EUROPEAN CENTRAL BANK
EUROSYSTEM

TARGET -SECURITIES

T2S FRAMEWORK AGREEMENT

BETWEEN

BANCO DE ESPAÑA

ACTING IN THE NAME AND ON BEHALF OF ALL OF THE MEMBERS OF THE EUROSYSTEM

AND

IBERCLEAR – BME GROUP

31 October 2011

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LIST OF SCHEDULES

This Agreement is entered into on the Agreement Date between [• *insert name and place of registered office of acting euro area NCB/ECB*] acting in the name and on behalf of all of the members of the Eurosystem

and

[• *insert name and place of registered office of Contracting CSD*] (hereinafter the 'Contracting CSD')

The parties to this Agreement are referred to collectively as the 'Parties' or individually as a 'Party'.

PREAMBLE

(1) On 17 July 2008, the Governing Council decided to launch the T2S Programme aimed at setting up a service to support securities settlement in Central Bank Money, to be provided to Central Securities Depositories (CSDs) under the name of TARGET2-Securities (T2S). As part of the Eurosystem's tasks in accordance with Articles 17, 18 and 22 of the Statute of the European System of Central Banks and of the European Central Bank (hereinafter the 'Statute of the ESCB'), T2S aims to facilitate post-trading integration by supporting core, neutral and borderless pan-European cash and securities settlement in Central Bank Money so that CSDs can provide their customers with harmonised and commoditised settlement services in an integrated technical environment with cross-border capabilities. The Governing Council also entrusted the 4CB with developing and operating T2S, as part of an internal distribution of work within the Eurosystem.

(2) On 16 July 2009, the Eurosystem and the Contracting CSD as well as other CSDs, entered into the T2S Memorandum of Understanding showing their support for the T2S Programme upon the terms set out therein and setting certain mutual obligations and responsibilities for the time period up to the conclusion of a definitive agreement.

(3) On 21 April 2010 the Governing Council adopted Guideline ECB/2010/2 of 21 April 2010 on TARGET2-Securities[1], which lays down the basic foundations of the T2S Programme in its Development Phase and further specifies the Eurosystem's governance procedures applicable in this context.

(4) The Contracting CSD, which is a CSD regulated and authorised under specific laws and regulations to act, *inter alia*, as an operator of Securities Settlement Systems, will use the T2S Services for securities settlement in Central Bank Money. The Contracting CSD will outsource certain IT development and operational activity to the Eurosystem, as necessary for the Eurosystem to operate T2S. The Contracting CSD will maintain full control over the business and contractual relationship with its customers and over the parameters of its business operations, which includes the Contracting CSD's ability to monitor and control the processing of its business operations in T2S in accordance with the terms of this Agreement. T2S is a settlement solution and is not a CSD nor a Securities Settlement System.

(5) In view of the above, this Agreement sets out the rights and obligations of the Parties.

CHAPTER 1
SCOPE, DEFINITIONS AND CONSTRUCTION

Article 1
Scope

1 This Agreement sets out the rules that govern, inter alia:

(a) the cooperation in the Development Phase of T2S, during which the Eurosystem will develop the T2S Services in accordance with Schedule 2 (T2S Programme Planning and Monitoring), the T2S Scope Defining Set of Documents, and Schedule 5 (T2S Service Description); and

(b) the provision of the T2S Services by the Eurosystem to the Contracting CSD in the Operational Phase, and the Contracting CSD's use of the same, as specified in Schedule 5 (T2S Service Description).

2 The purpose of the Development Phase is to establish the T2S Services to be provided by the Eurosystem in the Operational Phase.

3 The Contracting CSD shall have no contractual relationship with the 4CB, other than in the capacity of each of these four Central Banks as members of the Eurosystem, and waives any recourse against the 4CB in connection with the matters covered by this Agreement to the extent permissible by applicable law.

4 The Eurosystem shall have no contractual relationship with the Contracting CSD's customers related to the Eurosystem's provision of T2S Services to the Contracting CSD. The Contracting CSD shall remain exclusively responsible for its business and contractual relations with its customers, including Directly Connected Parties (DCPs), in relation to its services enabled by the Eurosystem's provision of the T2S Services, or other services provided in the Contracting CSD's capacity as a CSD or as an operator of a Securities Settlement System.

5 The Contracting CSD shall remain exclusively responsible for its relationship with the Relevant Competent Authorities regarding its use of the T2S Services. Without prejudice to other provisions of this Agreement, the Eurosystem shall refrain from intervening in this relationship without the Contracting CSD's prior written consent or request. The rights and obligations of the Parties in this respect are further detailed in Article 8.

6 This Agreement sets out the scope of the T2S Services.

[1] OJ L 118, 12.5.2010, p. 65.

Article 2

Definitions and construction

1 In this Agreement references:

(a) to applicable laws, Schedules, Annexes or other documents shall be deemed to refer, unless specified otherwise, to the respective applicable laws, Schedules, Annexes or other documents;

(b) to this Agreement (whether included in the Articles of the Agreement or in a Schedule or an Annex) shall include the Schedules and the Annexes;

(c) to ‘include’, ‘includes’, ‘including’, ‘in particular’ or ‘e.g.’ means ‘without limitation’;

(d) to persons shall include individuals (*natürliche Personen*) and legal entities (*juristische Personen*) and shall include the permitted transferees and assignees of such individuals and legal entities;

(e) to the holder of any office or position of responsibility include references to such person as is from time to time appointed to exercise the functions of the holder;

(f) to any service or other matter or item as described, listed or specified in this Agreement shall include references to such service or other matter or item as removed, replaced, amended or edited from time to time under the terms of this Agreement; and

(g) words in the plural shall have the same meaning when used in the singular and vice versa.

2 The heading and table of contents of this Agreement shall not affect its construction or interpretation.

3 This Agreement is composed of the Preamble and of Articles 1 to 54 as well as of Schedules 1 to 13 and the Annexes to the Schedules. The Schedules and the Annexes to the Schedules form part of this Agreement and shall have the same force and effect as if expressly set out in Articles 1 to 54. Schedule 1 (Definitions) sets out the meaning of the terms in this Agreement, which are written with initial capital letters, other than proper nouns or titles of the Schedules to the Agreement. In the event of a conflict between stipulations contained in Articles 1 to 54 and those contained in a Schedule or an Annex, as the case may be, the stipulations contained in Articles 1 to 54 shall prevail. In the event of a conflict or inconsistency between Schedule 1 (Definitions) and the other Schedules, or between such other Schedules, Schedule 1 (Definitions) shall prevail over the other Schedules and shall be used to resolve conflicts or inconsistencies between such other Schedules. In the event of a conflict between a Schedule and an Annex, the terms of the Schedule shall prevail. In the event of a conflict or inconsistency between this Agreement and any other document referenced or referred to in it, this Agreement shall prevail.

4 Where this Agreement contains a German term as a translation of an English term, the German term shall be binding for the interpretation of this Agreement.

5 The T2S Scope Defining Set of Documents shall be part of this Agreement, unless and to the extent expressly specified to the contrary in this Agreement or in the T2S Scope Defining Set of Documents. In case of such specification, the relevant part of the T2S Scope Defining Set of Documents shall have only interpretative value. The T2S Scope Defining Set of Documents may be complemented from time to time in accordance with Schedule 9 (Change and Release Management). The Eurosystem shall aim at ensuring consistency between the T2S Scope Defining Set of Documents and the Service Description at all times. In the event of inconsistencies between documents, the last version of the most detailed document reviewed by the Parties in accordance with Schedule 2 Annex 8 (T2S deliverables list and management process) concerning the issue shall prevail. If a requirement/function is not specified in the GFS or the UDFS, the URD shall prevail. The T2S Documentation that are not T2S Scope Defining Set of Documents are not part of this Agreement unless and insofar expressly specified to the contrary in this Agreement. The T2S Documentation may be complemented from time to time by the Eurosystem in accordance with Schedule 2 Annex 8 (T2S deliverables list and management process). The Eurosystem shall make the T2S Documentation available to the Contracting CSD. The T2S Documentation is not to be understood as amending, being part of, or supplementing this Agreement unless expressly specified in this Agreement.

CHAPTER 2
RIGHTS AND OBLIGATIONS OF THE PARTIES

Article 3
Representations of the Parties

1 The Eurosystem represents the following at the Agreement Date and throughout the term of this Agreement:

(a) in accordance with Articles 17, 18 and 22 of the Statute of the ESCB, the Eurosystem has and shall maintain in effect all the necessary statutory powers and authorisations to provide the T2S Services in performance of its public tasks;

(b) the execution and performance of this Agreement have been duly authorised by all necessary action of the decision-making bodies of the Eurosystem, in accordance with the Statute of the ESCB.

2 The Contracting CSD represents the following:

(a) at the Agreement Date and throughout the term of this Agreement that the execution and performance of this Agreement have been duly authorised by all necessary action of the decision-making or other relevant bodies of the Contracting CSD.

(b) as from the Migration Date and as from then throughout the term of this Agreement and without prejudice to Article 38(3)(a), the Contracting CSD has and shall maintain in effect all the necessary rights, powers, and authorisations to perform its obligations under this Agreement, including, in particular, all licenses, permits and consents required in order to use the T2S Services.

Article 4
Multilateral Character of T2S

1 The Parties acknowledge that T2S is multilateral in character in that it aims at facilitating European post-trading integration by supporting cash and securities settlement in Central Bank Money, thereby combining the interests of Participating CSDs, Central Banks and all other T2S Actors. The Parties agree that actions that would have a material negative impact on any of the CSDs participating in T2S or would not be in line with the aim of achieving securities settlement in Central Bank Money are incompatible with the Multilateral Character of T2S. The T2S Services shall be provided to CSDs participating in T2S on the basis of uniform requirements and Governance rules, which include a framework for Specific Changes. The Contracting CSD acknowledges that the Eurosystem will offer Parallel Framework Agreements to all CSDs that are eligible to use the T2S Services in accordance with the conditions set out in Article 5.

2 The Parties shall use reasonable efforts to cooperate with each other in identifying any subject matters related to T2S that would benefit from further harmonisation and in supporting consequent adaptations to the legal and regulatory framework. The Contracting CSD shall use reasonable efforts to adapt its operational, internal guidelines as well as its processes and related technical systems in order to foster the development of the European post-trading infrastructure, make efficient use of the T2S Services and maintain the Multilateral Character of T2S. The Eurosystem shall use reasonable efforts to adapt its operational, internal guidelines as well as its processes and related technical systems in order to foster the development of the European post-trading infrastructure and maintain the Multilateral Character of T2S.

Article 5
Non-discriminatory access

1 The Eurosystem may allow any CSD to access the T2S Services if it is eligible in accordance with the Access Criteria, as specified in the paragraph 2. The Eurosystem shall apply such Access Criteria in a fair and non-discriminatory manner.

2 CSDs shall be eligible to access T2S Services as Participating CSDs provided they:

(a) have been notified to the European Securities and Markets Authority (ESMA) under Article 10 of Directive 98/26/EC or, in the case of a CSD from a non-European

Economic Area jurisdiction, operate under a legal and regulatory framework that is equivalent to that in force in the Union Member States;

(b) have been positively assessed by the Relevant Competent Authorities against the CESR/ESCB Recommendations for Securities Settlement Systems;

(c) make each security/International Securities Identification Number (ISIN) for which they are an Issuer CSD (or Technical Issuer CSD) available to other Participating CSDs upon request;

(d) commit to offer to other Participating CSDs Basic Custody Services on a non-discriminatory basis;

(e) commit to other Participating CSDs to carry out their settlement in Central Bank Money in T2S if the relevant currency is available in T2S.

3. The Contracting CSD shall comply with the Access Criteria at the latest from the date of its migration to T2S and throughout the term of this Agreement. The Eurosystem shall assess the compliance with the Access Criteria. The Contracting CSD shall promptly inform the Eurosystem of any change affecting its compliance with the Access Criteria occurring during the term of this Agreement. If deemed appropriate, the Eurosystem may reassess the compliance with the Access Criteria. The Contracting CSD agrees that the Eurosystem has the right to request at any time confirmation and evidence regarding its compliance with the Access Criteria.

4. The Eurosystem may grant a derogation from the Access Criterion set out in paragraph 2(e) in line with Decision (ECB/2011/XX).

Article 6
Duty of loyal cooperation and information

In the exercise of its rights and the performance of its obligations under this Agreement each Party shall:

(a) act in good faith and collaborate with the other Party closely and transparently in their contractual relations; and

(b) promptly give to the other Party notice of facts and any information that may reasonably affect its own or the other Party's ability to perform its obligations under this Agreement in any material respect.

Article 7

Assignment and subcontracting

1. The Contracting CSD shall inform the Eurosystem as soon as reasonably practicable if it has outsourced or subcontracted any part of its obligations under this Agreement to a Third Party. Where the Contracting CSD outsources or subcontracts any of its tasks, it shall remain liable to the Eurosystem for the performance of its duties and obligations under this Agreement.

2. Any assignment or transfer of a right or an obligation of a Party arising out of or in connection with this Agreement shall be subject to the prior written approval of the other Party and such approval may not be unreasonably withheld or delayed. Such approval shall not be required for (a) the assignment or transfer of a right to an Affiliate of a Party; or (b) the assignment or transfer of a right enabling the exercise of a right of recourse of an insurance company of a Party to the extent that the claim or damage suffered by that Party is subrogated to such insurance company.

3. Due to the public nature of T2S, the operation and running of T2S can only be entrusted to one or more euro area national central banks (NCBs). The development and operation of T2S is performed by the 4CB, by an Affiliate of the 4CB, or by one or more euro area NCBs belonging to the 4CB, as part of an internal distribution of work within the Eurosystem and is not to be considered as assigning, transferring, outsourcing or subcontracting within the meaning of this Article. The Eurosystem may outsource or subcontract to a Third Party its tasks under this Agreement that are material for the performance of the Eurosystem's obligations under this Agreement only with the express, prior and written consent of the CSD Steering Group (CSG) as described in paragraph 4 and such approval may not be unreasonably withheld or delayed. Outsourcing and subcontracting within the meaning of this Article do not include the procurement of services which are not core tasks that CSDs outsource to the Eurosystem, and therefore no consent of the CSG is needed for such outsourcing and subcontracting. The dispute resolution mechanism set up in Article 42 shall apply in case of disagreement.

4. Where the consent of the CSG referred to in paragraph 3 is needed, the Eurosystem shall pre-advise the CSG, the Contracting CSD and each Participating CSD as soon as possible of any planned action, and shall give reasonable prior notice with details of the proposed terms and conditions pursuant to which such action would take place and shall request the consent of the CSG. The CSG shall give its response within 14 calendar days by providing its consent or reasoned refusal of consent or by indicating within which deadline it would be able to provide an answer to the Eurosystem. In any event, such additional time to respond shall not exceed four weeks from the receipt of the request. The CSG shall approve its consent by a double majority vote of the CSDs as set out in Schedule 8 (Governance). The consent shall be deemed to be given to the Eurosystem if it has been provided by a double majority of the CSDs that responded to the Eurosystem request within 14 calendar days from receiving the Eurosystem's request or, if applicable, within the additional time to respond as described above. Where a reply from a CSD or the CSG does not reach the Eurosystem within 14 calendar days or, if applicable, within the additional time to respond as described above, this is considered implied consent to the outsourcing or subcontracting.

5. Where the Eurosystem outsources or subcontracts any of its tasks in accordance with paragraph 3, it shall remain liable to the Contracting CSD for the performance of its duties and obligations under this Agreement. If the Eurosystem outsources or subcontracts a task to a Third Party, it shall ensure, as much as appropriate, that its subcontractors are bound by confidentiality and data protection obligations. If the task outsourced or subcontracted by the Eurosystem is a material task, it shall also ensure that its subcontractors are subject to Business Continuity and Disaster Recovery arrangements similar to those contained in this Agreement and that it retains an adequate level of control over such Third Party, including, if necessary, a right to access the subcontractor's relevant premises, records, systems and/or staff. The Eurosystem, in defining its subcontractors' obligations, shall take into account the need to ensure adequate cooperation with the Contracting CSD for the purpose of helping the Contracting CSD as a regulated entity to meet its Legal and Regulatory Requirements.

6. The Parties shall in addition use the form contained in Schedule 12 (Form for Subcontracting) in connection with the obtaining and granting of consent to subcontract.

Article 8
Compliance with Legal and Regulatory Requirements, separation of functions

1. Both Parties acknowledge that this Agreement is without prejudice to the Legal and Regulatory Requirements applicable to the Contracting CSD concerning inter alia the powers and responsibilities of the Relevant Competent Authority and consequently shall have no influence on such powers and responsibilities, which remain exclusively in charge of the supervision and oversight of the Contracting CSD. As regards access to relevant information and on-site inspections, the Relevant Competent Authorities maintain the legal and regulatory powers applicable under the jurisdiction in which the CSD operates.

2. Both Parties recognise that the Contracting CSD is directly responsible to the Relevant Competent Authorities with regard to compliance with the Legal and Regulatory Requirements and that in neither of these functions have the Contracting CSD's responsibilities been delegated to the Eurosystem. The Contracting CSD shall exercise its rights and perform its obligations under this Agreement at all times in compliance with the applicable Legal and Regulatory Requirements and shall ensure that its staff, agents and employees act in compliance with such requirements. The Contracting CSD shall promptly inform the Eurosystem of all Legal and Regulatory Requirements applicable to it and any changes to such requirements or any evolutions in their interpretation and application, when compliance with such requirements needs to be considered in connection with the provision or use of the T2S Services. The Eurosystem shall provide reasonable assistance to the Contracting CSD in meeting its Legal and Regulatory Requirements and in ensuring that the Contracting CSD's use of the T2S Services does not lead to non-compliance with such requirements, to the extent that it was informed by the Contracting CSD and to the extent that such requirements are compatible with the Multilateral Character of T2S.

3. The Eurosystem shall maintain contact with the relevant Union institutions and bodies, and the Relevant Competent Authorities to the extent necessary under this Agreement.

4. Each of the Eurosystem Central Banks shall maintain at all times a clear separation between (a) its role as a Party to this Agreement; (b) its regulatory, supervisory and oversight functions; and (c) its function as an operator of its own CSD, if applicable.

5. Based on Articles 127 of the Treaty on the Functioning of the European Union and Article 3 of the Statute of the ESCB, in the T2S context, the Eurosystem shall in particular:

   (a) exclusively exercise full control over all cash accounts in euro in T2S, i.e. operate the cash accounts it holds for its banks and safeguard the integrity of the euro which, for the purposes of this Agreement, includes the implementation of monetary policy including all central bank credit operations as well as settlement in Central Bank Money in the euro;

   (b) contribute to the smooth conduct of policies pursued by the Relevant Competent Authorities relating to the prudential supervision of credit institutions and the stability of the financial system;

   (c) ensure that it does not distort a level playing field for market participants;

   (d) carry out efficient oversight of their market infrastructure while preserving the separation of this function in line with paragraph 4 above.

6. To the extent relevant and subject to the Currency Participation Agreements, non-euro area NCBs shall have the same rights in T2S as the Eurosystem in relation to their respective currencies.

7. The Eurosystem shall promote good governance aimed at avoiding conflicts between the non-euro NCBs operating and oversight functions.

Article 9
Availability of expert personnel

Each Party shall ensure that sufficient and qualified personnel, who have appropriate expertise and are trained in the tasks in which they are engaged, are used to perform the duties and obligations under this Agreement.

Article 10
Compliance with Information Security requirements

1. The Eurosystem shall in accordance with and as described in Schedule 10 (Information Security):

   (a) implement the Information Security framework for T2S;

   (b) implement a process to manage Information Security in T2S by: (i) regularly reviewing the implementation, and (ii) regularly updating the T2S Security Requirements to keep them in line with technical developments;

(c) maintain the T2S Threat Catalogue;

(d) perform all activities related to Information Security in accordance with the provisions set out in Schedule 10 (Information Security);

(e) report the results of Information Security reviews to the Contracting CSD;

(f) report Information Security incidents to the Contracting CSD in accordance with the provisions set out in Schedule 10 (Information Security);

(g) provide all other relevant information to the Contracting CSD to allow it to fulfil its own risk management obligations.

2. In view of ensuring Information Security for T2S, the Contracting CSD shall:

(a) ensure its own compliance with Information Security requirements according to its internal standards, Legal and Regulatory Requirements and/or best practices;

(b) report Information Security incidents to the Eurosystem, if T2S or other T2S Actors might be impacted by such incidents;

(c) report to the Eurosystem newly identified threats or detected gaps that might threaten T2S Information Security.

3. The parties shall cooperate according to the following provisions:

(a) The Eurosystem shall at least on a yearly basis deliver for review to the Contracting CSD the T2S Information Security Risk Evaluation Table and the T2S Information Security Risk Treatment Plan, as further specified in section 4.2 of Schedule 10 (Information Security);

(b) The Eurosystem shall maintain a consolidated action plan for all risks appearing in a T2S Information Security Risk Treatment plan, which require follow-up, and shall deliver for review to the Contracting CSD an updated version of the action plan at least on an annual basis, as further specified in section 4.2.2 of Schedule 10 (Information Security);

(c) The Eurosystem shall set up a multilateral coordination substructure, in accordance with the Governance, for the coordination and monitoring of the T2S Information Security Risk Management activities, as further specified in section 4.3 of Schedule 10 (Information Security);

(d) If a disagreement arises in the substructure, each Party shall be entitled to escalate the issue to the Steering Level and shall have, if the disagreement persists, the ultimate possibility to initiate the dispute resolution procedure specified in Article 42, as further specified in section 4.3 of Schedule 10 (Information Security);

(e) If a new Information Security risk is identified, or if an existing Information Security risk obtains a higher likelihood or impact score, the Eurosystem shall communicate such changes to the Contracting CSD in accordance with the incident response times specified in Schedule 6 (Service Level Agreement), as further specified in section 4.3 of Schedule 10 (Information Security);

4. Any matters related to operational risk, which are not covered by this Article or in Schedule 10 (Information Security), will be managed directly by the Steering Level.

5. The Eurosystem will implement an appropriate risk management framework and inform the CSDs monthly about the risk situation.

Article 11
T2S Network Service Provider

1. The Eurosystem shall allow the Contracting CSD and its DCPs to connect its IT systems to the T2S Platform, either via a Value-added Connection or via a Dedicated Link Connection.

2. The Contracting CSD shall inform the Eurosystem about the solution it has chosen for its connection to T2S at least six months prior to the intended start date of its testing activities.

3. The Contracting CSD shall use reasonable efforts to ensure that its own connectivity with the T2S Platform functions properly at all times. The Contracting CSD shall provide in its rules or contractual terms for an obligation to be imposed on its DCPs to use reasonable efforts to ensure that their connectivity with the T2S Platform functions properly at all times.

4. The Contracting CSD shall inform the Eurosystem of its intention to change its Network Service Provider (NSP) as soon as reasonably possible.

5. As far as the Value-added Connections are concerned, the following provisions shall apply:

   (a) The Eurosystem shall communicate to the Contracting CSD during the Development Phase in accordance with Schedule 2 the NSPs that it has selected for the provision of Connectivity Services to the Contracting CSD. The requirements according to which the NSPs have been selected, and which they need to comply with, are specified in the attachments 1 (technical requirements) and 2 (business requirements) of the Licence Agreement, which has been and will be kept public on the website of the Banca d'Italia. Changes to these requirements will be managed in accordance with Schedule 9 (Change and Release Management) and the Licence Agreement.

   (b) The Eurosystem shall exercise due care in the coordination of the Contracting CSD's monitoring of the compliance of the NSP(s) with those requirements pursuant to paragraph 5(a) which the Contracting CSD can monitor itself. The Eurosystem shall exercise due care in the monitoring of the compliance of the NSP(s) with those requirements which the Contracting CSD cannot monitor itself. The Eurosystem shall address material breaches of such requirements in accordance with the relevant contractual provisions with the NSP(s). If the Contracting CSD connects to T2S via an NSP in respect of which the Eurosystem has identified a material breach or a potential material breach of the requirements, the Eurosystem will inform the Contracting CSD about the (potential) material breach it has identified, as well as about the steps it has undertaken to remedy (or avoid) such a (potential) material breach. Should the material breach by the NSP not be remedied in a reasonable timeframe, the Eurosystem shall take the appropriate measures towards the NSP, subject to the Eurosystem's arrangements with the NSP, and provide support to the Contracting CSD.

(c) The Contracting CSD shall carry out its own due assessment as regards the ability of the selected NSP(s) to offer a Value-added Connection to the Contracting CSD and as regards the reliability of the NSP(s) (financially, operationally, technically or otherwise) towards the Contracting CSD. The Contracting CSD may not rely solely on the results of the selection process undertaken by the Eurosystem regarding the selection of the NSP(s).

(d) The Eurosystem shall not be responsible for any cost or loss that the Contracting CSD may incur as a result of a need to transition to a different NSP if the NSP with which the Contracting CSD has contracted the Connectivity Services loses, for whatever reason, its status as an NSP.

(e) For the avoidance of doubt, the Contracting CSD and the DCP shall not be responsible to the Eurosystem for the acts and omissions of its NSP(s). The Contracting CSD shall inform the Eurosystem about any concerns it may have regarding the operational, technical or financial reliability of its NSP(s) as well as any performance issues regarding delivery of the Value-Added Connection provided by its NSP(s). The Eurosystem shall assess whether or not the information provided by the Contracting CSD could reasonably indicate non-compliance by the NSP of the requirements referred to in paragraph 5(a). If the Eurosystem, acting reasonably, decides that the NSP does not comply with the relevant requirements, the Eurosystem shall forthwith take appropriate steps against the NSP, subject to the Eurosystem's arrangements with the NSP. At all times, the Eurosystem shall keep the Contracting CSD informed of the steps it is taking and discuss the proposed actions with the Contracting CSD in advance.

(f) The Parties shall monitor the risk situation of the NSPs within their respective contractual relationships with their NSPs and discuss them as appropriate within the Information Security framework.

(g) The Parties shall analyse the impact on the T2S Programme Plan in accordance with Schedule 2 (T2S Programme Planning and Monitoring), whenever the Eurosystem starts a new selection process of a NSP.

(h) The provision of Connectivity Services is outside of the scope of the T2S Services and the Eurosystem is not responsible to the Contracting CSD for the acts and omissions of the NSP(s).

6. The Eurosystem shall communicate to the Contracting CSD in accordance with Schedule 2 (T2S Programme Planning and Monitoring) the entity that will offer the necessary Physical Connectivity Services for the Dedicated Link Connection, as well as the necessary specifications for the Value-added Connectivity Services, which the Contracting CSD has to implement, in order to establish a Dedicated Link Connection with the T2S Platform. The rights and obligations of the Parties related to the Dedicated Link Connection will be specified outside this Agreement.

Article 12
Directly Connected Parties

1. The Contracting CSD shall maintain a contractual relationship with the DCP that it has designated to the Eurosystem. The Eurosystem shall not maintain a contractual relationship with that DCP for the matters dealt with under this Agreement.
2. The Contracting CSD shall only have the obligations in respect of the DCP that it has designated, as provided for in this Agreement and in the T2S Scope Defining Set of Documents. The Contracting CSD shall reflect the obligations that need to be performed by the DCP in relation to the T2S Services in its contractual relationship with such DCP.
3. Without prejudice to Article 1(4), in all matters covered by the subject matter of this Agreement, and without prejudice to its provisions, the Eurosystem can interact in particular with the Contracting CSD’s DCPs for the purposes of managing the technical connections to T2S, DCP Certification in user testing and crisis management.

Article 13
Obligations of the Eurosystem related to the development of T2S

The Eurosystem shall:

(a) establish T2S in accordance with the T2S Scope Defining Set of Documents and Schedule 5 (T2S Service Description) and use reasonable efforts to allocate appropriate resources to its implementation and to respect the milestone deliverables set out in Schedule 2 (T2S Programme Planning and Monitoring) in line with the agreed procedure for modifications as defined in Schedule 2 (T2S Programme Planning and Monitoring*)*.

(b) implement Common and Specific Changes to the T2S Services as requested by the Contracting CSD and managed by the Eurosystem in accordance with Article 25 and Schedule 9 (Change and Release Management);

(c) set up and maintain the T2S Programme Plan as well as assess and adjust the T2S Programme Plan with a view to ensuring effective implementation of the T2S Services;

(d) report to and inform the Contracting CSD in accordance with Schedule 2 (T2S Programme Planning and Monitoring) of the progress achieved;

(e) make available T2S Documentation to the Contracting CSD in line with the T2S Programme Plan;

(f) allow the Contracting CSD to review and agree the preparation of the T2S Documentation as provided for in Article 14 in line with Schedule 2 (T2S Programme Planning and Monitoring).

Article 14
Obligations of the Contracting CSD related to the development of T2S

As further specified in the relevant Schedules, the Contracting CSD shall participate and contribute to the development of T2S through the following:

(a) it shall support the Eurosystem in the preparation of the T2S Documentation in accordance with Annex 8 of Schedule 2 (T2S Programme Plan and Monitoring);

(b) it shall inform the Eurosystem whenever it has in its possession material information, be it of a technical, operational, legal, regulatory or any other nature, and that would, in the absence of any action by the Eurosystem lead to a material adverse effect to the effective and harmonised functioning of the T2S Programme and/or T2S Services;

(c) it shall use reasonable efforts to respect the milestone deliverables set out in Schedule 2 (T2S Programme Planning and Monitoring), as applicable to it, set up its own project plan for implementation of the T2S Programme, allocate resources to successive versions of the T2S Documentation, with the view to ensuring effective use of the T2S Services in accordance with the timelines referred to in Article 13(f) and report on the progress of its project plan and its readiness for the effective implementation of the T2S Services;

(d) it shall cooperate with the Eurosystem by adapting its systems and processes, especially by ensuring adequate system interfaces and reliable connections and allocate appropriate resources to the implementation of the project plan, assess and adjust such project plan, so as to allow for its operational and technical readiness for the use of the T2S Services and for the timely initiation of provision of such T2S Services;

(e) the Contracting CSD shall provide information that may be relevant for the Eurosystem to develop T2S or fulfil its tasks and responsibilities under this Agreement, including information on the settlement volumes of the Contracting CSD.

Article 15
Obligations of the Eurosystem related to testing

As further specified in Schedule 3 (User Testing) the Eurosystem shall:

(a) coordinate the User Testing activities and communication between the Contracting CSD and the Central Banks whose currencies are available for settlement in T2S as well as between the Contracting CSD and other CSDs participating in the User Testing activities;

(b) inform the Contracting CSD about the results of User Testing as defined in Schedule 3 (User Testing);

(c) prepare and execute the Eurosystem Acceptance Testing (EAT), and provide regular progress reporting as well as an assessment report confirming the compliance of T2S with Schedule 5 (T2S Service Description) and the T2S Scope Defining Set of Documents before the start of User Testing;

(d) define the CSD certification tests required to assess that the Contracting CSD's systems cannot harm T2S due to an inappropriate technical communication or operational procedure;

(e) define the DCP certification tests required to assess that the systems of the DCPs of the Contracting CSD cannot harm T2S due to an inappropriate technical communication or operational procedure;

(f) prepare the necessary non-functional tests and execute these non-functional tests in order for the Eurosystem to confirm the non-functional compliance of T2S;

(g) remedy any material deficiency defined as critical defect (priority 1) and, for any defect defined as high defect (priority 2), either directly resolve the defect or, if agreed with the Contracting CSD, as a first step, provide a technical or procedural workaround and, as a second step, resolve the defect within a specific timeframe to be defined along with the workaround to ensure that the T2S Services are established in accordance with the principles set out in Schedule 5 (T2S Service Description) and the T2S Scope Defining Set of Documents;

(i) provide reasonable support for testing activities of the Contracting CSD in the different stages of User Testing;

(j) cooperate with the Contracting CSD in respect of the Contracting CSD's acceptance tests of the T2S Services in accordance with Article 17.

Article 16
Obligations of the Contracting CSD related to testing

As further specified in Schedule 3 (User Testing) the Contracting CSD shall:

(a) support the Eurosystem in the preparation of the overall User Testing calendar by providing the Eurosystem with its proposed Test Plan and User Testing calendar of its activities;

(b) execute the mandatory test cases and test scenarios for CSD certification within the period foreseen in the T2S Programme Plan for the migration wave in which it is participating;

(c) monitor that its DCPs execute the mandatory test cases and test scenarios for DCP Certification within the period foreseen in Schedule 2 (T2S Programme Planning and Monitoring) for the migration wave in which it is participating.

(d) cooperate with the Eurosystem in respect of its acceptance tests of the T2S Services in accordance with Article 17.

Article 17
Obligations of the Parties in respect of the Contracting CSDs' Acceptance Tests of the T2S Services

1 Following the Eurosystem's notification of its readiness to fulfil synchronisation point 8 (Start Bilateral Interoperability Testing) according to Annex 9 of Schedule 2 (T2S Programme Planning and Monitoring), the Contracting CSD shall be entitled to test the compliance of the T2S' Services with Schedule 5 (T2S Service Description) and the T2S Scope Defining Set of Documents in accordance with the methodology stated in this Article and in Schedule 3 (User Testing).

2 In case the Contracting CSD chooses to perform the tests as defined in paragraph 1, the Contracting CSD shall finalise such tests within 6 months following the Eurosystem's notification of its readiness to fulfil synchronisation point 8 (Start Bilateral Interoperability Testing), unless provided otherwise in Schedule 2 (T2S Programme Planning and Monitoring). If the Contracting CSD discovers that the T2S Services do not comply with Schedule 5 (T2S Service Description) and/or the T2S Scope Defining Set of Documents, it shall follow the procedures laid down in section 5.3 of Schedule 3 (User Testing).

3 Notwithstanding the Contracting CSD's decision to perform the tests as described in paragraphs 1 and 2, the Contracting CSD shall provide to the Eurosystem in writing, and within 6 months following the Eurosystem's notification of its readiness to fulfil synchronisation point 8 (Start Bilateral Interoperability Testing), either that it accepts the T2S Services as compliant with Schedule 5 (T2S Service Description) and the T2S Scope Defining Set of

Documents or that it does not accept the T2S Services as compliant with Schedule 5 (T2S Service Description) and the T2S Scope Defining Set of Documents.

4 In the case the Contracting CSD notifies the Eurosystem that it does not accept the T2S Services as compliant with Schedule 5 (T2S Service Description) and the T2S Scope Defining Set of Documents, it shall promptly, and in no case later than within 5 working days after such notification, deliver a report to the Eurosystem describing all cases of non-compliance it has identified (Non-compliance Notification).

5 Upon the Eurosystem's notice to the Contracting CSD that the Eurosystem has remedied individual or all cases of material non-compliance, the Contracting CSD shall test the error correction.

6 When the Contracting CSD finds that none of the reported cases of material non-compliance continues to exist, it shall provide a confirmation that it accepts the T2S Services as compliant with Schedule 5 (T2S Service Description) and the T2S Scope Defining Set of Documents (Compliance Confirmation) in writing without undue delay.

7 The presentation of the Compliance Confirmation by the Contracting CSD to the Eurosystem shall constitute a waiver by the Contracting CSD of any right to assert any other case of material non-compliance of T2S with Schedule 5 (T2S Service Description) and the T2S Scope Defining Set of Documents with regard to the termination right in accordance with Article 38(1)(b).

Article 18
Obligations of the Eurosystem related to Migration

As further specified in Schedule 4 (Migration) the Eurosystem shall:

(a) establish the necessary procedures and tools for Migration aimed at facilitating a smooth change-over of the Contracting CSD's operations from its legacy systems to T2S, which shall, *inter alia*, support the Contracting CSD in suspending or reversing its Migration if the conditions for Migration, as defined in Schedule 4 (Migration), cannot be satisfied; and

(b) provide the Contracting CSD with support related to its activities necessary for completing the Migration.

Article 19
Obligations of the Contracting CSD related to Migration

As further specified in Schedule 4 (Migration) the Contracting CSD shall:

(a) adjust its internal systems, processes, interfaces and connections to enable its Migration to the T2S in compliance with the Access Criteria and the T2S Documentation, and to achieve operational and technical readiness for the use of the T2S Services;

(b) set up its own project plan for the Migration and do whatever is reasonably required to ensure that its customers, including DCPs, are able to migrate to the T2S-enabled services of the Contracting CSD within the timeframe provided in Schedule 2 (T2S Programme Planning and Monitoring);

(c) determine, in co-operation with other Participating CSDs, the group in which it shall migrate to T2S and the date of its Migration in accordance with the criteria and the conditions, subject to the Eurosystem's rights specified in Schedule 4 (Migration), and the time specified in Schedule 2 (T2S Programme Planning and Monitoring);

(d) migrate to T2S in accordance with the process specified in Schedule 4 (Migration) and within the timeframe provided in Schedule 2 (T2S Programme Planning and Monitoring);

(e) cooperate with the Eurosystem in documenting that its Migration has been successfully completed.

Article 20
Obligations of the Eurosystem related to the provision and use of the T2S Services

1. For the provision and use of T2S Services, the Eurosystem shall:

   (a) provide to the Contracting CSD the T2S Services specified in Schedule 5 (T2S Service Description);

   (b) implement Common and Specific Changes to the T2S Services as requested by the Contracting CSD and managed by the Eurosystem in accordance with Article 25 and Schedule 9 (Change and Release Management);

   (c) maintain the T2S Services so as to support, in cooperation with the Contracting CSD, ongoing compliance with the applicable Legal and Regulatory Requirements, as detailed in Article 8(1), without prejudice to the application of Article 25 and Schedule 9 (Change and Release Management) to changes that may need to be implemented as a result of such requirements;

   (d) reinstate operations to permit use of the T2S Services following a failure as specified in Schedule 6 (T2S Service Level Agreement);

   (e) update in a timely manner the T2S Documentation;

   (f) provide the Contracting CSD with financial statements, reports and other information on T2S on a regular basis that fairly represent the business and financial conditions, result of operations and state of the cost recovery in relation to T2S on the respective dates or for the respective periods covered by such financial statements, reports and other information.

2. Changes to the T2S Platform or T2S Business Application that need to be implemented urgently in order to restore or continue the provision of the T2S Services in accordance with the service levels specified in Schedule 6 (T2S Service Level Agreement) may be au-

tonomously decided and implemented by the Eurosystem in accordance with Schedule 6 (T2S Service Level Agreement) and the Manual of Operational Procedures (MOP). In such cases, the Eurosystem shall inform the Contracting CSD as soon as reasonably practicable on the nature and characteristics of the changes and the time in which the change shall be implemented.

3. The Eurosystem shall make available to the Contracting CSD a monthly Service Level Report to determine the degree of the Eurosystem's compliance with Schedule 6 (T2S Service Level Agreement), in particular as regards the Key Performance Indicators (KPIs). If the Eurosystem fails to meet any of the KPIs, it shall in cooperation with the Contracting CSD:

   (a) investigate the underlying cause of the failure;

   (b) take necessary measures to minimise the impact of the failure;

   (c) take necessary measures to prevent the failure from recurring or report on the cause, the status and the remedies required to prevent recurrence of the failure.

Article 21
Obligations of the Contracting CSD related to the provision and use of the T2S Services

1. The Contracting CSD shall use the T2S Services once: (a) the User Testing is completed as specified in Article 16 and Schedule 3 (User Testing); and (b) Migration has been successfully completed as specified in Article 19 and Schedule 4 (Migration).

2. In pursuance of its obligation to use the T2S Services, the Contracting CSD shall, in particular:

   (a) perform the duties and responsibilities assigned to it in Schedule 6 (T2S Service Level Agreement);

   (b) support the resumption of the T2S Services following a failure as specified in Schedule 6 (T2S Service Level Agreement);

   (c) pay the fees in a timely manner and in accordance with the conditions set out in Schedule 7 (Pricing).

3. The Contracting CSD shall only present to T2S for processing Transfer Orders on behalf of customers that are 'participants' according to the national implementation of Article 2 of Directive 98/26/EC or, if the Contracting CSD is established outside the European Economic Area, on behalf of customers enjoying an equivalent protection to that in force for 'participants' pursuant to Directive 98/26/EC.

4. The Contracting CSD shall make all necessary arrangements with regard to its operational processes and contractual terms, in particular its rules, (a) to aim at harmonising definitions

of the moment of entry of Transfer Orders into the system and of the moment of irrevocability of such Transfer Orders, in accordance with Directive 98/26/EC, and (b) to ensure the unconditionality, irrevocability and enforceability of the settlement processed on the T2S Platform.

5. The Contracting CSD shall review, comment, and consent to or reject the Eurosystem report referred to in the Article 20(3). If the Contracting CSD rejects the report, and in particular the remedies proposed by the Eurosystem for preventing the recurrence of not meeting the KPIs, it may revert to the dispute resolution and escalation procedure set out in Article 42.

6. The Contracting CSD shall maintain and be responsible for the accuracy of all Securities Reference Data in T2S for which it is assigned as the Securities Maintaining Entity (SME). The Contracting CSD is the SME in T2S for all securities for which it is the Issuer CSD.

   If the Contracting CSD is not the Issuer CSD for a given security, then the Contracting CSD will agree with the other Participating CSDs which Participating CSD will act as SME. The Contracting CSD agrees with the following provisions concerning the responsibilities of the SME for a given security:

   (a) if the Securities Reference Data are required for settlement in T2S, the SME shall ensure that these are created in T2S in a timely manner and shall be responsible for maintaining them thereafter;

   (b) if the SME is informed of or becomes aware of errors and/or omissions in the Securities Reference Data, it shall correct them within two hours;

   (c) the Contracting CSD will not create Securities Reference Data for securities for which it is not the Issuer CSD or for which it has not agreed with the other Participating CSDs to act as SME.

7. The Contracting CSD, when acting as SME, acknowledges and confirms that it has obtained all authorisations, permits and licences to make available the Securities Reference Data to the Eurosystem for the purposes described in this Agreement. If legal action is commenced or threatened against the Eurosystem based on an alleged infringement of any right relating to such Securities Reference Data, the Eurosystem shall (a) notify the Contracting CSD in accordance with Article 50 as soon as reasonably practicable; (b) allow the Contracting CSD, at its expense, control of the defence of the claim (without prejudice to the Eurosystem's right to take an active role in the proceedings at its own expense); (c) not make admissions, agree to any settlement or otherwise compromise the defence of the claim without the prior written consent of the Contracting CSD; such consent shall not be unreasonably withheld and (d) give, at the Contracting CSD's request, reasonable assistance in connection with the conduct of the defence. If the Eurosytem should be held legally liable for the infringement of the Third Party's right according to an Enforceable Judgement or has, with the prior written consent of the Contracting CSD, settled the claim, the Contracting CSD shall reimburse the Eurosystem in accordance with Schedule 13 (Procedures for Payment of Claims) for all payments that the Eurosystem has to make to the relevant Third Party. The consent referred to in the previous sentence shall not be unreasonably withheld. This reimbursement obligation shall not apply with regard to any

Third Party claim asserted before a court outside (a) the European Union or (b) the home country of the Contracting CSD or any Participating CSD. In this case, the liability rules pursuant to Article 32 shall apply.

8. The Eurosystem may reassign the responsibility of the SME for a given security in T2S on a written request from the Contracting CSD and only if another Participating CSD accepts the responsibility as SME for this security.

9. The Eurosystem shall not reimburse the SME for any costs related to its responsibility to maintain the Securities Reference Data in T2S, nor shall it be involved in any way in any financial compensation arrangements between the Contracting CSD and the other Participating CSDs.

10. The Eurosystem shall not be liable to the Contracting CSD or the other Participating CSDs for any errors or omissions in any Securities Reference Data, nor shall it be involved in any way in the processing of any liability claims between them.

11. The Eurosystem may, upon request of the Contracting CSD and the other Participating CSDs, accept to act as SME for a given security. This shall not constitute a T2S Service and the Eurosystem shall not accept any liability in connection with its function as SME.

Article 22
Obligations of the Parties related to Securities Account balances

1. Securities Account balances of the Contracting CSD operated on the T2S Platform shall only be changed in T2S.

2. The Eurosystem acknowledges that the Transactional Data and CSD Static Data are essential to the Contracting CSD’s operations and that the Contracting CSD will rely on such Transactional Data and CSD Static Data for the operation of its Securities Accounts. The Eurosystem has no Intellectual Property Rights (IPRs) over the Transactional Data and CSD Static Data, which remain under the responsibility and control of the Contracting CSD except as provided by and/or required for the execution of this Agreement.

3. In providing the T2S Services, the Eurosystem shall process changes to Securities Account balances on the T2S Platform upon Transfer Orders through which the Contracting CSD has been instructed by its Users. The Eurosystem shall have no obligation to monitor the accuracy of the Transfer Orders and may rely in good faith on all Transfer Orders and information communicated and properly authenticated in accordance with the methods described in Schedule 5 (T2S Service Description) and the T2S Scope Defining Set of Documents.

4. The Eurosystem warrants that all Transactional Data and CSD Static Data shall be accessible to and available for the Contracting CSD as specified in Schedule 5 (T2S Service Description). The Contracting CSD shall report to the Eurosystem any errors as soon as reasonably practicable. The Contracting CSD shall require its DCPs to report any such errors to it as soon as reasonably practicable and it shall report such errors to the Eurosystem as soon as reasonably practicable.

5. The timing and procedures of error handling are further described in the MOP. The Parties shall collaborate and use their best endeavours to reverse any erroneous changes to any Securities Account balances.

Article 23
Crisis management

1. The Eurosystem shall manage and resolve any operational disturbances in T2S. In addition, due to the central role which T2S plays in securities settlement in connected markets, the Eurosystem shall assume a coordinating role. In particular, it shall coordinate, initiate and lead activities in connection with any event of an operational or financial nature which may impact the functioning and performance of T2S. The Eurosystem shall use its best efforts to act to protect the functioning of T2S and to operate T2S in a way that supports the financial stability of all connected markets.

2. The principles of Crisis management are laid down in the Schedule 5 (Service Description) and Schedule 6 (Service Level Agreement), whereas the procedural aspects of the Crisis management framework are set out in the MOP, without prejudice to the competence of the Relevant Competent Authorities. The Contracting CSD shall, in coordination with the Relevant Competent Authorities, use its best efforts to ensure the compatibility of its Crisis management framework with applicable laws. Moreover, the Contracting CSD shall make reasonable efforts to ensure the compatibility of its Crisis management framework with the T2S Crisis management procedures.

3. The details of the assistance to be provided by the Eurosystem in case of a Crisis are specified in the Service Level Agreement and are based on the following principles:

   (a) the Eurosystem shall have adequate organisational and personnel capacities to deal with a Crisis Situation;

   (b) the Eurosystem shall fully cooperate with the Contracting CSDs, the Participating CSDs, the Relevant Competent Authorities and ESMA in order to manage a Crisis Situation (including investigating the feasibility of and implementing reasonable workarounds);

(c) the Eurosystem shall prepare and maintain a Crisis management plan, and shall test its appropriateness together with the Contracting CSD, the Participating CSDs, the Relevant Competent Authorities and ESMA, on a regular basis;

(d) the Eurosystem shall provide a report to the Contracting CSDs, the Participating CSDs, the Relevant Competent Authorities and ESMA on the effective handling of a Crisis Situation within a reasonable period of time after such a Crisis has occurred; and

(e) the Eurosystem shall cover and where appropriate involve the DCP in the context of Crisis management.

4. The details of the assistance to be provided by the Contracting CSD in the case of a Crisis are specified in the Service Level Agreement and are based on the following principles:

(a) the Contracting CSD shall use its best efforts to fully cooperate with the Eurosystem in order to manage a Crisis Situation;

(b) the Contracting CSD shall use its best efforts to inform the Eurosystem about any potential market disturbances that may have an impact on T2S without delay;

(c) the Contracting CSD shall use its best efforts to ensure that its own Crisis management plans cover T2S Crisis scenarios;

(d) the Contracting CSD shall without undue delay inform and involve its DCP and other users about any T2S Crisis that could impact them; and

(e) the Contracting CSD shall use its best efforts to assist in the preparation and maintenance of a Crisis management plan by the Eurosystem.

5. In the case of a Crisis, the Contracting CSD shall be entitled to invoke its own Crisis management plan in full cooperation with and where relevant with the approval of the Eurosystem, the Relevant Competent Authorities and ESMA, which may include the settlement of transactions outside T2S, unless this would have a detrimental impact on financial stability.

CHAPTER 3
PARTICIPATION AND CONTROLLING RIGHTS
OF THE CONTRACTING CSD

Article 24
Scope of the participation and controlling rights

1. The participation and controlling rights of the Contracting CSD during the Development Phase shall include the following:

(a) the right to submit Change Requests in accordance with the Change and Release Management procedure described in Article 25 and Schedule 9 (Change and Release Management);

(b) the right to be represented and to participate in the Governance, as specified in Article 27 and Schedule 8 (Governance);

(c) the right to obtain information as otherwise provided for in this Agreement.

2. The participation and controlling rights of the Contracting CSD during the Operational Phase shall include the following:

(a) the right to submit Change Requests in accordance with the Change and Release Management procedure set out in Article 25 and Schedule 9 (Change and Release Management);

(b) technical and operational examinations by the External Examiner in line with the multi-year T2S examination plan and the Contracting CSD's right to request special examinations by the External Examiner, in accordance with Article 26(1) to (5) of this Agreement;

(c) the right to be represented and to participate in the Governance as specified in Article 27 and Schedule 8 (Governance);

(d) the right to obtain information as otherwise provided for in this Agreement.

3. The rights set out in paragraphs 1 and 2 shall be exercised without prejudice to Article 8 and the principle of Central Bank independence set out in Article 130 and Article 282(3) of the Treaty on the Functioning of the European Union, Article 7 of the Statute of the ESCB and in relevant national legislation.

Article 25
Change and Release Management

1. The Parties may propose Change Requests for the T2S Business Application, the T2S Scope Defining Set of Documents and requirements for NSPs. Such proposal shall be made and dealt with in accordance with Schedule 9 (Change and Release Management).

2. Change and Release Management shall adhere to the following principles:

(a) T2S is aimed at accommodating market evolution and supporting innovation;

(b) without prejudice to the right of the Contracting CSD to submit a request for the implementation of Specific Changes, new or changed services within T2S shall be provided with the objective of being available to all CSDs and Central Banks in T2S, and through them to T2S Users;

(c) without prejudice to the ultimate decision-making powers of the Governing Council, as set out in Schedule 8, no individual Participating CSD shall have a veto right with respect to the approval of changes;

(d) T2S shall endeavour to facilitate the Contracting CSD's and the other Participating CSDs' compliance with their respective Legal and Regulatory Requirements, to the extent that the Eurosystem was informed by the Contracting CSD and the other Participating CSDs about such requirements and to the extent that they are compatible with the Multilateral Character of T2S;

(e) it is the Contracting CSD's (or respectively, another Participating CSD's) responsibility to involve their respective user communities throughout the whole Change and Release Management;

(f) the Eurosystem shall continue to be committed to communicating information in a transparent manner towards the market in line with Schedules 8 (Governance) and 9 (Change and Release Management);

(g) the development of specific functionalities to accommodate national specificities shall be limited as much as possible. Instead, where applicable, building the necessary interfaces to let the Contracting CSD, Participating CSDs and Central Banks offer these national specificities on their platforms, with no impact on T2S, shall be favoured.

(h) in the case of changes in respect of Legal and Regulatory Requirements which apply only to one, or a few CSDs or Central Banks, Specific Changes will be available in accordance with paragraph 3 below;

(i) sufficient time shall be allotted to implement any changes needed for the Eurosystem to develop the T2S Services on a consistent basis and provide enough lead time for the Contracting CSD or another Participating CSD to change their own internal systems, processes, interfaces and connections accordingly.

3. The following principles apply to Specific Changes:

(a) the Contracting CSD, a Participating CSD or a Central Bank which has a specific need, triggered by Legal and Regulatory Requirements or by innovation/improvements, may request a new functionality, provided that this does not endanger the Lean Scope of T2S and is not incompatible with the Multilateral Character of T2S; and

(b) the requesting CSD or Central Bank shall formally commit itself to bear the financial consequences of the Specific Change in accordance with Schedule 7 (Pricing); and/or

(c) the associated costs shall be shared among all CSDs and/or Central Banks making use of the given functionality in accordance with Schedule 7 (Pricing); and

(d) the Specific Changes shall be approved in accordance with Schedule 9 (Change and Release Management); and

(e) no Specific Changes may be implemented if this imposes changes to existing features, functionalities, processes or interfaces or a deterioration of the service level of other CSDs or Central Banks, that have not approved such Specific Changes and unless these CSDs or Central Banks agree to them.

4. In accordance with Article 28(2) but subject to Article 28(3), the Contracting CSD waives any IPRs that it may have acquired in connection with the proposed changes to the T2S Services or that may have arisen in the context of Change and Release Management. Should any other legal entity or natural person who would have been associated directly or indirectly with the Change and Release Management Procedure, have acquired IPRs in connection with the proposed changes, the Contracting CSD shall: (a) inform the Eurosystem as soon as it becomes aware of potential IPRs vested in such a legal entity or natural person; and (b) use its best endeavours to ensure that such legal entity or natural person also waives any IPRs acquired in the abovementioned context.

5. In the case of refusal to implement changes triggered by Legal and Regulatory Requirements, the Governing Council shall provide a full written explanation of the reasons for the refusal.

6. The full financial consequences related to Common Changes and Specific Changes shall be recovered in accordance with Schedule 7 (Pricing).

7. Authorised changes and defect resolutions the implementation of which is pending are prioritised based on a scoring mechanism. The definition of the release is based on this priority rating taking into account the business and legal criticality of changes, the associated risks, budgetary implications and the capacity for Common Changes and Specific Changes. The approval of the content of the release and the final prioritisation are carried out as described in Schedule 8 (Governance).

Article 26

Examination of T2S Services and records retention

1. Without prejudice to the principle of Central Bank independence in performance of its public tasks, as established under Article 130 and Article 282(3) of the Treaty on the Functioning of the European Union and in the relevant national legislation, the performance of T2S Services shall be subject to technical and operational examinations performed by the External Examiner appointed by the Governing Council on the proposal of the CSG and after consultation with the Non-euro Currencies Steering Group. The costs of the External Examiner, both for regular examinations and for the special examinations according to paragraphs 4 and 6, shall be shared in equal parts between the Eurosystem, on the one side, and the Contracting CSD and the Participating CSDs, on the other.

2. The External Examiner shall be a well-reputed, internationally active accounting firm. It shall perform its services within the scope set by the Governing Council and in accordance with internationally recognised audit standards such as the Statement on Standards for Attestation Engagement (SSAE) No 16 or International Standards for Assurance Engagements (ISAE) No. 3402. The External Examiner shall be changed every 4 years.

3. The Governing Council shall set the External Examiner’s mission statement and a multi-year examination plan, taking into account examination items proposed by the CSG. The scope of the regular examinations or special examinations should be limited to the provision of T2S Services or directly related activities. The objective of these examinations is to

give to the CSG reasonable assurance about whether (a) the organisation set up by the Eurosystem meets the obligations established in this Agreement and (b) the controls implemented by the Eurosystem are suitably designed to meet the security objectives. Moreover, the External Examiner shall deliver an opinion on the effectiveness of the controls performed by the Eurosystem on the basis of the results of the compliance check reviews and of the risks assessment and related treatment plans managed by the Eurosystem. The CSG may also propose to the Governing Council to approve any special examinations to be conducted by the External Examiner outside the multi-year examination plan.

4. Where a special examination is necessary because of a severe incident or a material and ongoing problem which has disrupted the proper functioning of the T2S Platform or the provision of T2S Services, the External Examiner shall have access to the relevant technical documentation.

5. Following the submission of the External Examiner's report of its regular examination, the CSG shall hold an annual meeting, or, in case of a special examination, an extraordinary meeting, with the External Examiner to review the submitted report and to discuss solutions for the identified issues. The report and recommended solutions for the identified issues shall then be submitted to the Governing Council. Within 3 months of receiving the report, the Governing Council shall reply whether it accepts or rejects each of the recommended solutions. If it accepts a recommendation, the Governing Council will describe how it intends to implement such recommendation and in what timeframe. The External Examiner shall then monitor the Eurosystem's progress on implementing the accepted recommendations and report back to the CSG at the annual meeting. If a recommendation is rejected, the Governing Council shall communicate the reasons to the CSG and the Relevant Competent Authority.

6. Without prejudice to paragraph 3, the Contracting CSD shall have the right to: (a) propose to the CSG items for the regular examinations and requests for special examinations to be conducted by the External Examiner; (b) receive all External Examiner reports; and (c) request the External Examiner to provide additional explanations to the CSG during an annual meeting referred to in paragraph 5 or in written form following such annual meeting and within its remit. The Contracting CSD and/or the Relevant Competent Authorities shall have the right to propose special examinations to be conducted by the External Examiner directly to the Governing Council.

7. If the Governing Council refuses to appoint the External Examiner proposed by the CSG as provided for in paragraph 1 or to include items for the regular or special examination to be conducted by the External Examiner upon the CSG's proposal, the Governing Council shall communicate the reasons for its refusal to the CSG, to the Contracting CSD and/or to the Relevant Competent Authorities. The CSG, the Contracting CSD and/or the Relevant Competent Authorities may submit new proposals to the Governing Council until a mutually agreeable solution is found.

8. The Eurosystem shall ensure that the External Examiner has the following rights and obligations related to the performance of its examinations and checks:

(a) the External Examiner shall contact the Eurosystem through the indicated contact persons. The External Examiner shall give the Eurosystem prior notice of 14 calendar days before starting the regular examination or an additional check and shall inform the Eurosystem of the following: (a) the object of the examination or check; (b) the names of the authorised representatives of the External Examiner who shall carry out the examination or check; (c) the Eurosystem offices at which the examination or check is to be conducted; (d) the methods to be applied; and (e) the time schedule;

(b) the External Examiner shall have the right to examine technical and operational documentation and records, whether in written or electronic form, directly relevant for assessing the performance of the T2S Services and for the setting of the T2S pricing policy and the implementation of the T2S Programme budget. Such technical and operational documentation and records shall be made available, upon request, to the External Examiner's authorised representatives during normal business hours at the relevant Eurosystem offices. The External Examiner shall have the right to make, for its own internal use only, copies and excerpts from the documentation and records made available by the Eurosystem. Such copies and excerpts shall be listed in a transmission protocol and returned to the Eurosystem upon completion of the examination or check and upon confirmation from the External Examiner that no other unauthorised copies or transcripts exist

(c) the External Examiner shall ensure that the authorised representatives who carry out the examinations or checks comply with: (a) the internal rules of the relevant Eurosystem member, as communicated to such authorised representatives before the commencement of their activity; and (b) the confidentiality obligations set out in Article 29. The External Examiner's authorised representatives shall not enter areas or offices and shall not use physical or electronic resources of the Eurosystem other than those which are strictly needed for the performance of the examination or check.

9. The Eurosystem shall maintain documentation and records documenting the performance of this Agreement for at least 10 years after their creation and, for documents and records maintained at the date of the termination of this Agreement, for at least 10 years following the termination. Such documentation and records shall include any financial records relating to costs and expenses directly related to the performance of this Agreement, as incurred by the Eurosystem on its own behalf or on behalf of the Contracting CSD. Where the Contracting CSD notifies the Eurosystem of any potential or actual litigation requiring preservation of certain records or a change in law establishing longer documentation and records preservation periods the Eurosystem shall forthwith: (a) suspend the destruction of documentation or records, as required by the Contracting CSD; and (b) give the Contracting CSD prior written notice of at least 60 calendar days before destroying the documentation or records subject to such suspension, during which notice period the Contracting CSD may submit a reasoned request for their further maintenance, with the Eurosystem being entitled to reimbursement of reasonable costs incurred as a result of such further maintenance.

10. Nothing in paragraph 9 relieves the Contracting CSD or the Eurosystem from their statutory or contractual obligations related to the storage of records and documents.

Article 27

Governance

1. Without prejudice to Articles 8(5) and 42, the Governance framework applicable during the development and operation of T2S Services is specified in this article and, more specifically, in Schedule 8 (Governance).

2. The Eurosystem shall participate in the Governance of T2S in the performance of its tasks under the Treaty on the Functioning of the European Union and the Statute of the ESCB and in its capacity as owner and operator of T2S. In particular, this includes the ability to recover its costs and to operate T2S in a safe and efficient manner with due consideration of the rights, interests, prerogatives and obligations of the T2S Stakeholders in line with the Multilateral Character of T2S.

3. Participating CSDs shall have control and participation rights in accordance with the Governance framework of T2S, in particular through their participation in the relevant Governance bodies as set out in paragraph 4 and the decision-making process as outlined in Schedule 8.

4. Without prejudice to the ultimate decision-making powers of the Governing Council, as set out in Schedule 8, and the decision making bodies of the non-euro area NCBs, the Governance bodies shall comprise:

   (a) the T2S Board, which replaces the T2S Programme Board established by Decision ECB/2009/6;

   (b) the CSD Steering Group (CSG), whose mandate and composition are annexed to Schedule 8 (Governance);

   (c) the Non-euro Currencies Steering Group (NECSG), whose mandate and composition are set out in Schedule 8 (Governance) of the Currency Participation Agreement;

   (d) the Governors' Forum, whose mandate and composition are part of the Schedule 8 (Governance) of the Currency Participation Agreement;

   (e) the Advisory Group (AG), whose mandate and composition are set out in the Annex to Guideline ECB/2010/2 of 21 April 2010 on TARGET2-Securities; and

   (f) the National User Groups (NUGs), whose mandate and composition are set out in the Annex to the Guideline ECB/2010/2 of 21 April 2010 on TARGET2-Securities. The NUGs link the respective national market with the AG.

   These Governance bodies shall draft their respective rules of procedure once they have been established.

CHAPTER 4
INTELLECTUAL PROPERTY RIGHTS, CONFIDENTIALITY AND DATA PROTECTION

Article 28
Intellectual Property Rights

1. Each Party and, where applicable, its licensors, shall retain all rights and titles in their Background IPRs. In particular, the Eurosystem shall not acquire any right, title or interest in or to the IPRs of the Contracting CSD or its licensors (including but not limited to software, CSD Static Data, Securities Reference Data, Transactional Data, data, documentation, processes, and procedures of the Contracting CSD), save to the extent required for the performance of this Agreement.

2. The Parties agree that no IPRs developed or created before or during the course of this Agreement by or for the benefit of the Eurosystem or its subcontractors shall be transferred, licensed or otherwise conveyed to the Contracting CSD, save as expressly set out in this Agreement. This includes without limitation: (a) all IPRs developed or created in connection with the development of T2S or the establishment or provision of T2S Services; (b) changes to T2S or to the T2S Scope Defining Set of Documents implemented pursuant to Change and Release Management as described in Article 25 and Schedule 9 (Change and Release Management); and (c) the T2S Documentation and any other documents created or used for the development and operations of the T2S.

3. Notwithstanding paragraph 2, the Parties may use general project know-how acquired in connection with T2S, in particular in connection with Change and Release Management, including after the termination of this Agreement.

4. The Eurosystem shall provide the T2S Services in a manner that shall ensure that no IPR of any Third Party is infringed through the use of T2S Services by the Contracting CSD in line with this Agreement. If legal action is commenced or threatened against the Contracting CSD based on an alleged infringement of the IPR of any Third Party through the use of T2S Services by the Contracting CSD, the Contracting CSD shall (a) notify the Eurosystem in accordance with Article 50 as soon as reasonably practicable; (b) allow the Eurosystem, at its expense, control of the defence of the claim (without prejudice to the Contracting CSD's right to take an active role in the proceedings at its own expense); (c) not make admissions, agree to any settlement or otherwise compromise the defence of the claim without the prior written consent of the Eurosystem; such consent shall not be unreasonably withheld; and (d) give, at the Eurosystem's request, reasonable assistance in connection with the conduct of the defence. If the Contracting CSD should be held legally liable for the infringement of the Third Party's IPR according to an Enforceable Judgement or has, with the prior written consent of the Eurosystem, settled the claim, the Eurosystem shall reimburse the Contracting CSD in accordance with Schedule 13 (Procedure for payment of claims) for all payments that the Contracting CSD has to make to the relevant Third Party. The consent referred to in the previous sentence shall not be unreasonably withheld. This reimbursement obligation shall not apply with regard to any Third Party claim asserted before a court outside (a) the European Union or (b) the home country of

the Contracting CSD or any Participating CSD. In this case, the liability rules pursuant to Article 32 shall apply.

5. The Eurosystem grants to the Contracting CSD a non-exclusive and non-transferable licence to copy the T2S Documentation and any other document made available to the CSDs for any purpose connected to the use of the T2S Services or other purpose that is incidental to the rights granted to the Contracting CSD under this Agreement.

6. The T2S trademarks and logos remain the sole property of the Eurosystem. The Eurosystem grants to the Contracting CSD the non-exclusive, non-transferable right to use the T2S trademarks and logos in the territories, in which they are protected, for the T2S Services in conformity with applicable law.

7. The Contracting CSD's trademarks and logos remain its (or its Affiliates) sole property. The Contracting CSD grants to the Eurosystem the non-exclusive, non-transferable right to use the Contracting CSD's trademarks and logos in the territories, in which they are protected, for the T2S Services in conformity with applicable law.

Article 29
Confidentiality

1. The Parties acknowledge and agree that they have received and will receive Confidential Information in connection with this Agreement.

2. The Parties agree that all Confidential Information shall be used only for the purpose of exercising rights or complying with obligations under this Agreement and the receiving Party shall ensure that only such personnel to whom disclosure of the Confidential Information is required for the purpose of exercising any rights or the performance of the receiving Party's obligations under this Agreement shall have access to the Confidential Information and only to the extent necessary to exercise these rights or perform these obligations.

3. To the extent that Confidential Information disclosed by a Contracting CSD consists of statistical or personal data, such data may only be used to prepare aggregated data for further use by the Eurosystem, provided that such aggregated data does not allow for the direct or indirect identification of the content of the specific Confidential Information or any personal data.

4. The receiving Party of Confidential Information shall use all reasonable efforts to protect such Confidential Information from unauthorised use or disclosure (intentional, inadvertent or otherwise) and, in any event, shall exercise at least the same reasonable level of care to avoid any such unauthorised use or disclosure as it uses to protect its Confidential Information.

5. Notwithstanding the foregoing, a receiving Party may disclose Confidential Information of the disclosing Party to Third Parties with the prior written consent of the disclosing Party,

and each Party shall be free to disclose Confidential Information without the consent of the disclosing Party only:

(a) as required by a court of competent jurisdiction or a Relevant Competent Authority or an administrative body of a competent jurisdiction, or otherwise required by the applicable laws, but only to the extent legally required;

(b) in any potential or actual litigation among the Parties arising in connection with the T2S Programme or this Agreement, to the extent required to establish, exercise or defend a legal claim;

(c) to directors, officers, personnel, attorneys, consultants, auditors, subcontractors, insurers and agents of the Contracting CSD (including persons belonging to an Affiliate of the Contracting CSD) on a strict need-to-know basis in connection with their duties, as long as such persons are advised of the confidential nature of such information and their obligation to protect it as confidential and are bound by confidentiality undertakings consistent with those contained in this Agreement,

provided that, with respect to points (a) and (c), the Party shall, subject to the applicable laws, inform the other Party reasonably in advance in writing in order to enable it to take precautionary measures.

6. If this Agreement is terminated or expires for any reason, all Parties that have received Confidential Information shall return it to the disclosing Party and/or, at the disclosing Party's discretion, destroy it and provide a corresponding certificate to the disclosing Party, except to the extent that retention of any Confidential Information is required by applicable laws or expressly permitted under this Agreement. A receiving Party may keep one copy of the Confidential Information for backup, audit and compliance purposes, subject to the obligation to keep this copy confidential and not use the information for any other purpose. This confidentiality obligation shall remain in force following the termination or expiration of this Agreement.

7. Nothing in this Article limits the ability of the Parties to provide the text of this Agreement to the relevant Union institutions and bodies, and national authorities, including the Relevant Competent Authorities, for purposes related to receiving regulatory assessments or approvals necessary for provision and use of the T2S Services or establishing the tax status of the T2S Services.

8. The Parties acknowledge and agree that the uniform text of this Agreement may be made public (including publication on the T2S website) once the Governing Council has approved it and decided to offer this Agreement to the CSDs.

Article 30
Data protection

1. Each Party shall comply with the data protection laws applicable to it and in particular the relevant implementations of Directive 95/46/EC or, as applicable, Regulation (EC) No

45/2001 or, in the case of a CSD from a non-European Economic Area jurisdiction, with a data protection framework that is equivalent to these directives and/or regulations.

2. The Eurosystem shall use personal data solely for the purpose of providing and using the T2S Services. Within these limits, the Eurosystem may transfer personal data to Third Parties including NSPs. Where the Eurosystem receives personal data from any Contracting CSD under this Agreement, and where the Eurosystem (and/or any of its subcontractors and/or Third Parties used to provide the T2S Services) transfers such personal data to a country outside the Union, which does not provide the same level of protection as in the Union, the Parties shall agree on the terms and conditions for the data transfer which shall be based on the standard contractual clauses for the transfer of personal data to processors established in third countries as approved by Commission Decision 2010/87/EU of 5 February 2010 on standard contractual clauses for the transfer of personal data to processors established in third countries under Directive 95/46/EC.

3. The Contracting CSD shall acquaint itself with an NSP's data retrieval policy prior to entering into a contractual relationship with this NSP. The Contracting CSD and, to the extent necessary under applicable law, the Eurosystem have each obtained or shall obtain all the authorisations and approvals from, or shall make the necessary notifications to, the relevant regulatory or administrative authorities as well as other interested parties (in particular the Contracting CSD's customers) required for the Eurosystem to use and store data as contemplated under this Agreement.

CHAPTER 5
LIABILITY

Article 31
Standard of liability

1. Except as otherwise provided in this Agreement, the Parties shall be bound by a general duty of reasonable care in relation to each other in performing their obligations under this Agreement.

2. Each Party shall be obliged to perform only the duties and obligations specifically attributed to it in this Agreement and shall be liable only in respect of those duties and obligations as provided for in this Agreement.

3. Each Party shall take all reasonable and practical actions and measures to mitigate any loss, damage or adverse consequence that it may cause to the other Party or that it may suffer by reason of the acts or omissions of the other Party.

Article 32
Liability rules

1. Each Party shall be liable to the other Party without limitation for any loss or damage resulting from fraud or wilful misconduct in performing its duties and obligations under this Agreement.

2. Each Party shall be liable to the other Party for any Direct Loss incurred resulting from its gross or ordinary negligence in performing its duties and obligations under this Agreement. "Direct Loss", for the purpose of this Agreement, shall mean loss or damage directly caused to the damaged Party as a result of the gross or ordinary negligence of the other Party in performing its duties and obligations under this Agreement. Lost revenues, lost profits, lost savings and reputational damage shall not qualify as Direct Loss; instead they shall qualify as indirect losses. Without prejudice to paragraphs 3 and 9, liability for indirect loss and damages not qualifying as Direct Loss is excluded to the extent permitted by German law.

3. The Eurosystem shall also be liable to the Contracting CSD for a claim of a Contracting CSD's customer against the Contracting CSD in connection with T2S Services (hereinafter a 'Customer Claim'), resulting from the Eurosystem's gross or ordinary negligence in performing its duties and obligations under this Agreement, if and to the extent that all of the following criteria are satisfied: (a) the Contracting CSD has, with the approval of the Eurosystem (such approval shall not be unreasonably withheld or delayed), settled the Customer Claim or is held legally liable for the Customer Claim pursuant to an Enforceable Judgment; (b) the loss or damage of a customer is the direct result of an act or omission of the Eurosystem and (c) the Customer Claim would have been settled according to local market practice (marktübliche Bedingungen). The Contracting CSD shall reimburse to the Eurosystem a Customer Claim (i) for which the condition(s) outlined above are not fulfilled or are reversed or (ii) which is paid twice on the basis of this Agreement as well as on another basis, such as an insurance policy or through a claim paid by a Central Bank based on the same facts and circumstances. For the avoidance of doubt, no Customer Claim shall be paid directly by the Eurosystem to the Contracting CSD's customers.

4. Each Party shall be liable to the other Party in proportion of the contribution of its fraud, willful misconduct, gross or ordinary negligence in the loss or damage of the other Party.

5. Without prejudice to paragraph 1, the Eurosystem's liability according to this Article shall be limited or excluded as follows:

   (a) The liability of the Eurosystem shall be limited to a maximum total amount per calendar year for all losses or damages suffered by the Contracting CSD and all Participating CSDs that were caused by events that occurred in the same calendar year.

      (i) In case of the Eurosystem's ordinary negligence, the liability of the Eurosystem vis-à-vis, combined, the Contracting CSD and all Participating CSDs shall be limited to a maximum total amount of EUR 30,000,000 for the relevant calendar year.

      (ii) In case of the Eurosystem's gross negligence, the liability of the Eurosystem vis-à-vis, combined, the Contracting CSD and all Participating CSDs shall be limited to a maximum total amount of EUR 500,000,000 for the relevant calendar year,.

   If the aggregate amount of losses or damages suffered by the Contracting CSD and all Participating CSDs in any calendar year exceeds the maximum set out in this subparagraph, then the amount due to the Contracting CSD shall be determined by the Eurosystem pro rata, i.e. having regard to the total amount of all losses or damages suffered by the Contracting CSD and all Participating CSDs.

(b) The Eurosystem shall not be liable for losses or damages suffered by the Contracting CSD related to the early termination of any Parallel Framework Agreement or any Currency Participation Agreement.

(c) The Eurosystem shall have no liability for the suspension of settlement in the currency of a non-euro area NCB.

6. Without prejudice to paragraph 1, the Contracting CSD's liability according to this Article shall be limited as follows: In the case of ordinary negligence, the liability shall be limited to the equivalent of the T2S fees that the Contracting CSD has paid during the 12 months period preceding the calendar year in which the event occurred that caused the liability claim or, in case the Contracting CSD has not paid T2S fees for 12 months, the T2S fees that the Contracting CSD could be reasonably expected to have paid during this 12 months period, taking into account the number of securities instructions that the Contracting CSD has settled in its legacy settlement infrastructure during the remainder of the 12 months period. In the case of liability due to gross negligence, the liability shall be limited to the fivefold of the amount as determined in accordance with the previous sentence.

7. If loss or damage to the Contracting CSD results from a delay of the Eurosystem in meeting synchronisation point 6 (Eurosystem ready for User Testing) according to Annex 9 of Schedule 2 (T2S Programme Planning and Monitoring), the liability of the Eurosystem shall, without prejudice to paragraph 1, not apply to a loss or damage that arises during the first 12 months of such delay.

8. If loss or damage to the Contracting CSD results from the material non-compliance of T2S with Schedule 5 (T2S Service Description) and/or the T2S Scope Defining Set of Documents, the liability of the Eurosystem shall, without prejudice to paragraph 1, not apply to a loss or damage that arises during the first 15 months following the Eurosystem's notification of its readiness to fulfil synchronisation point 8 (Start Bilateral Interoperability Testing) according to Annex 9 of Schedule 2 (T2S Programme Planning and Monitoring).

9. If loss or damage to the Eurosystem results from a delay of the Contracting CSD in meeting its applicable synchronisation point 16 (Ready for Migration) according to Annex 9 to Schedule 2 (T2S Programme Planning and Monitoring), the liability of the Contracting CSD shall, without prejudice to paragraph 1, not apply to a loss or damage that arises during the first 12 months of such delay. After this period, the Eurosystem's damage shall be equal to the T2S fees that the Contracting CSD could be reasonably expected to pay during the time of its delay. The Contracting CSD's expected T2S fees shall be determined as follows: daily average number of securities instructions that the Contracting CSD settled in its legacy settlement infrastructure during the 12-months period preceding the Contracting CSD's synchronisation point 15 according to Annex 9 of Schedule 2 (T2S Programme Planning and Monitoring) multiplied by the relevant T2S prices indicated in T2S Price List multiplied by the number of days in delay.

10. The procedures for the exercise, allocation and payment of liability claims are detailed in Section 1 of Schedule 13 (Procedure for payment of claims).

11. The right of either Party to claim damages pursuant to this Article is excluded to the extent that the Party is entitled to claim financial compensation in accordance with Article 40 for the same event.

12. For the avoidance of doubt, the circumstances specified in Article 34(1) apply as grounds for exclusion of the liability under this Article.

Article 33
Indemnification obligations of the Contracting CSD for acts of Third Parties

1. Notwithstanding Article 34(1)(b), the Contracting CSD shall indemnify and hold harmless the Eurosystem from:

   (a) any claim asserted directly or indirectly against the Eurosystem by a Third Party in relation to the T2S Services used by the Contracting CSD. If legal action is commenced or threatened against the Eurosystem by a Third Party, the Eurosystem shall (a) notify the Contracting CSD in accordance with Article 50 as soon as reasonably practicable; (b) allow the Contracting CSD, at its expense, control of the defence of the claim (without prejudice to the Eurosystem's right to take an active role in the proceedings at its own expense); (c) not make admissions, agree to any settlement or otherwise compromise the defence of the claim without the prior written consent of the Contracting CSD; such consent shall not be unreasonably withheld and (d) give, at the Contracting CSD's request, reasonable assistance in connection with the conduct of the defence. If the Eurosytem should be held legally liable towards the Third Party according to an Enforceable Judgement or has, with the prior written consent of the Contracting CSD, settled the claim, the Contracting CSD shall reimburse the Eurosystem in accordance with Schedule 13 (Procedure for Payment of Claims) for all payments that the Eurosystem has to make to the relevant Third Party. The consent referred to in the previous sentence shall not be unreasonably withheld. This reimbursement obligation shall not apply with regard to any Third Party claim asserted before a court outside (a) the European Union or (b) the home country of the Contracting CSD or any Participating CSD. In this case, the liability rules pursuant to Article 32 shall apply;

   (b) any loss or damage incurred as a result of the acts and omissions of one of the Contracting CSD's customers in relation to T2S.

2. The obligations of the Contracting CSD pursuant to paragraph 1 shall not be construed as a limitation of any claim for loss or damage the Contracting CSD may have against the Eurosystem under this Agreement.

Article 34
Force Majeure and acts by Third Parties

1. No Party shall be responsible to the other Party for a failure to perform any of its obligations under this Agreement insofar as such failure is due to conditions beyond its reasona-

ble control which result from: (a) Force Majeure; or (b) acts or omissions by any Third Party to the extent that such Third Party's acts or omissions were beyond the reasonable control of the non-performing Party.

2. Each Party shall inform the other Party without delay of any actual or imminent failure referred to in paragraph 1, and use its best efforts to resolve such a failure as soon as reasonably possible.

CHAPTER 6
SUSPENSION, TECHNICAL DISCONNECTION, DURATION AND TERMINATION

Article 35
Right of suspension by the Eurosystem

1. The Eurosystem shall be entitled to suspend the Contracting CSD from using some or all T2S Services with immediate effect if the Relevant Competent Authority requests or supports the suspension. If the Contracting CSD is subject to an Insolvency Event or is in non-compliance with the Access Criteria, the Eurosystem, together with the Relevant Competent Authority, shall assess the required timing and level of suspension. Where possible, the suspension shall be limited to the T2S Services that are relevant to the cause of the suspension.

2. The implementation of the suspension of the Contracting CSD from using some or all T2S Services shall trigger Article 23 on Crisis management. The Eurosystem and the Contracting CSD shall use their best efforts to remove the suspension in collaboration with the Relevant Competent Authorities.

Article 36
Right of Technical Disconnection by the Eurosystem

1. The Eurosystem shall be entitled to technically disconnect the Contracting CSD from the T2S Platform with immediate effect if, in the Eurosystem's reasonable opinion, the technical connection of the Contracting CSD to the T2S Platform represents a major threat to the security or integrity of T2S. The Technical Disconnection of the Contracting CSD may cause the Technical Disconnection of its DCPs in accordance with the Crisis management procedures. The Eurosystem shall, to the extent possible, provide reasonable prior notice of the imminent Technical Disconnection to the Relevant Competent Authorities and the Contracting CSD. Where possible, the Eurosystem shall consult the Relevant Competent Authorities prior to the Technical Disconnection.

2. The Eurosystem shall be entitled to technically disconnect a DCP from the T2S Platform with immediate effect if, in the Eurosystem's reasonable opinion, the technical connection of such DCP to the T2S Platform represents a major threat to the security or integrity of

T2S. The Eurosystem shall, to the extent possible, provide reasonable prior notice of the imminent technical disconnection of the DCP to and consult the Relevant Competent Authorities, the Contracting CSD and the DCP that is impacted.

3. The implementation of the technical disconnection of the Contracting CSD or one of its DCPs shall trigger Article 23 on Crisis management. The Eurosystem and the Contracting CSD shall undertake to use their best efforts in order to remove the disconnection after 2 hours, counting from the moment of disconnection. Where possible, the technical disconnection shall be limited to the T2S Services that are relevant to the cause of the disconnection.

Article 37
Term

1. This Agreement shall be executed on the date hereof and shall become effective on the Agreement Date. The provisions of this Agreement shall not have any retroactive effect except for Articles 6, 28 and 29, which shall apply retroactively.

2. This Agreement shall continue unless and until terminated in accordance with this Chapter. There shall be no termination rights other than those set out in this Agreement or those mandatory under applicable law.

Article 38
Termination for cause

1. The Contracting CSD shall be entitled to terminate this Agreement in the following cases:

   (a) the Eurosystem is in delay of more than 18 months in meeting synchronisation point 6 (Eurosystem ready for User Testing) according to Annex 9 of Schedule 2 (T2S Programme Planning and Monitoring);

   (b) T2S does not comply in a material respect with Schedule 5 (T2S Service Description) and the T2S Scope Defining Set of Documents and this material non-compliance is not remedied by the Eurosystem in a satisfactory manner within 15 months after the Eurosystem's notification of its readingess to fulfil synchronisation point 8 (Start Bilateral Interoperability Testing) according to Annex 9 of Schedule 2 (T2S Programme Planning and Monitoring).

   (c) after migration of the Contracting CSD, the Eurosystem is in material breach of any provision of this Agreement and this breach is not remedied within a reasonable time;

   (d) after the second year following the migration of the Contracting CSD, the Eurosystem repeatedly and unreasonably refuses to implement a Specific Change.

2. The Eurosystem shall be entitled to terminate this Agreement if

   (a) the Contracting CSD does not fulfil the Access Criteria for being eligible to the T2S Services as specified in Article 5(2); or

   (b) the Contracting CSD is in material breach of any other provision of this Agreement and such breach is not remedied within a reasonable time; or

   (c) the Contracting CSD is subject to an Insolvency Event and the Eurosystem, together with the Relevant Competent Authority, has assessed the required timing for such termination; or

   (d) the provision of the T2S Services becomes illegal under existing laws or regulations.

3. Either Party shall be entitled to terminate this Agreement if

   (a) the Relevant Competent Authorities of the Contracting CSD have issued a final and binding decision which prevent the Contracting CSD from using the T2S Services or, if such decision cannot be obtained, the Contracting CSD provides evidence of the existence of legal or regulatory obstacles that make the use of the T2S Services illegal; or

   (b) the Contracting CSD does not agree with a material change approved pursuant to Article 25 and Schedule 9 (Change and Release Management) and such a change cannot be implemented as a Specific Change.

4. Prior to termination by the Eurosystem according to paragraph 2(a), the Eurosystem shall apply the following procedure for determining non-compliance of the Contracting CSD with the Access Criteria:

   (a) Where the T2S Board determines that the Contracting CSD has not complied with one or more of the Access Criteria, it shall:

      (i) evaluate the nature and seriousness of the non-compliance as well as any repeated occurrences; and

      (ii) submit a written notice informing the Contracting CSD of its conclusions regarding non-compliance.

   (b) The Contracting CSD shall respond to the T2S Board within one month of receipt of notice by providing relevant evidence.

   (c) Based on the Contracting CSD's response, the T2S Board may, after having heard the Contracting CSD, where necessary, submit a non-compliance report to the Governing Council. It shall take into account the nature and seriousness of non-compliance by the Contracting CSD as well as any repeated occurrences.

   (d) Following receipt of the T2S Board's non-compliance report, the Governing Council may issue a reasoned decision regarding non-compliance.

5. The Party intending to terminate this Agreement pursuant to paragraph 1 (a), (b) or 2 (b) of this Article shall first revert to the dispute resolution and escalation procedure laid down in Article 42.

6. Without prejudice to Article 41(4), the notice period which applies to this Article shall be at least 90 days. In the cases of paragraph 5, notice of termination shall only be given after the dispute resolution and escalation procedure laid down in Article 42 is completed and the issue remains unresolved.

Article 39
Termination for convenience

1. Five years after the last migration wave, the Contracting CSD shall be entitled to terminate this Agreement for convenience at any time by giving prior written notice of termination to the Eurosystem of 24 months.

2. The Contracting CSD shall also be entitled to terminate this Agreement for convenience at any time by giving prior written notice to the Eurosystem with the financial consequences stipulated in Article 40(1).

3. Five years after the last migration wave, the Eurosystem shall be entitled to terminate this Agreement for convenience at any time by giving prior written notice of termination to the Contracting CSD of 36 months.

Article 40
Financial consequences of termination

1. If this Agreement is terminated by the Eurosystem pursuant to Article 38(2)(a), (b) or (c), 38(3)(b) or by the Contracting CSD pursuant to Articles 38(1)(d), (3)(b) or 39(2), the Eurosystem shall be entitled to claim financial compensation from the Contracting CSD. The procedures for the exercise of compensation claims and for the determination of the amounts of compensation are detailed in Section 2 of Schedule 13 (Procedures for payment of Claims). In case of termination by the Contracting CSD pursuant to Article 38(1)(d), the financial compensation to be paid by the Contracting CSD in accordance with Section 2 of Schedule 13 is reduced by 50 percent.

2. If this Agreement is terminated by the Contracting CSD pursuant to Article 38(1)(a), (b) or (c), the Contracting CSD shall be entitled to claim financial compensation from the Eurosystem for the Direct Loss, as defined in Article 32(2), incurred by the Contracting CSD. The Contracting CSD claiming compensation shall provide evidence of the losses for which compensation is claimed. The procedures for the exercise of compensation claims and for the determination of the amounts of compensation, also with regard to the limitation of such claims, are detailed in Section 2 of Schedule 13 (Procedures for payment of

claims). For the avoidance of doubt, compensation for losses incurred by either Party resulting from the termination of this Agreement can be claimed only in accordance with Section 2 of Schedule 13 (Procedures for payment of Claims).

Article 41
Duties of the Parties after notification of termination

1. The Contracting CSD shall pay fees until the effective date of termination.

2. When this Agreement is terminated after the Contracting CSD has migrated to T2S, the Parties shall closely cooperate and the Eurosystem shall reasonably assist the Contracting CSD and use its best efforts in order to support the transfer of activities to the Contracting CSD itself and/or any other service provider selected by the latter. Specifically in case of termination by the Contracting CSD pursuant to Article 38(3)(a), the Eurosystem shall deploy additional assistance and efforts to achieve the objectives stated in this Article.

3. The details of the cooperation and assistance to be provided by the Eurosystem are specified in Schedule 11 (Exit Management) and are based on the following principles:

   (a) the Contracting CSD is responsible for the set up and execution of the exit plan; and

   (b) the Eurosystem shall provide the required assistance, as reasonably necessary, to the Contracting CSD.

4 Without prejudice to the termination rights of the Eurosystem pursuant to Article 38(2)(a), (b), (c) and (d), 38(3)(a) and (b), the Eurosystem shall, upon request of the Contracting CSD, continue to provide the T2S Services to the Contracting CSD for a period of up to 24 months after the date of the service of notice of termination, but not beyond the effectiveness of such termination, as long as the Contracting CSD complies with the T2S Access Criteria In case the Contracting CSD cannot comply with all Access Criteria, the Parties, together with the Relevant Competent Authority, shall assess the required level of provision of T2S Services.

5. The Eurosystem shall maintain at the disposal of the Contracting CSD the relevant documents, data and archives related to T2S Services provided to the Contracting CSD.

6. From the date of notification of termination, the Contracting CSD shall become an observer in the entities or bodies governing T2S in which it participated. As an observer, the Contracting CSD shall not be entitled to vote, unless decisions relate to the day-to-day management and operation of T2S. From the effectiveness of termination, the Contracting CSD shall be excluded from any entities or bodies governing T2S.

CHAPTER 7
MISCELLANEOUS

Article 42
Dispute resolution and escalation

1. The Eurosystem and the Contracting CSD shall attempt to resolve disputes involving: (a) the Eurosystem and the Contacting CSD, or, as the case may be, (b) the Eurosystem, the Contracting CSD and one or more Participating CSDs, and which arise out of or relate to this Agreement, any Parallel Framework Agreements or the provision or use of the T2S Services, in a constructive manner that reflects their respective concerns and legitimate interests. The first attempt to resolve a dispute shall be, as soon as the circumstances allow, through negotiations between the Eurosystem, the Contracting CSD and, as the case may be, the involved Participating CSDs.

2. If the attempt to resolve a dispute through negotiations is unsuccessful, the Eurosystem, the Contracting CSD or any Participating CSD involved in the dispute may escalate the matter to the CSG. The CSG shall attempt to resolve the dispute and find a mutually agreeable solution within 60 calendar days from the date of the first meeting of the CSG in which the dispute was discussed. The CSG may establish a Resolution Task Force, grouping representatives of the Eurosystem and of the CSDs involved, selected with the view to ensuring balanced representation of the whole CSG.

3. If no mutually agreeable solution can be reached by the CSG, the issue may be escalated to the T2S Board. Any party to the dispute may address the T2S Board with submissions in writing. The T2S Board shall deliver its proposal for the resolution of the matter within 60 calendar days after the dispute has been submitted to the T2S Board in writing to the parties involved.

4. If the parties involved in the dispute do not agree to the resolution proposal made by the T2S Board, they shall notify the T2S Board within 60 calendar days and the T2S Board Chairperson shall without delay inform the Governing Council of this outcome. The T2S Board Chairperson shall make a reasoned proposal of the resolution options to the Governing Council, documenting the status of the dispute and the positions of the Eurosystem, the Contracting CSD and, if applicable, the Participating CSDs. Any party to the dispute may address the Governing Council with submissions in writing. As a result of its review, the Governing Council shall decide on the resolution of the dispute within a reasonable time.

5. At any point of the procedure described in paragraphs 1 to 4, advice on the disputed issues from the Advisory Group and the NECSG may be requested by the T2S Board Chairperson, by the Contracting CSD, by any Participating CSD involved in the dispute, by the CSG, and by the Governing Council. The Advisory Group and the NECSG shall provide their advice without delay and in due time for it to be considered before the escalation procedure is concluded or moved to the next stage. The Advisory Group and the NECSG may request at any stage of the escalation procedure an appropriate prolongation of the time for giving their respective advice, if necessary for the adequate preparation of the advice.

6. At each stage of the escalation process, adequate consideration shall be given to related matters that are the subject of similar escalation procedures between the Eurosystem and a non-euro area Central Banks in T2S.

Article 43
Arbitration

1. The Parties agree that any dispute between the Parties arising out of or in connection with this Agreement shall be decided through proceedings between all Parties to this Agreement and that any dispute shall, subject to the prior completion of the dispute resolution and escalation procedure set out in Article 42, be brought before the Court of Justice of the European Union by either of the Parties in accordance with Article 35.4 of the Statute of the ESCB.

2. The members of the Eurosystem can internally agree to authorise a Eurosystem Central Bank to act in the name and on behalf of all the other members of the Eurosystem in all matters related to an Arbitration arising under this Article. Any such agreement shall promptly be communicated by the Eurosystem to the Contracting CSD.

Article 44
Own fees and costs

Each Party shall bear its own costs and expenses connected with the preparation, execution and application of this Agreement (including the costs of its legal and other advisors), without prejudice to other provisions of this Agreement.

Article 45
Public announcements

Without prejudice to Articles 8 and 29(7), the Parties shall not issue nor allow for any press releases or communications relating to the performance or non-performance of either Party under this Agreement without the prior written approval of the other Party.

Article 46
Entire Agreement and non-retroactivity

The Agreement and the Schedules represent the complete agreement regarding the subject-matter hereof and replace any prior oral or written communications between the Eurosystem and the Contracting CSD, including those resulting from the T2S Memorandum of Understanding.

Article 47
Amendments

1. Any amendment of, or supplement to, this Agreement must be executed in writing and agreed by both Parties unless provided otherwise in this Article. Written form in the meaning of this Article requires a formal document containing the amendment or supplement with a statement that the document is intended to amend or supplement this Agreement. The document shall be duly signed by Authorised Representatives of the Parties.

2. The Eurosystem shall notify the CSG of its intention to amend the Schedules with regard to minor changes of a technical or operational nature. These minor changes shall be deemed to be approved unless the CSG or the Contracting CSD, within 21 calendar days, notifies the Eurosystem that in its view such changes may not be considered minor. In the latter case, the amendment procedure according to paragraph 1 shall apply.

3. The Parties agree to negotiate in good faith to amend this Agreement, to the extent required, in the event that any of the legal acts or instruments forming an element of the overall legal framework for T2S, including for the avoidance of doubt any relevant legal act or instrument that applies in the jurisdiction of the Contracting CSD, is amended and in the event any such amendment has a material effect on this Agreement in the reasonable opinion of the Eurosystem or of the Contracting CSD.

4. The Parties shall implement the system changes decided pursuant to Article 24 and Schedule 9 (Change and Release Management). The scope of system changes is further defined in Schedule 9 (Change and Release Management).

5. The Eurosystem may, except as provided otherwise under paragraph 6 and subject to paragraph 4 regarding system changes, amend the Annexes to the Schedules, with the CSG's agreement.

6. The Eurosystem may amend the Annexes to Schedule 2 (T2S Programme Planning and Monitoring) pursuant to the process detailed therein. Furthermore, the Eurosystem may amend Schedule 7 (Pricing), with prior notice of 180 calendar days to the Contracting CSD, in accordance with the T2S pricing policy decided by the Governing Council and published on the T2S's website or if the actual usage of T2S Services that have an initial zero price is not within an expected consumption pattern. This is without prejudice to the account management service fee for securities accounts which will be kept at zero until the end of the cost recovery period and which the Eurosystem may only amend with prior notice of 24 months to the Contracting CSD.

Article 48
No waiver

The exercise or waiver, in whole or in part, of any right, remedy, or duty provided for in this Agreement shall not constitute the waiver of any prior, concurrent or subsequent right, remedy, or duty within this Agreement.

Article 49
Survival

Any terms of this Agreement that by their nature extend beyond its expiration or termination shall remain in effect until fulfilled, including those concerning examination and records retention, Confidential Information, Arbitration, governing law and jurisdiction, indemnification, Intellectual Property Rights, limitation of liability, limitations period, charges, credits and payments, survival, and warranty.

Article 50
Notices

All notices to be given or other communications to be made pursuant to this Agreement shall be valid only if made in writing, including e-mail or facsimile transmission, to the Authorised Representative notified as such by the other Party.

Except as otherwise provided for in the MOP, all notices of the Contracting CSD to the Eurosystem in relation to this Agreement shall be submitted to the entity having executed this Agreement on behalf of the Eurosystem.

Article 51
Invalid or incomplete provisions

If a provision of this Agreement is or becomes invalid or is inadvertently incomplete, the validity of the other provisions of this Agreement shall not be affected thereby. The invalid or incomplete provision shall be replaced or supplemented by a legally valid provision that is consistent with the Parties intentions or with what would have been the Parties intentions according to the aims of this Agreement had they recognised the invalidity or incompleteness. It is the Parties' intention that this Article shall not merely result in a reversal of the burden of proof but that Section 139 of the BGB is contracted out in its entirety.

Article 52
No agency or transfer of undertaking

1. Except for the [• *insert the name of the acting euro area NCB/ECB*] acting in the name and on behalf of the Eurosystem, this Agreement shall not be construed to deem either Party as a representative, agent, employee, partner, or joint venturer of the other Party. The Eurosystem shall not have the authority to enter into any agreement, nor to assume any liability, on behalf of the Contracting CSD, nor to bind or commit the Contracting CSD in any manner, except as provided hereunder.

2. Nothing in this Agreement shall be construed as a transfer of the Contracting CSD's undertaking, or any part thereof, including any employment contracts, to the Eurosystem.

Article 53

Joint liability

As part of the Eurosystem's tasks in accordance with Articles 17, 18 and 22 of the Statute of the ESCB and of the ECB, T2S has the nature of a public service. All obligations of the Eurosystem arising under this Agreement can only be performed jointly by all members of the Eurosystem and qualify as a joint liability. All rights and claims of the Contracting CSD under this Agreement are therefore always rights and/or claims that can be exercised only against all members of the Eurosystem jointly.

Article 54
Choice of law

The Agreement shall be governed by the laws of Germany.

[*Signature page(s) follow(s).*]

T2S Framework Agreement

Signed for and on behalf of:

Banco de España, acting in the name and on behalf of the Eurosystem

Place and date: Frankfurt, 8 May 2012

Signed for and on behalf of:

Iberclear

Place and date: Frankfurt, 8 May 2012

FRAMEWORK AGREEMENT

SCHEDULE 1

DEFINITIONS

1 Definitions

In this Agreement, unless the context requires otherwise, terms defined in the singular have the same meaning in the plural, and vice versa.

In this Agreement, references to Union legislation are intended as referring to the most recent version of that legal act.

In this Agreement, unless the context requires otherwise, terms with an initial capital letter have the following meanings:

‘4CB’	means the Deutsche Bundesbank, the Banco de España, the Banque de France and the Banca d’Italia, collectively, in their capacity as national central banks (NCBs) responsible for building, maintaining and running the T2S Platform based on the relevant contractual arrangements and on decisions of the Governing Council.
‘Access Criteria’	means the access criteria for Central Securities Depositories (CSDs) wishing to use the T2S Services, as set out in Article 15 of Guideline ECB/2010/2. These are also referred to as the eligibility criteria, as adopted by the ECB Governing Council on 14 January 2010.
‘Advisory Group (AG)’	means the T2S Advisory Group, the mandate and composition of which is set out in the Annex to Guideline ECB/2010/2.
‘Affiliate’	means a legal entity which, with respect to any person, directly, or indirectly through one or more intermediaries, controls, is controlled by or is under common control with the person in question. For the purposes of this definition, ‘control’ means the possession, directly or indirectly, of more than 50% of the equity interests of a person or the power to direct or cause the direction of the management and policies of a person, in whole or in part, whether through ownership of voting interests, by contract or otherwise.
‘Agreement’ or ‘Framework Agreement (FA)’	means the contractual arrangement composed of a core agreement, including Schedules and Annexes, between a Contracting CSD and the Eurosystem.
‘Agreement Date’	means the date on which both contracting parties signed this Agreement.
‘Annex’	means an Annex to one of the Schedules of this Agreement.
‘Application-to-Application (‘A2A’)’	means a connectivity mode to exchange information between the T2S software application and the application at the T2S Actor.
‘Arbitration’	has the meaning set out in Article 43 of this Agreement.

‘Authorised Representative’	means the individual appointed by either party to such role and notified to the other party in accordance with Article 47 of this Agreement.
‘Background IPRs’	means all IPRs owned by or licensed to the Contracting CSD or the Eurosystem prior to the Agreement Date.
‘Basic Custody Service’	means the holding and administration of securities and other financial instruments, by an entity entrusted with such tasks. Basic Custody Service includes the safekeeping of securities, the distribution of interest and dividends on the securities in safekeeping, and the processing of corporate actions on the said securities.
‘Batch Settlement’	means the set of sequenced, scheduled processes in T2S that settle or attempt to settle all instructions that are eligible for settlement on a transaction-by-transaction basis.
‘BGB’	means the Bürgerliches Gesetzbuch (the German Civil Code).
‘Business Continuity and Disaster Recovery’	means the set of rules and procedures aimed at resuming normal T2S Services in compliance with the Service Levels as described in Schedule 6 (T2S Service Level Agreement), after the occurrence of an incident, as well as at mitigating the impact of such an incident.
‘Central Bank (CB)’	means the European Central Bank (ECB), the euro area NCBs and the non-euro area NCBs.
‘Central Bank Money (CeBM)’	means the liabilities of a Central Bank, in the form of either banknotes or bank deposits held at a Central Bank, which can be used for settlement purposes.
‘Central Securities Depository (CSD)’	means an entity that a) enables securities to be established and settled in book entry form, and/or maintains and administers securities on behalf of others through the provision or maintenance of securities accounts; and b) operates or provides for a Securities Settlement System in accordance with Article 2(a) of Directive 98/26/EC or for entities not located in the EEA in accordance with the relevant national legislation equivalent with Directive 98/26/EC and/or that is regulated by Central Bank; and c) is recognised as a CSD by national regulations and/or legislation and/or authorised or regulated as such by the Relevant Competent Authority.
‘CESR/ESCB Recommendations for Securities Settlement Systems’	means Committee of European Securities Regulators / European System of Central Banks Recommendations for Securities Settlement Systems and Recommendations for Central Counterparties in the European Union.
‘Change and Release Management (CRM)’	means the set of rules used and the activities performed when a Change Request, as described in Schedule 9 (Change and Release Management) is initiated and until it is rejected or the change is implemented into the production environment.
‘Change Management’	means the processes used and the activities performed when a Change Request as described in Schedule 9 (Change and Release Management) is initiated and until it is rejected or authorised for implementation.

'Change Request'	means a request of a contracting party for a change that is subject to the Change and Release Management process, as described in Schedule 9 (Change and Release Management).
'Change Review Group (CRG)'	means the group established by the Steering Level and composed of the relevant T2S Actors mandated to analyse Change Requests and make proposals on the content of T2S releases, as further specified in Schedule 9 (Change and Release Management).
'Common Change'	means a change implemented for the benefit of all T2S Actors as described in Schedule 9 (Change and Release Management).
'Common Static Data'	means the business information, which is available to all T2S Actors and which T2S requires to process business operations. This includes but is not limited to processing schedules, system entities, the SWIFT BIC Directory, system configuration data, attribute domains that are not specific to a CSD or Central Bank and standardised roles and privileges from which CSDs and Central Banks can configure their specific roles and access rights for their system users.
'Confidential Information'	means any information, data, documentation or material that includes trade and business secrets, know-how and information regarding the business, strategy, financial situation, products and prospects, processes and methodologies, customers, suppliers and employees, systems, programs, algorithms, source codes, technical and security requirements and specifications (including any information that any party is obliged to keep confidential according to a contractual agreement or by law), and any other information, material or documentation (in each case to the extent marked as confidential or with a similar designation, or which a reasonable person would consider as confidential) related to a party or its Affiliates, which such a party has disclosed (in whatever form) to the other party in connection with this Agreement. Confidential Information does not include information that: (a) has been designated by a party as being intended for disclosure to Third Parties and does not reveal Confidential Information received by another party; (b) becomes generally available to the public other than as a result of a breach of the confidentiality obligations under this Agreement; or (c) is received from a Third Party not bound by an obligation of confidentiality with respect to such information (while the receiving party is aware or made aware by the other party of this fact); (d) was known to or legally in a party's possession without obligations of confidentiality prior to such information being provided as Confidential Information in accordance with this Agreement; or (e) is developed by either party (or its Affiliates or their employees or representatives) independently without the use of Confidential Information of the other party.
'Connectivity Services'	means the combination of Physical Connectivity Services and Value-added Connectivity Services.
'Contracting CSD'	means the CSD which enters into this Agreement.

‘Crisis’ or ‘Crisis Situation’	means a situation that requires the involvement of the senior manager of the Contracting CSD (referred to as CSD crisis manager in Schedule 6 [T2S Service Level agreement]), in order to manage a severe technical incident or market disturbance, either in accordance with the requirements specified in the MOP or because the procedures described in the MOP are not sufficient to effectively handle the situation.
‘CSD Static Data’	means the business information, specific to a CSD in T2S that T2S requires to process the Transactional Data related to that CSD. This includes but is not limited to T2S system users, conditional securities parameters, message subscriptions, attribute domains that are specific to the CSD or relevant Central Bank, report subscriptions, securities account reference data, party reference data, cross-CSD settlement parameterisation, assignment of securities accounts to limits, and CSD-specific attributes for Securities Reference Data.
‘CSD Steering Group (CSG)’	means the T2S governance body which, with respect to a set of matters stipulated in this Agreement, is part of the Steering Level and makes resolutions and delivers opinions on behalf of the Contracting CSD and the Participating CSDs. The CSG mandate is annexed to Schedule 8 (Governance).
‘CSDs’ Acceptance Tests of the T2S Services’	means the process whereby the Contracting CSD assesses the compliance of T2S with Schedule 5 (T2S Service Description) and the T2S Scope Defining Set of Documents as further specified in Article 17 of this Agreement and in Schedule 3 (User Testing).
‘Currency Participation Agreement (CPA)’	means each of the contractual agreements to be entered into by the Eurosystem and a non-euro area NCB or another authority responsible for a non-euro currency, to allow for securities settlement in Central Bank Money in the non-euro currency they are responsible for.
‘Customer Claim’	has the meaning set out in Article 32 of this Agreement.
‘Decision 2010/87/EU’	means Commission Decision 2010/87/EU of 5 February 2010 on standard contractual clauses for the transfer of personal data to processors established in third countries under Directive 95/46/EC of the European Parliament and of the Council (OJ L 39, 12.2.2010, p. 5).
‘Decision ECB/2009/6’	means Decision ECB/2009/6 of 19 March 2009 on the establishment of the TARGET2-Securities Programme Board (OJ L 102, 22.4.2009, p. 12).
‘Decision ECB/2011/20’	means Decision ECB/2011/20 of 16 November 2011 establishing detailed rules and procedures for implementing the eligibility criteria for central securities depositories to access TARGET2-Securities services (OJ L 319, 02/12/2011, p. 0117-0123).
‘Dedicated Cash Account (DCA)’	means a cash account in T2S operated by a Central Bank.

‘Dedicated Link Connection’	means a solution to connect the T2S data centres with the data centres of the Directly Connected T2S Actors, whereby the Value-added Connectivity Services are implemented in T2S and in the systems of the Directly Connected T2S Actors.
‘Dedicated Link Connectivity Specifications’	means the description of the technical communication protocols that allow T2S Actors to implement the Value-added Connectivity Services in their systems.
‘Delivery versus Payment (DvP)’	means a securities settlement mechanism, which links a securities transfer and a funds transfer in such a way as to ensure that delivery occurs if – and only if – the corresponding payment occurs.
‘Development Phase’	means the period during which the Eurosystem specifies, develops and tests T2S and establishes its operational framework; this period ends on the date that the Governing Council decides that the full scope of T2S Services as documented in Schedule 5 (T2S Service Description) are operational in the T2S production environment, as depicted in Annex 1 (Diagram of Phases/Periods) to this Schedule.
‘Directive 95/46/EC’	means Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data (OJ L 281, 23.11.1995, p. 31).
‘Directive 98/26/EC’	means Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on settlement finality in payment and securities settlement systems (OJ L 166, 11.6.1998, p. 45).
‘Direct Loss’	has the meaning set out in Article 32(2) of this Agreement.
‘Directly Connected Party (DCP)’	means a T2S User, which has been authorised by its Contracting CSD or Central Bank to access T2S directly to use T2S Services, i.e. without the need for the Contracting CSD to act as a technical interface.
‘Directly Connected T2S Actor’	means either the Contracting CSD or any of the Participating CSDs, or any of the connected NCBs, or any of the DCPs.
‘Dynamic Data’	see ‘Transactional Data’.
‘Enforceable Judgement’	means a binding and enforceable judgment or equivalent type of decision rendered by a court or award rendered by an arbitral tribunal.
‘euro area NCB’	means the NCB of a Union Member State whose currency is the euro.
‘European System of Central Banks (ESCB)’	means, in accordance with Article 282(1) of the Treaty on the Functioning of the European Union, the System constituted by the ECB and the NCBs of the Union Member States.
‘Eurosystem’	means, in accordance with Article 1 of the Statute of the ESCB and of the European Central Bank, the ECB and the NCBs of the Union Member States whose currency is the euro..
‘Eurosystem Acceptance Testing (EAT)’	means the formal testing conducted by the Eurosystem to determine whether the T2S Platform is compliant with the T2S Scope Defining Set of Documents.

‘Exit Management’	means the set of rules and procedures applied on termination of the Agreement, howsoever caused, as described in Schedule 11 (Exit Management).
‘External Examiner’	means a well-reputed, internationally active auditing firm that has the tasks set out in Article 26 of this Agreement assigned to it.
‘Fast-track Changes’	means changes that are imposed by Legal and Regulatory Requirements, or by CSG resolutions related to risk management, or changes that are critical for the stability of the T2S Platform or by Central Bank decisions related to safeguarding the currency/-ies or related to crisis management measures to ensure financial stability and that, owing to the time constraints, have to be implemented in a shorter timeframe than normal, which will be decided on an ad-hoc basis, as specified in Schedule 9 (Change and Release Management).
‘Force Majeure’	means any circumstances beyond the reasonable control of the non-performing contracting party, including, without limitation, an element of nature or an act of God, earthquake, fire, flood, war, terrorism, civil, industrial or military disturbance, sabotage, labour strike or lock-outs, pandemic, epidemic, riot, loss or malfunction of utilities or communication services, court order, act of civil or military authority, or governmental, judicial or regulatory action.
‘Framework Agreement’	see ‘Agreement’
‘Free of Payment (FoP)’	means the delivery of securities with no corresponding payment.
‘General Specifications (GS)’	means together with the GFS and the GTD, the document that describes how the Eurosystem envisages implementing the URD. In particular, the General Specifications focus on those user requirements that do not have a functional or technical dimension, such as operational support, testing, migration and Information Security.
‘General Functional Specifications (GFS)’	means a general functional description of the T2S Business Application to be developed to comply with the T2S user requirements. It will include elements such as the functional architecture (domains, modules and interactions), the conceptual models, the data model or the data flow process.
‘Governance’	means the set of rules and procedures concerning the management of T2S Services, including the related decision-making of the parties involved in T2S, as specified in Schedule 8 (Governance).
‘Governing Council’	means the decision-making body of the ECB comprising the members of the Executive Board of the ECB and the governors of the euro area NCBs, as provided for in Article 10 of the Statute of the ESCB.
‘General Technical Design (GTD)’	means the document that details the solution envisaged for the T2S non-functional requirements, more specifically with regard to the application design and the infrastructure design.

‘Graphical User Interface (GUI)’	means the interface that allows a user to interact with a software application through the use of graphical elements (e.g. windows, menus, buttons and icons) on a computer screen using the keyboard and the mouse.
‘Guideline ECB/2010/2’	means Guideline ECB/2010/2 of 21 April 2010 on TARGET2-Securities (OJ L 118, 12.5.2010, p. 65).
‘Information Security’	means the set of requirements and procedures, described in Schedule 10 (Information Security) and based on International Organisation for Standardisation (‘ISO’) Standard 27002:2005, to safeguard integrity, confidentiality and availability of the T2S information and T2S Services.
‘Information Technology Infrastructure Library (ITIL)’	means the set of best practices for managing IT infrastructure, development and operations, maintained under the auspices of the Office of Government Commerce, an office of the UK Treasury.
‘Insolvency Event’	means a collective judicial or administrative proceeding, including an interim proceeding, in which the assets and affairs of the Contracting CSD are subject to control or supervision by a court or other competent authority for the purpose of reorganisation, winding up or liquidation.
‘Intended Settlement Date (ISD)’	means the date on which the parties to a securities transaction agree that settlement is to take place. The ISD is also referred to as the contractual settlement date or value date.
‘Intellectual Property Rights (IPRs)’	means any patents, utility models, designs, trademarks, copyrights (each of the foregoing, to the extent applicable, registered, applied for or unregistered), inventions whether or not patentable, database rights, know-how and all rights having equivalent or similar effect in any jurisdiction.
‘International Securities Identification Number (ISIN)’	means the number, which uniquely identifies a security. Its structure is defined in ISO 6166.
‘Investor CSD’	means a CSD that holds a security for which it is not the/an Issuer CSD. It holds these securities either directly or indirectly, via one or more intermediaries, at the/an Issuer CSD.
‘Issuer CSD’	means a CSD, which holds a primary deposit in the relevant securities, either in dematerialised or physical form.
‘Key Performance Indicator(s) (KPI(s))’	means a metric used to quantify the performance of the Eurosystem and to monitor compliance with the Service Level Agreement.
‘Legal and Regulatory Requirements’	means all applicable requirements that a Contracting CSD and the Eurosystem must comply with, including those of a legal, regulatory (including fiscal), supervisory and oversight nature and that are relevant in the context of T2S.
‘Lean Scope of T2S’	means the scope of T2S defined by the URD resulting from the market involvement and is restricted by the General Principles of T2S, as referenced in the URD.

‘Licence Agreement’	means the contract signed by the Banca d'Italia in the name and on behalf of the Eurosystem and each NSP, which contains the requirements which the latter has to fulfil to be entitled to deliver the Connectivity Services to the Eurosystem and to the Directly Connected T2S Actors.
‘Maintenance Window’	means the period for system maintenance during which T2S is planned to be unavailable, as defined in Schedule 6 (Service Level Agreement).
‘Manual of Operational Procedures (MOP)’	means the document that describes the procedures to be applied by all T2S Actors, aimed at ensuring the smooth conduct of daily operations and at minimising the duration and impact of service interruptions or deteriorations.
‘Matching’	means the process used for comparing the settlement details provided by parties in order to ensure that they agree on the terms of the transaction.
‘Migration’	means a set of rules and procedures concerning the Contracting CSD’s migration to T2S, as described in Schedule 4 (Migration).
‘Migration Period’	means the time frame beginning on the date on which the T2S Board confirms that the T2S production environment is ready for CSDs and Central Banks to connect (SP14) and ending on the date on which all Contracting and Participating CSDs have migrated to T2S, in accordance with the conditions applicable to synchronisation point 16.
‘Multilateral Character of T2S’	has the meaning set out in Article 4 of this Agreement.
‘Network Service Provider (NSP)’	means a network service provider (NSP) that has concluded a Licence Agreement with the Eurosystem to provide Connectivity Services to T2S. It is a business or organisation providing the technical infrastructure, including hardware and software, to establish a secure and encrypted network connection that permits the exchange of information between T2S Actors and T2S.
‘non-euro area NCB’	means the NCB of a Union Member State, whose currency is not the euro or of a country that is outside the Union.
‘Non-euro Currencies Steering Group (NECSG)’	means the T2S governance body which, with respect to a set of matters stipulated in the CPAs, makes resolutions and delivers opinions on behalf of the non-euro area NCBs having signed the CPA. The NECSG mandate is annexed to Schedule 8 (Governance) of the CPA.
‘Operations Managers Group (OMG)’	means the group established by the Steering Level and composed of the relevant T2S Actors that develops and maintains the Manual of Operational Procedures, meets to review the T2S service performance against the Service Level Agreement and coordinates the management of operational incidents, as specified in Schedule 6 (T2S Service Level Agreement).
‘Operational Phase’	means the period when the full scope of T2S Services are operational in the T2S production environment, and beginning on the T2S Go-Live Date, as depicted in Annex 1 to this Schedule.

‘Parallel Framework Agreement’	means an agreement essentially identical, save for the identity of the parties to the agreement entered into between a Participating CSD and the Eurosystem.
‘Participating CSD(s)’	means the CSD(s) other than the Contracting CSD that have signed this Agreement.
‘Payment Bank’	means a commercial bank used to effect money settlements. In the context of securities settlement, a Payment Bank provides cash on behalf of a CSD participant to support the settlement of securities.
‘Payment Free of Delivery (PFoD)’	means a transfer of cash without the delivery of securities.
‘Physical Connectivity Services’	means the implementing, maintaining and keeping available of a data communication network for the purpose of exchanging files and messages between the Directly Connected T2S Actors and T2S, as more specifically described in the Licence Agreement.
‘Project Managers Group (PMG)’	means the group established by the Steering Level and composed of the relevant T2S Actors that coordinates and monitors activities to ensure that the initial release as well as subsequent releases of T2S go live, as specified in Schedule 2 (T2S Programme Planning and Monitoring), 3 (User Testing) and 4 (Migration).
‘Pricing’	means the set of rules and procedures that is applied to price the T2S Services and T2S-related services provided by the Eurosystem, as described in Schedule 7 (Pricing).
‘Real-time Settlement’	means the continuous process in T2S that settles or attempts to settle instructions that are eligible for settlement on a transaction-by-transaction basis.
‘Regulation (EC) No 45/2001’	means Regulation (EC) No 45/2001 of the European Parliament and of the Council of 18 December 2000 on the protection of individuals with regard to the processing of personal data by the Community institutions and bodies and on the free movement of such data (OJ L 8, 12.1.2001, p. 1).
‘Release Management’	means the set of rules used and the activities performed to implement a set of authorised changes and defect corrections in a new version of the T2S Business Application, as set out in Schedule 9 (Change and Release Management).
‘Relevant Competent Authority’	means any organisation having regulatory, supervisory or oversight authority over the Contracting CSD or a Participating CSD (as required by the context).
‘Schedule’	means a Schedule to this Agreement.
‘Securities Account’	means an account maintained by a CSD to which securities may be credited or debited.
‘Securities Maintaining Entity (SME)’	means an entity, typically a CSD that has been assigned the responsibility for maintaining the reference data for a security in T2S.

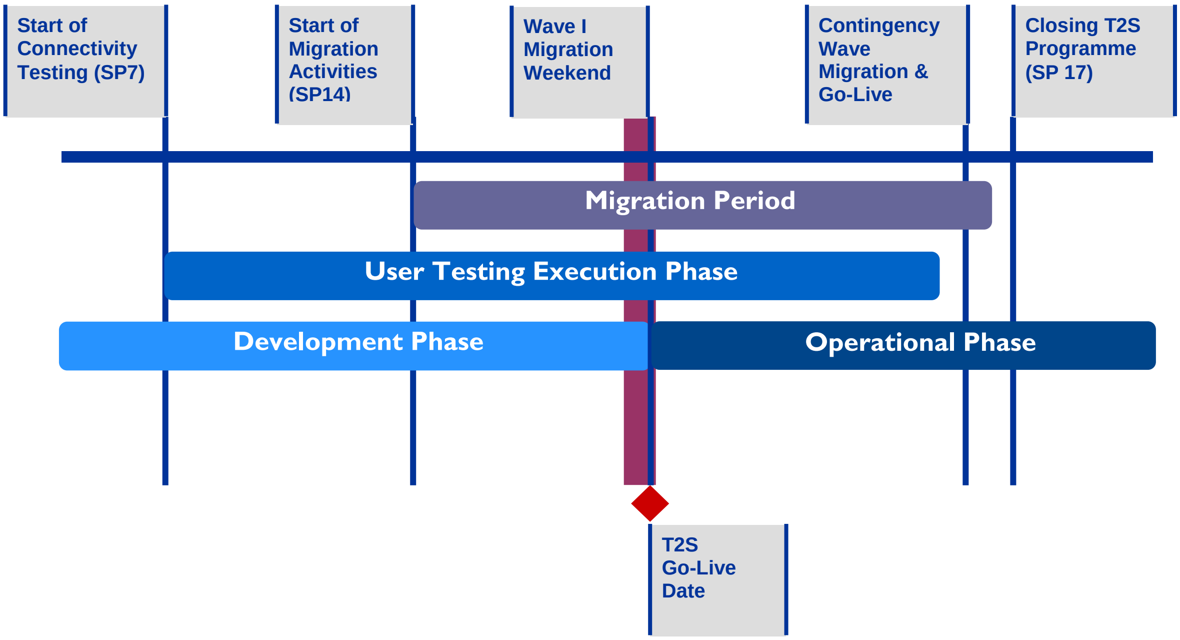
‘Securities Reference Data’	means the business information for a financial instrument, excluding any CSD-specific attributes and under the responsibility of the SME and available to all Participating CSDs, that T2S stores and requires for processing all operations related to settlement instructions.
‘Securities Settlement System’	means a system as defined in Article 2(a) of Directive 98/26/EC for the execution of transfer orders related to title to or interest in a security or securities by means of a book entry on a register or otherwise.
‘Service Description’	means the description of the T2S Services, contained in Schedule 5 (T2S Service Description).
‘Service Level’	means the level of performance of a T2S Service, that Schedule 6 (T2S Service Level Agreement) specifies and that the Contracting CSD requires to deliver its services to its customers.
‘Service Level Agreement (SLA)’	means the agreement defining the Service Levels, measured against agreed KPIs where relevant, to be provided by the Eurosystem to the CSDs, as specified in Schedule 6 (T2S Service Level Agreement) and in relation to T2S Services.
‘Service Level Report’	means the monthly report made available by the Eurosystem to the Contracting CSD to determine the degree of the Eurosystem’s compliance with the Service Level Agreement, as specified in Schedule 6 (T2S Service Level Agreement), in particular as regards the KPIs.
‘Settlement Day’	means a day on which T2S settlement takes place according to the daily processing schedule.
‘Specific Change’	means any new feature, functionality or service – or any amendment of an existing feature, functionality or service – which is not implemented as a Common Change (within the applicable Governance arrangements), but which some Participating CSDs and/or Central Banks wish to implement, provided that it is compliant with the Lean Scope of T2S, and for which they jointly accept to bear the investment and running costs.
‘Statute of the ESCB’	means the Statute of the European System of Central Banks and of the European Central Bank (Protocol No 4 to the Treaty on the Functioning of the European Union, OJ C 83, 30.3.2010, p. 230).
‘Steering Level’	means the level comprising the T2S Board for tasks delegated by the Governing Council, the CSG and the NECSG, as specified in Schedule 8 (Governance).
‘Suspension’	means the temporary freezing – possibly limited to the T2S Services relevant to the cause of suspension – of the rights and obligations of the Contracting CSD for a period of time to be determined by the Eurosystem, as described in Article 35.

‘T2S Actor’	means either the Contracting CSD, a Participating CSD, CSD participant (a legal entity or, as the case may be, an individual) having a contractual relationship with the CSD for the processing of its securities settlement-related activities in T2S, or a Central Bank, whose currency is available for settlement-related processing in T2S, or a member of a Central Bank having a contractual relationship with the Central Bank for the processing of its settlement-related cash-processing activities in T2S.
‘T2S Board’	means the Eurosystem management body established pursuant to Decision ECB/2012/6, which has the task of developing proposals for the Governing Council on key strategic issues and executing tasks of a purely technical nature in relation to T2S.
‘T2S Business Application’	means the software developed and operated by the 4CB on behalf of the Eurosystem with a view to enabling the Eurosystem to provide the T2S Services on the T2S Platform.
‘T2S Documentation’	means the T2S non-scope defining set of documents that consists of the T2S Specification, the T2S Operational Phase Documents and the T2S Project Documents as described in Schedule 2 Annex 8 (T2S Deliverables List and Management Process).
‘T2S Go-Live Date’	means the first Settlement Day after which the first Participating CSD(s) has/have migrated to T2S.
‘T2S Memorandum of Understanding’	means the Memorandum of Understanding concluded on 16 July 2009 between the Eurosystem and the Contracting CSD as well as other European CSDs, showing the commitment towards T2S and setting out the mutual obligations and responsibilities for the time frame up to the conclusion of a definitive agreement.
‘T2S Operator’	means the legal and/or organisational entity/entities that operates/operate the T2S Platform. As part of an internal distribution of work within the Eurosystem, the Governing Council entrusted the 4CB with operating T2S on behalf of the Eurosystem.
‘T2S Operational Phase Documents’	means the set of documents that describes how T2S provides its services when it is in production. It encompasses the documentation for T2S as a software application and the manuals describing the rules and procedures for operating T2S.
‘T2S Platform’ or ‘TARGET2-Securitie (T2S)’	see ‘TARGET2-Securities (T2S)’.
‘T2S Programme’	means the set of related activities and deliverables needed to develop T2S until the full migration of all CSDs which have signed this Agreement.
‘T2S Programme Plan’	means the common Eurosystem-CSD-Central Bank plan, outlining the milestones and timelines to deliver the T2S Programme as well as the actions and contributions required from the Eurosystem, the CSDs and other T2S Stakeholders, as described in Schedule 2 (T2S Programme Planning and Monitoring).

‘T2S Project Documents’	means the set of documents required for planning, monitoring and successfully completing the scheduled activities (e.g. User Testing, Migration, client readiness tracking) in the T2S project lifecycle but not during the operational part, i.e. from the start of the T2S Programme until T2S is live, or during any subsequent preparation for releases.
‘T2S Scope Defining Set of Documents’	means the set of documents defining the scope of T2S composed of the URD, the UDFS, the GUI Business Functionality, GFS Functional Chapter, the Dedicated Link Connectivity Specifications and the Data Migration Tool Specifications and Related Procedures.
‘T2S Services’	means the services to be provided by the Eurosystem to the Contracting CSD as specified in this Agreement
‘T2S Specifications’	means the set of documents, when added to the T2S Scope Defining Set of Documents, provide a full description of T2S. This includes the GFS non-Functional Chapters.
‘T2S Stakeholder’	means any organisation, legal entity or governmental entity, public or private interest groups, or individual that has a valid interest in the outcome of the T2S project and the governance and operation of T2S.
‘T2S Threat Catalogue’	means the information on relevant threats to the T2S Platform, which serves as the basis for the specification of appropriate security controls and, at a later stage, the evaluation of residual risks in terms of impact and likelihood, as described in Schedule 10 (Information Security).
‘T2S User’ or ‘User’	see ‘User’.
‘TARGET2’	means the payment system functioning in accordance with Guideline ECB/2007/2 of 26 April 2007 on a Trans-European Automated Real-time Gross settlement Express Transfer system (TARGET2) (OJ L 237, 8.9.2007, p. 1).
‘TARGET2-Securities (T2S)’ or ‘T2S Platform’	means the set of hardware, software and other technical infrastructure components through which the Eurosystem provides the services to CSDs that allow core, neutral and borderless settlement of securities transactions on a DvP basis in Central Bank Money.
‘Technical Disconnection’	means the action motivated by an imminent threat to the security or availability of the T2S Platform, whereby the Eurosystem, in its capacity of operator of T2S, technically blocks the access to the T2S Platform for one or more Directly Connected T2S Actors until such threat has been neutralised.
‘Technical Issuer CSD’	means a CSD where the security holdings of the participants of an Investor CSD are deposited.
‘Third Party’	means an individual or legal entity, which is not party to this Agreement. For the avoidance of doubt, a Third Party is a person or legal entity other than the Contracting CSD, the ECB, the euro area NCBs or the T2S Operator.

‘Transactional Data’	means the information that T2S creates and stores through the execution of a business process event, where the content of the information defines that event. This includes but is not limited to inbound and outbound XML messages, all types of settlement instructions and all data that T2S generates for the life cycle of the instruction (e.g. securities positions) and static data maintenance instructions. This is also referred to as Dynamic Data in the Schedules and in other documentation.
‘Transfer Order’	has the meaning set out in article 2(i) of Directive 98/26/CE.
‘Treaty on the Functioning of the European Union (TFEU)’	means the Treaty on the Functioning of the European Union (OJ C 83, 30.3.2010, p. 47).
‘User Detailed Functional Specifications (UDFS)’	means a detailed description of the functions managing the T2S external data flows (from A2A). It will include the necessary information for the users to adjust or to develop their internal information systems with a view to connecting them to T2S.
‘User Handbook (UHB)’	means the document describing the way in which T2S Users can make use of a number of T2S software functions that are available in a U2A (screen- based) mode.
‘User Requirements Document (URD)’	means the document setting out the user requirements for T2S as published by the ECB on 3 July 2008 and as subsequently amended through the T2S change and release management procedure.
‘User’ or ‘T2S User’	means a CSD participant (a legal entity or, as the case may be, an individual) having a contractual relationship with the CSD for the processing of its securities settlement-related activities in T2S, or a member of a Central Bank (whose currency is available for settlement-related processing in T2S) having a contractual relationship with the Central Bank for the processing of its securities settlement-related cash-processing activities in T2S.
‘User Testing ‘ or ‘User Tests’	means a set of rules and procedures concerning the testing of T2S by CSDs as described in Schedule 3 (User Testing).
‘User-to-Application (‘U2A’)’	means a connectivity mode to exchange information between software applications of T2S and a T2S Actor through a GUI.
‘Value-added Connection’	means a solution to connect the T2S data centres with the data centres of the Directly Connected T2S Actors, whereby both the Value-added Connectivity Services and the Physical Connectivity Services are provided by a NSP.
‘Value-added Connectivity Services’	means the set of messaging services, security services and operational services either provided by a NSP in accordance with the Licence Agreement, or implemented in T2S and in the systems of the Directly Connected T2S Actors.

Annex 1 – Diagram of Phases / Periods


Start of Connectivity Testing (SP7)
Start of Migration Activities (SP14)
Wave I Migration Weekend
Contingency Wave Migration & Go-Live
Closing T2S Programme (SP 17)
Migration Period
User Testing Execution Phase
Development Phase
Operational Phase
T2S Go-Live Date

EUROPEAN CENTRAL BANK

EUROSYSTEM

TARGET2-SECURITIES

FRAMEWORK AGREEMENT

SCHEDULE 2

T2S PROGRAMME PLANNING AND MONITORING

Table of contents

1 Introduction

1.1 Context

T2S is a large-scale programme, involving a significant number of actors. Owing to this complexity, a successful development, implementation and production start of T2S requires agreement between the parties to this Agreement on their roles and responsibilities as well as the respective expectations and commitments during the programme. It is not sufficient for the parties to this Agreement to the T2S Programme to establish and monitor stand-alone project plans independently of each other. It requires a common programme plan that:

- is based upon clearly identified and scoped deliverables;
- takes into account all the respective constraints and dependencies of the parties to this Agreement; and
- undergoes regular, close monitoring over the life of the programme, with decisions committing all parties.

As the plan may evolve during the course of the T2S Programme, a comprehensive framework must exist to manage events that may affect the programme's deliverables and milestones, including a review and decision-making process for adapting the programme plan. This requires a regular dialogue between the parties to this Agreement to enable them to manage their own parts of the programme, and jointly make proposals on common tasks and activities affecting the other parties to this Agreement. Contracting Central Securities Depositories (CSDs) must be in the position to organise their planning and their internal resources. Conversely, the Eurosystem planning of the User Testing and Migration phases, as well as the start operations in T2S, requires the input of all T2S Actors.

A successful programme delivery requires a consistent and complete framework to plan, coordinate, monitor and report the activities of the T2S Actors. Article 47 of the FA defines the process of updating this Schedule 2. This Schedule 2 specifies the process of updating Annexes of Schedule 2 (see Section 7).

1.2 Structure of Schedule

The Schedule 2 contains different sections and has several Annexes.

The third section presents the general responsibilities of the Eurosystem and the Contracting CSDs.

The fourth section describes the main documents supporting the monitoring of the T2S Programme Plan.

The fifth section presents the three official views of the T2S Programme plan and their main features.

The sixth section presents the main principles and conventions used for progress monitoring, for risk monitoring and for the management of bilateral relations between the Eurosystem and each Contracting CSD.

The seventh section documents the T2S Programme Plan monitoring process and includes the process for changing Schedule 2 Annexes.

The Annexes to Schedule 2 have three objectives:

- to provide the initial state of the T2S Programme planning documentation, which may evolve according to the processes defined in Schedule 2;
- to provide the templates used for programme reporting purposes; and
- to provide the initial state of the supporting documentation.

Schedule 2 includes the following Annexes:

<u>Annexes with focus on the plan substance:</u>

- Annex 1 - T2S Executive Summary Plan
- Annex 2 - T2S Operational Plan
- Annex 3 - T2S Detailed Plan
- Annex 4 - T2S Programme Plan assumptions

<u>Annexes with focus on reporting templates:</u>

- Annex 5 - T2S Programme Progress Reporting templates

- Annex 6 - T2S Risk and Issue Reporting templates

Annexes with focus on supporting documents:

- Annex 7 - T2S Programme Work Breakdown Structure (WBS)
- Annex 8 - T2S list of Deliverables
- Annex 9 - T2S list of Synchronisation points
- Annex 10 - T2S list of Milestones on the critical path

2 Scope and Objectives

2.1 Scope

This document on Programme Planning and Monitoring (Schedule 2 of the FA) presents the commitment of the Eurosystem to establish and maintain a common programme plan (the T2S Programme Plan) and defines roles, responsibilities, processes and interactions of the parties to this Agreement.

2.2 Objectives

The objectives of Schedule 2 are:

- to document the baseline T2S Programme Plan and its underlying assumptions;
- to define the framework for coordinating, managing and attempting to resolve potential disagreement on the T2S Programme Plan;
- to provide all parties to this Agreement with the necessary information to develop, coordinate and manage their respective project plans in coordination with the T2S Programme Plan;
- to define a monitoring and reporting framework on the progress against the T2S Programme Plan, including risks and issues; and
- to define a monitoring framework for client readiness.

3 General Responsibilities of the parties to this Agreement

3.1 General Responsibilities of the Eurosystem

The Eurosystem commits to deliver and maintain the documentation, frameworks and processes, as defined in this Schedule and its Annexes. This means that at any point in time there will be a valid programme plan and an agreed framework to provide all parties to this Agreement with relevant information on the programme status detailing the main principles, frameworks, processes and tools to support the programme monitoring. The Eurosystem commits to follow the framework and processes defined in this Schedule.

Furthermore, the responsibilities of the Eurosystem include:

- preparing and maintaining the T2S Programme Plan;
- organizing a close coordination with Contracting CSDs for reviewing and proposing changes to the plan to the Steering Level;
- providing on a regular basis to Contracting CSDs an accurate T2S Programme status assessment based on the T2S Programme Plan;
- preparing reports on, and response plans for, risks and issues pertaining to the T2S Programme Plan with emphasis on activities and deliverables that impact Contracting CSDs;
- establishing and chairing the Project Managers Group (PMG) to review, discuss and agree on the T2S Operational Plan and the T2S Programme status for Contracting CSDs relevant planning items with Contracting CSDs and Contracting CBs; and
- establishing and attending a bilateral forum between the Eurosystem and each Contracting CSD to review and discuss the Contracting CSD's individual status assessment for their activities within the T2S Programme Plan.

3.2 General Responsibilities of the Contracting Central Securities Depositories (CSDs)

Contracting CSDs are responsible for ensuring their own readiness and for undertaking reasonable efforts to coordinate the readiness of their clients (including those who are directly connected to T2S) to start with T2S. Contracting CSDs commit to follow the framework and processes defined in this Schedule and its Annexes.

Furthermore, the responsibilities of the Contracting CSDs include:

- establishing their own adaptation plans to start operations with T2S in synchronisation with the T2S Programme Plan;
- providing relevant and accurate information on progress and achievement of milestones, deliverables and synchronisation points, as well as on risks and issues, including response plans, potentially affecting the T2S Programme Plan. This is to enable the Eurosystem to maintain the T2S Programme Plan and consolidate the information received in the context of the monitoring of client readiness;
- participating in the PMG to review, discuss and agree on the T2S Operational Plan and the T2S Programme status for activities, deliverables and milestones affecting the plans of Contracting CSDs; and
- participating in a bilateral forum between the Eurosystem and each Contracting CSD to review and discuss the Contracting CSD's individual status assessment of its activities within the T2S Programme Plan to become operational on T2S.

3.3 General responsibilities of the Project Manager Group (PMG)

The PMG shall be composed of representatives of the Eurosystem, Contracting CSDs and Contracting CBs. Schedule 1 and Schedule 8 define the general role of the PMG. The following specifies the responsibilities of the PMG when supporting activities as defined in Schedule 2. The PMG shall:

- Meet (physically or via conference call) on a regular basis and on an ad hoc basis when requested by one of the members. The PMG determines the frequency of its meetings based on its needs.
- Assess the T2S Operational Plan and propose updates as detailed in Section 7.
- Assess the T2S Programme status report and propose changes.
- Identify risks and issues related to the execution of the T2S Plan
- Propose mitigation or resolution measures for all risks and issues identified.
- Discuss and propose solutions for multilateral issues related to the readiness of one of its members.
- Act proactively and in good faith to achieve agreement between PMG members.
- Prepare escalations on and escalate disagreements to the Steering Level.
- Be informed on a regular (e.g. quarterly) basis and identify the needs of the changes to the T2S Scope Defining Set of Documents.

4 Supporting Documentation

The Eurosystem provides the documents described in this section as background information supporting programme planning and monitoring. The Annexes to Schedule 2 contain the baseline versions of these documents. These documents may evolve in the course of the programme as defined by the processes in Section 7.

The supporting documentation provides the reference that allows the reader to understand the content and construction of the plans and reports.

4.1 T2S Programme Work Breakdown Structure

The Eurosystem defines and maintains a *Work Breakdown Structure (WBS)* for the purpose of programme planning and monitoring. The WBS is a Deliverable-oriented hierarchical decomposition of the work that the T2S Programme needs to execute to deliver T2S successfully. The WBS is the basis for grouping, aggregating and classifying the activities and deliverables for the T2S Programme Plan as well as for T2S programme status monitoring.

4.2 T2S Programme Deliverables

A Deliverable is a unique and verifiable product, result, or capabilities to perform a service, required to complete a process or phase[1].

The specification of the Deliverable consists of the information documented in the introduction to Annex 8 (e.g. name of the Deliverable, its classification according to the WBS)

The Eurosystem defines and maintains the List of Deliverables.

[1] In line with the PMBOK®

4.3 Milestones

Milestones are significant points or events in the programme[2]. In addition to this standard milestone definition, the T2S Programme Plan includes specific milestones as defined in the subsequent paragraphs.

4.3.1 Synchronisation Points

A synchronisation point is a point of time in the programme at which the T2S Programme is to reach a specific objective. The purpose of a synchronisation point is to monitor at foreseen time intervals that the progress of all parties to this Agreement is in line with the programme plan.
The Eurosystem provides the list of synchronisation points, which includes the list of the deliverables and milestones that require delivery or completion by the Eurosystem, Contracting CSDs and Contracting CBs in order to have successfully achieved the synchronisation point.

4.3.2 Critical Milestones

Critical milestones are milestones on the critical path of the T2S Programme Plan.

4.3.3 Key Milestones

Key milestones are specific Synchronisation Points, which, in case of delay, might trigger legal/financial consequences as defined in the FA Article 32. Therefore, any update of the Key Milestones' dates follows the FA updating process.

[2] In line with the PMBOK®

5 T2S Programme Plan

The T2S Programme Plan is the common Eurosystem-CSD-CB plan. This chapter describes the three views of the T2S Programme Plan that the Eurosystem provides in order to allow Contracting CSDs and Contracting CBs to monitor the progress of the T2S Programme and update their own plans.

The T2S Programme WBS, based on work streams, provides the organisational structure for activities, tasks, and milestones of the plans.

5.1 CSD-relevance of planning items

The T2S Programme Plan differentiates between CSD-relevant, non-CSD-relevant and CSD-internal planning items, specifically identified in the T2S Programme Plan.

5.1.1 CSD-relevant planning items

These are planning items (e.g. deliverables, milestones and processes) affecting, or being affected by the Contracting CSDs.

- Deliverables are CSD-relevant if the Contracting CSD is:
  - the assignee;
  - the addressee;
  - the reviewer; or
  - being consulted.
- Meetings, workshops are CSD-relevant when:
  - the Contracting CSD is participating (e.g. CSG, PMG, AG, Sub Groups); or
  - feedback is expected on specific topics (e.g. planning workshops)
- Programme phases, activities and tasks are CSD-relevant when the Contracting CSD is involved as an actor, e.g. as a reviewer or an observer.
- Programme phases, activities and tasks affecting the successful and timely completion of the Synchronisation Points.

The Eurosystem will provide status reporting on these items in the PMG. Contracting CSDs can review/analyse, discuss, and envisage alternative solutions for these items.

5.1.2 Non CSD–relevant planning items

These are planning items (e.g. deliverables, milestones and processes) that do not require any Contracting CSD involvement. The T2S Programme Plan does not present the details of activities or steps leading to a deliverable, but it provides milestones and summary tasks to ease plan readability.

Some examples for these items:

- Internal Eurosystem activities or deliverables not impacting the critical path or the delivery of a Contracting CSD deliverable (e.g. Internal Detailed Functional Specifications, Internal development process);
- predecessor of processes highlighted above (all the tasks preparatory to the deliverables, e.g. information security preparatory work related to the deliverable 'risk assessment'); and
- independent processes (e.g. Internal Eurosystem governance).

The Eurosystem shall provide a status reporting and information on planning items that are not CSD-relevant that are in the Operational Plan. However, Contracting CSDs do not analyse and propose alternative solutions for these planning items.

5.1.3 Internal CSD planning items

The T2S Programme Plan presents the main dependencies, relating to the completion process for specific milestones, called *Synchronisation Points*. Since Contracting CSDs may be ready at various points in time, the T2S Programme Plan only presents the ultimate deadline before a delay could affect the critical path.

In the context of the monitoring of client readiness, Contracting CSDs report progress on these items to their relationship manager, who in turn reports to the PMG. These items are under management responsibility of the Contracting CSD. Therefore, the Eurosystem does not analyse or propose alternative solutions for these items.

5.2 T2S Programme Plan Views

The Eurosystem ensures the synchronisation of three different views of the T2S Programme Plan:

- the T2S Detailed Plan, which presents the most detailed level and is to be used as reference to support detailed discussions when issues arise at the level of the T2S Operational Plan;
- the T2S Operational Plan, which forms the baseline subject to monitoring at PMG level;
- the T2S Executive Summary Plan, which is the plan communicated externally and which contains the most important dates of the T2S Programme Plan.

The Eurosystem produces an initial version of the plans in June of each year. The Eurosystem reviews the draft plans with Contracting CSDs, wherever CSD-relevant, in order to deliver an agreed T2S Operational Plan in September following the process described in Section 7 of the present Schedule.

5.2.1 T2S Detailed Plan

The T2S Detailed Plan provides for the T2S Programme the accurate and detailed planning for all deliverables and activities, relevant for Contracting CSDs as well as selected deliverables, milestones and activities not CSD-relevant or CSD-internal to ease readability. It also provides the necessary details until the end of the project, bearing in mind that the accuracy of the information decrease with time. The purpose of the T2S Detailed Plan is to provide the single point of reference and to support discussion within the PMG when the T2S Operational Plan does not provide sufficient detail.

The Eurosystem produces an updated version of this plan in June. The Eurosystem reviews a draft T2S Detailed Plan with Contracting CSDs, wherever CSD-relevant, to support the delivery of the T2S Operational Plan in September.

The T2S Detailed Plan specifies:

- ▪ all CSD-relevant deliverables, milestones and activities (flagged as “CSD-relevant”);
- ▪ selected deliverables, milestones and tasks that are not-CSD-relevant or CSD-internal, but required for the understanding of the plan and for a global overview of the programme;
- ▪ the synchronisation points for the monitoring of client readiness for Contracting CSDs and Contracting CBs; and
- ▪ a Schedule of meetings and workshops, requiring the participation of Contracting CSDs and/or Contracting CBs.

The T2S Programme Office provides updates of this plan as references to support the bilateral meetings for monitoring of client readiness (MCR) and the meetings of the PMG.

Should a regular update relate to an internal Eurosystem activity (4CB or ECB) and have no impact on the T2S Operational Plan (e.g. critical path, readiness; review period, etc.), the Eurosystem amends the T2S Detailed Plan, without prior discussion at PMG level.

5.2.2 T2S Operational Plan (One-Year Rolling)

The T2S Operational Plan aggregates the detail of the T2S Detailed Plan for one calendar year, including all tasks starting and/or finishing in that year. It also provides summary tasks and activities for the subsequent years until completion of the programme. This plan forms the baseline and is the basis for the reporting of the T2S Programme status. The purpose of the T2S Operational plan is:

- to coordinate the activities and interactions on deliverables between the Eurosystem and Contracting CSDs;
- to enable Contracting CSDs to develop and to monitor their own internal plans for T2S and to determine their resource requirements; and
- to support Contracting CSDs in performing their own assessment of the progress of the T2S Programme.

The T2S Operational Plan specifies for the one calendar year:

- all major deliverables, dependencies, milestones and aggregated tasks ;
- whether a planning item is CSD-relevant;
- the synchronisation point for the monitoring of client readiness for Contracting CSDs and Contracting CBs; and
- a summary task of the period of time requiring the participation of Contracting CSDs and/or Contracting CBs.

The Eurosystem provides updates of this plan to support the meetings for monitoring of client readiness and the meetings of the PMG. If a planning update affects another party (in the larger sense: readiness with external provider, review period, dependency Eurosystem, Contracting CSDs and Contracting CBs etc…) or influences the critical path, focussed information will be provided, including the explanation of the issue, the impact analysis and whenever relevant, the presentation of alternative solutions to be envisaged.

5.2.3 T2S Executive Summary Plan

The T2S Executive Summary Plan documents the milestones, synchronisation points and the duration of activities for the major deliverables and phases of the T2S Programme in order to provide a high-level summary view of the T2S Programme Plan.

5.3 T2S Critical Path

The critical path is the sequence of activities/tasks with the longest overall duration, determining the shortest time possible to complete the programme.

The T2S Detailed Plan documents the critical path for the Eurosystem activities and includes some external dependencies such as activities of Contracting CSDs. Building the critical path for external dependencies requires a series of assumptions, as the plan cannot reflect detailed dependencies with each Contracting CSD. The Eurosystem provides all such assumptions (Annex 4 to this Schedule) when providing the T2S Detailed Plan. The T2S Detailed and T2S Operational Plan highlights (MS Project) the tasks belonging at the critical path in red. The critical path may change because of updates of the T2S Detailed Plan.

6 Monitoring frameworks

The next sections define supporting materials and the methodology followed to assess progress and report the risks and issues.

Section 7 describes the underlying process.

6.1 T2S Programme Status Assessment Framework

6.1.1 Objectives and Scope

The Eurosystem establishes a T2S Programme status assessment framework. The objectives of the framework are:

- Organise regular reporting to all parties to this Agreement at the various levels of governance about the progress of the T2S Programme against the T2S Operational Plan;
- to enable proper monitoring by providing a status report;
- to facilitate the coordination of activities and interactions on deliverables between the Eurosystem and the Contracting CSDs; and
- to ensure that possible plan deviations against the Operational Plan are identified, discussed and addressed in a timely and appropriate manner.

In regularly scheduled (multilateral) assessment meetings with Contracting CSDs, the Eurosystem reports on the progress against the T2S Operational Plan. Contracting CSDs report their progress on deliverables pertaining to synchronisation points on a bilateral basis as part of the monitoring of client readiness.

6.1.2 Key Element of Programme Status Assessment and Monitoring

The process description for programme assessment and monitoring is Annex 5 to this Schedule.

6.1.2.1 T2S Progress Dashboard

The T2S Programme WBS specifies the structure of the dashboard template, presented in Annex 5 and 6 to this Schedule. Using the WBS, the T2S dashboard presents a high-level overview of the progress achieved and the overall risk situation for the main streams of the programme (aggregation of activities and deliverables at work stream level).

The T2S Progress Dashboard presents the following elements:

- status, with colour coding;
- change (for status), compared to previous report;
- trend, expected in the next report;
- risk, with colour coding; and
- change, (for risk) compared to previous report.

6.1.2.2 T2S Programme Status Report

The Eurosystem provides a T2S Programme Status. The T2S Programme Status Report includes:

- the high-level T2S Progress Dashboard, as described in the previous Section;
- per work stream a status assessment for each CSD-relevant deliverable with a status “green”, “yellow” or “red”;
- per work stream a detailed status assessment for each CSD-relevant deliverable with a status “yellow” or “red”;
- per work stream a risk assessment for each CSD-relevant deliverable. A detailed risk assessment is provided in case the risk criticality is “yellow” or “red”; and
- per work stream an issue description (incl. a response plan) for each issue pertaining to a CSD-relevant Deliverable, in case a risk has materialised.

6.1.2.3 Conventions

The Eurosystem prepares a programme status assessment for each Deliverable, using colour coding (Green/Yellow/Red). This assessment evaluates the status of a Deliverable based on time, quality and scope.

A specific colour, based on a three colours scheme, specifies the progress:

Colour	Description
Green	Deliverable is within the required scope and quality and is on time
Yellow	Deliverable will not have the required scope, will be delayed and/or not of the required quality if no corrective measures are taken
Red	Corrective measures have not delivered the expected effect or no corrective measures are possible. Deliverable will be delayed to achieve the required quality or scope if no extraordinary action is taken and requires escalation as described in section 7.2.

In addition to the colour reported for the progress assessment, the reporting of the Deliverable shows:

- the change from the previous progress assessment; and
- the expected trend for the next monitoring period.

The T2S Programme Status Report provides detailed information for each activity or Deliverable with a “yellow” or “red” status, including:

- the list of achievements;
- when relevant, the list of milestones missed or delayed; and
- the list of mitigating actions already started or envisaged to manage the situation.

6.2 T2S Risk and Issue Management and Monitoring Framework

6.2.1 Definitions, Scope and Objectives

The Eurosystem establishes a T2S Risk and Issue Management and Reporting Framework as comprehensive tool for the handling of risks and issues. The term ‘risk’ refers to a ‘threat’ to the successful delivery of the T2S Programme. The framework does not track and manage ‘opportunities’. ‘Issues’ define materialised risks.

The objectives of the framework that all parties to this Agreement are to follow are:

- to identify, manage and monitor risks and issues, potentially affecting the successful delivery of the T2S Programme;
- to inform and discuss between all parties to this Agreement in case of risks/issues, which may

potentially impact T2S Operational Plan;

- to ensure that potential risks are addressed in a timely and appropriate manner; and
- to ensure that planning issues are identified, discussed and addressed in a timely and appropriate manner.

6.2.2 Principles

The T2S Risk and Issue Management and Reporting Framework covers all risks, which may materialise during the programme's lifetime (i.e. from today until 'start operation') and all identified issues. The framework also foresees for each risk a root cause analysis, which identifies the underlying cause leading to the risk. The assumption is that one root cause will exist for each risk.

The assessment of programme risks applies a common grading scale for probability and impact. A probability/impact matrix is then applied to determine the criticality zone each risk is allocated to. The actual risk situation (reflecting the status of implementation of mitigation measures) is decisive for assessing the criticality.

The parties to this Agreement shall report:

- risks and the related risk response strategy as soon as possible following the formal risk assessment; and
- issues as soon as possible after their identification.

6.2.3 Risk and Issue Identification and Registration

All parties to this Agreement ensure that the appropriate risk and issue management functions as well as operational processes are in place for the registration of identified risks and issues, potentially affecting the various programme deliverables and milestones. All parties to this Agreement commit to share risks and issues in the appropriate forums, as defined hereafter in the Sections "T2S Monitoring of Client Readiness Framework" and "Processes".

6.2.4 Risk Assessment

The party to this Agreement identifying a risk (risk owner) shall evaluate the risk, based on:

- the impact on the T2S Programme; and

- the probability of the risk materialising.

6.2.4.1 Risk Impact Grading Scale

The T2S Risk and Issue Management Framework applies a five-level impact grading scale:

		Impact				
		5 **Very Severe**	**4** **Major**	**3** **Significant**	**2** **Low**	**1** **Negligible**
Project Objective	**Scope**	Project end item is effectively useless	Scope change unacceptable	Major areas of scope affected	Minor areas of scope affected	Scope impact barely noticeable
	Quality	Project end item is effectively useless	Quality reduction unacceptable	Quality reduction requires an approval	Only very demanding applications are affected	Quality degradation barely noticeable
	Cost	> 10 M euros	1M – 10M euros	100,000 – 1M euros	10,000 – 100,000 euros	<10,000 euros
	Time[3]	> 20% time increase	10 - 20% time increase	5 - 10% time increase	1 - 5% time increase	< 1% time increase

Figure 1: Risk Impact Grading Scale

The programme objectives scope, quality, cost and time are the basis for evaluating the risk impact, following the international standard Project Management Book of Knowledge (PMBOK) with the exception of the cost dimension. The use of this standard facilitates the assessment of the risk by determining the effect of the materialisation of an identified risk on each project objective. The highest category of the risk's impact on a project objective defines the overall impact of the risk.

[3] The percentages are calculated against the overall project duration.

6.2.4.2 Risk Probability Grading Scale

The T2S Risk and Issue Management Framework applies a five-level probability grading scale.

Risk Probability				
1 Very Unlikely	2 Unlikely	3 Possible	4 Likely	5 Almost Certain

Figure 2: Risk Probability Grading Scale

The description of the risk probability level uses a percentage to classify the risk according to a probability that it materialises. When possible, the assessment of the probability of a risk eventuating is based on comparable large-scale programmes. However, the experience of management in similar programmes and projects and the experience in operating in similar complex environments and organisations are also factors in determining the probability for common risk programme risks.

6.2.4.3 Probability-Impact Matrix

The impact of a T2S-related risk and the probability of occurring determine its level of criticality. The T2S Programme uses the following probability/impact matrix for determining the criticality of a risk according to a three colour scheme.

Impact	**5**	Red	Red	Red	Red	Red
	4	Yellow	Yellow	Red	Red	Red
	3	Green	Yellow	Yellow	Yellow	Yellow
	2	Green	Green	Green	Green	Yellow
	1	Green	Green	Green	Green	Green
		1	**2**	**3**	**4**	**5**
		Probability				

Figure 3: Probability-Impact Matrix

- The intersection between the impact of the risk and its probability in the matrix specifies the level of criticality of a risk to the T2S Programme (labelled with the colours green, yellow and red). The level of criticality determines on how the risk is managed.

In case the criticality level of a work stream for which several risks have been identified needs to be determined, the most severe risk determines the criticality level of the entire work stream.

6.2.5 Risk Tolerance Policy

The T2S Programme risk tolerance policy defines the level of programme risk that the ECB (ESCB/Eurosystem) is prepared to accept. The T2S Programme risk tolerance policy stipulates that the criticality of a risk and determines the body responsible for accepting a non-mitigated risk. The framework considers risks allocated to the green criticality level as accepted ex ante. All risks allocated beyond the tolerated level, i.e. those in the yellow and red zone, are subject to further risk management measures. Risks allocated to the red zone have the highest priority for mitigation.

6.2.6 Risk Response Plan

Risk response plans address identified T2S risks. Unless exempted by the confidentiality rules, the PMG monitors the implementation of the risk response plan, as indicated in the risk identification form, based on status reports received from the risk owners. The T2S Programme Office informs the Steering Level of the status of mitigation via the regular status reports. In case the risk has been reported to the other parties to this Agreement, the respective status information is provided in the (multilateral) monitoring meetings as defined hereafter in the Sections “T2S Monitoring of Client Readiness Framework” and “Processes”.

6.2.7 Issue Response Plan

Issue Response Plans address identified issues affecting the successfully delivery of T2S. The implementation of the issue response plan and sharing of information on issues is analogous to the process for risk response plans.

6.2.8 Risk/Issue Reporting

Based on the information received via the risk/issue notification forms, the Eurosystem registers each identified risk/issue. A risk/issue sheet provides high-level information on the risk/issue and its background and forms part of the T2S Programme Status Report.

6.3 T2S Monitoring of Client Readiness Framework

6.3.1 Definitions, Objectives and Scope

In the context of this Schedule, Client Readiness is defined as the capability of a Contracting CSD (and their respective communities - including DCP) to fulfil the legal, functional, technical and organisational requirements (i.e. all showstopper are resolved) to start operation in T2S relative to the synchronisation points (CSD-relevant milestones), as specified in the T2S Programme Plan.

The term Monitoring of Client Readiness (MCR) defines the framework to ascertain the readiness of a Contracting CSD (and their respective communities- including DCP) to start operation in T2S based on the Contracting CSDs' progress against the agreed milestones and deliverables of the T2S Operational Plan for the current phase of the T2S Programme. As a component of T2S Programme Planning and Monitoring, the parties to this Agreement agree to establish such a framework to allow the Eurosystem to monitor the readiness status of Contracting CSDs to start operation with T2S.

The objectives of the MCR Framework are:

- to ensure accurate reporting on the progress of a Contracting CSD regarding its readiness level relative to the T2S Programme Plan;
- to establish the necessary collaborative measures, rules, procedures and tools to support the monitoring process; and
- to foster the communication between individual Contracting CSDs and the Eurosystem on programme-plan-related issues, with a view to ensure timely and proactive identification and notification of any event that would have a material effect on the T2S Programme Plan and the start operation of T2S.

The scope of the MCR includes activities that the Contracting CSDs and their communities (including DCP) must undertake to ensure the required readiness level relative to the T2S Operational Plan and to the successful and timely completion of the Synchronisation Points.

MCR covers all phases of the T2S Programme until start of full operation of T2S with the successful implementation of the last of the planned migration waves. It also includes the monitoring of and reporting on the readiness of the Contracting CSD clients, indirectly and directly connected to T2S. It should be noted that the Contracting CSDs are responsible for tracking their own community (including DCP) and accurately reporting to the Eurosystem.

MCR encompasses the following activities:

- the monitoring of the fulfilment of the mutual obligations, milestones and deliverables;
- the monitoring and review of the mutual obligations in regular intervals and for individual periods, as bilaterally agreed, to ascertain their status as compared to the T2S Programme Plan; and
- the identification and notification of delays or any event affecting the successful and timely completion of the Synchronisation Points.

6.3.2 Monitoring of Client Readiness and Reporting

6.3.2.1 Principles

Gathering client readiness relevant information from the Contracting CSD and comparing the Contracting CSD's adaptation and migration plan to the overall T2S Programme Plan ensures that all Contracting CSDs consistently and jointly progress towards a successful start operation in T2S. At the synchronisation points, the parties to this Agreement can assess whether they remain aligned with the T2S Programme Plan. MCR identifies risks (incl. potential mitigation measures) as well as issues (incl. response plans), which potentially affect the Eurosystem, Contracting CSDs or Contracting CBs or the successful start operation of T2S. Between synchronisation points, the Contracting CSDs and the Eurosystem collaborate closely to support each other in the timely achievement of the relevant assessments, deliverables and milestones.

The parties to this Agreement agree to meet bilaterally to review, assess and discuss the Contracting CSD's progress at least once per synchronisation point, based on agreed assessment criteria and status reporting methodology of this Schedule. Contracting CSDs agree to report for readiness monitoring:

- the progress against their adaptation plan and status of their deliverables; and
- their risks and issues pertaining to their adaptation and affecting the successful completion of

synchronisation points.

6.3.2.2 Periodicity

The periodicity of meetings is dependent on the phase of the T2S Programme. Meetings will occur:

- on a quarterly basis from the signature of the FA until the start of the User Testing;
- on a monthly basis from the start of User Testing; and
- on an ad hoc basis when requested by one of the parties to this Agreement.

6.3.2.3 Organisation

MCR includes all Contracting CSDs participating in the T2S Programme. The Eurosystem monitors actively the degree of client readiness and asks the Contracting CSDs for regular monitoring of the status of the different activities and of the preparedness level of their communities (including DCP).

The Eurosystem monitors Client Readiness at three levels:

- The first level of monitoring is at the operational level of the client relationship management, with support provided by the other functions of the T2S Programme. The formal communication and exchange of information between the Contracting CSD and the T2S Programme Office takes place by means of (a) written submissions or (b) bilateral meetings between representatives of the Contracting CSD and representatives of the T2S Programme. Aiming at ensuring an efficient and effective communication, a Contracting CSD has a single person of contact within the client relationship area of the T2S Programme. The role of the single person of contact is to bundle the issues, comments and questions of the Contracting CSD, to coordinate and align these issues, comments and questions with other Contracting CSDs and Contracting CBs and to ensure final response and implementation;
- The second level of monitoring of client readiness is at the level of the PMG, which looks for common alternatives to resolve issues causing a delay or a risk of delay to a synchronisation point; and
- The third level of client readiness monitoring is at the Steering Level.

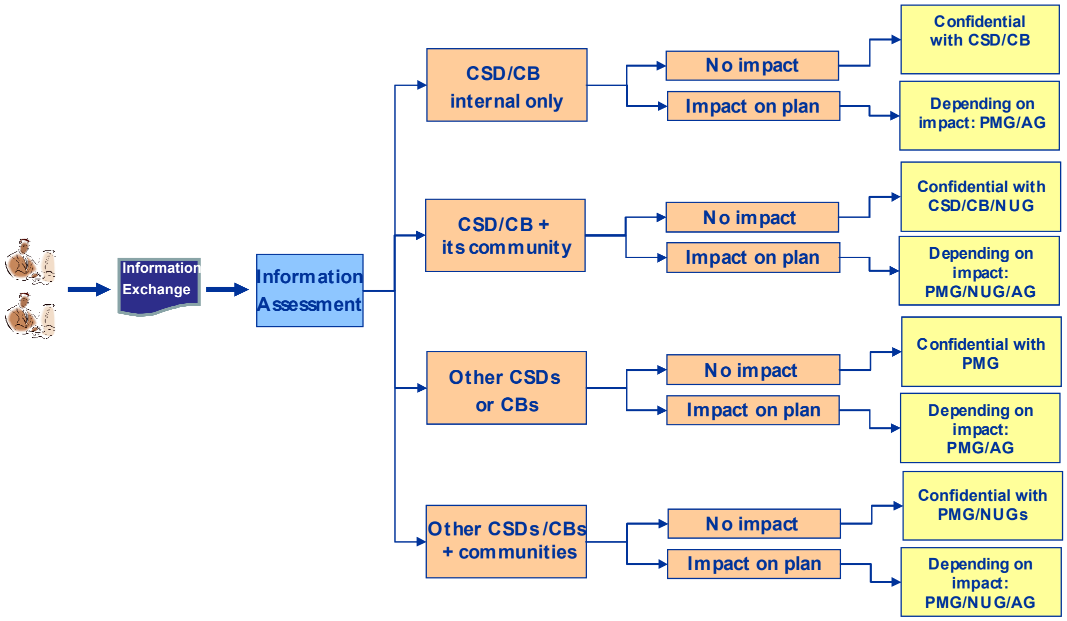
6.3.3 Client Readiness Reporting

The Eurosystem regularly reports on the overall Client Readiness (Contracting CSDs and Contracting CBs) as part of the programme status assessment and discusses the status with the Contracting CSDs in multilateral meetings. The status of a specific Contracting CSD in the context of MCR is subject to the confidentiality and transparency rules (see Section 6.3.4). The Eurosystem intends to publish aggregated client readiness-relevant information on a regular basis to provide a summary of the T2S readiness status covering the entire community (including DCP). The Eurosystem reviews this assessment with the Contracting CSDs prior to publication.

6.3.4 Confidentiality and Transparency Rules

The Eurosystem is committed to full transparency regarding T2S. T2S communication on client readiness addresses a wide spectrum of recipients, comprising individual Contracting CSDs, various T2S governance bodies and the public.

Full transparency does not preclude confidentiality. As a matter of principle, and as reflected in the business rules below, Contracting CSD readiness status and internal issues, discussed in the MCR bilateral meetings, remain confidential unless they affect the overall readiness, other Contracting CSDs, the T2S Programme organisation and/or the T2S business case. Communication of any other topics to a third party shall require prior written mutual consent. The business rules, which govern the confidentiality versus transparency dimensions, are set out below:


Information Exchange
Information Assessment
CSD/CB internal only
CSD/CB + its community
Other CSDs or CBs
Other CSDs/CBs + communities
No impact
Impact on plan
No impact
Impact on plan
No impact
Impact on plan
No impact
Impact on plan
Confidential with CSD/CB
Depending on impact: PMG/AG
Confidential with CSD/CB/NUG
Depending on impact: PMG/NUG/AG
Confidential with PMG
Depending on impact: PMG/AG
Confidential with PMG/NUGs
Depending on impact: PMG/NUG/AG

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7 Processes

The below processes only cover topics related to Schedule 2; therefore, the process actors' roles, as described below, are only applicable to the Schedule 2 topics and should not be read as a limitation to their roles in other topics of the FA.

7.1 Methodology and Conventions

The T2S monitoring process is represented in a diagram and supported by a high–level process description.

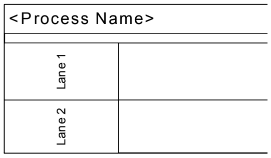
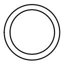
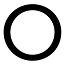
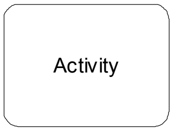
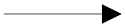
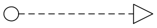
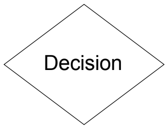
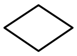
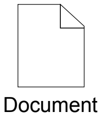
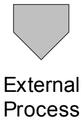
Individual sub-processes are described, but not supported by business diagrams.

There is no specific section to describe the individual activities, decision points or business rules.

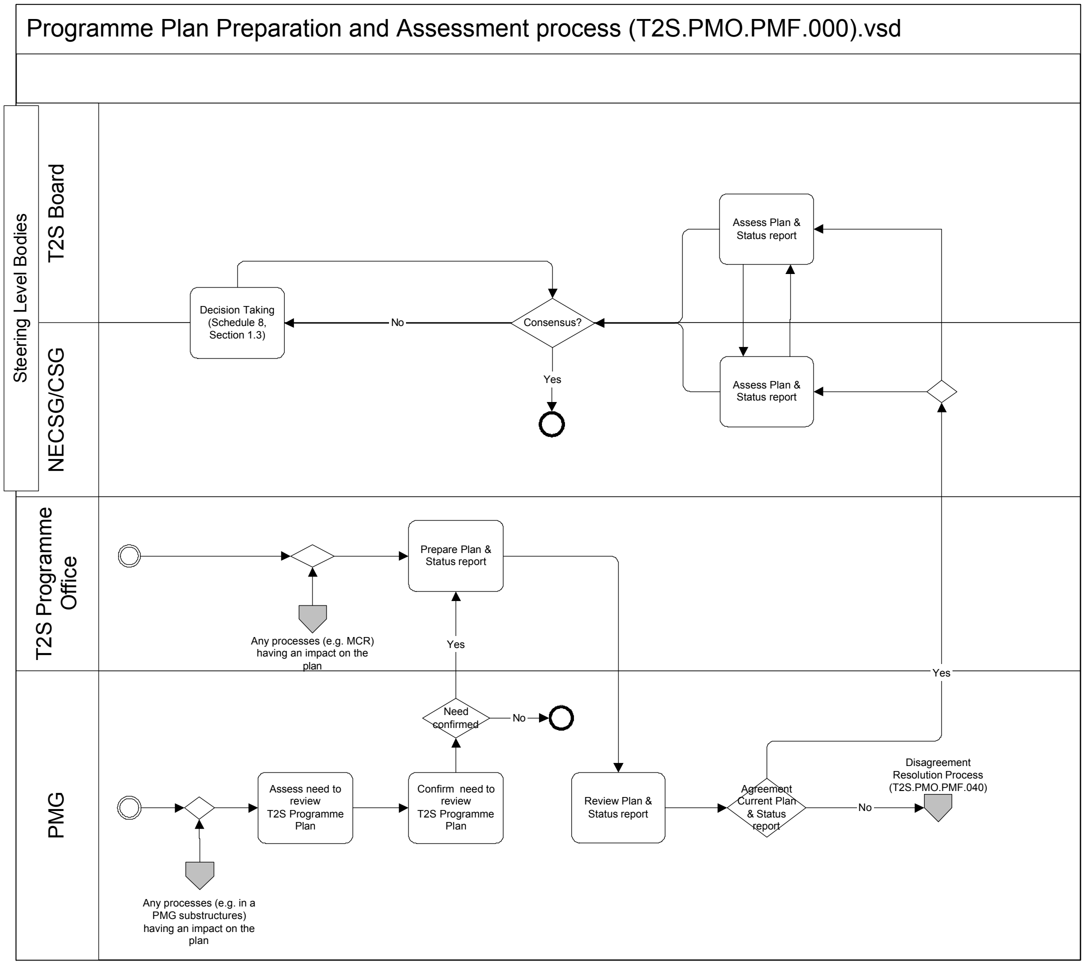
Likewise, the adaptation process for Schedule 2 Annexes is represented in a diagram and supported by a high-level process description.

7.1.1 Standards

The document uses a simplified version of the Business Process Modelling Notation (BPMN) 2.0 notation, as documented below.

Convention	Description
	Pools (Participants) and lanes represent responsibilities of a business actor for activities in a process. A pool or a lane can be an organization, a role, or a system. Lanes may subdivide pools or other lanes hierarchically.
	This symbol represents the starting point for a process.
	This symbol represents the termination of a process.
	An Activity is a unit of work or action.
	This symbol defines the execution order of activities.
	This symbol defines an indirect execution of activity (e.g. sending/exchange of information).
	This symbol represents a decision, resulting in the triggering of different activities. It typically follows an activity.
	Gateway, used to ease the readability of the flow transfers
	A Data Object represents information flowing through the process, such as business documents, e-mails, or letters
	Indicates reference to an external process not described in the current business process map

7.2 Programme Plan Preparation, Adaptation and Assessment Review Process


Programme Plan Preparation and Assessment process (T2S.PMO.PMF.000).vsd
Steering Level Bodies
T2S Board
NECSG/CSG
T2S Programme Office
PMG
Assess Plan & Status report
Decision Taking (Schedule 8, Section 1.3)
No
Consensus?
Yes
Assess Plan & Status report
Prepare Plan & Status report
Any processes (e.g. MCR) having an impact on the plan
Yes
Yes
Need confirmed
No
Disagreement Resolution Process (T2S.PMO.PMF.040)
Assess need to review T2S Programme Plan
Confirm need to review T2S Programme Plan
Review Plan & Status report
Agreement Current Plan & Status report
No
Any processes (e.g. in a PMG substructures) having an impact on the plan

573 ### 7.2.1 Process Actors and their Roles

Process Actor	Process Role
T2S Programme Office	The T2S Programme Office is responsible for collecting information from the Eurosystem, Contracting CSDs and Contracting CBs in order to prepare for PMG and Steering Level review: ▪ An updated T2S Programme Plan; ▪ A Programme Status Report (including progress, risks and issues). The T2S Programme Office sends the relevant information (T2S Programme Plan and Programme Status Report) to the PMG, at least 1 week before PMG meetings. The T2S Programme Office is responsible for organising and chairing the PMG meetings.
PMG	In this process, the PMG is responsible for : • Assessing and agreeing on the updates of the T2S Operational Plan • Assessing and agreeing on the T2S Programme status report. Its responsibility is to analyse the plan and the reporting packages, propose improvements or changes, and highlight risks and issues. When alternatives for solving an issue exist, the PMG will assess them and propose the best way forward. It is the responsibility of the PMG to act pro-actively and in good faith to try to achieve agreement between PMG members.
CSG	The CSG is responsible for assessing the programme plan and programme status, taking into account the recommendations supplied by the PMG and taking all necessary steps to reach a consensus at Steering Level.
T2S Board	The T2S Board is responsible for assessing the programme plan and programme status, taking into account the recommendations supplied by the PMG and taking all necessary steps to reach a consensus at Steering Level. The T2S Board also coordinates the work at Steering Level to reach a consensus following the process described in Schedule 8, Section 1.3.

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7.2.2 High-Level Process Description

This section provides an overview of the process to monitor the T2S Programme Plan. This includes progress and risk reporting, and adaptation to the plan. This process encompasses the ongoing monitoring of the programme by the different actors. It applies to production of the programme status reports and to updates of the plan. It may also result in changes to the different supporting documents, e.g. to document changes in planning assumptions. This process does not apply to changing the layouts of plans and supporting documents, as described in the Annexes of this Schedule 2. Such changes follow the process for the adaptation of Schedules described in section 7.3.

The T2S Programme Office collects information from the Eurosystem, Contracting CSDs and Contracting CBs for plan updates and status reporting.

Based on the information received, the T2S Programme Office updates the T2S Operational Plan, prepares a Programme status reports.

When applicable, the T2S Programme Office prepares presentations on changes, impacts and alternative solutions.

The T2S Programme Office sends the various plans and the programme status report to the PMG at least one week before the meeting.

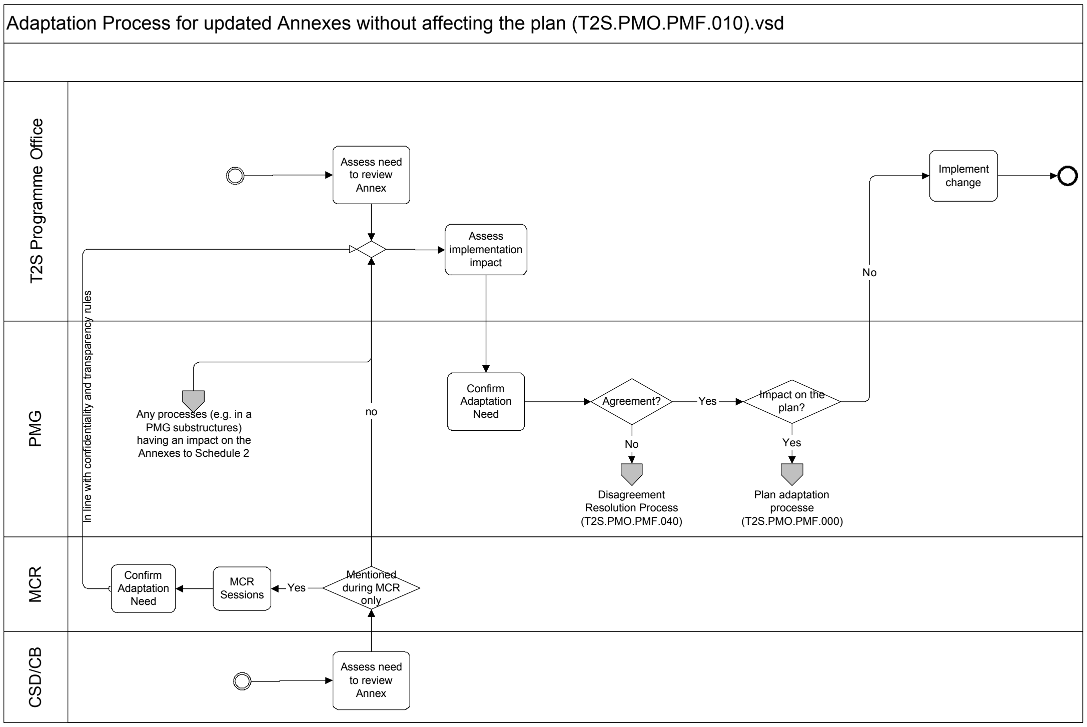
The T2S Programme office presents the overall programme plan and status during the PMG sessions for review and discussion.

Once the PMG has reviewed and agreed on the T2S Operational Plan and status reports, it forwards the plan and status reports to the Steering Level for endorsement. The T2S Board coordinates the work at Steering Level to reach a consensus following the process described in Schedule 8, Section 1.3.

In case of disagreement on the implementation, the PMG may initiate the PMG disagreement resolution process in order to seek for guidance from the Steering Level.

The PMG meets at least quarterly or as agreed with the PMG members.

7.3 Adaptation Process for updated Annexes without affecting the plan:


Adaptation Process for updated Annexes without affecting the plan (T2S.PMO.PMF.010).vsd
T2S Programme Office
PMG
MCR
CSD/CB
Assess need to review Annex
Assess implementation impact
Implement change
No
In line with confidentiality and transparency rules
Any processes (e.g. in a PMG substructures) having an impact on the Annexes to Schedule 2
no
Confirm Adaptation Need
Agreement?
Yes
Impact on the plan?
No
Yes
Disagreement Resolution Process (T2S.PMO.PMF.040)
Plan adaptation processe (T2S.PMO.PMF.000)
Confirm Adaptation Need
MCR Sessions
Yes
Mentioned during MCR only
Assess need to review Annex

7.3.1 Process Actors and their Roles

Process Actor	Process Role
T2S Programme Office	The T2S Programme Office is responsible for: ▪ identifying and raising adaptation requests; ▪ collecting adaptation requests; ▪ undertaking the impact assessment for the requested adaptation; ▪ communicating the results of the impact analysis to the PMG; and ▪ implementing the adaptation in the applicable processes and templates.
CSD	▪ The Contracting CSDs are responsible identifying and raising adaptation requests, if relevant.
Monitoring of Client Readiness	The MCR is responsible for providing information on the reasons for the adaptation request to the T2S Programme Office to allow for an impact assessment.

PMG	In this process, the PMG is responsible for: ▪ reviewing and discussing the adaptation requests; ▪ confirming the need of the adaptation or rejecting the request to the Steering Level; and ▪ escalating Disagreement on adaptation request to the Steering Level.

7.3.2 High Level Process Description

This section provides a process to adapt the Annexes to the present Schedule that do not affect the plan over time in a controlled way. This process is valid to change the layout of the plan and of the supporting documentation, but it does not apply for changing the plan (e.g. the Eurosystem and/or CSDs may wish to review the Annexes to Schedule 2 of this FA in order to improve reporting). Adaptations approved at Steering Level, do not need to go through this procedure, and should be directly implemented.

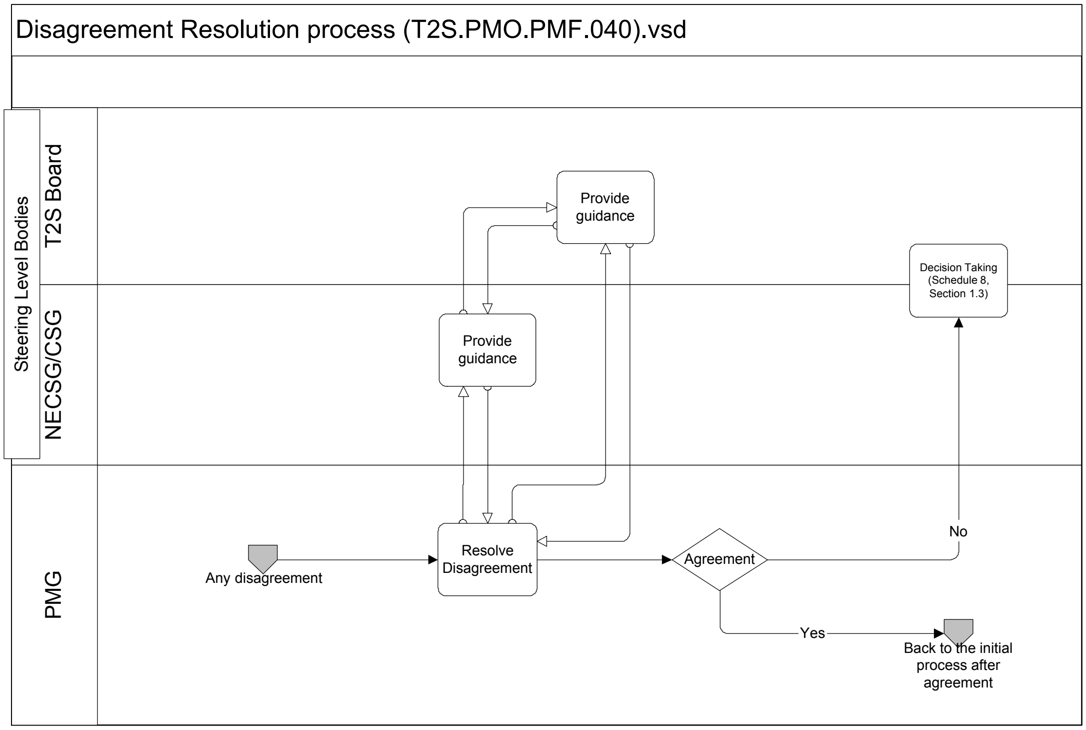
The T2S Programme Office and/or CSDs may wish to change an Annex.

The T2S Programme Office collects the change(s) request. Thereafter, the T2S Programme Office assesses the change(s) request. The PMG reviews the change(s) request together with the T2S Programme Office assessment.

After agreement on the change(s) at PMG level, the T2S Programme Office implements the change(s).

In case of disagreement, the PMG may initiate the disagreement resolution process to get agreement on the proposed change(s).

7.4 Disagreement Resolution process


Disagreement Resolution process (T2S.PMO.PMF.040).vsd
Steering Level Bodies
T2S Board
NECSG/CSG
PMG
Provide guidance
Provide guidance
Decision Taking (Schedule 8, Section 1.3)
Any disagreement
Resolve Disagreement
Agreement
No
Yes
Back to the initial process after agreement

7.4.1 Process Actors and their Roles

Process Actor	Process Role
PMG	The PMG is responsible for taking all necessary actions to solve the disagreement.
CSG	The CSG is responsible for discussing with T2S Board any disagreement escalated by the PMG and for providing guidance to the PMG In case of outstanding disagreement after escalation at PMG level, the CSG takes all necessary steps to reach a consensus at Steering Level.
T2S Board	The T2S Board is responsible for discussing with CSG any disagreement escalated by the PMG and for providing guidance to the PMG. In case of outstanding disagreement after escalation at PMG level, the T2S Board coordinates the work at Steering Level to reach a consensus following the process described in Schedule 8, Section 1.3.

7.4.2 High Level Process Description

This Section describes the process to be followed in case of disagreement within the PMG.

In case of disagreement within the PMG, the PMG escalates to the Steering Level for guidance on how to mitigate the disagreement.

The Steering Level discussed the escalated issue in view of providing guidance to the PMG.

The Parties should aim to conducting the process of resolving disagreements within 2 weeks.

In case of outstanding disagreement after escalation at PMG level, the T2S Board coordinates the work at Steering Level to reach a consensus following the process described in Schedule 8, Section 1.3, before a potential escalation.

FRAMEWORK AGREEMENT

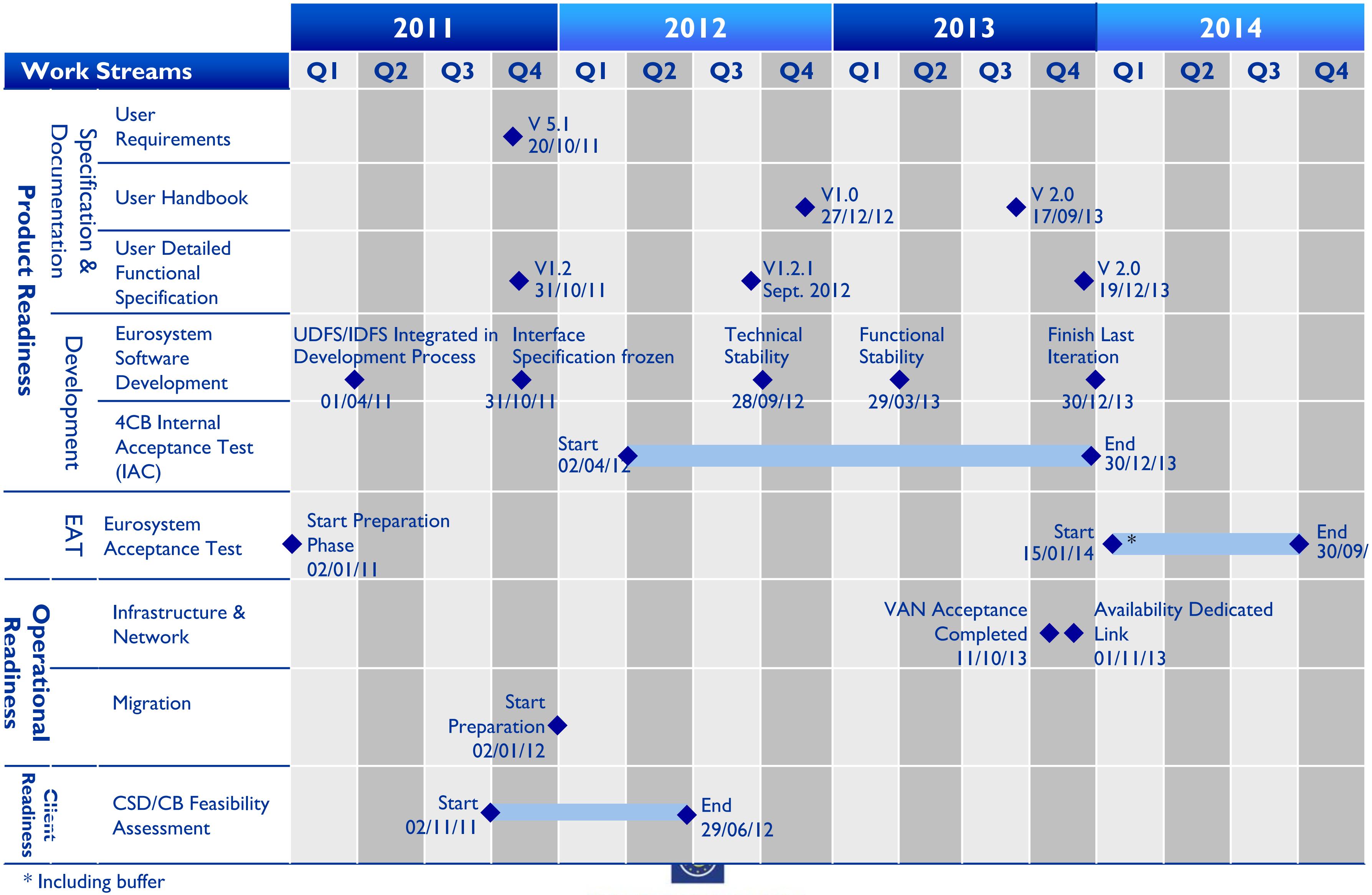
SCHEDULE 2 – ANNEX 1

T2S EXECUTIVE SUMMARY PLAN

31 Oct. 2011

Executive Summary Plan

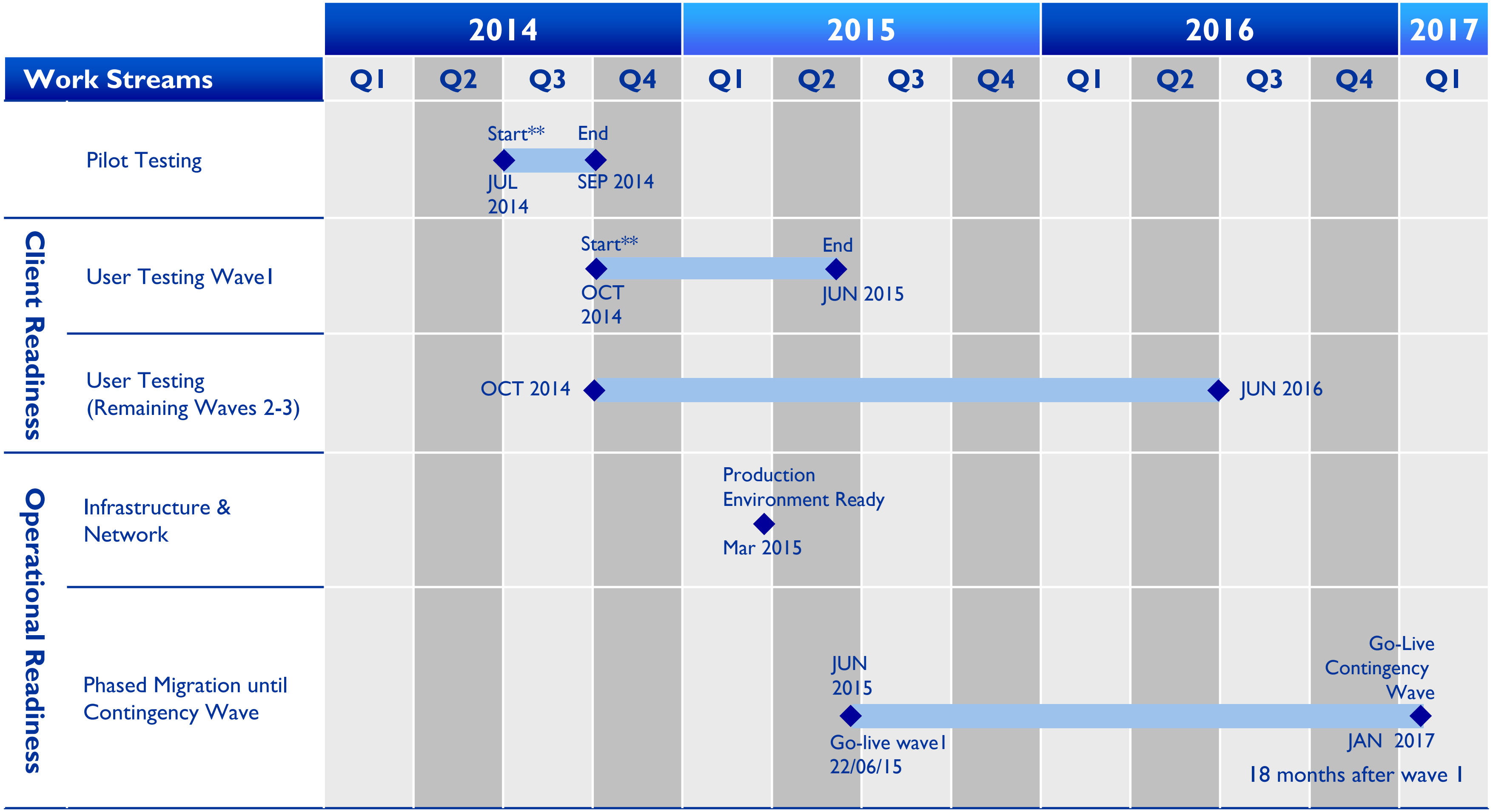
T2S Executive Summary Plan



			2011				2012				2013				2014			
		Work Streams	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Product Readiness	Specification & Documentation	User Requirements				V 5.1 20/10/11												
		User Handbook								V1.0 27/12/12			V 2.0 17/09/13					
		User Detailed Functional Specification				V1.2 31/10/11			V1.2.1 Sept. 2012					V 2.0 19/12/13				
	Development	Eurosystem Software Development	UDFS/IDFS Integrated in Development Process 01/04/11			Interface Specification frozen 31/10/11			Technical Stability 28/09/12		Functional Stability 29/03/13			Finish Last Iteration 30/12/13				
		4CB Internal Acceptance Test (IAC)						Start 02/04/12						End 30/12/13				
	EAT	Eurosystem Acceptance Test	Start Preparation Phase 02/01/11												Start 15/01/14 *		End 30/09/14	
Operational Readiness		Infrastructure & Network												VAN Acceptance Completed 11/10/13 Availability Dedicated Link 01/11/13				
		Migration					Start Preparation 02/01/12											
Client Readiness		CSD/CB Feasibility Assessment				Start 02/11/11		End 29/06/12										

* Including buffer

T2S Executive Summary Plan



2014 | 2015 | 2016 | 2017

Work Streams | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1

Pilot Testing: Start** JUL 2014 – End SEP 2014

Client Readiness

User Testing Wave1: Start** OCT 2014 – End JUN 2015

User Testing (Remaining Waves 2-3): OCT 2014 – JUN 2016

Operational Readiness

Infrastructure & Network: Production Environment Ready Mar 2015

Phased Migration until Contingency Wave: JUN 2015 Go-live wave1 22/06/15 – Go-Live Contingency Wave JAN 2017

18 months after wave 1

** For simplicity reasons, connectivity's activities which could be performed prior to the start do not appear on this plan view

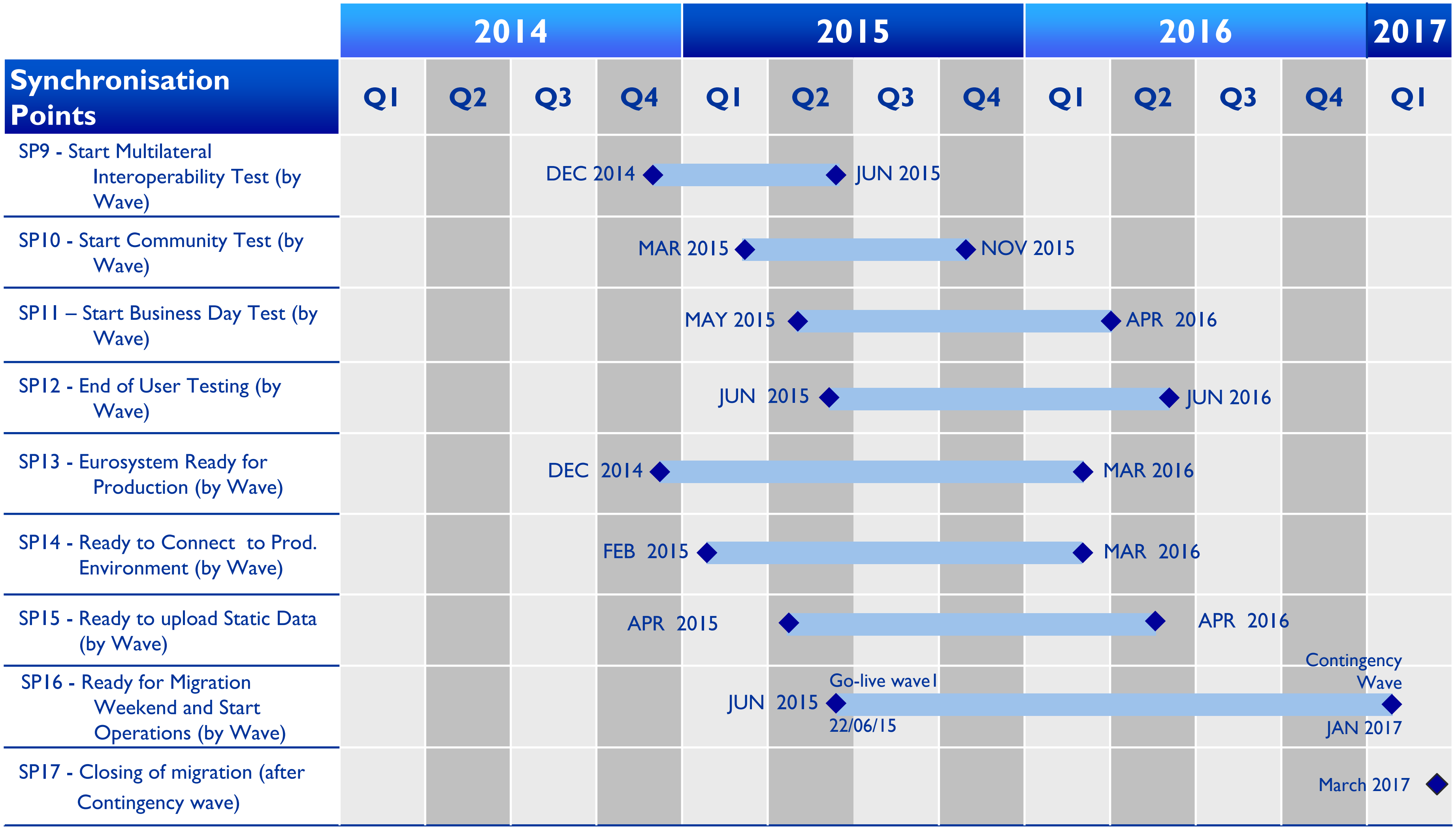
Client Readiness Tracking
Synchronisation Points 1

	2011				2012				2013				2014			
Synchronisation Points	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
SP1- Start Feasibility Confirmed				20/12/11 ◆												
SP2 - Feasibility Confirmation							10/08/12 ◆									
SP3 – T2S Programme Plan Comprehensiveness								17/12/12 ◆								
SP4 - Network Providers Confirmed														24/04/14 ◆		
SP5 - Eurosystem ready for EAT													15/01/14 ◆			
SP6 - Eurosystem Ready for User Testing															02/09/14 ◆	
SP7 - Start Connectivity Test															07/07/14 ◆	
SP8 - Start Bilateral Interoperability Testing																01/10/14 ◆

SETTLING WITHOUT BORDERS

Client Readiness Tracking

Synchronisation Points 2



Synchronisation Points		
SP9 - Start Multilateral Interoperability Test (by Wave)	DEC 2014	JUN 2015
SP10 - Start Community Test (by Wave)	MAR 2015	NOV 2015
SP11 – Start Business Day Test (by Wave)	MAY 2015	APR 2016
SP12 - End of User Testing (by Wave)	JUN 2015	JUN 2016
SP13 - Eurosystem Ready for Production (by Wave)	DEC 2014	MAR 2016
SP14 - Ready to Connect to Prod. Environment (by Wave)	FEB 2015	MAR 2016
SP15 - Ready to upload Static Data (by Wave)	APR 2015	APR 2016
SP16 - Ready for Migration Weekend and Start Operations (by Wave)	JUN 2015 Go-live wave1 22/06/15	Contingency Wave JAN 2017
SP17 - Closing of migration (after Contingency wave)		March 2017

EUROPEAN CENTRAL BANK
EUROSYSTEM

FRAMEWORK AGREEMENT

SCHEDULE 2 – ANNEX 2

T2S OPERATIONAL PLAN

Disclaimer:

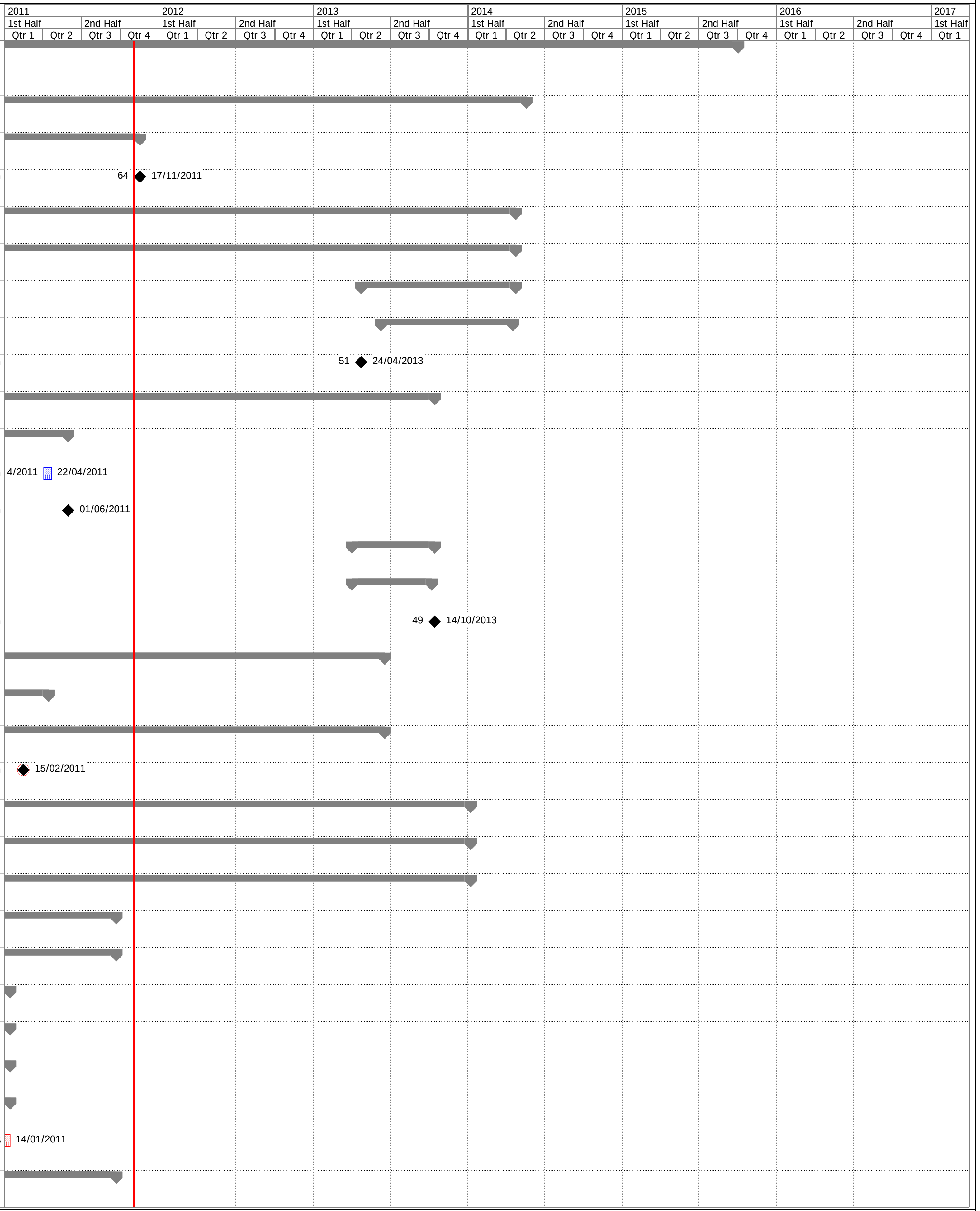
Planning is an ongoing process and Annexes with planning elements are subject to change during the lifetime of a project. Planning workshops with CSDs and CBs will continue to agree on the planning for Connectivity, User Testing and Migration. Subsequent plan updates follow the process, documented in the Schedule 2, Section 7.

Annexes 2, 3, 4, 7, 8, 9 and 10 document the planning status as at 31 Oct. 2011.

T2S Operational Plan with Critical Path

31/10/2011

ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
1	**100**	**PRODUCT READINESS**		**1945d**	**Tue 01/04/08**	**Fri 02/10/15**	
2	**500**	**SPECIFICATION AND DOCUMENTATION**		**1417d**	**Fri 28/11/08**	**Mon 19/05/14**	
3	**1100**	**REQUIREMENTS**		**692d**	**Thu 26/03/09**	**Thu 17/11/11**	
35	16100	[Deliverable] - User Requirement Document (URD) 5.01	◆	0d	Thu 17/11/11	Thu 17/11/11	Eurosystem
36	**18100**	**SPECIFICATIONS**		**1401d**	**Fri 28/11/08**	**Thu 24/04/14**	
37	**18200**	**General Specification (GS)**		**1401d**	**Fri 28/11/08**	**Thu 24/04/14**	
45	**26100**	**GS v. 2.0**		**257d**	**Wed 24/04/13**	**Thu 24/04/14**	
46	**26200**	**Internal Eurosystem Preparation [General Specifications v. 2.0]**		**219d**	**Mon 10/06/13**	**Thu 17/04/14**	
55	34150	[Deliverable] - General Specification (GS) V. 2.0	◆	0d	Wed 24/04/13	Wed 24/04/13	Eurosystem
67	**47100**	**General Functional Specifications (GFS)**		**1231d**	**Mon 19/01/09**	**Mon 14/10/13**	
81	**60100**	**GFS 4.0 - aligned with URD 5.0**		**347d**	**Tue 02/02/10**	**Wed 01/06/11**	
99	74400	Feedback of the ECB T2S project team to the Market on GFS V4.0 13/04	◆	15d	Mon 04/04/11	Fri 22/04/11	Eurosystem
101	74500	Delivery GFS Note	◆	0d	Wed 01/06/11	Wed 01/06/11	Eurosystem
102	**73400**	**GFS 5.0**		**139d**	**Tue 02/04/13**	**Mon 14/10/13**	
103	**73500**	**Internal Eurosystem Preparation [Production of the GFS V5.0]**		**134d**	**Tue 02/04/13**	**Mon 07/10/13**	
113	88150	[Deliverable] - General Function Specification (GFS) V 5.0	◆	0d	Mon 14/10/13	Mon 14/10/13	Eurosystem
132	**155150**	**Internal Detailed Functional Specification (IDFS)**		**910d**	**Wed 16/12/09**	**Tue 18/06/13**	
133	**156100**	**Settlement Algorithm Objectives Document**		**327d**	**Fri 15/01/10**	**Fri 15/04/11**	
148	**165100**	**Production of IDFS**		**910d**	**Wed 16/12/09**	**Tue 18/06/13**	
156	172200	WS - Delivery IDFS V0.85 to the Development Coordination		0d	Tue 15/02/11	Tue 15/02/11	Eurosystem
170	**97100**	**User Detailed Functional Specifications (UDFS)**		**1300d**	**Thu 01/01/09**	**Tue 07/01/14**	
182	**550200**	**Work on Messages Pillar I-III**		**1300d**	**Thu 01/01/09**	**Tue 07/01/14**	
183	**105100**	**Message standardisation**		**1300d**	**Thu 01/01/09**	**Tue 07/01/14**	
194	**116200**	**Production of UDFS V1.0, V1.1, V1.2 (in line with GFS V4.0)**		**560d**	**Mon 03/08/09**	**Fri 23/09/11**	
195	**116300**	**Production of UDFS V1.0 [dialogue between T2S and Its users and detailed msg specification]**		**560d**	**Mon 03/08/09**	**Fri 23/09/11**	
231	**190500**	**UDFS v1.0 - Messages**		**207.75d**	**Thu 01/04/10**	**Fri 14/01/11**	
232	**190550**	**Pillar III (T2S specific messages)**		**207.75d**	**Thu 01/04/10**	**Fri 14/01/11**	
233	**190580**	**Detailed T2S message specification, development and T2S documentation for UDFS**		**207.75d**	**Thu 01/04/10**	**Fri 14/01/11**	
239	**192400**	**Production of first draft T2S customised schema files/documentation by 4CB**		**79.75d**	**Tue 28/09/10**	**Fri 14/01/11**	
241	134940	Validation of draft T2S customised files/docum. By SGMS (incl. Incorporation of	◆	47d	Thu 11/11/10	Fri 14/01/11	SGMS
242	**190450**	**Validations of the version v0.3 to produce the UDFS V1.0**		**517d**	**Thu 01/10/09**	**Fri 23/09/11**	

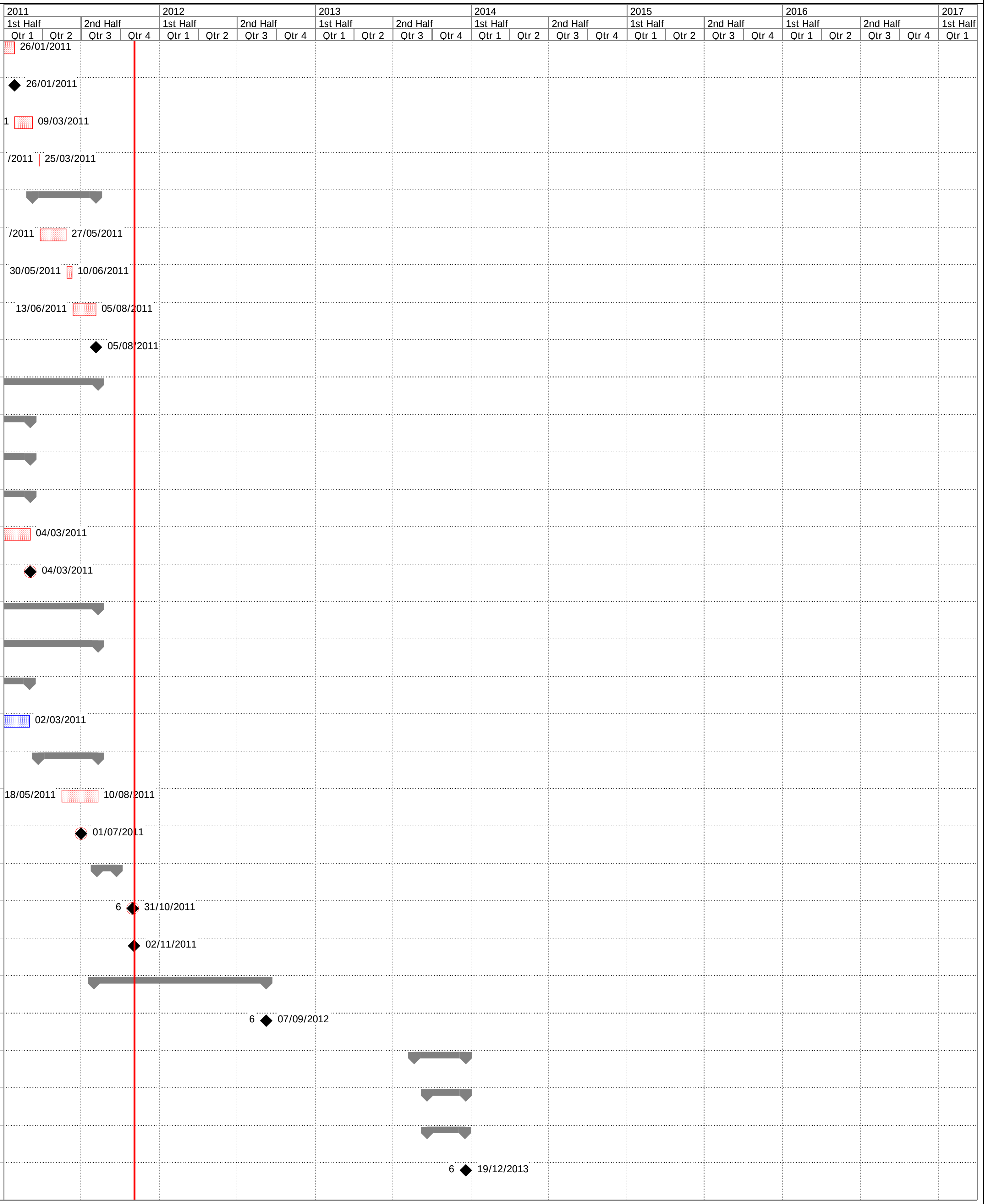


Task	▭	Task	▭	Critical Milestone	◆	Milestone	◆	Critical Task	▨	Project Summary	▬	Group By Summary ▬

T2S Operational Plan with Critical Path

31/10/2011

ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
245	190470	ECB T2S programme Office /Market review of UDFS V0.3 (one month)	◆	21d	Thu 30/12/10	Wed 26/01/11	Eurosystem
246	190490	Reception of consolidated ECB/Market feedback on UDFS v0.3 to FC	◆	0d	Wed 26/01/11	Wed 26/01/11	Eurosystem
247	190560	Integration of PMC & ECB T2S Programme Office comments in v0.3 to produce the V1.0 of UDFS (1,5 month)		30d	Thu 27/01/11	Wed 09/03/11	Eurosystem
250	190700	Delivery of UDFS V1.0 to the Market by the ECB	◆	1d	Fri 25/03/11	Fri 25/03/11	Eurosystem
251	**190800**	**Validation of complete UDFS V1.0 by the Market**		**107d**	**Thu 10/03/11**	**Fri 05/08/11**	
254	195100	Feedback from the Market on the UDFS V1.0	◆	45d	Mon 28/03/11	Fri 27/05/11	CSDs
256	196100	Consolidation of Market comments by the ECB		10d	Mon 30/05/11	Fri 10/06/11	Eurosystem
257	198100	Integration of Market comments in complete UDFS V1.0 (two months)		40d	Mon 13/06/11	Fri 05/08/11	Eurosystem
258	199100	Delivery to ECB T2S Programme Office of UDFS V1.1		0d	Fri 05/08/11	Fri 05/08/11	Eurosystem
259	**199200**	**UDFS v1.2 - Messages**		**486d**	**Thu 01/10/09**	**Wed 10/08/11**	
260	**134500**	**Pillar II (new standard)**		**288d**	**Thu 28/01/10**	**Fri 04/03/11**	
262	**134570**	**Detailed T2S message specification and T2S documentation for UDFS**		**288d**	**Thu 28/01/10**	**Fri 04/03/11**	
263	**134600**	**Customisation of draft ISO schema files (incl. definition of fields)/documentation,**		**288d**	**Thu 28/01/10**	**Fri 04/03/11**	
265	134670	Validation of draft T2S customised files/documentation by	◆	288d	Thu 28/01/10	Fri 04/03/11	SGMS
266	124150	Final Validation Pillar II by the SGMS	◆	0d	Fri 04/03/11	Fri 04/03/11	SGMS
267	**134700**	**Pillar III (T2S specific messages)**		**486d**	**Thu 01/10/09**	**Wed 10/08/11**	
268	**134730**	**Detailed T2S message specification, development and T2S documentation for UDFS**		**486d**	**Thu 01/10/09**	**Wed 10/08/11**	
269	**134770**	**Creation of HLBR by 4CB for delivery to SWIFT; Validation by SGMS (as BVG)**		**371d**	**Thu 01/10/09**	**Wed 02/03/11**	
271	134830	SGMS Validate the HLBR (incl. Incorporation of comments by 4CB)	◆	330d	Fri 27/11/09	Wed 02/03/11	SGMS
273	**134900**	**Production of first draft T2S customised schema files/documentation by 4CB**		**100.75d**	**Wed 23/03/11**	**Wed 10/08/11**	
275	134950	Validation of draft T2S customised files/docum. By SGMS (incl. Incorporation	◆	61d	Wed 18/05/11	Wed 10/08/11	SGMS
276	134150	Final Validation Pillar III by the SGMS	◆	0d	Fri 01/07/11	Fri 01/07/11	SGMS
277	**200100**	**Final validation of complete UDFS V1.1 by ECB T2S Programme Office**		**34d**	**Mon 08/08/11**	**Fri 23/09/11**	
288	211100	[Deliverable] - User Detailed Functional Specification (UDFS) V1.2	◆	0d	Mon 31/10/11	Mon 31/10/11	Eurosystem
289	211200	Start feasibility study	◆	0d	Wed 02/11/11	Wed 02/11/11	CSDs,CBs
290	**211300**	**Production of UDFS V1.2.1 (CR and Architecture Issues)**		**290d**	**Mon 01/08/11**	**Fri 07/09/12**	
322	214800	[Deliverable] - User Detailed Functional Specification (UDFS) V1.2.1	◆	0d	Fri 07/09/12	Fri 07/09/12	Eurosystem
323	**215100**	**UDFS v 2.0**		**86d**	**Wed 21/08/13**	**Thu 19/12/13**	
326	**217100**	**Validation and revision of UDFS v.2.0 after IAC**		**64d**	**Fri 20/09/13**	**Thu 19/12/13**	
327	**217200**	**Internal Eurosystem Preparation [Validation and revision of UDFS v.2.0 after IAC]**		**62d**	**Fri 20/09/13**	**Tue 17/12/13**	
335	223150	[Deliverable] - UDFS v.2.0	◆	0d	Thu 19/12/13	Thu 19/12/13	Eurosystem

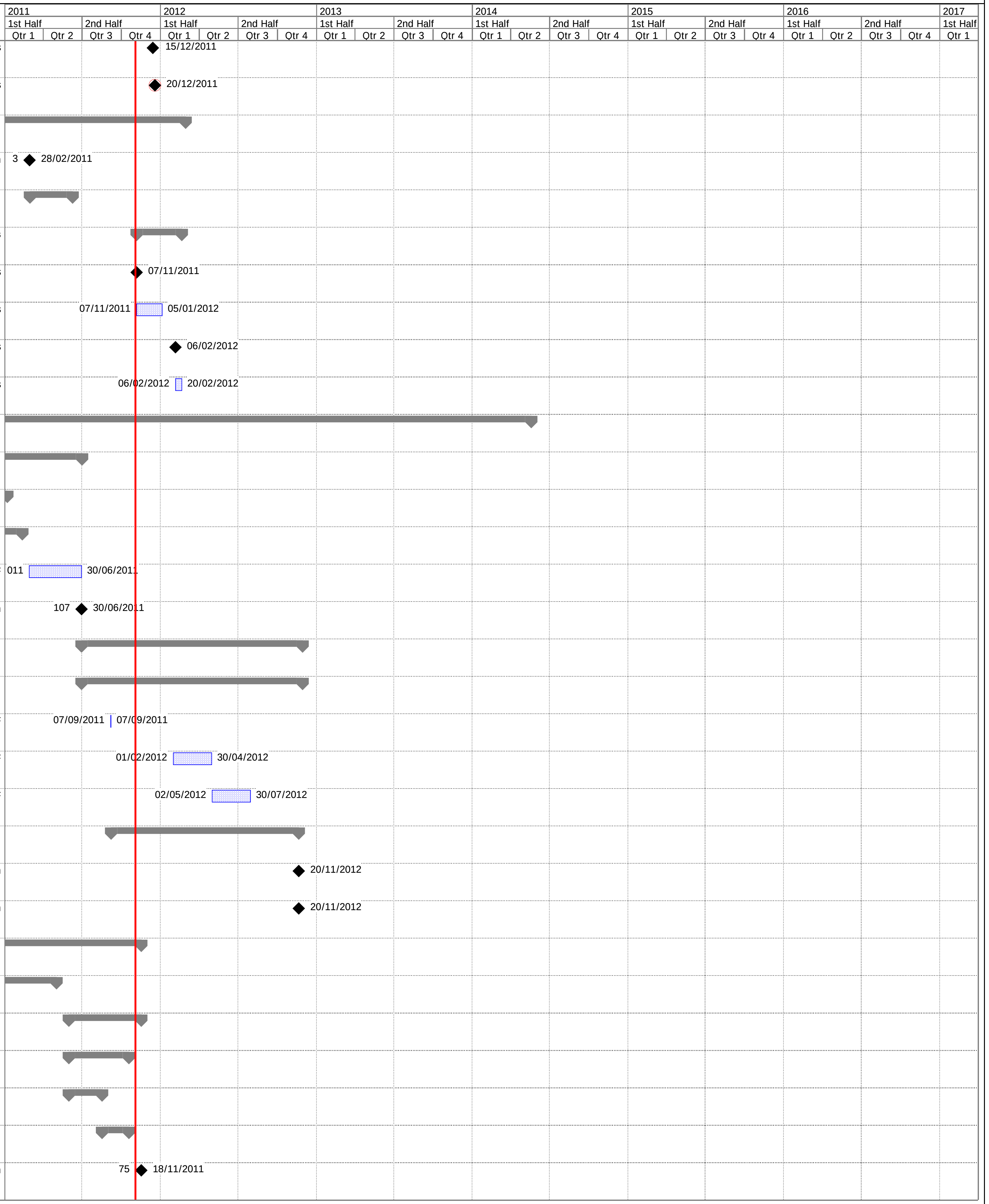


	Task	▨	Task	▨	Critical Milestone	◆	Milestone	◆	Critical Task	▨	Project Summary	▬	Group By Summary	▬

T2S Operational Plan with Critical Path

31/10/2011

ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
336	536200	Confirm comprehensiveness to start feasibility assessment	◆	0d	Thu 15/12/11	Thu 15/12/11	CSDs,CBs
337	212100	**Synchronization Point [SP1 - Start Feasibility Confirmed]**	◆	0d	Tue 20/12/11	Tue 20/12/11	Eurosystem,CSDs,CBs
338	**260100**	**Graphical User Interface (GUI)**		**535d**	**Fri 12/02/10**	**Thu 01/03/12**	
358	281100	[Deliverable] - Graphical User Interface (GUI) Business Functionalities	◆	0d	Mon 28/02/11	Mon 28/02/11	Eurosystem
359	**281200**	**GUI Screens Workshops**	◆	**72d**	**Wed 02/03/11**	**Thu 09/06/11**	
366	**281800**	**GUI Usability Workshops after SIBOS**		**76d**	**Mon 07/11/11**	**Mon 20/02/12**	**Eurosystem,CSDs,CBs**
367	281850	Sixth Workshop on T2S GUI	◆	0d	Mon 07/11/11	Mon 07/11/11	Eurosystem,CSDs,CBs
368	281900	Market Feedbacks on T2S GUI	◆	44d	Mon 07/11/11	Thu 05/01/12	CSDs,CBs
369	281950	Seventh Workshop on T2S GUI	◆	0d	Mon 06/02/12	Mon 06/02/12	Eurosystem,CSDs,CBs
370	282000	Market Feedbacks on T2S GUI	◆	11d	Mon 06/02/12	Mon 20/02/12	CSDs,CBs
373	**282200**	**DOCUMENTATION**		**1045d**	**Tue 04/05/10**	**Mon 19/05/14**	
374	**252100**	**T2S Smooth Cross CSD settlement**		**305d**	**Tue 04/05/10**	**Fri 01/07/11**	
378	**253200**	**1st Mini-consultation**	◆	**89d**	**Wed 08/09/10**	**Fri 07/01/11**	
391	**257275**	**2nd Mini-consultation**	◆	**55d**	**Tue 30/11/10**	**Fri 11/02/11**	
405	257500	Preparation of final deliverable of smooth cross-CSD settlement in T2S	◆	89d	Mon 28/02/11	Thu 30/06/11	TF
411	259100	[Deliverable] - T2S Smooth Cross CSD settlement Report V1.0	◆	0d	Thu 30/06/11	Thu 30/06/11	Eurosystem
412	**259200**	**Adaptation to Cross CSD settlement**	◆	**369d**	**Fri 01/07/11**	**Thu 29/11/12**	
413	**259300**	**Task Force Activities/Meetings**		**369d**	**Fri 01/07/11**	**Thu 29/11/12**	
416	259600	1st Task Force meeting	◆	1d	Wed 07/09/11	Wed 07/09/11	TF
418	259800	Mini-consultation 1	◆	64d	Wed 01/02/12	Mon 30/04/12	TF
420	260000	Mini-consultation 2	◆	64d	Wed 02/05/12	Mon 30/07/12	TF
428	**261600**	**Preparation of Adaptation to T2S Cross CSD settlement**		**313d**	**Thu 08/09/11**	**Tue 20/11/12**	
430	261900	Final Delivery of the TF Report to the AG		0d	Tue 20/11/12	Tue 20/11/12	Eurosystem
431	262000	[Deliverable] - Adaptation to Cross CSD settlement Report	◆	0d	Tue 20/11/12	Tue 20/11/12	Eurosystem
432	**224200**	**Business Process Description (BPD)**		**389d**	**Tue 25/05/10**	**Fri 18/11/11**	
445	**225150**	**BPD V0.1**		**198d**	**Fri 30/07/10**	**Mon 02/05/11**	
465	**225550**	**BPD V1.0**		**122d**	**Wed 01/06/11**	**Fri 18/11/11**	
466	**227300**	**On going process of reviewing Business Process Description with the Market**		**101d**	**Wed 01/06/11**	**Wed 19/10/11**	
467	**227400**	**First Phase: Production of Business Process Description V0.3**		**56d**	**Wed 01/06/11**	**Wed 17/08/11**	
475	**228600**	**Second Phase: Production of Business Process Description V1.0 (including V0.3 & V0.4)**		**45d**	**Wed 17/08/11**	**Wed 19/10/11**	
486	230000	[Deliverable] - Business Process Description V 1.0 (BPD)	◆	0d	Fri 18/11/11	Fri 18/11/11	Eurosystem

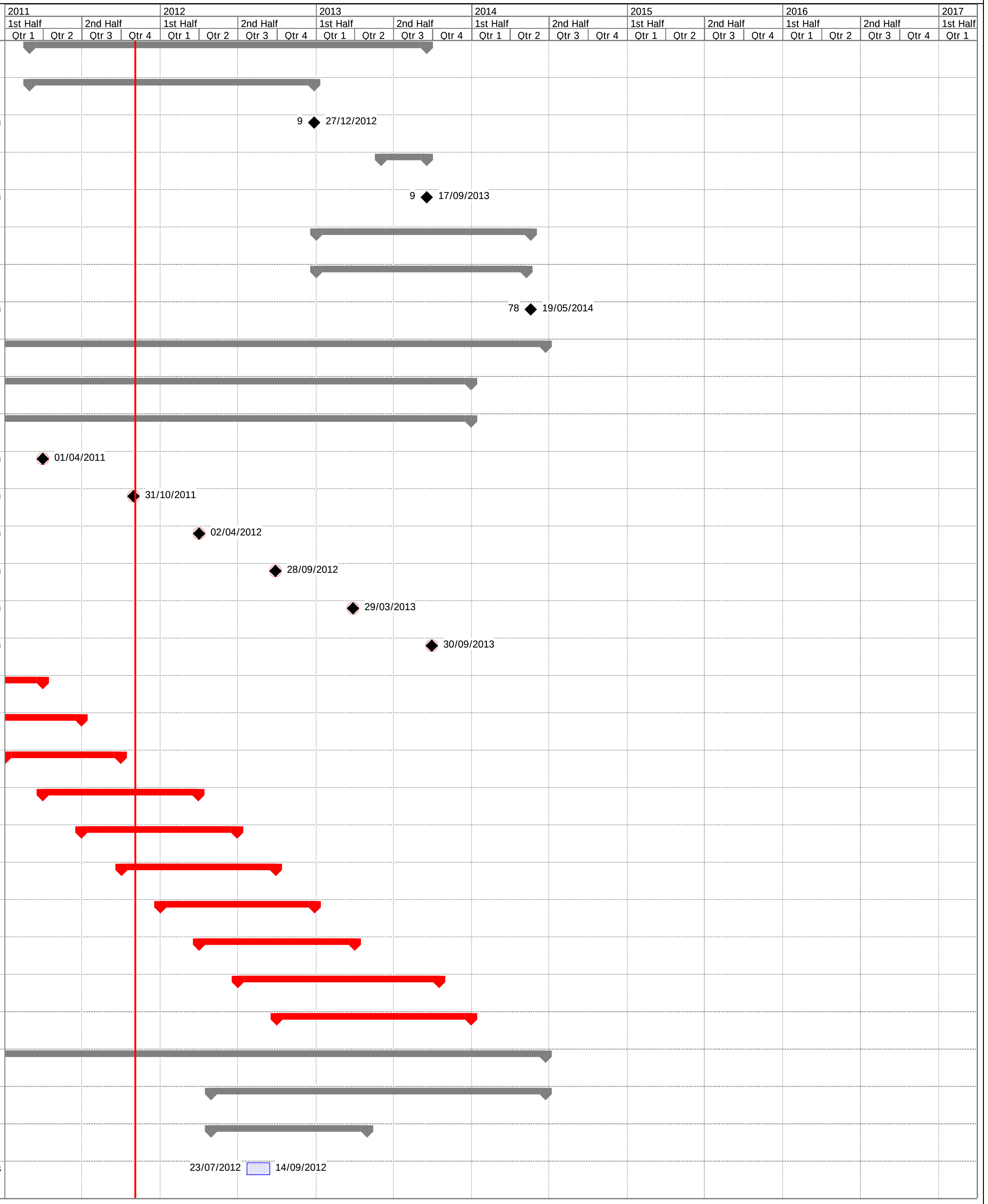


Task	▨	Task	▨	Critical Milestone	◆	Milestone	◆	Critical Task	▨	Project Summary	▬	Group By Summary	▬

T2S Operational Plan with Critical Path

31/10/2011

ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
487	**304100**	**User Handbook (UHB)**		**661d**	**Mon 28/02/11**	**Tue 17/09/13**	
488	**311100**	**User Handbook V1.0**		**475d**	**Mon 28/02/11**	**Thu 27/12/12**	
505	324100	[Deliverable] -User Hand Book (UHB) V1.0	◆	0d	Thu 27/12/12	Thu 27/12/12	Eurosystem
506	**325100**	**User Handbook V 2.0**		**77d**	**Mon 03/06/13**	**Tue 17/09/13**	
517	335200	[Deliverable] - User Hand Book V2.0 (UHB)	◆	0d	Tue 17/09/13	Tue 17/09/13	Eurosystem
518	**34101**	**T2S Glossary**		**353d**	**Wed 02/01/13**	**Mon 19/05/14**	
519	**34114**	**Internal Eurosystem Preparation [T2S Glossary]**		**347d**	**Wed 02/01/13**	**Fri 09/05/14**	
532	35100	[Deliverable] - T2S Glossary V1.0		0d	Mon 19/05/14	Mon 19/05/14	Eurosystem
533	**414300**	**DEVELOPMENT**		**1615d**	**Tue 01/04/08**	**Mon 23/06/14**	
534	**414400**	**SOFTWARE AND 4CB TESTING**		**1232d**	**Wed 01/04/09**	**Mon 30/12/13**	
541	**339100**	**Application Development & Internal Testing**		**1232d**	**Wed 01/04/09**	**Mon 30/12/13**	
543	351130	Development Process - M2 - UDFS/IDFS stabilised and integrated in the development process iterations		0d	Fri 01/04/11	Fri 01/04/11	Eurosystem
544	353130	Development process - M3 – Interfaces specifications frozen (UDFS/GUI): iteration 5 technically integrated and tested		0d	Mon 31/10/11	Mon 31/10/11	Eurosystem
545	354130	Development Process - M4 - Start of 4CB IAC		0d	Mon 02/04/12	Mon 02/04/12	Eurosystem
546	355140	Development process – M5 – Technical stability		0d	Fri 28/09/12	Fri 28/09/12	Eurosystem
547	361101	Development process – M6 – Functional stability		0d	Fri 29/03/13	Fri 29/03/13	Eurosystem
548	339200	Development process – M7 – 4CB Internal Acceptance check point – Progress status		0d	Mon 30/09/13	Mon 30/09/13	Eurosystem
559	**350100**	**Iteration 3**		**197d**	**Thu 01/07/10**	**Thu 31/03/11**	
563	**351100**	**Iteration 4**		**196d**	**Fri 01/10/10**	**Thu 30/06/11**	
568	**352100**	**Iteration 5**		**195d**	**Mon 03/01/11**	**Fri 30/09/11**	
573	**353100**	**Iteration 6**		**261d**	**Fri 01/04/11**	**Fri 30/03/12**	
579	**354100**	**Iteration 7**		**261d**	**Fri 01/07/11**	**Fri 29/06/12**	
585	**355100**	**Iteration 8**		**260d**	**Mon 03/10/11**	**Fri 28/09/12**	
591	**356100**	**Iteration 9**		**257d**	**Mon 02/01/12**	**Fri 28/12/12**	
597	**357100**	**Iteration 10**		**256d**	**Mon 02/04/12**	**Mon 01/04/13**	
603	**365200**	**Iteration 11**		**332d**	**Mon 02/07/12**	**Wed 16/10/13**	
617	**369700**	**Iteration 12**		**318d**	**Mon 01/10/12**	**Mon 30/12/13**	
622	**370100**	**INFRASTRUCTURE**		**1615d**	**Tue 01/04/08**	**Mon 23/06/14**	
633	**377150**	**4CB - Infrastructure Test**		**550d**	**Mon 30/04/12**	**Mon 23/06/14**	
634	**377155**	**Preparation Non functional test cases**		**257d**	**Mon 30/04/12**	**Tue 30/04/13**	
641	377650	Exchanges with the market (non functional test cases)	◆	40d	Mon 23/07/12	Fri 14/09/12	Eurosystem,CSDs,CBs

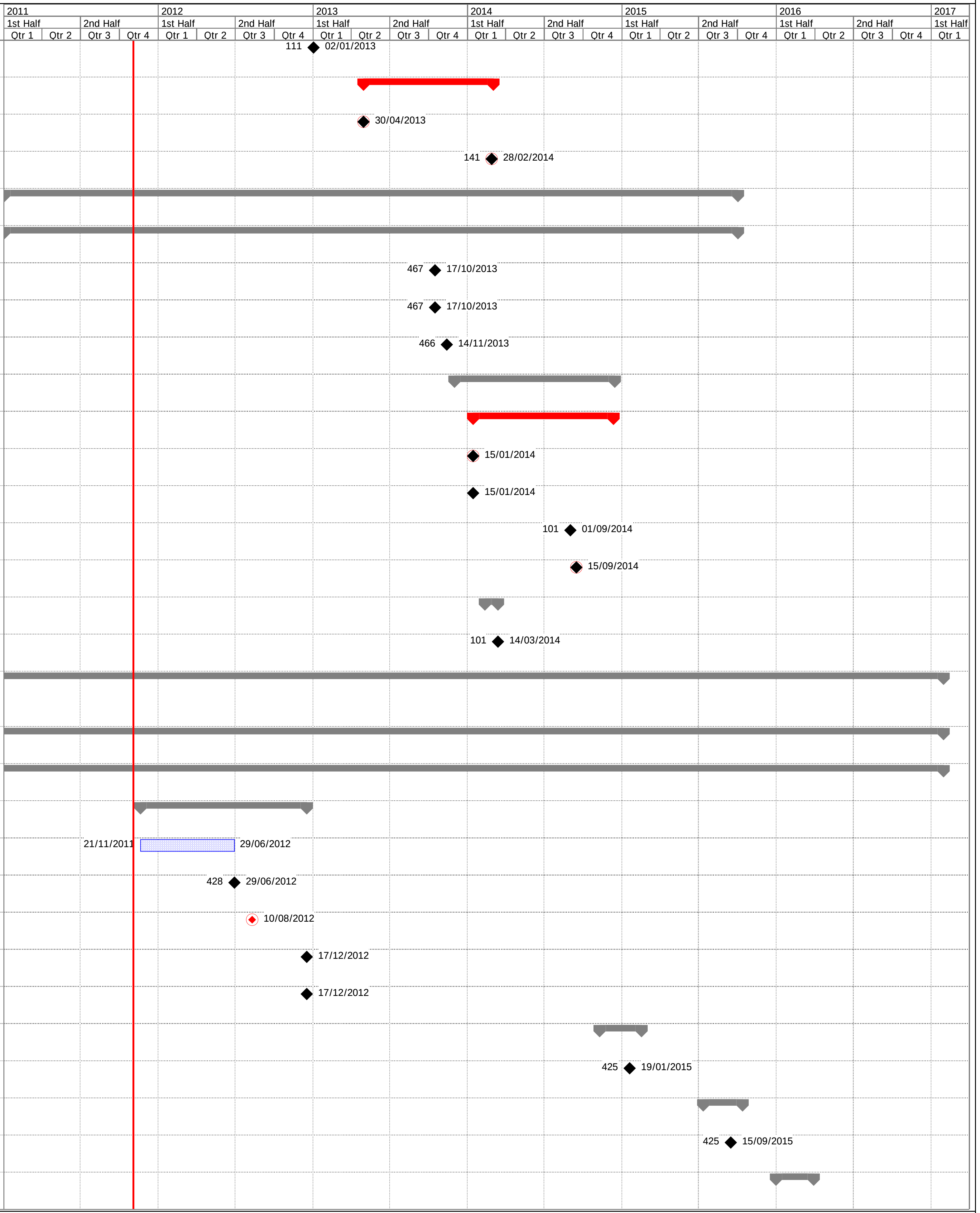


Task	▨	Task	▨	Critical Milestone	◆	Milestone	◆	Critical Task	🟥	Project Summary	▬	Group By Summary	▬

T2S Operational Plan with Critical Path

31/10/2011

ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
648	380110	[Deliverable] - T2S Non-functional Testing Scenarios	◆	0d	Wed 02/01/13	Wed 02/01/13	Eurosystem
651	**380300**	**Execution Non functional test cases**		**214d**	**Tue 30/04/13**	**Mon 03/03/14**	
652	378101	Start Execution Infrastructure test		0d	Tue 30/04/13	Tue 30/04/13	Eurosystem
659	386100	[Deliverable] - Non Functional Testing Report	◆	0d	Fri 28/02/14	Fri 28/02/14	Eurosystem
664	**388100**	**EUROSYSTEM ACCEPTANCE TEST**		**1225d**	**Mon 03/01/11**	**Fri 02/10/15**	
665	**389200**	**EAT PREPARATION**		**1225d**	**Mon 03/01/11**	**Fri 02/10/15**	
983	451300	[Deliverable] - CSDs Market specific test cases for EAT V1.0	◆	0d	Thu 17/10/13	Thu 17/10/13	CSDs
984	451700	[Deliverable] - CBs Market specific test cases for EAT V1.0	◆	0d	Thu 17/10/13	Thu 17/10/13	CBs
1045	451400	[Deliverable] - EAT Documentation V1.0 (EAT Test Sets)		0d	Thu 14/11/13	Thu 14/11/13	Eurosystem
1071	**482300**	**EAT EXECUTION**		**265d**	**Mon 02/12/13**	**Mon 15/12/14**	
1074	**485100**	**Execution Phase EAT Critical**		**236d**	**Wed 15/01/14**	**Fri 12/12/14**	
1075	464150	**Synchronization Point [SP5: Start of Eurosystem Acceptance Test]**		0d	Wed 15/01/14	Wed 15/01/14	Eurosystem
1076	486120	Start EAT - Eurosystem Acceptance Test (following the Entry Criteria)		0d	Wed 15/01/14	Wed 15/01/14	Eurosystem
1089	493130	[Deliverable] EAT Assessment Report	◆	0d	Mon 01/09/14	Mon 01/09/14	Eurosystem
1090	493160	Go-no go decision with CSDs to start the User Testing	◆	0d	Mon 15/09/14	Mon 15/09/14	T2SPB
1094	**498100**	**EAT Status update (recurrent task during EAT phase until 1 month prior the start of UT)**		**23d**	**Wed 12/02/14**	**Fri 14/03/14**	
1099	451800	[Deliverable] - EAT Status update (recurrent task)	◆	0d	Fri 14/03/14	Fri 14/03/14	Eurosystem
1194	**524100**	**CLIENT READINESS**		**2134d**	**Mon 17/11/08**	**Mon 30/01/17**	
1195	**524200**	**SYNCHRONISATION AND ON-BOARDING**		**2134d**	**Mon 17/11/08**	**Mon 30/01/17**	
1196	**534200**	**CSD READINESS**		**1950d**	**Fri 31/07/09**	**Mon 30/01/17**	
1275	**536000**	**CSDs Feasibility Assessment**		**280d**	**Mon 21/11/11**	**Mon 17/12/12**	
1276	536100	Preparation of impact assessment and adaptation plan by CSDs	◆	160d	Mon 21/11/11	Fri 29/06/12	CSDs
1277	213100	[Deliverable] - CSD Feasibility Assessment	◆	0d	Fri 29/06/12	Fri 29/06/12	CSDs
1281	214100	**Synchronization Point [SP2 - Feasibility Confirmation by CSD/CB]**	◆	0d	Fri 10/08/12	Fri 10/08/12	Eurosystem
1284	553000	Update on CSD Feasibility Assessment	◆	0d	Mon 17/12/12	Mon 17/12/12	CSDs
1285	553100	**Synchronisation Point [SP3 - T2S Programme Plan Comprehensiveness]**	◆	0d	Mon 17/12/12	Mon 17/12/12	Eurosystem,CSD
1546	**625200**	**Proof of Eligibility to Participate in T2S (Wave 1)**		**67d**	**Mon 10/11/14**	**Mon 16/02/15**	
1553	625600	[Deliverable] - Proof of Eligibility to Participate in T2S (Wave 1)	◆	0d	Mon 19/01/15	Mon 19/01/15	CSDs
1556	**625900**	**Proof of Eligibility to Participate in T2S (Wave 2)**		**67d**	**Mon 13/07/15**	**Tue 13/10/15**	
1563	626700	[Deliverable] - Proof of Eligibility to Participate in T2S (Wave 2)	◆	0d	Tue 15/09/15	Tue 15/09/15	CSDs
1566	**627000**	**Proof of Eligibility to Participate in T2S (Wave 3)**		**67d**	**Fri 01/01/16**	**Tue 29/03/16**	



Task	▨	Task	▨	Critical Milestone	◆	Milestone	◆	Critical Task	▨	Project Summary	▬	Group By Summary	▬

T2S Operational Plan with Critical Path

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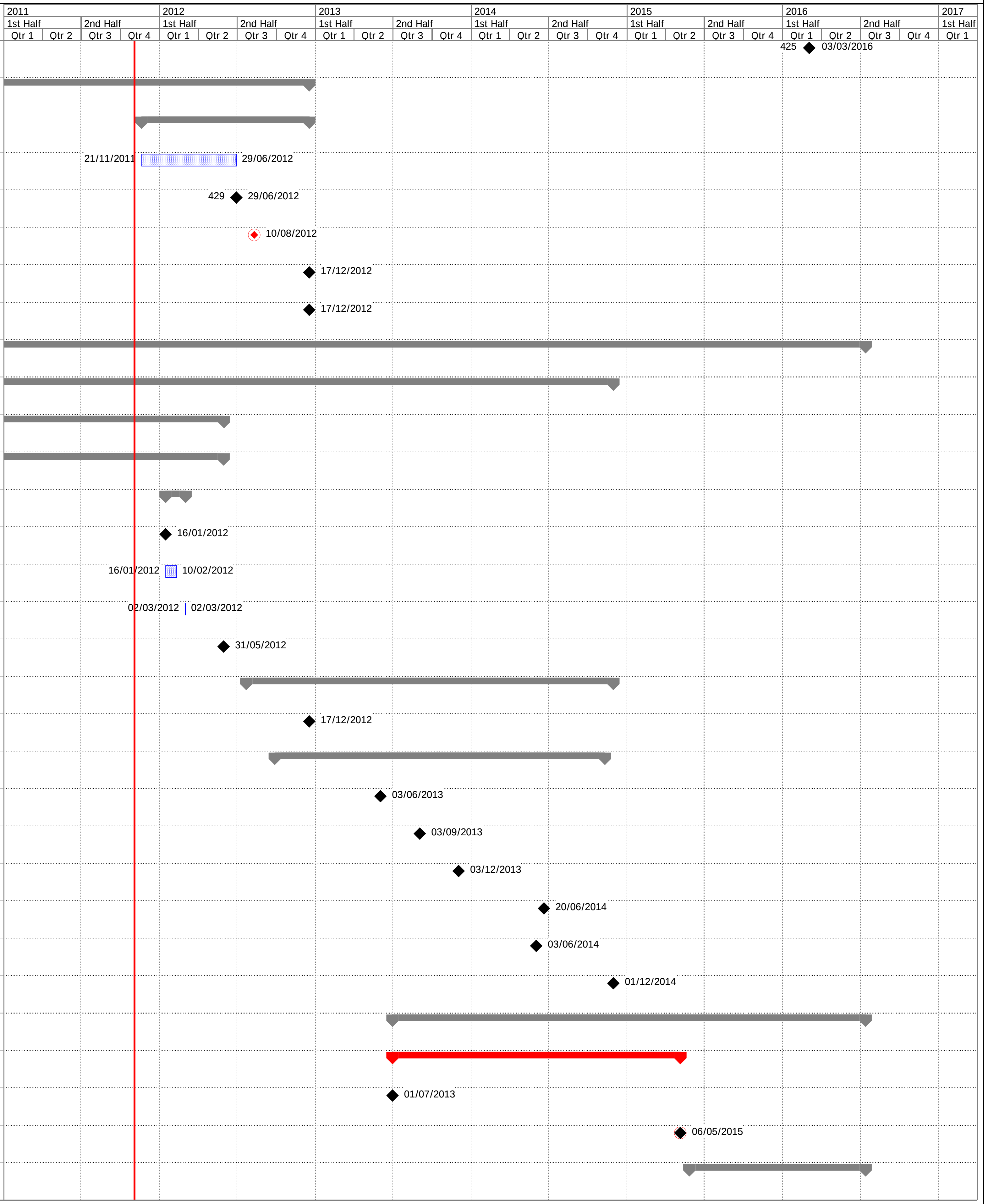
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
1573	628000	[Deliverable] - Proof of Eligibility to Participate in T2S (Wave 3)	◆	0d	Thu 03/03/16	Thu 03/03/16	CSDs
1576	**544100**	**CB READINESS**		**882d**	**Fri 31/07/09**	**Mon 17/12/12**	
1581	**536300**	**CBs Feasibility Assessment**		**280d**	**Mon 21/11/11**	**Mon 17/12/12**	
1582	536310	Preparation of impact assessment and adaptation plan by CBs	◆	160d	Mon 21/11/11	Fri 29/06/12	CBs
1583	546500	[Deliverable] - CB Feasibility Assessment	◆	0d	Fri 29/06/12	Fri 29/06/12	CBs
1587	546600	**Synchronization Point [SP2 - Feasibility Confirmation by CSD/CB]**	◆	0d	Fri 10/08/12	Fri 10/08/12	Eurosystem
1590	553200	Update on CB Feasibility Assessment	◆	0d	Mon 17/12/12	Mon 17/12/12	CBs
1591	546800	**Synchronisation Point [SP3 - T2S Programme Plan Comprehensiveness]**	◆	0d	Mon 17/12/12	Mon 17/12/12	Eurosystem,CB
1633	**516600**	**USER TRAINING AND TESTING**		**1953d**	**Fri 02/01/09**	**Wed 13/07/16**	
1634	**555100**	**TRAINING PREPARATION**		**1119d**	**Mon 02/08/10**	**Mon 01/12/14**	
1635	**556100**	**Preparation of the T2S Training Framework**		**480d**	**Mon 02/08/10**	**Thu 31/05/12**	
1645	**558100**	**Training Framework Phase**		**436d**	**Thu 30/09/10**	**Thu 31/05/12**	
1654	**559700**	**Consultation of Public Training Framework V0.1 with CSDs and CBs**		**35d**	**Mon 16/01/12**	**Fri 02/03/12**	
1655	559800	Delivery of Public Training Framework V0.1 to the CSDs and CBs for advice	◆	0d	Mon 16/01/12	Mon 16/01/12	Eurosystem
1656	559900	Feedback from CSDs and CBs on Public Training Framework v0.1	◆	20d	Mon 16/01/12	Fri 10/02/12	CSDs,CBs
1658	556500	Workshop with CSDs and CBs on Public Training Framework V0.1 (in case of need)	◆	1d	Fri 02/03/12	Fri 02/03/12	ECB,4CB,CSDs,CBs
1668	562100	[Deliverable] - T2S Public Training Framework V1.0	◆	0d	Thu 31/05/12	Thu 31/05/12	Eurosystem
1678	**563100**	**Training Materials preparation**		**603d**	**Mon 23/07/12**	**Mon 01/12/14**	
1685	566400	Publication of T2S Training Calendar		0d	Mon 17/12/12	Mon 17/12/12	Eurosystem
1686	**566500**	**Internal Eurosystem Preparation [Training Materials]**		**540d**	**Fri 28/09/12**	**Mon 10/11/14**	
1700	568100	[Deliverable] - Basic Training Materials	◆	0d	Mon 03/06/13	Mon 03/06/13	Eurosystem
1702	568400	[Deliverable] - Technical Training Materials	◆	0d	Tue 03/09/13	Tue 03/09/13	Eurosystem
1704	568600	[Deliverable] - Functional Training Materials	◆	0d	Tue 03/12/13	Tue 03/12/13	Eurosystem
1706	568800	[Deliverable] - Operational Training Materials	◆	0d	Fri 20/06/14	Fri 20/06/14	Eurosystem
1708	569000	[Deliverable] - Testing Training Materials	◆	0d	Tue 03/06/14	Tue 03/06/14	Eurosystem
1710	569200	[Deliverable] - Migration Training Materials	◆	0d	Mon 01/12/14	Mon 01/12/14	Eurosystem
1711	**574200**	**TRAINING EXECUTION**		**786d**	**Mon 01/07/13**	**Wed 13/07/16**	
1712	**575100**	**Training Session**		**471d**	**Mon 01/07/13**	**Wed 06/05/15**	
1713	575101	Start training session	◆	0d	Mon 01/07/13	Mon 01/07/13	Eurosystem,CSDs,CBs
1721	580150	CSDs and CBs training sessions finalised before wave 1	◆	0d	Wed 06/05/15	Wed 06/05/15	Eurosystem,CSDs,CBs
1722	**581100**	**Refresh-training before go-live**		**300d**	**Thu 28/05/15**	**Wed 13/07/16**	



Task ▭	Task ▭	Critical Milestone ◈	Milestone ◆	Critical Task ▭	Project Summary ▬	Group By Summary ▬

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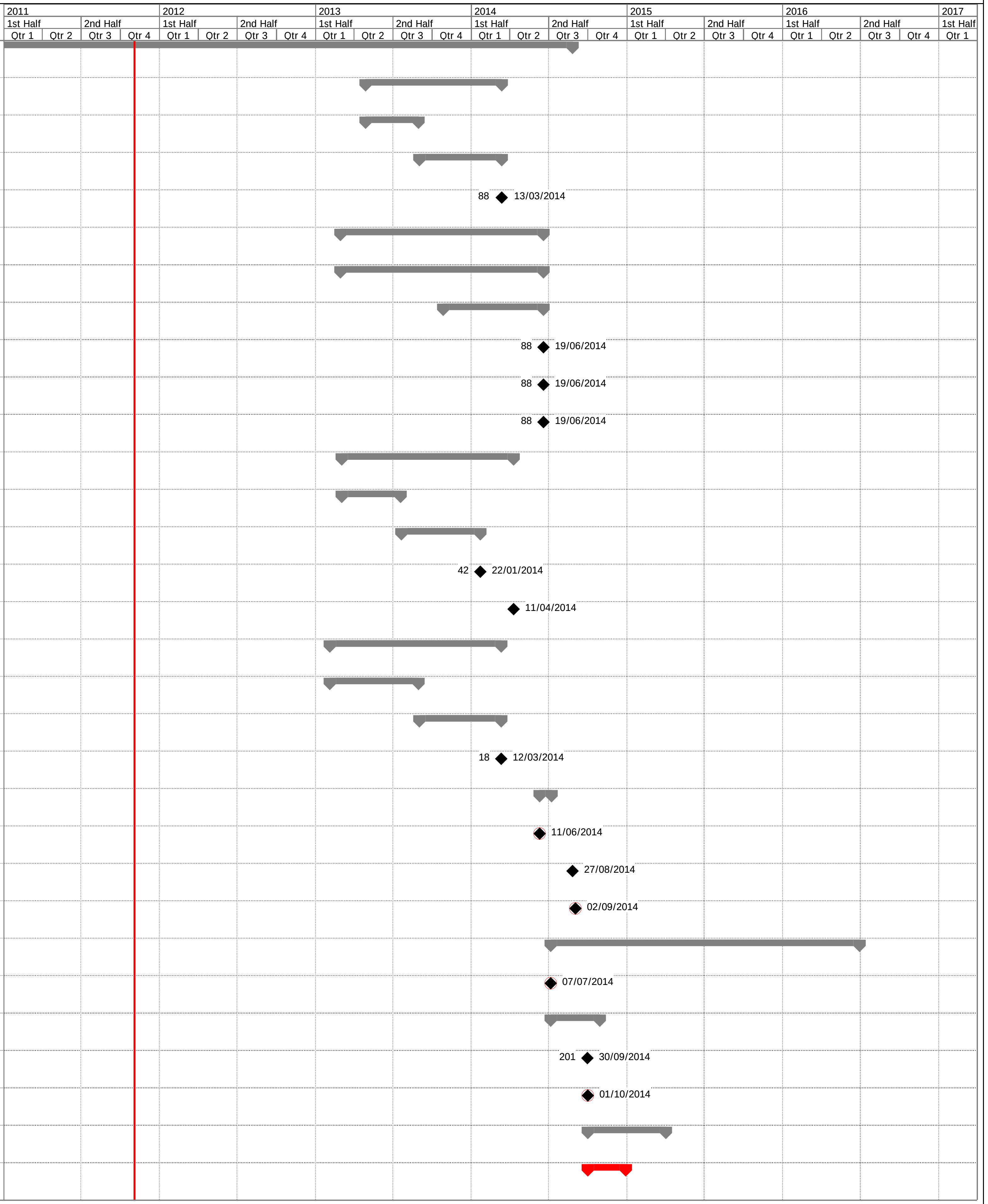
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
1726	**583100**	**USER TESTING PREPARATION**		**1463d**	**Fri 02/01/09**	**Wed 27/08/14**	
1734	**592200**	**T2S User Testing Calendar**		**224d**	**Mon 29/04/13**	**Thu 13/03/14**	
1735	**592300**	**Internal Eurosystem Preparation [T2S User Testing Calendar]**		**90d**	**Mon 29/04/13**	**Fri 30/08/13**	
1739	**593400**	**Market consultation on T2S User Testing calendar**	◆	**134d**	**Mon 02/09/13**	**Thu 13/03/14**	
1756	597300	[Deliverable] - User Testing Calendar	◆	0d	Thu 13/03/14	Thu 13/03/14	Eurosystem
1757	**616200**	**Certification Test Sets**		**334d**	**Fri 01/03/13**	**Thu 19/06/14**	
1758	**616300**	**Internal Eurosystem Preparation [Certification Test Sets]**		**334d**	**Fri 01/03/13**	**Thu 19/06/14**	
1762	**616540**	**Market Consultation/Information on Certification test sets**	◆	**164d**	**Mon 28/10/13**	**Thu 19/06/14**	
1780	634600	[Deliverable] - CSD Certification Test Cases	◆	0d	Thu 19/06/14	Thu 19/06/14	Eurosystem
1781	634700	[Deliverable] - CB Certification Test Cases	◆	0d	Thu 19/06/14	Thu 19/06/14	Eurosystem
1782	634800	[Deliverable] - DCP Certification Test Cases	◆	0d	Thu 19/06/14	Thu 19/06/14	Eurosystem
1807	**603100**	**UT Registration Guide**		**284d**	**Mon 04/03/13**	**Fri 11/04/14**	
1808	**603200**	**Internal Eurosystem Preparation [UT Registration Guide]**		**100d**	**Mon 04/03/13**	**Fri 19/07/13**	
1812	**606140**	**Market information on UT Registration Guide**	◆	**128d**	**Mon 22/07/13**	**Wed 22/01/14**	
1827	607200	[Deliverable] - Registration Guide for User Testing	◆	0d	Wed 22/01/14	Wed 22/01/14	Eurosystem
1828	627100	Completed UT Registration Guide for User Testing (network registration)	◆	0d	Fri 11/04/14	Fri 11/04/14	CSDs,CBs
1829	**611100**	**User Testing Guide**		**283d**	**Mon 04/02/13**	**Wed 12/03/14**	
1830	**611200**	**Internal Eurosystem Preparation [User Testing Guide]**		**150d**	**Mon 04/02/13**	**Fri 30/08/13**	
1834	**612240**	**Market consultation on User Testing Guide**	◆	**133d**	**Mon 02/09/13**	**Wed 12/03/14**	
1849	616100	[Deliverable] - User Testing Guide	◆	0d	Wed 12/03/14	Wed 12/03/14	Eurosystem
1865	**630100**	**UT Environment Preparation**		**20d**	**Wed 11/06/14**	**Tue 08/07/14**	
1869	634200	UT environment ready	◆	0d	Wed 11/06/14	Wed 11/06/14	Eurosystem
1870	634300	Delivery updated version of the EAT Status update	◆	0d	Wed 27/08/14	Wed 27/08/14	Eurosystem
1871	497100	**Synchronization Point [SP6 - Eurosystem Ready for User Testing]**	◆	0d	Tue 02/09/14	Tue 02/09/14	Eurosystem
1879	**636100**	**USER TESTING EXECUTION**		**517d**	**Mon 07/07/14**	**Wed 29/06/16**	
1880	645100	**Synchronization Point [SP7 - Start Connectivity Testing]**	◆	0d	Mon 07/07/14	Mon 07/07/14	Eurosystem,CSDs,CBs
1881	**645150**	**Connectivity Testing for Interoperability wave 1**		**82d**	**Mon 07/07/14**	**Wed 29/10/14**	
1886	646160	[Deliverable] - User Testing Stage Report (Wave 1) V1.0 [Connectivity phase]	◆	0d	Tue 30/09/14	Tue 30/09/14	Eurosystem
1890	649200	**Synchronization Point [SP8 - Start Bilateral Interoperability Testing]**	◆	0d	Wed 01/10/14	Wed 01/10/14	Eurosystem,CSDs,CBs
1891	**649250**	**Acceptance Phase**		**126d**	**Thu 02/10/14**	**Thu 02/04/15**	
1892	**647200**	**CSD Acceptance phase wave 1**	◆	**60d**	**Thu 02/10/14**	**Mon 29/12/14**	



Task	▨	Task	▨	Critical Milestone	◆	Milestone	◆	Critical Task	▨	Project Summary	▬	Group By Summary	▬

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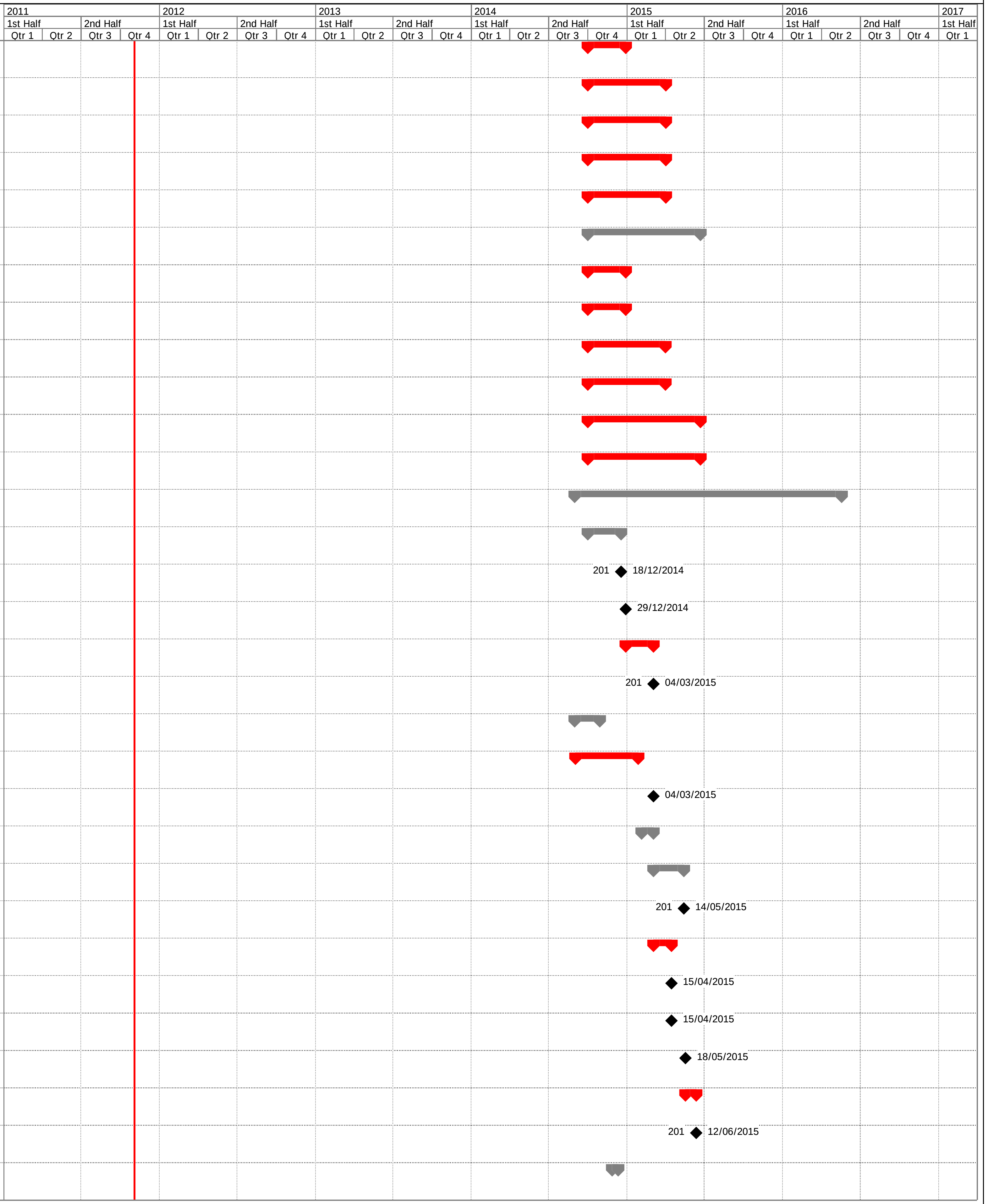
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
1896	649000	CB Acceptance phase wave 1	◆	60d	Thu 02/10/14	Mon 29/12/14	
1900	647350	CSD Acceptance phase wave 2	◆	126d	Thu 02/10/14	Thu 02/04/15	
1904	649300	CB Acceptance phase wave 2	◆	126d	Thu 02/10/14	Thu 02/04/15	
1908	647450	CSD Acceptance phase wave 3	◆	126d	Thu 02/10/14	Thu 02/04/15	
1912	649700	CB Acceptance phase wave 3	◆	126d	Thu 02/10/14	Thu 02/04/15	
1916	647550	Certification Phase		184d	Thu 02/10/14	Mon 22/06/15	
1917	647600	CSD Certification phase wave 1	◆	60d	Thu 02/10/14	Mon 29/12/14	
1921	647890	CB Certification phase wave 1	◆	60d	Thu 02/10/14	Mon 29/12/14	
1925	647990	CSD Certification phase wave 2	◆	125d	Thu 02/10/14	Wed 01/04/15	
1929	648290	CB Certification phase wave 2	◆	125d	Thu 02/10/14	Wed 01/04/15	
1933	648390	CSD Certification phase wave 3	◆	184d	Thu 02/10/14	Mon 22/06/15	
1937	648590	CB Certification phase wave 3	◆	184d	Thu 02/10/14	Mon 22/06/15	
1941	650100	Interoperability - Community - Business Day Testing Wave 1		447d	Mon 01/09/14	Wed 18/05/16	
1942	652100	Interoperability Bilateral Testing Wave 1		55d	Wed 01/10/14	Thu 18/12/14	
2001	714280	[Deliverable] - User Testing Stage Report (Wave 1) V1.1 Interoperability Bilateral phase]	◆	0d	Thu 18/12/14	Thu 18/12/14	Eurosystem
2002	714300	Synchronization Point [SP9.1 - Start Multilateral Interoperability Testing (wave 1)]	◆	0d	Mon 29/12/14	Mon 29/12/14	Eurosystem,CSDs,CBs
2003	722000	Interoperability Multilateral testing Wave 1	◆	45d	Tue 30/12/14	Wed 04/03/15	
2007	723100	[Deliverable] - User Testing Stage Report (Wave 1) V1.2 [Interoperability Multilateral phase]	◆	0d	Wed 04/03/15	Wed 04/03/15	Eurosystem
2040	726400	Connectivity Testing for Migration wave 1		42d	Mon 01/09/14	Wed 29/10/14	
2044	726800	Migration Wave 1	◆	100d	Wed 03/09/14	Tue 27/01/15	
2053	730100	Synchronization Point [SP10.1 - Start Community Testing Wave 1]	◆	0d	Wed 04/03/15	Wed 04/03/15	Eurosystem,CSDs,CBs
2054	730200	Connectivity Testing for Community wave 1		20d	Thu 05/02/15	Wed 04/03/15	
2057	731100	Community testing Wave 1		50d	Wed 04/03/15	Thu 14/05/15	
2120	789400	[Deliverable] - User Testing Stage Report (Wave 1) V1.3 [Community phase]	◆	0d	Thu 14/05/15	Thu 14/05/15	Eurosystem
2121	789500	DCP-DCAH Certification phase wave 1	◆	30d	Thu 05/03/15	Wed 15/04/15	
2124	789800	[Deliverable] - Certification report for DCPs (Wave 1)	◆	0d	Wed 15/04/15	Wed 15/04/15	Eurosystem
2127	792000	[Deliverable] - Certification report for DCAH (Wave 1)	◆	0d	Wed 15/04/15	Wed 15/04/15	Eurosystem
2128	796000	Synchronization Point [SP11.1 - Start Business Day Testing Wave 1]	◆	0d	Mon 18/05/15	Mon 18/05/15	Eurosystem,CSDs,CBs
2129	796100	Business day test Wave 1		19d	Mon 18/05/15	Fri 12/06/15	
2153	832300	[Deliverable] - User Testing Stage Report (Wave 1) V1.4 [Business day phase]	◆	0d	Fri 12/06/15	Fri 12/06/15	Eurosystem
2154	832400	Progress Report Wave 1(recurrent task during UT phase until End of User Testing Wave 1)	◆	10d	Fri 28/11/14	Thu 11/12/14	



Task ▨ Task ▨ Critical Milestone ◈ Milestone ◆ Critical Task ▨ Project Summary ▬ Group By Summary ▬

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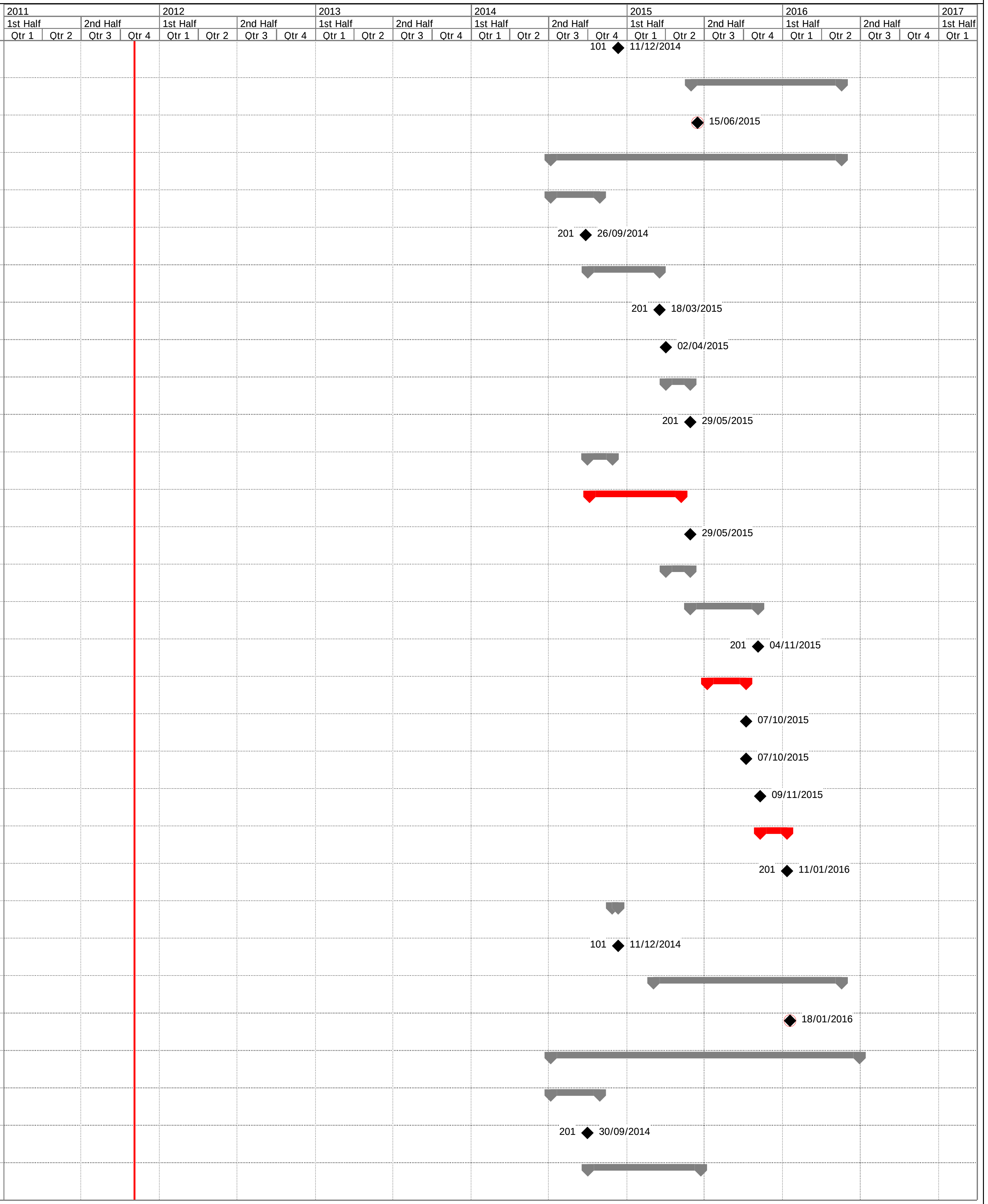
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
2156	832600	[Deliverable] - Progress Report Wave 1	◆	0d	Thu 11/12/14	Thu 11/12/14	CSDs,CBs
2157	**836100**	**Support Testing for other waves**	◆	**258d**	**Mon 01/06/15**	**Wed 18/05/16**	
2160	833100	**Synchronization Point [SP12.1 - End of User Testing Execution Phase Wave 1]**	◆	0d	Mon 15/06/15	Mon 15/06/15	Eurosystem,CSDs,CBs
2161	**840100**	**Interoperability - Community - Business Day Testing Wave 2**		**487d**	**Mon 07/07/14**	**Wed 18/05/16**	
2162	**840200**	**Connectivity Testing for Interoperability wave 2**		**82d**	**Mon 07/07/14**	**Wed 29/10/14**	
2167	840560	[Deliverable] - User Testing Stage Report (Wave 2) V2.0 [Connectivity phase]	◆	0d	Fri 26/09/14	Fri 26/09/14	Eurosystem
2168	**842100**	**Interoperability Bilateral testing Waves 2**		**115d**	**Wed 01/10/14**	**Wed 18/03/15**	
2227	914180	[Deliverable] - User Testing Stage Report (Wave 2) V2.1 [Interoperability Bilateral phase]	◆	0d	Wed 18/03/15	Wed 18/03/15	Eurosystem
2228	913000	**Synchronization Point [SP9.2 - Start Multilateral Interoperability Testing (wave 2)]**	◆	0d	Thu 02/04/15	Thu 02/04/15	Eurosystem,CSDs,CBs
2229	**911000**	**Interoperability Multilateral testing Wave 2**	◆	**40d**	**Fri 03/04/15**	**Fri 29/05/15**	
2233	913100	[Deliverable] - User Testing Stage Report (Wave 2) V2.2 [Interoperability Multilateral phase]	◆	0d	Fri 29/05/15	Fri 29/05/15	Eurosystem
2266	**917300**	**Connectivity Testing for Migration wave 2**		**42d**	**Wed 01/10/14**	**Fri 28/11/14**	
2270	**917700**	**Migration Wave 2**	◆	**150d**	**Mon 06/10/14**	**Fri 08/05/15**	
2280	920100	**Synchronization Point [SP10.2 - Start Community Testing Wave 2]**	◆	0d	Fri 29/05/15	Fri 29/05/15	Eurosystem,CSDs,CBs
2281	**920200**	**Connectivity Testing for Community wave 2**		**40d**	**Fri 03/04/15**	**Fri 29/05/15**	
2284	**922100**	**Community Testing Wave 2**		**115d**	**Fri 29/05/15**	**Wed 04/11/15**	
2347	979300	[Deliverable] - User Testing Stage Report (Wave 2) V2.3 [Community phase]	◆	0d	Wed 04/11/15	Wed 04/11/15	Eurosystem
2348	**979400**	**DCP-DCAH Certification phase wave 2**	◆	**65d**	**Thu 09/07/15**	**Wed 07/10/15**	
2351	979700	[Deliverable] - Certification report for DCPs (Wave 2)	◆	0d	Wed 07/10/15	Wed 07/10/15	Eurosystem
2354	981000	[Deliverable] - Certification report for DCAH (Wave 2)	◆	0d	Wed 07/10/15	Wed 07/10/15	Eurosystem
2355	1024400	**Synchronization Point [SP11.2 - Start Business Day Testing Wave 2]**	◆	0d	Mon 09/11/15	Mon 09/11/15	Eurosystem,CSDs,CBs
2356	**986100**	**Business day test Wave 2**		**44d**	**Mon 09/11/15**	**Mon 11/01/16**	
2380	1022300	[Deliverable] - User Testing Stage Report (Wave 2) V2.4 [Business day phase]	◆	0d	Mon 11/01/16	Mon 11/01/16	Eurosystem
2381	**1022500**	**Progress Report Wave 2 (recurrent task during UT phase End of User Testing Wave 2)**	◆	**10d**	**Fri 28/11/14**	**Thu 11/12/14**	
2383	1022700	[Deliverable] - Progress Report Wave 2 (recurrent task)	◆	0d	Thu 11/12/14	Thu 11/12/14	CSDs,CBs
2384	**1022800**	**Support Testing for other waves**	◆	**319d**	**Thu 05/03/15**	**Wed 18/05/16**	
2387	1023100	**Synchronization Point [SP12.2 - End of User Testing Execution Phase Wave 2]**	◆	0d	Mon 18/01/16	Mon 18/01/16	Eurosystem,CSDs,CBs
2388	**2200000**	**Interoperability - Community - Business Day Testing Wave 3**		**517d**	**Mon 07/07/14**	**Wed 29/06/16**	
2389	**2200100**	**Connectivity Testing for Interoperability wave 3**		**82d**	**Mon 07/07/14**	**Wed 29/10/14**	
2394	2200600	[Deliverable] - User Testing Stage Report (Wave 3) V3.0 [Connectivity phase]	◆	0d	Tue 30/09/14	Tue 30/09/14	Eurosystem
2395	**2201000**	**Interoperability Bilateral testing Wave 3**		**185d**	**Wed 01/10/14**	**Tue 23/06/15**	



Task	▨	Task	▨	Critical Milestone	◆	Milestone	◆	Critical Task	▨	Project Summary	▬	Group By Summary	▬

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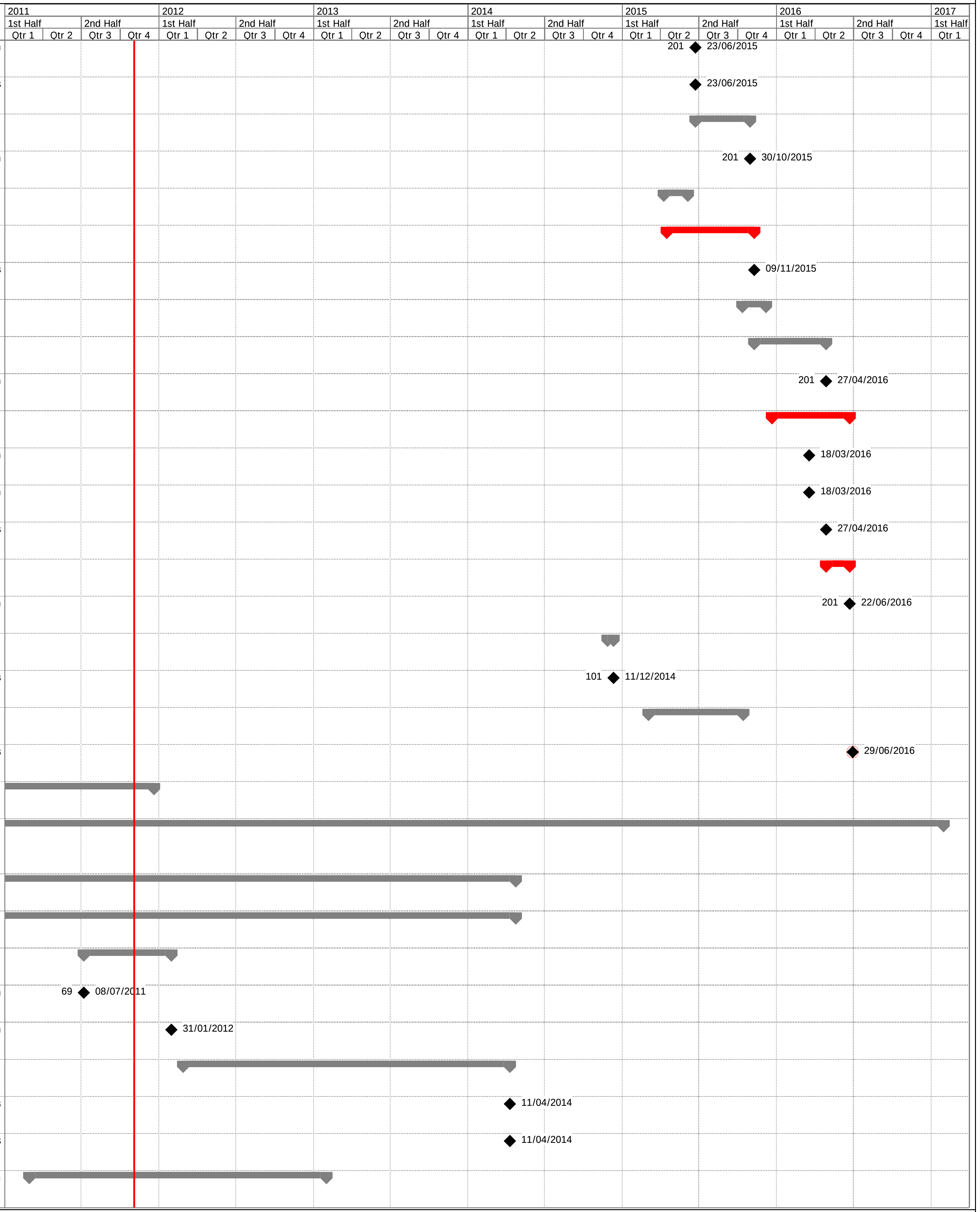
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
2457	2273080	[Deliverable] - User Testing Stage Report (Wave 3) V3.1 Interoperability Bilateral phase]	◆	0d	Tue 23/06/15	Tue 23/06/15	Eurosystem
2458	2273500	**Synchronization Point [SP9.3 - Start Multilateral Interoperability Testing (wave 3)]**	◆	0d	Tue 23/06/15	Tue 23/06/15	Eurosystem,CSDs,CBs
2459	**2273100**	**Interoperability Multilateral testing Wave 3**	◆	**93d**	**Wed 24/06/15**	**Fri 30/10/15**	
2463	2275000	[Deliverable] - User Testing Stage Report(Wave 3) V3.2 [Interoperability Multilateral phase]	◆	0d	Fri 30/10/15	Fri 30/10/15	Eurosystem
2496	**2282050**	**Connectivity Testing for Migration wave 3**		**40d**	**Fri 10/04/15**	**Fri 05/06/15**	
2500	**2282400**	**Migration Wave 3**	◆	**148d**	**Fri 17/04/15**	**Mon 09/11/15**	
2510	2284000	**Synchronization Point [SP10.3 - Start Community Testing Wave 3]**	◆	0d	Mon 09/11/15	Mon 09/11/15	Eurosystem,CSDs,CBs
2511	**2284100**	**Connectivity Testing for Community wave 3**		**40d**	**Tue 13/10/15**	**Mon 07/12/15**	
2514	**2285000**	**Community testing Wave 3**		**125d**	**Mon 09/11/15**	**Wed 27/04/16**	
2577	2345100	[Deliverable] - User Testing Stage Report (Wave 3) V3.3 [Community phase]	◆	0d	Wed 27/04/16	Wed 27/04/16	Eurosystem
2578	**2346000**	**DCP-DCAH Certification phase wave 3**	◆	**135d**	**Tue 22/12/15**	**Wed 22/06/16**	
2581	2346300	[Deliverable] - Certification report for DCPs (Wave 3)	◆	0d	Fri 18/03/16	Fri 18/03/16	Eurosystem
2584	2346700	[Deliverable] - Certification report for DCAH (Wave 3)	◆	0d	Fri 18/03/16	Fri 18/03/16	Eurosystem
2585	2351100	**Synchronization Point [SP11.3 - Start Business Day Testing Wave 3]**	◆	0d	Wed 27/04/16	Wed 27/04/16	Eurosystem,CSDs,CBs
2586	**2352000**	**Business day test Wave 3**		**40d**	**Wed 27/04/16**	**Wed 22/06/16**	
2610	2390200	[Deliverable] - User Testing Stage Report (Wave 3) V3.4 [Business day phase]	◆	0d	Wed 22/06/16	Wed 22/06/16	Eurosystem
2611	**2391000**	**Progress Report Wave 3 (recurrent task during UT phase End of User Testing Wave 3)**	◆	**10d**	**Fri 28/11/14**	**Thu 11/12/14**	
2613	2391200	[Deliverable] - Progress Report Wave 3 (recurrent task)	◆	0d	Thu 11/12/14	Thu 11/12/14	CSDs,CBs
2614	**2394400**	**Support Testing for other waves**	◆	**161d**	**Thu 05/03/15**	**Wed 14/10/15**	
2617	2394200	**Synchronization Point [SP12.3 - End of User Testing Execution Phase Wave 3]**	◆	0d	Wed 29/06/16	Wed 29/06/16	Eurosystem,CSDs,CBs
2619	**1310100**	**CONTRACTUAL FRAMEWORK**		**602d**	**Tue 01/09/09**	**Wed 21/12/11**	
2748	**1027100**	**OPERATIONAL READINESS**		**1984d**	**Mon 15/06/09**	**Mon 30/01/17**	
2749	**1027200**	**NETWORK AND CONNECTIVITY**		**1260d**	**Mon 15/06/09**	**Thu 24/04/14**	
2750	**1028100**	**NETWORK AND CONNECTIVITY**		**1260d**	**Mon 15/06/09**	**Thu 24/04/14**	
2809	**1063480**	**Tender process for Value-Added Services (VA-NSPs)**		**147d**	**Fri 08/07/11**	**Tue 31/01/12**	
2811	1059100	[Deliverable] - Tender for Network Connectivity (VAN)		0d	Fri 08/07/11	Fri 08/07/11	Eurosystem
2814	1061100	Signature of Network Service Provider Agreement		0d	Tue 31/01/12	Tue 31/01/12	Eurosystem
2815	**1062000**	**CSDs - Network Service Provider negotiations**		**543d**	**Tue 28/02/12**	**Fri 11/04/14**	
2818	1063120	CSD: Network Agreement Contract signed	◆	0d	Fri 11/04/14	Fri 11/04/14	CSDs
2821	1063190	CB: Network Agreement Contract signed	◆	0d	Fri 11/04/14	Fri 11/04/14	CBs
2822	**1060500**	**Tender process for Dedicated line (DL-NSPs) (to be updated after PB meeting in June)**		**498d**	**Tue 01/03/11**	**Thu 31/01/13**	**Eurosystem**



Task	▨	Task	▨	Critical Milestone	◆	Milestone	◆	Critical Task	▨	Project Summary	▬	Group By Summary	▬

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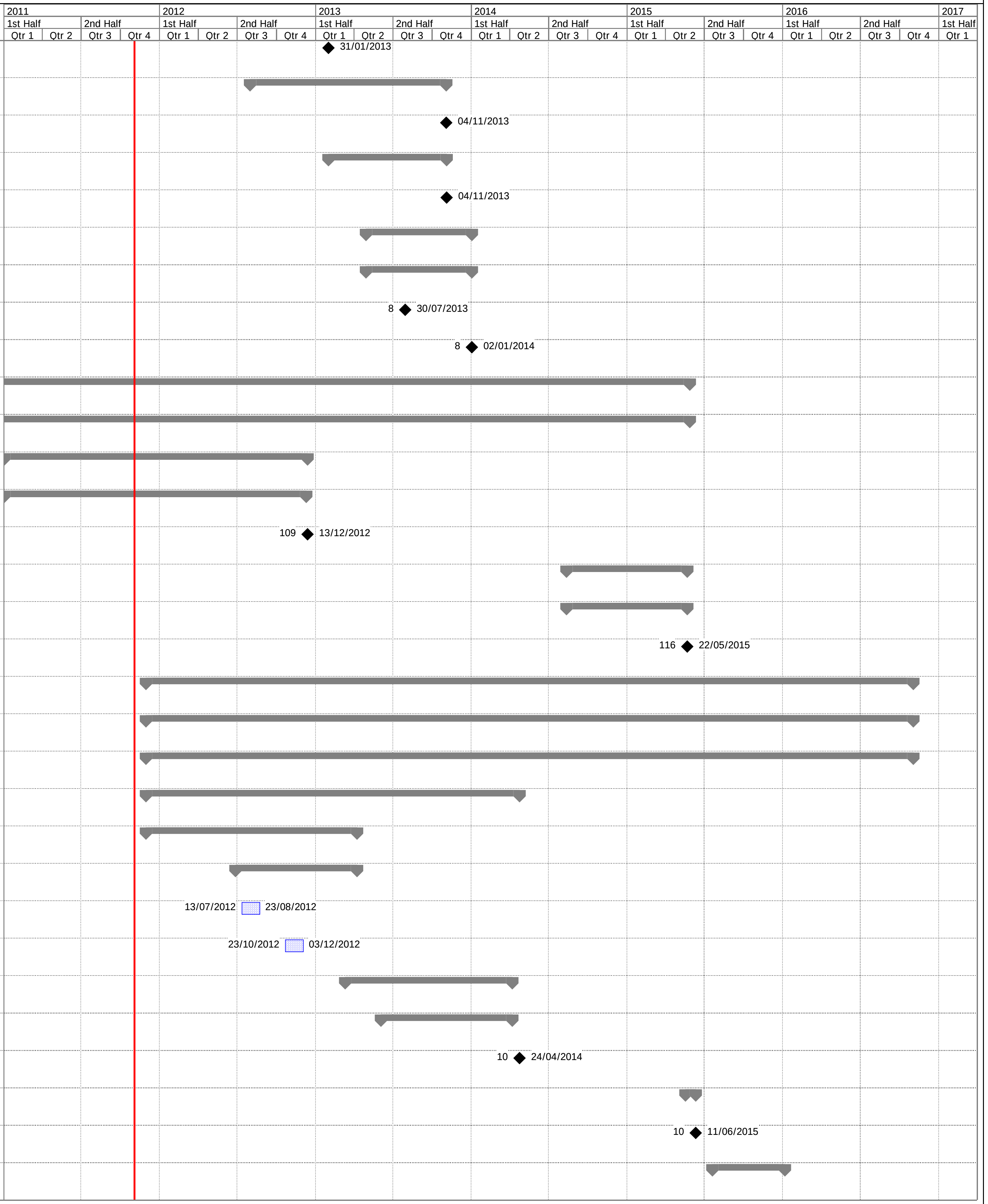
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
2829	1061000	Contract Signature for dedicated link	◆	0d	Thu 31/01/13	Thu 31/01/13	Eurosystem
2837	**1064100**	**Implementation Phase 2 - VAN Network**		**322d**	**Wed 01/08/12**	**Mon 04/11/13**	
2842	1067100	Start of VAN Networks connectivity tests with CSDs/CBs (Finish acceptance VAN Networks by 4CB)		0d	Mon 04/11/13	Mon 04/11/13	Eurosystem
2843	**1077300**	**Implementation - Phase 2 - Dedicated Links**		**196d**	**Fri 01/02/13**	**Mon 04/11/13**	**Eurosystem**
2847	1077700	Start of DL connectivity tests with DiCoAs		0d	Mon 04/11/13	Mon 04/11/13	Eurosystem
2849	**1037100**	**Implementation - Phase 3 - Network - Connectivity Guides**		**173d**	**Tue 30/04/13**	**Thu 02/01/14**	
2850	**1038100**	**Internal Eurosystem Preparation [Connectivity Guide]**		**173d**	**Tue 30/04/13**	**Thu 02/01/14**	
2852	1042200	[Deliverable] - Connectivity Guide for VAN and Direct connectivity (Testing) V1.0	◆	0d	Tue 30/07/13	Tue 30/07/13	Eurosystem
2855	1043100	[Deliverable] - Connectivity Guide for VAN and Direct connectivity V2.0	◆	0d	Thu 02/01/14	Thu 02/01/14	Eurosystem
2856	**1081100**	**INFORMATION SECURITY**		**1221d**	**Wed 01/09/10**	**Fri 29/05/15**	
2857	**1082100**	**INFORMATION SECURITY**		**1221d**	**Wed 01/09/10**	**Fri 29/05/15**	
2858	**1084280**	**T2S Threat Catalogue**		**508d**	**Mon 03/01/11**	**Thu 13/12/12**	
2859	**1084290**	**Internal Eurosystem Preparation [T2S Threat Catalogue]**		**505d**	**Mon 03/01/11**	**Mon 10/12/12**	
2867	1091500	[Deliverable] - T2S Threat Catalogue		0d	Thu 13/12/12	Thu 13/12/12	Eurosystem
2906	**1107250**	**Risk analysis on T2S Compliance with T2S Information Security policy [Risk evaluation table & Risk treatment plan]**		**197d**	**Wed 13/08/14**	**Fri 22/05/15**	
2907	**1107260**	**Internal Eurosystem Preparation [Risk analysis on T2S Compliance with T2S Information Security policy]**		**197d**	**Wed 13/08/14**	**Fri 22/05/15**	
2920	1108100	[Deliverable] - Risk Analysis on T2S Compliance with T2S Information Security policy	◆	0d	Fri 22/05/15	Fri 22/05/15	Eurosystem
2932	**1109200**	**OPERATIONS**		**1275d**	**Thu 01/12/11**	**Wed 02/11/16**	
2933	**1110100**	**OPERATIONAL PROCEDURES**		**1275d**	**Thu 01/12/11**	**Wed 02/11/16**	
2934	**1111100**	**Manual of Operational Procedures (MOP)**		**1275d**	**Thu 01/12/11**	**Wed 02/11/16**	
2935	**1111150**	**Production MOP V1.0 (before starting User Test)**		**616d**	**Thu 01/12/11**	**Thu 24/04/14**	
2936	**1112050**	**First set of review cycles**		**348d**	**Thu 01/12/11**	**Mon 08/04/13**	
2942	**1113500**	**First Market consultation on Manual of Operational Procedures (MOP)**	◆	**198d**	**Thu 28/06/12**	**Mon 08/04/13**	
2946	1115100	Review MOP V0.1 by OMG	◆	30d	Fri 13/07/12	Thu 23/08/12	OMG
2950	1119100	Review MOP V0.2 by OMG	◆	30d	Tue 23/10/12	Mon 03/12/12	OMG
2963	**1124000**	**Second set of review cycles**		**275d**	**Tue 12/03/13**	**Mon 07/04/14**	
2966	**1124300**	**Second Market consultation on Manual of Operational Procedures (MOP)**	◆	**215d**	**Tue 04/06/13**	**Mon 07/04/14**	
2983	1140100	[Deliverable] - Manual of Operational Procedures (MOP) V1.0 for Business Day Test wave 1	◆	0d	Thu 24/04/14	Thu 24/04/14	Eurosystem
2984	**1140200**	**Production MOP V1.2 (revised MOP V1.0 before Start Operation in T2S wave 1)**		**18d**	**Tue 19/05/15**	**Thu 11/06/15**	
2988	1121100	[Deliverable] - Manual of Operational Procedures (MOP) V1.2 before Start Operation in T2S Wave 1	◆	0d	Thu 11/06/15	Thu 11/06/15	Eurosystem
2989	**1121200**	**Production MOP V1.3 (revised MOP V1.2 after Start Operation in T2S wave 1 and during Business Day Test wave 2)**		**121d**	**Tue 21/07/15**	**Thu 07/01/16**	



Task ▨ Task ▨ Critical Milestone ◆ Milestone ◆ Critical Task ▨ Project Summary ▬ Group By Summary ▬

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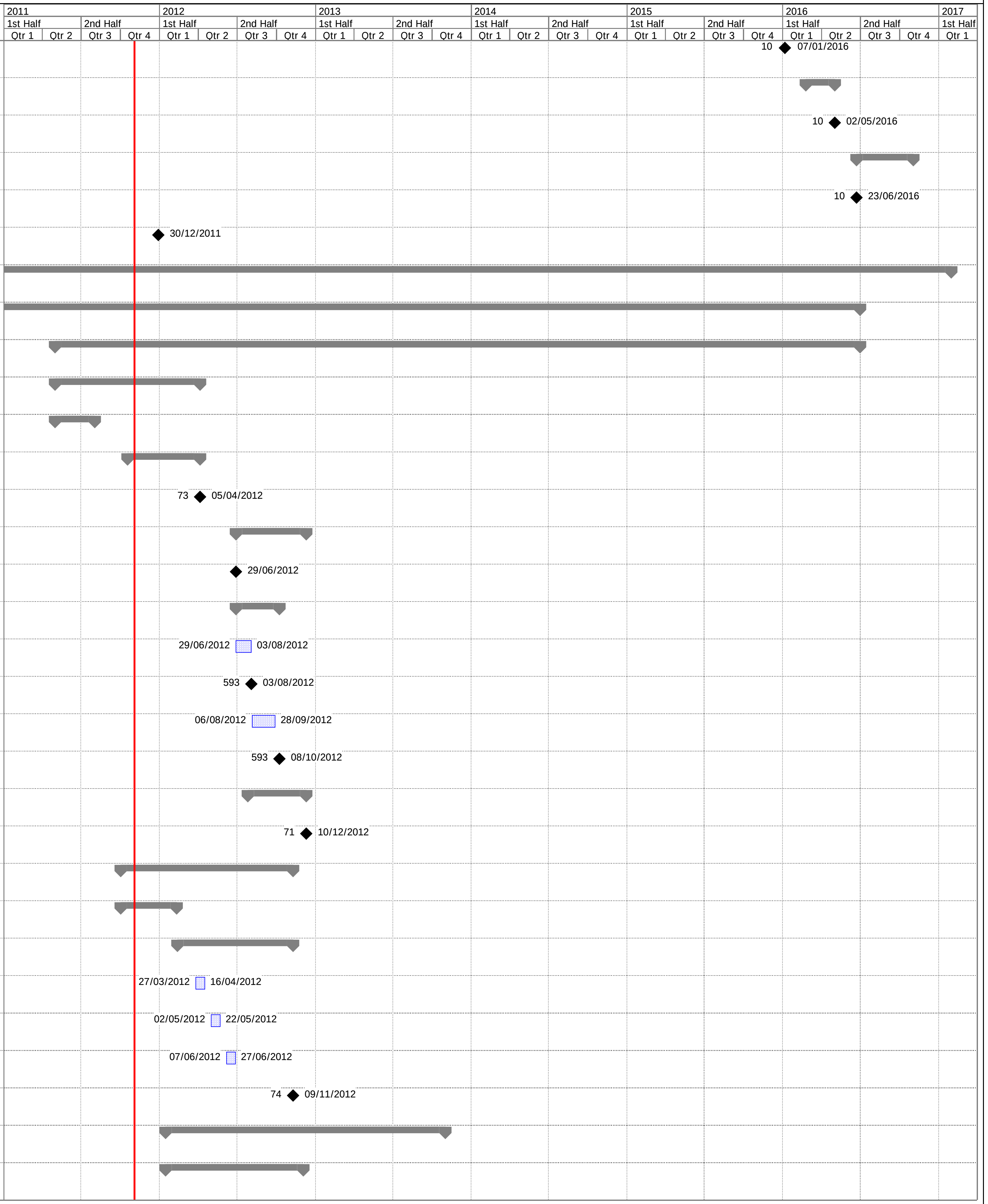
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
2995	1145200	[Deliverable] - Manual of Operational Procedures (MOP) V1.3 during Business Day Test Wave 2	◆	0d	Thu 07/01/16	Thu 07/01/16	Eurosystem
2996	**1145300**	**Production MOP V1.4 (revised MOP V1.3 after Start Operation in T2S wave 2 and during Business Day Test wave 3)**		**50d**	**Thu 25/02/16**	**Mon 02/05/16**	
3002	1145800	[Deliverable] - Manual of Operational Procedures (MOP) V1.4 during Business Day Test Wave 3	◆	0d	Mon 02/05/16	Mon 02/05/16	Eurosystem
3003	**1145900**	**Production MOP V2.0 (Operational activities after Start Operation in T2S wave 3)**		**97d**	**Thu 23/06/16**	**Wed 02/11/16**	
3009	1146050	[Deliverable] - Manual of Operational Procedures (MOP) V2.0 after start of operations in T2S of wave 3	◆	0d	Thu 23/06/16	Thu 23/06/16	Eurosystem
3017	1110200	**SERVICE LEVEL AGREEMENT**		0d	Fri 30/12/11	Fri 30/12/11	
3018	**1187100**	**MIGRATION**		**1956d**	**Thu 23/07/09**	**Mon 30/01/17**	
3019	**1187200**	**MIGRATION PREPARATION**		**1800d**	**Thu 23/07/09**	**Thu 30/06/16**	
3027	**1200100**	**Preparation phase**		**1337d**	**Mon 02/05/11**	**Thu 30/06/16**	
3028	**1201100**	**Processes and tools for Data Migration**		**244d**	**Mon 02/05/11**	**Thu 05/04/12**	
3029	**1201200**	**Internal Eurosystem Preparation [Processes and tools for Data Migration]**		**67d**	**Mon 02/05/11**	**Tue 02/08/11**	
3033	**1203400**	**Market consultation on Processes and tools for Data Migration**	◆	**122d**	**Wed 19/10/11**	**Thu 05/04/12**	
3049	1206100	[Deliverable] - User Requirements for data migration tools V1.0	◆	0d	Thu 05/04/12	Thu 05/04/12	Eurosystem
3050	**1207100**	**Composition of Migration Waves & Dates**		**116d**	**Fri 29/06/12**	**Mon 10/12/12**	
3051	1207150	Reception of Proposal of migration waves plus migration dates for each CSD/CB (as part of the feasibility study)	◆	0d	Fri 29/06/12	Fri 29/06/12	CSDs,CBs
3052	**1207200**	**Eurosystem consultation: review of CSDs proposal by the Eurosystem**	◆	**71d**	**Fri 29/06/12**	**Mon 08/10/12**	
3053	1209100	Coordination by Eurosystem of proposal for the Composition of migration waves (incl. CSD/CBs views)	◆	26d	Fri 29/06/12	Fri 03/08/12	Eurosystem,CSDs,CBs
3054	546350	[Deliverable] - Composition and Timing Migration Waves by CSDs/CBs	◆	0d	Fri 03/08/12	Fri 03/08/12	CSDs,CBs
3055	1209130	Evaluation by Eurosystem of proposal for the timing of migration waves (incl. CSD/CBs views)	◆	40d	Mon 06/08/12	Fri 28/09/12	Eurosystem,CSDs,CBs
3056	1209150	Confirmation of the Timing and Composition of Migration Waves by Eurosystem	◆	0d	Mon 08/10/12	Mon 08/10/12	Eurosystem
3057	**1209160**	**Market Consultation on Composition of Migration Waves & Dates (only whether CSDs proposal conflicts with migration criteria)**	◆	**96d**	**Fri 27/07/12**	**Mon 10/12/12**	
3075	1218000	[Deliverable] - Confirmation of composition and timing of Migration Waves V1.0	◆	0d	Mon 10/12/12	Mon 10/12/12	Eurosystem
3076	**1218100**	**Migration profiles & Registration Guide**		**289d**	**Mon 03/10/11**	**Fri 09/11/12**	
3077	**1218200**	**Internal Eurosystem Preparation [Migration profiles & Registration Guide]**		**95d**	**Mon 03/10/11**	**Fri 10/02/12**	
3080	**1220400**	**Market Consultation on Migration profiles & Registration Guide**	◆	**194d**	**Mon 13/02/12**	**Fri 09/11/12**	
3084	1222250	Review Migration profiles & Registration Guide V0.1 by MSG	◆	15d	Tue 27/03/12	Mon 16/04/12	OMG
3088	1222650	Review Migration profiles & Registration Guide V0.2 by MSG	◆	15d	Wed 02/05/12	Tue 22/05/12	OMG
3092	1222850	Review Migration profiles & Registration Guide V0.2 by MSG	◆	15d	Thu 07/06/12	Wed 27/06/12	OMG
3106	1222100	[Deliverable] - Registration Guide for Migration V1.0	◆	0d	Fri 09/11/12	Fri 09/11/12	Eurosystem
3107	**1228100**	**Standard Migration plans (including Fallback and Roll-back Procedures)**		**464d**	**Mon 16/01/12**	**Fri 01/11/13**	
3108	**1228200**	**Internal Eurosystem Preparation [Standard Migration plans (including Fallback and Roll-back Procedures)]**		**230d**	**Mon 16/01/12**	**Mon 03/12/12**	



Task	▨	Task	▨	Critical Milestone	◆	Milestone	◆	Critical Task	▨	Project Summary	▬	Group By Summary	▬

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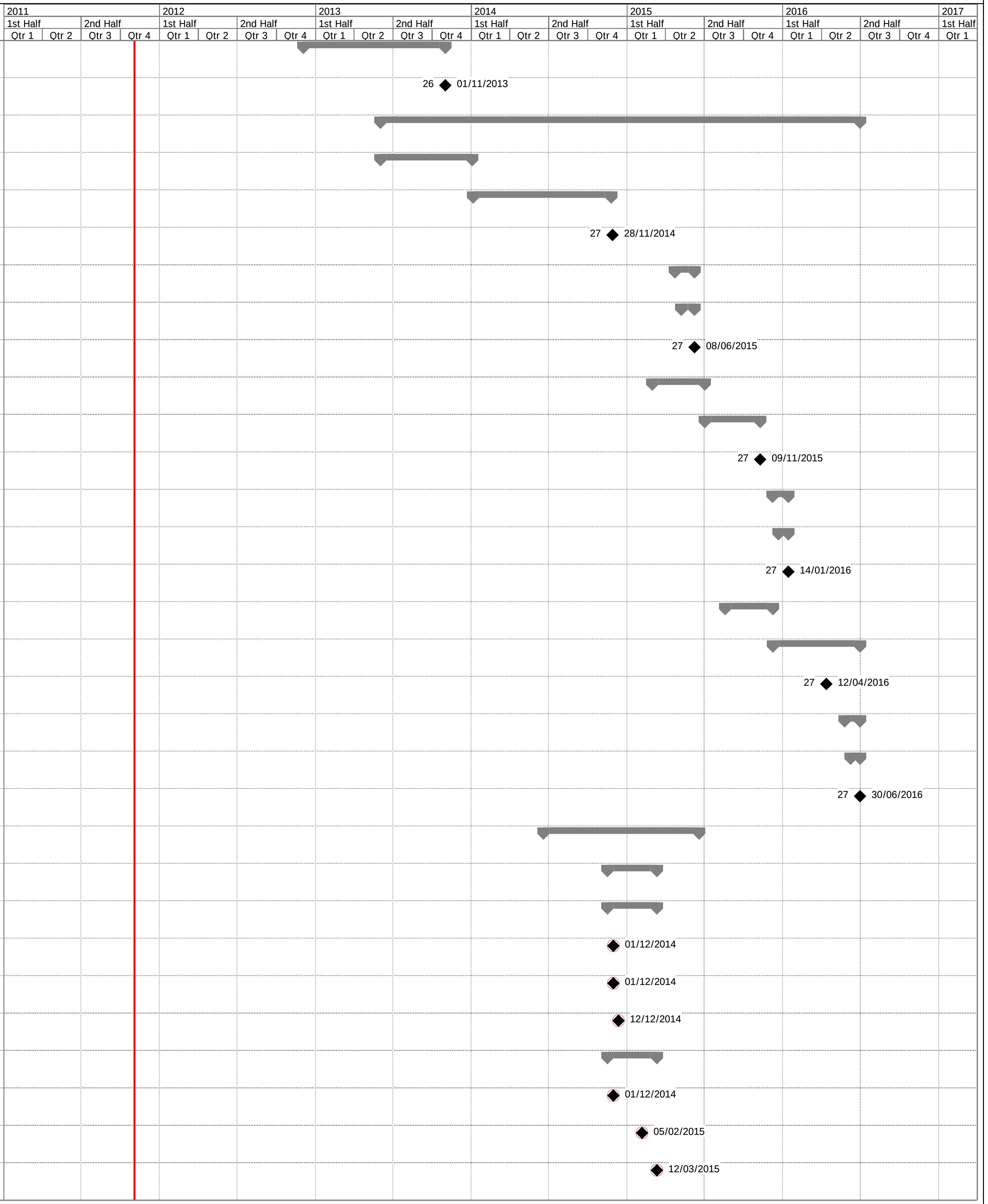
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
3113	**1229500**	**Market consultation on Standard Migration plan and Tailored**	◆	**234d**	**Tue 04/12/12**	**Fri 01/11/13**	
3143	1232800	[Deliverable] - Standard Migration Plan V1.0	◆	0d	Fri 01/11/13	Fri 01/11/13	Eurosystem
3144	**1232900**	**Migration Weekend Script (including Fallback and Roll-back Procedures)**		**797d**	**Mon 03/06/13**	**Thu 30/06/16**	
3145	**1233000**	**Internal Eurosystem Preparation [Migration Weekend Script for wave 1]**		**150d**	**Mon 03/06/13**	**Fri 03/01/14**	
3150	**1233340**	**Market consultation on Migration Weekend Script**	◆	**230d**	**Mon 06/01/14**	**Tue 25/11/14**	
3176	1235400	[Deliverable] - Detailed Migration Weekend Script V1.0 Wave 1	◆	0d	Fri 28/11/14	Fri 28/11/14	Eurosystem
3177	**1235500**	**Review Migration Weekend Script for wave 1 before Start Operation in T2S**		**31d**	**Fri 24/04/15**	**Mon 08/06/15**	
3179	**1235650**	**Market consultation Migration Weekend Script for wave 1 before Start Operation in T2S**	◆	**21d**	**Fri 08/05/15**	**Mon 08/06/15**	
3183	1236000	[Deliverable] - Detailed Migration Weekend Script V1.2 Wave 1	◆	0d	Mon 08/06/15	Mon 08/06/15	Eurosystem
3184	**1236400**	**Internal Eurosystem Preparation [Migration Weekend Script for wave 2]**		**90d**	**Mon 02/03/15**	**Thu 02/07/15**	
3187	**1236640**	**Market consultation Migration Weekend Script for wave 2**	◆	**92d**	**Fri 03/07/15**	**Mon 09/11/15**	
3196	1237300	[Deliverable] - Detailed Migration Weekend Script V2.2 Wave 2	◆	0d	Mon 09/11/15	Mon 09/11/15	Eurosystem
3197	**1237350**	**Review Migration Weekend Script for wave 2 before Start Operation in T2S wave 2**		**26d**	**Wed 09/12/15**	**Thu 14/01/16**	
3199	**1237450**	**Market consultation Migration Weekend Script for wave 2 before Start Operation in T2S**	◆	**16d**	**Tue 22/12/15**	**Thu 14/01/16**	
3203	1236020	[Deliverable] - Detailed Migration Weekend Script V2.4 Wave 2	◆	0d	Thu 14/01/16	Thu 14/01/16	Eurosystem
3204	**1237400**	**Internal Eurosystem Preparation [Migration Weekend Script for wave 3]**		**80d**	**Thu 20/08/15**	**Wed 09/12/15**	
3207	**1237540**	**Market consultation on Migration Weekend Script for wave 3**	◆	**149d**	**Thu 10/12/15**	**Thu 30/06/16**	
3216	1238200	[Deliverable] - Detailed Migration Weekend Script V3.2 Wave 3	◆	0d	Tue 12/04/16	Tue 12/04/16	Eurosystem
3217	**1234650**	**Review Migration Weekend Script for wave 3 before Start Operation in T2S wave 3**		**26d**	**Thu 26/05/16**	**Thu 30/06/16**	
3219	**1235710**	**Market consultation Migration Weekend Script for wave 3 before Start Operation in T2S**	◆	**16d**	**Wed 08/06/16**	**Thu 30/06/16**	
3223	1236040	[Deliverable] - Detailed Migration Weekend Script V3.4 Wave 3	◆	0d	Thu 30/06/16	Thu 30/06/16	Eurosystem
3239	**1269100**	**PRE-MIGRATION TASKS (WAVE 1)**		**255d**	**Fri 20/06/14**	**Fri 19/06/15**	
3240	**1235410**	**Implementation Migration phase (wave 1)**		**80d**	**Mon 17/11/14**	**Thu 12/03/15**	
3241	**1244100**	**Preparation of Migration Weekend (wave 1)**		**80d**	**Mon 17/11/14**	**Thu 12/03/15**	
3242	124410	Start preparation of Migration Weekend	◆	0d	Mon 01/12/14	Mon 01/12/14	Eurosystem
3244	387100	Network ready for Production		0d	Mon 01/12/14	Mon 01/12/14	Eurosystem
3247	1247100	Registration Form filled in (wave 1 + CSDs/CBs with Common Static Data)	◆	0d	Fri 12/12/14	Fri 12/12/14	CSDs,CBs
3248	**1249100**	**Preparation of production environment**		**80d**	**Mon 17/11/14**	**Thu 12/03/15**	
3250	1250100	**Synchronization Point [SP13 - Eurosystem ready for Production]**	◆	0d	Mon 01/12/14	Mon 01/12/14	Eurosystem
3257	1257100	**Synchronization Point [SP14.1 -Ready to connect to Production wave 1]**	◆	0d	Thu 05/02/15	Thu 05/02/15	Eurosystem,CSDs
3259	1263100	Successful connectivity tests CSD (wave 1)	◆	0d	Thu 12/03/15	Thu 12/03/15	CSDs



Task ▨	Task ▨	Critical Milestone ◆	Milestone ◆	Critical Task ▨	Project Summary ▬	Group By Summary ▬

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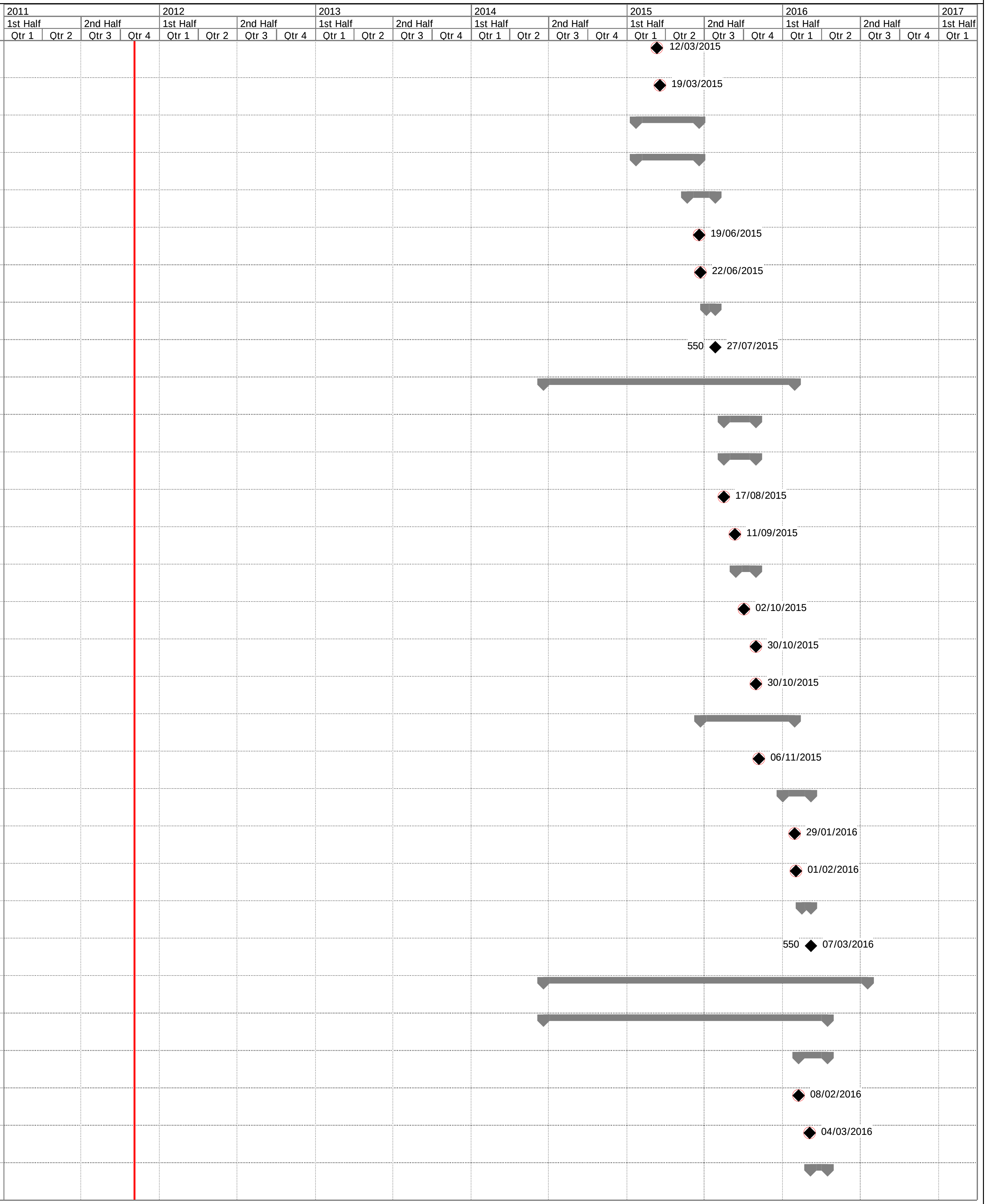
3260	1255400	Successful connectivity tests CB (wave 1)	◆	0d	Thu 12/03/15	Thu 12/03/15	CBs
3266	1272100	**Synchronization Point [SP15.1 - Ready to upload Static Data wave 1]**	◆	0d	Thu 19/03/15	Thu 19/03/15	Eurosystem,CSDs
3268	**1268200**	**Migration Common Static Data**	◆	**105d**	**Fri 23/01/15**	**Fri 19/06/15**	
3275	**1269200**	**Migration Proprietary Static Data (wave 1)**		**105d**	**Fri 23/01/15**	**Fri 19/06/15**	
3282	**1275000**	**MIGRATION WEEKEND (WAVE 1)**		**48d**	**Fri 22/05/15**	**Mon 27/07/15**	
3288	1275100	**Synchronization Point [SP16.1 - Ready for T2S Go-Live (Wave 1)]**	◆	0d	Fri 19/06/15	Fri 19/06/15	CSDs,CBs,Eurosystem
3290	1279100	**Wave 1 Start Operations in T2S**	◆	0d	Mon 22/06/15	Mon 22/06/15	Eurosystem,CSDs
3291	**1279200**	**Migration closing phase Wave 1**		**15d**	**Tue 07/07/15**	**Mon 27/07/15**	
3294	835100	[Deliverable] - End of Migration Report (Wave 1)	◆	0d	Mon 27/07/15	Mon 27/07/15	Eurosystem
3295	**1280200**	**PRE-MIGRATION TASKS (WAVE 2)**		**416d**	**Fri 20/06/14**	**Fri 29/01/16**	
3296	**1281000**	**Implementation Migration phase (wave 2)**		**55d**	**Mon 17/08/15**	**Fri 30/10/15**	
3297	**1281100**	**Preparation of Migration Weekend (wave 2)**		**55d**	**Mon 17/08/15**	**Fri 30/10/15**	
3298	1281200	Start preparation of Migration Weekend (wave 2)	◆	0d	Mon 17/08/15	Mon 17/08/15	Eurosystem
3301	1281500	Registration Form filled in (CSDs/CBs) (wave 2)	◆	0d	Fri 11/09/15	Fri 11/09/15	CSDs,CBs
3302	**1281600**	**Preparation of production environment**		**35d**	**Mon 14/09/15**	**Fri 30/10/15**	
3309	1283500	**Synchronization Point [SP14.2 - Ready to connect to Production wave 2]**	◆	0d	Fri 02/10/15	Fri 02/10/15	Eurosystem,CSDs
3311	1283370	Successful connectivity tests CSD (wave 2)	◆	0d	Fri 30/10/15	Fri 30/10/15	CSDs
3312	1283390	Successful connectivity tests CB (wave 2)	◆	0d	Fri 30/10/15	Fri 30/10/15	CBs
3318	**1283100**	**Migration Proprietary Static Data (wave 2)**		**158d**	**Tue 23/06/15**	**Fri 29/01/16**	
3323	1285200	**Synchronization Point [SP15.2 - Ready to upload Static Data wave 2]**	◆	0d	Fri 06/11/15	Fri 06/11/15	Eurosystem,CSDs
3326	**1287000**	**MIGRATION WEEKEND (WAVE 2)**		**48d**	**Fri 01/01/16**	**Mon 07/03/16**	
3332	1287100	**Synchronization Point [SP16.2 - Ready for Migration Wave 2]**	◆	0d	Fri 29/01/16	Fri 29/01/16	Eurosystem,CSDs
3334	1291100	**Wave 2 Start Operations in T2S**	◆	0d	Mon 01/02/16	Mon 01/02/16	Eurosystem,CSDs
3335	**1291200**	**Migration closing phase Wave 2**		**15d**	**Tue 16/02/16**	**Mon 07/03/16**	
3338	1025100	[Deliverable] - End of Migration Report (Wave 2)	◆	0d	Mon 07/03/16	Mon 07/03/16	Eurosystem
3339	**1293000**	**PRE-MIGRATION TASKS (WAVE 3)**		**543d**	**Fri 20/06/14**	**Mon 18/07/16**	
3340	**1293100**	**Implementation Migration phase (wave 3)**		**475d**	**Fri 20/06/14**	**Fri 15/04/16**	
3341	**1293200**	**Preparation of Migration Weekend (wave 3)**		**52d**	**Mon 08/02/16**	**Fri 15/04/16**	
3342	1293300	Start preparation of Migration Weekend (wave 3)	◆	0d	Mon 08/02/16	Mon 08/02/16	Eurosystem
3345	1293600	Registration Form filled in (CSDs/CBs) (wave 3)	◆	0d	Fri 04/03/16	Fri 04/03/16	CSDs,CBs
3346	**1293700**	**Preparation of production environment**		**32d**	**Mon 07/03/16**	**Fri 15/04/16**	



Task ▨	Task ▨	Critical Milestone ◆	Milestone ◆	Critical Task ▨	Project Summary	Group By Summary	

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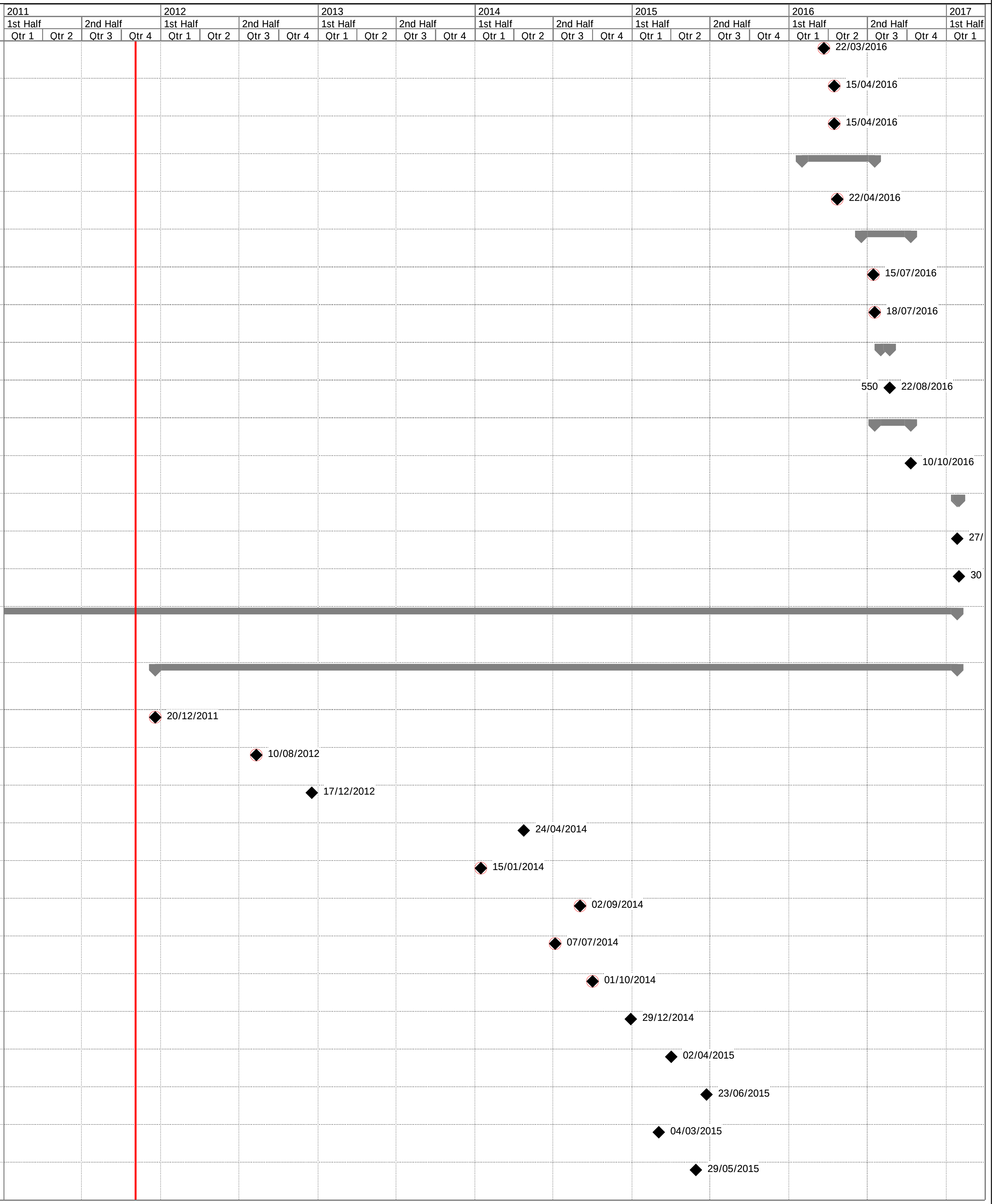
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
3353	1294600	**Synchronization Point [SP14.3 - Ready to connect to Production wave 3]**	◆	0d	Tue 22/03/16	Tue 22/03/16	Eurosystem,CSDs
3355	1294300	Successful connectivity tests CSD (wave 3)	◆	0d	Fri 15/04/16	Fri 15/04/16	CSDs
3356	1294370	Successful connectivity tests CB (wave 3)	◆	0d	Fri 15/04/16	Fri 15/04/16	CBs
3362	**1296100**	**Migration Proprietary Static Data (wave 3)**		**125d**	**Mon 01/02/16**	**Mon 18/07/16**	
3367	1298200	**Synchronization Point [SP15.3 - Ready to upload Static Data]**	◆	0d	Fri 22/04/16	Fri 22/04/16	Eurosystem,CSDs
3370	**1299200**	**MIGRATION WEEKEND (WAVE 3)**		**83d**	**Fri 17/06/16**	**Mon 10/10/16**	
3376	1300100	**Synchronization Point [SP16.3 - Ready for Migration Wave 3]**	◆	0d	Fri 15/07/16	Fri 15/07/16	Eurosystem,CSDs
3378	1304100	**Wave 3 Start Operations in T2S**	◆	0d	Mon 18/07/16	Mon 18/07/16	Eurosystem,CSDs
3379	**1304200**	**Migration closing phase Wave 3**		**15d**	**Tue 02/08/16**	**Mon 22/08/16**	
3382	2394000	[Deliverable] - End of Migration Report (Wave 3)	◆	0d	Mon 22/08/16	Mon 22/08/16	Eurosystem
3383	**1309900**	**Closing phase**		**60d**	**Tue 19/07/16**	**Mon 10/10/16**	
3388	1313000	**Synchronization Point [SP17 - Closing of migration]**	◆	0d	Mon 10/10/16	Mon 10/10/16	Eurosystem,CSDs
3433	**1309500**	**TENTATIVE CONTINGENCY MIGRATION - MIGRATION WEEKEND**		**4d**	**Fri 27/01/17**	**Mon 30/01/17**	
3434	1309600	**Synchronization Point [SP16.5 - Ready for Contingency Migration Weekend]**	◆	0d	Fri 27/01/17	Fri 27/01/17	Eurosystem,CSDs
3436	1309800	**Contingency Wave Start Operations in T2S**	◆	0d	Mon 30/01/17	Mon 30/01/17	Eurosystem,CSDs
3779	**2000100**	**PROGRAMME PLANNING & MONITORING**		**1932d**	**Thu 20/08/09**	**Fri 27/01/17**	
3848	**2005100**	**SYNCHRONISATION POINT**		**1323d**	**Tue 20/12/11**	**Fri 27/01/17**	
3849	2006100	SP1 - Start Feasibility Confirmed	◆	0d	Tue 20/12/11	Tue 20/12/11	
3850	2007100	SP2 - Feasibility Confirmation by CSD/CB	◆	0d	Fri 10/08/12	Fri 10/08/12	
3851	2007200	SP3 - T2S Programme Plan Comprehensiveness	◆	0d	Mon 17/12/12	Mon 17/12/12	
3852	2008100	SP4 - Network Service Provider Confirmed	◆	0d	Thu 24/04/14	Thu 24/04/14	
3853	2009200	SP5 - Start of Eurosystem Acceptance Test	◆	0d	Wed 15/01/14	Wed 15/01/14	
3854	2009100	SP6 - Eurosystem Ready for User Testing	◆	0d	Tue 02/09/14	Tue 02/09/14	
3855	2010100	SP7 - Start Connectivity Testing	◆	0d	Mon 07/07/14	Mon 07/07/14	
3856	2011100	SP8 - Start Bilateral Interoperability Testing	◆	0d	Wed 01/10/14	Wed 01/10/14	
3857	2011200	SP9.1 - Start Multilateral Interoperability Testing (wave 1)	◆	0d	Mon 29/12/14	Mon 29/12/14	
3858	2011300	SP9.2 - Start Multilateral Interoperability Testing (wave 2)	◆	0d	Thu 02/04/15	Thu 02/04/15	
3859	2011400	SP9.3 - Start Multilateral Interoperability Testing (wave 3)	◆	0d	Tue 23/06/15	Tue 23/06/15	
3860	2012100	SP10.1 - Start Community Testing (wave 1)	◆	0d	Wed 04/03/15	Wed 04/03/15	
3861	2012200	SP10.2 - Start Community Testing (wave 2)	◆	0d	Fri 29/05/15	Fri 29/05/15	



Task ▨	Task ▨	Critical Milestone ◆	Milestone ◆	Critical Task ▨	Project Summary	Group By Summary

T2S Operational Plan with Critical Path

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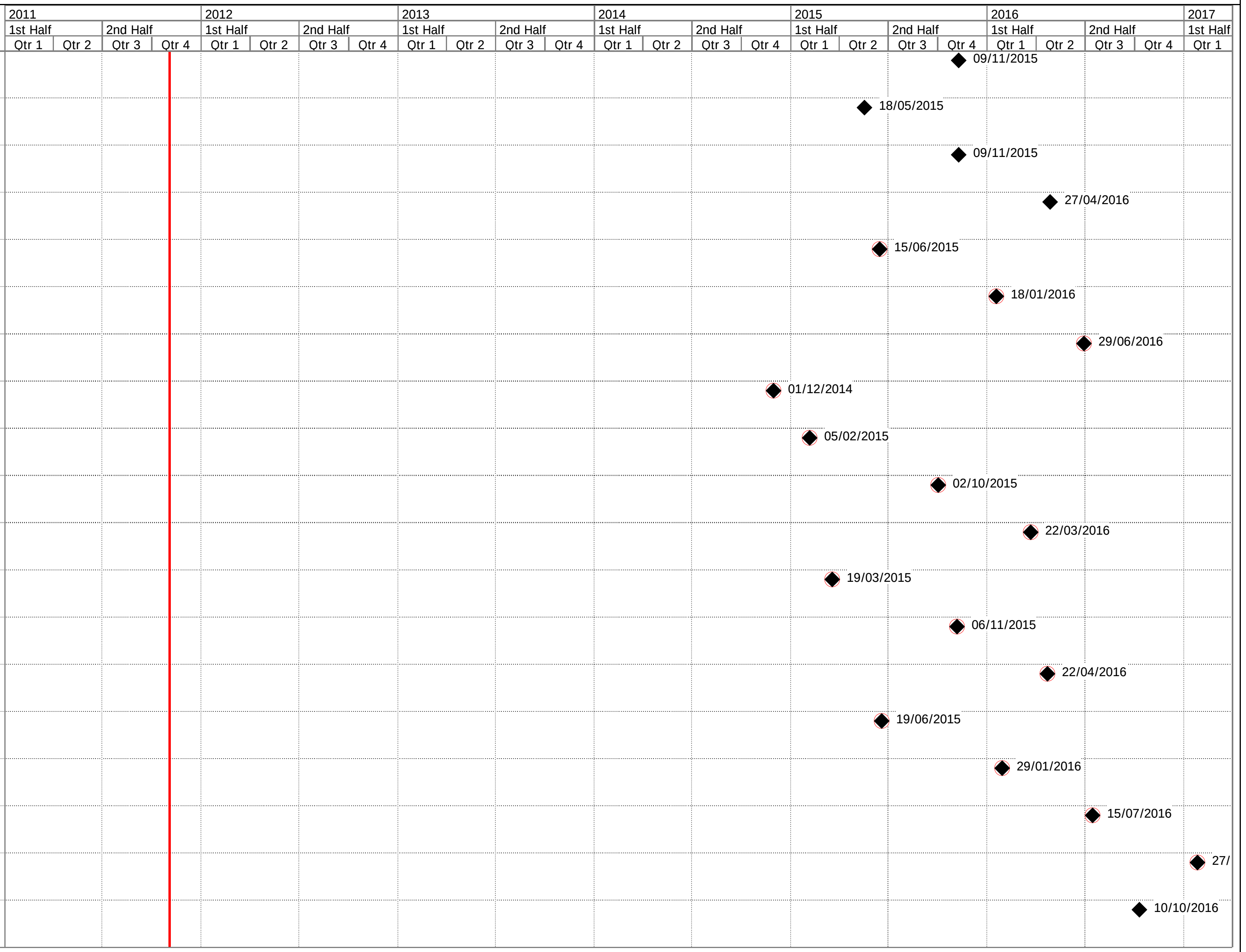
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
3862	2012300	SP10.3 -Start Community Testing (wave 3)	◆	0d	Mon 09/11/15	Mon 09/11/15	
3863	2012400	SP11.1 - Start Business Day Testing (wave 1)	◆	0d	Mon 18/05/15	Mon 18/05/15	
3864	2012500	SP11.2 - Start Business Day Testing (wave 2)	◆	0d	Mon 09/11/15	Mon 09/11/15	
3865	2012600	SP11.3 - Start Business Day Testing (wave 3)	◆	0d	Wed 27/04/16	Wed 27/04/16	
3866	2013100	SP12.1 - End of User Testing Execution Phase (wave 1)	◆	0d	Mon 15/06/15	Mon 15/06/15	
3867	2013200	SP12.2 - End of User Testing Execution Phase (wave 2)	◆	0d	Mon 18/01/16	Mon 18/01/16	
3868	2013300	SP12.3 - End of User Testing Execution Phase (wave 3)	◆	0d	Wed 29/06/16	Wed 29/06/16	
3869	2014100	SP13 - Eurosystem ready for Production	◆	0d	Mon 01/12/14	Mon 01/12/14	
3870	2015100	SP14.1 - Ready to connect to Production (wave 1)	◆	0d	Thu 05/02/15	Thu 05/02/15	
3871	2015200	SP14.2 - Ready to connect to Production (wave 2)	◆	0d	Fri 02/10/15	Fri 02/10/15	
3872	2015300	SP14.3 - Ready to connect to Production (wave 3)	◆	0d	Tue 22/03/16	Tue 22/03/16	
3873	2016100	SP15.1 - Ready to upload Static Data (wave 1)	◆	0d	Thu 19/03/15	Thu 19/03/15	
3874	2016200	SP15.2 - Ready to upload Static Data (wave 2)	◆	0d	Fri 06/11/15	Fri 06/11/15	
3875	2016300	SP15.3 - Ready to upload Static Data (wave 3)	◆	0d	Fri 22/04/16	Fri 22/04/16	
3876	2017100	SP16.1 - Ready for T2S Go-Live (wave 1)	◆	0d	Fri 19/06/15	Fri 19/06/15	
3877	2017200	SP16.2 - Ready for Migration Wave 2	◆	0d	Fri 29/01/16	Fri 29/01/16	
3878	2017300	SP16.3 - Ready for Migration Wave 3	◆	0d	Fri 15/07/16	Fri 15/07/16	
3879	2017400	SP16.5 - Ready for Contingency Migration Weekend	◆	0d	Fri 27/01/17	Fri 27/01/17	
3880	2018300	SP17 - Closing of migration	◆	0d	Mon 10/10/16	Mon 10/10/16	



Task ▨	Task ▨	Critical Milestone ◆	Milestone ◆	Critical Task ▨	Project Summary	Group By Summary

EUROPEAN CENTRAL BANK

EUROSYSTEM

TARGET2-SECURITIES

FRAMEWORK AGREEMENT

SCHEDULE 2 – ANNEX 3

T2S DETAILED PLAN

Disclaimer:

Planning is an ongoing process and Annexes with planning elements are subject to change during the lifetime of a project. Planning workshops with CSDs and CBs will continue to agree on the planning for Connectivity, User Testing and Migration. Subsequent plan updates follow the process, documented in the Schedule 2, Section 7.

Annexes 2, 3, 4, 7, 8, 9 and 10 document the planning status as at 31 Oct. 2011.

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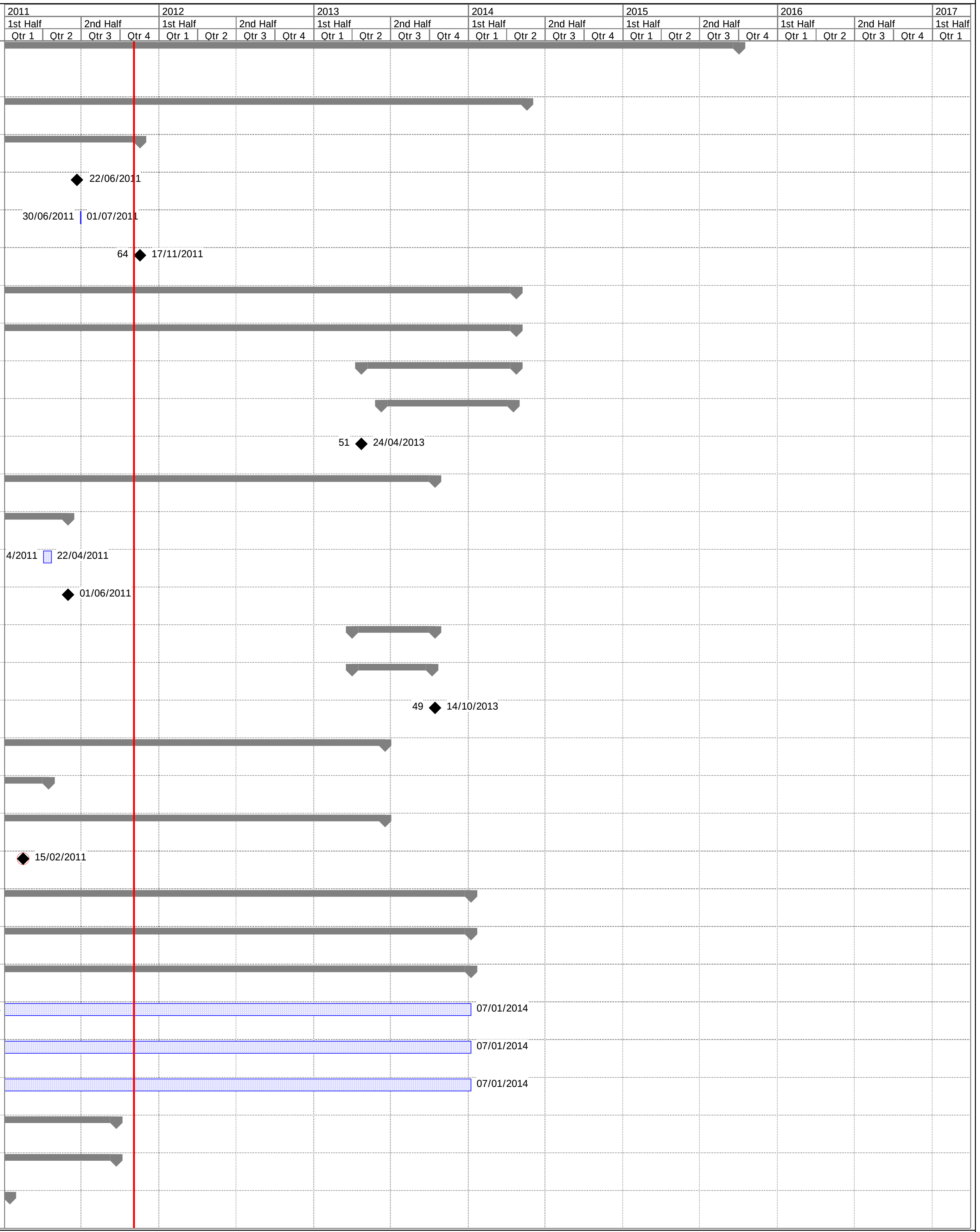
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
1	100	PRODUCT READINESS		1945d	Tue 01/04/08	Fri 02/10/15	
2	500	SPECIFICATION AND DOCUMENTATION		1417d	Fri 28/11/08	Mon 19/05/14	
3	1100	REQUIREMENTS		692d	Thu 26/03/09	Thu 17/11/11	
27	11400	Submission CR for URD v 5.01 & 4CB cost assessment to AG	◆	0d	Wed 22/06/11	Wed 22/06/11	Eurosystem
28	13100	AG Meeting: Approval of CR for URD v 5.01	◆	2d	Thu 30/06/11	Fri 01/07/11	AG
35	16100	[Deliverable] - User Requirement Document (URD) 5.01	◆	0d	Thu 17/11/11	Thu 17/11/11	Eurosystem
36	18100	SPECIFICATIONS		1401d	Fri 28/11/08	Thu 24/04/14	
37	18200	General Specification (GS)		1401d	Fri 28/11/08	Thu 24/04/14	
45	26100	GS v. 2.0		257d	Wed 24/04/13	Thu 24/04/14	
46	26200	Internal Eurosystem Preparation [General Specifications v. 2.0]		219d	Mon 10/06/13	Thu 17/04/14	
55	34150	[Deliverable] - General Specification (GS) V. 2.0	◆	0d	Wed 24/04/13	Wed 24/04/13	Eurosystem
67	47100	General Functional Specifications (GFS)		1231d	Mon 19/01/09	Mon 14/10/13	
81	60100	GFS 4.0 - aligned with URD 5.0		347d	Tue 02/02/10	Wed 01/06/11	
99	74400	Feedback of the ECB T2S project team to the Market on GFS V4.0 13/04	◆	15d	Mon 04/04/11	Fri 22/04/11	Eurosystem
101	74500	Delivery GFS Note	◆	0d	Wed 01/06/11	Wed 01/06/11	Eurosystem
102	73400	GFS 5.0		139d	Tue 02/04/13	Mon 14/10/13	
103	73500	Internal Eurosystem Preparation [Production of the GFS V5.0]		134d	Tue 02/04/13	Mon 07/10/13	
113	88150	[Deliverable] - General Function Specification (GFS) V 5.0	◆	0d	Mon 14/10/13	Mon 14/10/13	Eurosystem
132	155150	Internal Detailed Functional Specification (IDFS)		910d	Wed 16/12/09	Tue 18/06/13	
133	156100	Settlement Algorithm Objectives Document		327d	Fri 15/01/10	Fri 15/04/11	
148	165100	Production of IDFS		910d	Wed 16/12/09	Tue 18/06/13	
156	172200	WS - Delivery IDFS V0.85 to the Development Coordination		0d	Tue 15/02/11	Tue 15/02/11	Eurosystem
170	97100	User Detailed Functional Specifications (UDFS)		1300d	Thu 01/01/09	Tue 07/01/14	
182	550200	Work on Messages Pillar I-III		1300d	Thu 01/01/09	Tue 07/01/14	
183	105100	Message standardisation		1300d	Thu 01/01/09	Tue 07/01/14	
184	106100	Sub-group for Message Standardisation	◆	1300d	Thu 01/01/09	Tue 07/01/14	SGMS
185	107100	Monitoring of message standard development		1300d	Thu 01/01/09	Tue 07/01/14	Eurosystem
186	108100	Participation in message standardisation market practice for (ISO's RMG and SC4, SMPG) & contributions to publications	◆	1300d	Thu 01/01/09	Tue 07/01/14	SMPG
194	116200	Production of UDFS V1.0, V1.1, V1.2 (in line with GFS V4.0)		560d	Mon 03/08/09	Fri 23/09/11	
195	116300	Production of UDFS V1.0 [dialogue between T2S and Its users and detailed msg specification]		560d	Mon 03/08/09	Fri 23/09/11	
231	190500	UDFS v1.0 - Messages		207.75d	Thu 01/04/10	Fri 14/01/11	

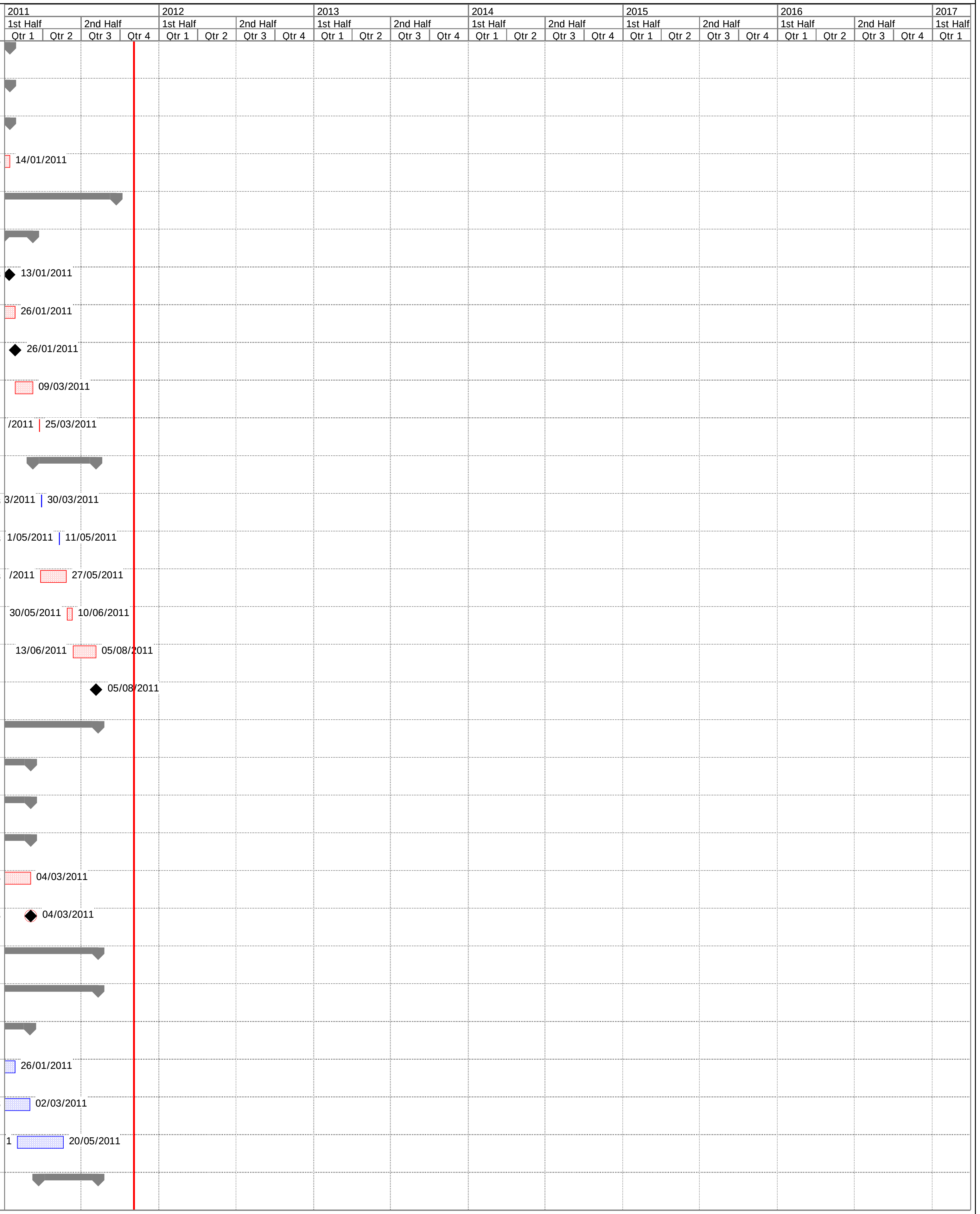


Task ▨	Task ▨	Critical Milestone ◆	Milestone ◆	Critical Task ▨	Project Summary ▬	Group By Summary ▬

T2S Detailed Plan with Critical Path

31/10/2011

ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
232	**190550**	**Pillar III (T2S specific messages)**		**207.75d**	**Thu 01/04/10**	**Fri 14/01/11**	
233	**190580**	**Detailed T2S message specification, development and T2S documentation for UDFS**		**207.75d**	**Thu 01/04/10**	**Fri 14/01/11**	
239	**192400**	**Production of first draft T2S customised schema files/documentation by 4CB**		**79.75d**	**Tue 28/09/10**	**Fri 14/01/11**	
241	134940	Validation of draft T2S customised files/docum. By SGMS (incl. Incorporation of	◆	47d	Thu 11/11/10	Fri 14/01/11	SGMS
242	**190450**	**Validations of the version v0.3 to produce the UDFS V1.0**		**517d**	**Thu 01/10/09**	**Fri 23/09/11**	
243	**190460**	**Validation of v0.3 by PMC & ECB T2S Programme Office**		**51d**	**Thu 30/12/10**	**Wed 09/03/11**	
244	190465	UDFS market workshop V0.3	◆	0d	Thu 13/01/11	Thu 13/01/11	Eurosystem,CSDs
245	190470	ECB T2S programme Office /Market review of UDFS V0.3 (one month)	◆	21d	Thu 30/12/10	Wed 26/01/11	Eurosystem
246	190490	Reception of consolidated ECB/Market feedback on UDFS v0.3 to FC	◆	0d	Wed 26/01/11	Wed 26/01/11	Eurosystem
247	190560	Integration of PMC & ECB T2S Programme Office comments in v0.3 to produce the V1.0 of UDFS (1,5 month)		30d	Thu 27/01/11	Wed 09/03/11	Eurosystem
250	190700	Delivery of UDFS V1.0 to the Market by the ECB	◆	1d	Fri 25/03/11	Fri 25/03/11	Eurosystem
251	**190800**	**Validation of complete UDFS V1.0 by the Market**		**107d**	**Thu 10/03/11**	**Fri 05/08/11**	
252	193400	Fifth workshop with the Market on the UDFS	◆	1d	Wed 30/03/11	Wed 30/03/11	Eurosystem,CSDs
253	193500	Sixth workshop with the Market on the UDFS (Cancelled)	◆	1d	Wed 11/05/11	Wed 11/05/11	Eurosystem,CSDs
254	195100	Feedback from the Market on the UDFS V1.0	◆	45d	Mon 28/03/11	Fri 27/05/11	CSDs
256	196100	Consolidation of Market comments by the ECB		10d	Mon 30/05/11	Fri 10/06/11	Eurosystem
257	198100	Integration of Market comments in complete UDFS V1.0 (two months)		40d	Mon 13/06/11	Fri 05/08/11	Eurosystem
258	199100	Delivery to ECB T2S Programme Office of UDFS V1.1		0d	Fri 05/08/11	Fri 05/08/11	Eurosystem
259	**199200**	**UDFS v1.2 - Messages**		**486d**	**Thu 01/10/09**	**Wed 10/08/11**	
260	**134500**	**Pillar II (new standard)**		**288d**	**Thu 28/01/10**	**Fri 04/03/11**	
262	**134570**	**Detailed T2S message specification and T2S documentation for UDFS**		**288d**	**Thu 28/01/10**	**Fri 04/03/11**	
263	**134600**	**Customisation of draft ISO schema files (incl. definition of fields)/documentation,**		**288d**	**Thu 28/01/10**	**Fri 04/03/11**	
265	134670	Validation of draft T2S customised files/documentation by	◆	288d	Thu 28/01/10	Fri 04/03/11	SGMS
266	124150	Final Validation Pillar II by the SGMS	◆	0d	Fri 04/03/11	Fri 04/03/11	SGMS
267	**134700**	**Pillar III (T2S specific messages)**		**486d**	**Thu 01/10/09**	**Wed 10/08/11**	
268	**134730**	**Detailed T2S message specification, development and T2S documentation for UDFS**		**486d**	**Thu 01/10/09**	**Wed 10/08/11**	
269	**134770**	**Creation of HLBR by 4CB for delivery to SWIFT; Validation by SGMS (as BVG)**		**371d**	**Thu 01/10/09**	**Wed 02/03/11**	
270	134800	Creation of HLBR for delivery to SGMS (incl. First SWIFT and FC review)	◆	346d	Thu 01/10/09	Wed 26/01/11	Eurosystem
271	134830	SGMS Validate the HLBR (incl. Incorporation of comments by 4CB)	◆	330d	Fri 27/11/09	Wed 02/03/11	SGMS
272	134870	Production of first draft ISO schema files/document. By SWIFT/RA, iterative process with	◆	79d	Tue 01/02/11	Fri 20/05/11	Eurosystem
273	**134900**	**Production of first draft T2S customised schema files/documentation by 4CB**		**100.75d**	**Wed 23/03/11**	**Wed 10/08/11**	

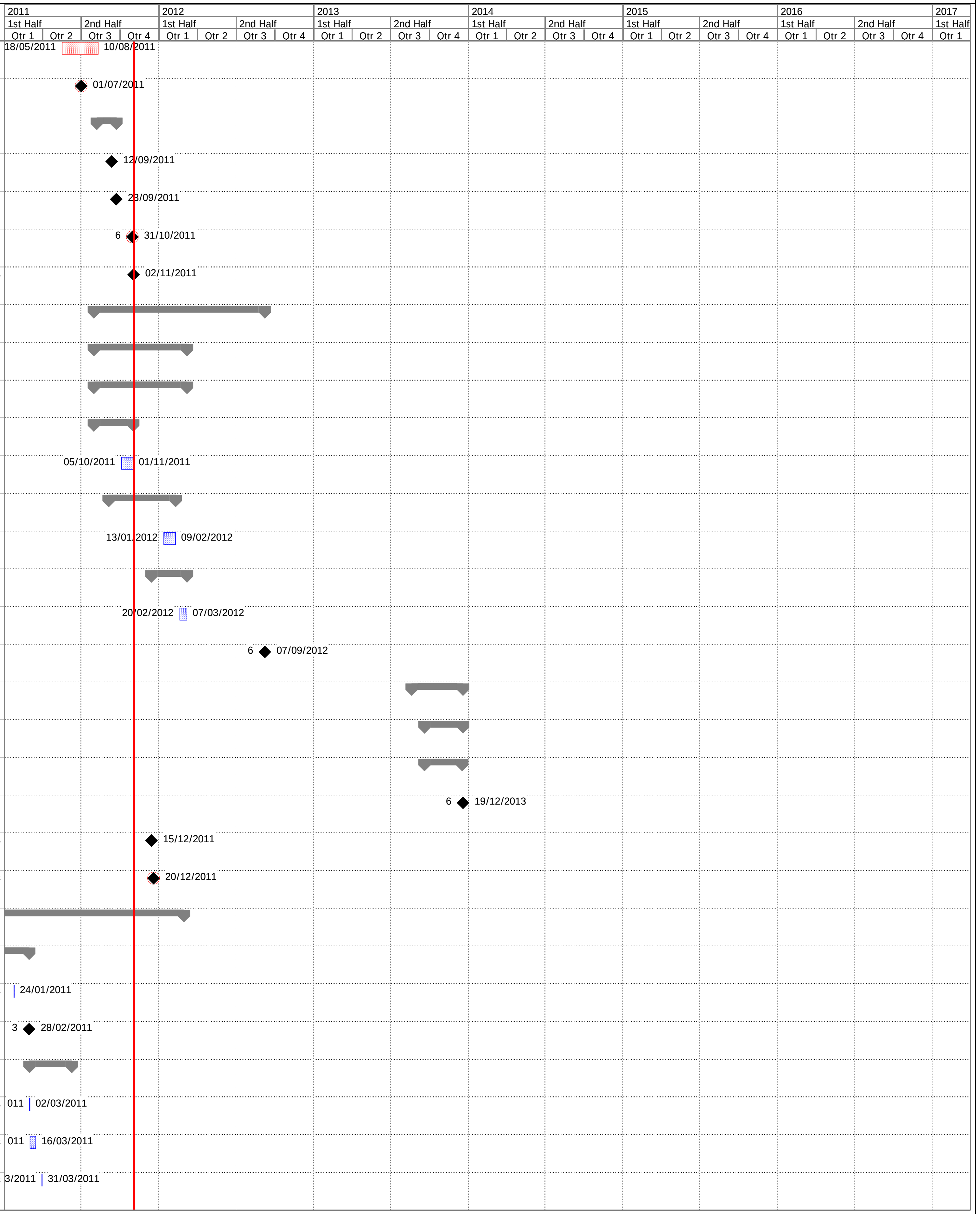


Task	▨	Task	▨	Critical Milestone	◆	Milestone	◆	Critical Task	▨	Project Summary	▬	Group By Summary	▬

T2S Detailed Plan with Critical Path

31/10/2011

ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
275	134950	Validation of draft T2S customised files/docum. By SGMS (incl. Incorporation	◆	61d	Wed 18/05/11	Wed 10/08/11	SGMS
276	134150	Final Validation Pillar III by the SGMS	◆	0d	Fri 01/07/11	Fri 01/07/11	SGMS
277	**200100**	**Final validation of complete UDFS V1.1 by ECB T2S Programme Office**		**34d**	**Mon 08/08/11**	**Fri 23/09/11**	
280	202300	Delivery to ECB T2S PO/Market of updated UDFS chapter 3 (including additional queries and reports)	◆	0d	Mon 12/09/11	Mon 12/09/11	Eurosystem
281	202400	Reception of ECB T2S PO/Market comments on updated UDFS chapter 3	◆	0d	Fri 23/09/11	Fri 23/09/11	Eurosystem
288	211100	[Deliverable] - User Detailed Functional Specification (UDFS) V1.2	◆	0d	Mon 31/10/11	Mon 31/10/11	Eurosystem
289	211200	Start feasibility study	◆	0d	Wed 02/11/11	Wed 02/11/11	CSDs,CBs
290	**211300**	**Production of UDFS V1.2.1 (CR and Architecture Issues)**		**290d**	**Mon 01/08/11**	**Fri 07/09/12**	
291	**211400**	**UDFS v1.2.1 - Messages**		**158d**	**Mon 01/08/11**	**Wed 07/03/12**	
294	**211700**	**Pillar III (T2S-specific message)**		**158d**	**Mon 01/08/11**	**Wed 07/03/12**	
295	**211800**	**T2S 0285 URD / CR_00096_E (re-modelling of existing PIII messages)**		**67d**	**Mon 01/08/11**	**Tue 01/11/11**	
299	212300	Validation of draft T2S customised files/docum. By SGMS (incl. Incorporation of comments by 4CB)	◆	20d	Wed 05/10/11	Tue 01/11/11	SGMS
300	**212400**	**T2S 0294 SYS / CR_00086_E (development of 3 new PIII messages)**		**114d**	**Mon 05/09/11**	**Thu 09/02/12**	
304	212800	Validation of draft T2S customised files/docum. By SGMS (incl. Incorporation of comments by 4CB)	◆	20d	Fri 13/01/12	Thu 09/02/12	SGMS
305	**212900**	**Securities Account Position Response (List of Deviations Item #1)**		**60d**	**Thu 15/12/11**	**Wed 07/03/12**	
308	213300	Validation of draft T2S customised files/docum. By SGMS (incl. Incorporation of comments by 4CB)	◆	13d	Mon 20/02/12	Wed 07/03/12	SGMS
322	214800	[Deliverable] - User Detailed Functional Specification (UDFS) V1.2.1	◆	0d	Fri 07/09/12	Fri 07/09/12	Eurosystem
323	**215100**	**UDFS v 2.0**		**86d**	**Wed 21/08/13**	**Thu 19/12/13**	
326	**217100**	**Validation and revision of UDFS v.2.0 after IAC**		**64d**	**Fri 20/09/13**	**Thu 19/12/13**	
327	**217200**	**Internal Eurosystem Preparation [Validation and revision of UDFS v.2.0 after IAC]**		**62d**	**Fri 20/09/13**	**Tue 17/12/13**	
335	223150	[Deliverable] - UDFS v.2.0	◆	0d	Thu 19/12/13	Thu 19/12/13	Eurosystem
336	536200	Confirm comprehensiveness to start feasibility assessment	◆	0d	Thu 15/12/11	Thu 15/12/11	CSDs,CBs
337	212100	**Synchronization Point [SP1 - Start Feasibility Confirmed]**	◆	0d	Tue 20/12/11	Tue 20/12/11	Eurosystem,CSDs,CBs
338	**260100**	**Graphical User Interface (GUI)**		**535d**	**Fri 12/02/10**	**Thu 01/03/12**	
344	**261100**	**GUI Business Functionalities**		**273d**	**Fri 12/02/10**	**Mon 28/02/11**	
355	274120	Third Workshop GUI Business Functionalities	◆	1d	Mon 24/01/11	Mon 24/01/11	Eurosystem,CSDs,CBs
358	281100	[Deliverable] - Graphical User Interface (GUI) Business Functionalities	◆	0d	Mon 28/02/11	Mon 28/02/11	Eurosystem
359	**281200**	**GUI Screens Workshops**	◆	**72d**	**Wed 02/03/11**	**Thu 09/06/11**	
360	281300	Fourth Workshop on T2S GUI	◆	1d	Wed 02/03/11	Wed 02/03/11	Eurosystem,CSDs,CBs
361	281400	Market Feedback on T2S GUI	◆	10d	Thu 03/03/11	Wed 16/03/11	CSDs,CBs
362	281500	Fifth Workshop on T2S GUI	◆	1d	Thu 31/03/11	Thu 31/03/11	Eurosystem,CSDs,CBs

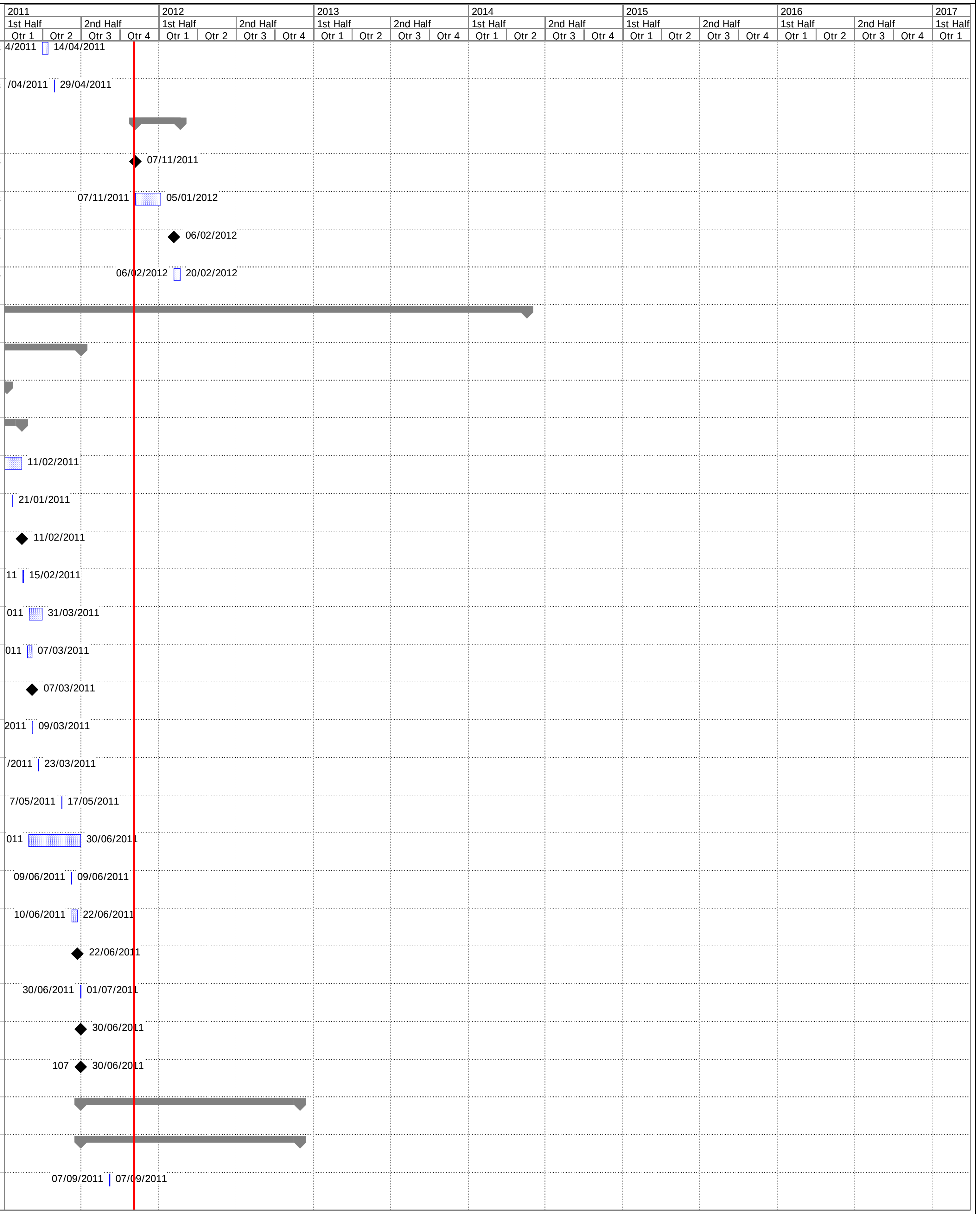


Task ▨ Task ▨ Critical Milestone ◆ Milestone ◆ Critical Task ▨ Project Summary ▬ Group By Summary ▬

T2S Detailed Plan with Critical Path

31/10/2011

ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
363	281600	Market Feedback on T2S GUI	◆	10d	Fri 01/04/11	Thu 14/04/11	CSDs,CBs
364	281700	Early market validation of GUI screens	◆	1d	Fri 29/04/11	Fri 29/04/11	CSDs,CBs
366	**281800**	**GUI Usability Workshops after SIBOS**		**76d**	**Mon 07/11/11**	**Mon 20/02/12**	**Eurosystem,CSDs,CBs**
367	281850	Sixth Workshop on T2S GUI	◆	0d	Mon 07/11/11	Mon 07/11/11	Eurosystem,CSDs,CBs
368	281900	Market Feedbacks on T2S GUI	◆	44d	Mon 07/11/11	Thu 05/01/12	CSDs,CBs
369	281950	Seventh Workshop on T2S GUI	◆	0d	Mon 06/02/12	Mon 06/02/12	Eurosystem,CSDs,CBs
370	282000	Market Feedbacks on T2S GUI	◆	11d	Mon 06/02/12	Mon 20/02/12	CSDs,CBs
373	**282200**	**DOCUMENTATION**		**1045d**	**Tue 04/05/10**	**Mon 19/05/14**	
374	**252100**	**T2S Smooth Cross CSD settlement**		**305d**	**Tue 04/05/10**	**Fri 01/07/11**	
378	**253200**	**1st Mini-consultation**	◆	**89d**	**Wed 08/09/10**	**Fri 07/01/11**	
391	**257275**	**2nd Mini-consultation**	◆	**55d**	**Tue 30/11/10**	**Fri 11/02/11**	
394	257320	Analysis and preparation of consultation results		35d	Tue 28/12/10	Fri 11/02/11	TF
395	257325	3nd Task Force meeting	◆	1d	Fri 21/01/11	Fri 21/01/11	TF
396	257330	Publication of mini-consultation results	◆	0d	Fri 11/02/11	Fri 11/02/11	Eurosystem
398	257400	4rd Task Force meeting	◆	2d	Mon 14/02/11	Tue 15/02/11	TF
399	257420	Consultation of NUGS	◆	23d	Tue 01/03/11	Thu 31/03/11	NUGs
400	257440	Report preparation for March 2011 AG	◆	7d	Fri 25/02/11	Mon 07/03/11	TF
401	257460	Submission of report to AG	◆	0d	Mon 07/03/11	Mon 07/03/11	Eurosystem
402	257470	AG Meeting	◆	2d	Tue 08/03/11	Wed 09/03/11	AG
403	257480	5rd Task Force meeting	◆	1d	Wed 23/03/11	Wed 23/03/11	TF
404	257490	6rd Task Force meeting	◆	1d	Tue 17/05/11	Tue 17/05/11	TF
405	257500	Preparation of final deliverable of smooth cross-CSD settlement in T2S	◆	89d	Mon 28/02/11	Thu 30/06/11	TF
406	257520	7th Task Force meeting	◆	1d	Thu 09/06/11	Thu 09/06/11	TF
407	257540	Preparation of Report to the June 2011 AG to present the solutions and recommendations on the issues in the list	◆	9d	Fri 10/06/11	Wed 22/06/11	TF
408	257560	Submission report to the AG	◆	0d	Wed 22/06/11	Wed 22/06/11	Eurosystem
409	257570	AG Meeting	◆	2d	Thu 30/06/11	Fri 01/07/11	AG
410	258100	Final Delivery of T2S Smooth Cross CSD settlement	◆	0d	Thu 30/06/11	Thu 30/06/11	Eurosystem
411	259100	[Deliverable] - T2S Smooth Cross CSD settlement Report V1.0	◆	0d	Thu 30/06/11	Thu 30/06/11	Eurosystem
412	**259200**	**Adaptation to Cross CSD settlement**	◆	**369d**	**Fri 01/07/11**	**Thu 29/11/12**	
413	**259300**	**Task Force Activities/Meetings**		**369d**	**Fri 01/07/11**	**Thu 29/11/12**	
416	259600	1st Task Force meeting	◆	1d	Wed 07/09/11	Wed 07/09/11	TF



Task	▨	Task	▨	Critical Milestone	◆	Milestone	◆	Critical Task	▨	Project Summary	▬	Group By Summary	▬

T2S Detailed Plan with Critical Path

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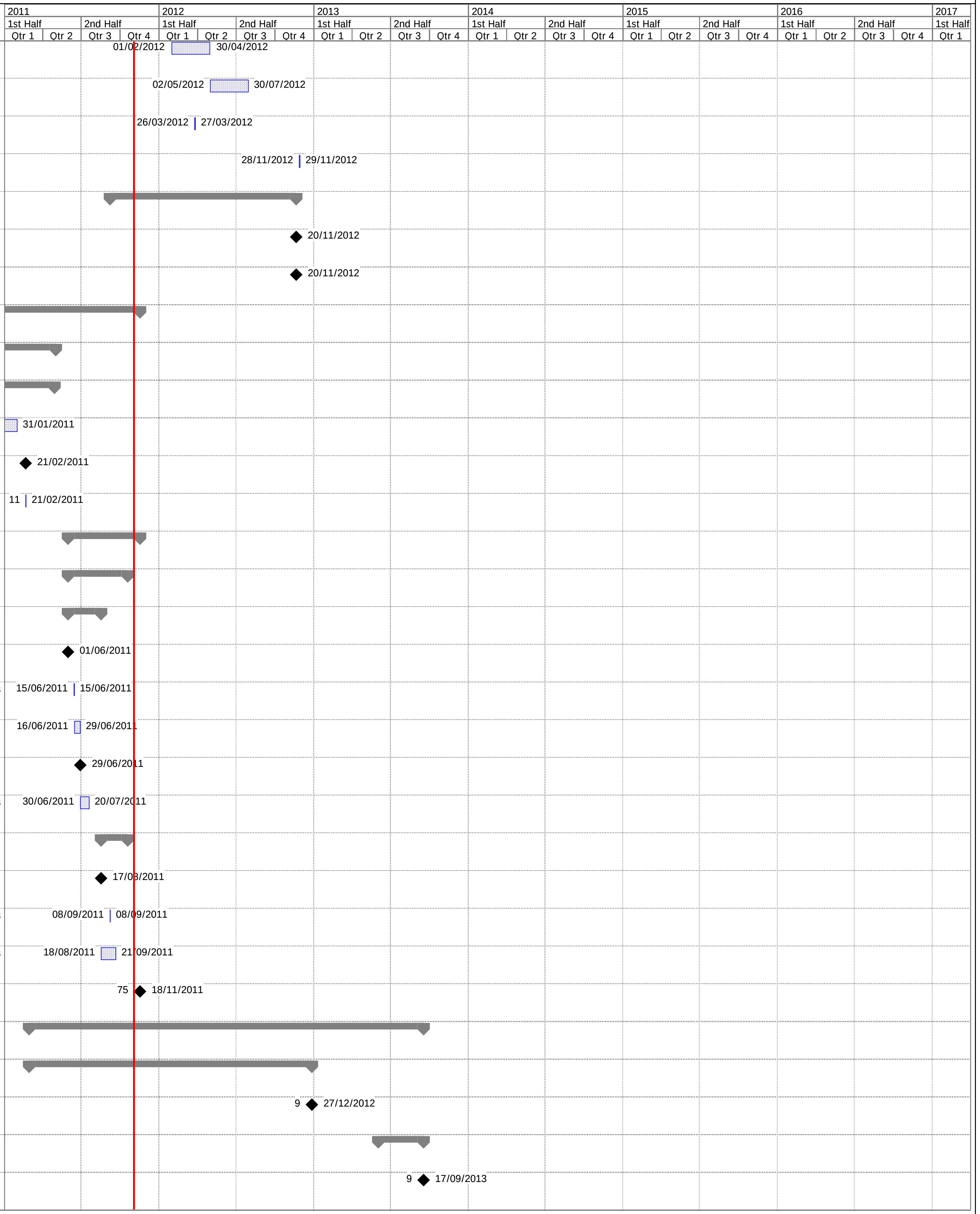
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
418	259800	Mini-consultation 1	◆	64d	Wed 01/02/12	Mon 30/04/12	TF
420	260000	Mini-consultation 2	◆	64d	Wed 02/05/12	Mon 30/07/12	TF
424	260700	AG Meeting	◆	2d	Mon 26/03/12	Tue 27/03/12	AG
427	261550	AG Meeting November	◆	2d	Wed 28/11/12	Thu 29/11/12	AG
428	**261600**	**Preparation of Adaptation to T2S Cross CSD settlement**		**313d**	**Thu 08/09/11**	**Tue 20/11/12**	
430	261900	Final Delivery of the TF Report to the AG		0d	Tue 20/11/12	Tue 20/11/12	Eurosystem
431	262000	[Deliverable] - Adaptation to Cross CSD settlement Report	◆	0d	Tue 20/11/12	Tue 20/11/12	Eurosystem
432	**224200**	**Business Process Description (BPD)**		**389d**	**Tue 25/05/10**	**Fri 18/11/11**	
445	**225150**	**BPD V0.1**		**198d**	**Fri 30/07/10**	**Mon 02/05/11**	
446	**225200**	**Delivery of the CA BPD Sections**		**197d**	**Fri 30/07/10**	**Fri 29/04/11**	
451	226400	Receptions of feedbacks from CASG and update CA BPD Sections	◆	46d	Tue 30/11/10	Mon 31/01/11	Eurosystem
452	226900	Send CA BPD to the CASG	◆	0d	Mon 21/02/11	Mon 21/02/11	Eurosystem
453	226950	CASG Meeting	◆	1d	Mon 21/02/11	Mon 21/02/11	Eurosystem
465	**225550**	**BPD V1.0**		**122d**	**Wed 01/06/11**	**Fri 18/11/11**	
466	**227300**	**On going process of reviewing Business Process Description with the Market**		**101d**	**Wed 01/06/11**	**Wed 19/10/11**	
467	**227400**	**First Phase: Production of Business Process Description V0.3**		**56d**	**Wed 01/06/11**	**Wed 17/08/11**	
468	227500	Delivery of first BPD extract of v0.2 to the Market	◆	0d	Wed 01/06/11	Wed 01/06/11	Eurosystem
470	227600	First Workshop with the Market on BPD Methodology, Scope and Examples	◆	1d	Wed 15/06/11	Wed 15/06/11	Eurosystem,CSDs,CBs
471	227620	Consolidation of comments on BPD from the market	◆	10d	Thu 16/06/11	Wed 29/06/11	Eurosystem
472	227640	Delivery of BPD v0.3 to the Market	◆	0d	Wed 29/06/11	Wed 29/06/11	Eurosystem
473	227660	Feedback by market participants on BPD v0.3	◆	15d	Thu 30/06/11	Wed 20/07/11	CSDs,CBs
475	**228600**	**Second Phase: Production of Business Process Description V1.0 (including V0.3 & V0.4)**		**45d**	**Wed 17/08/11**	**Wed 19/10/11**	
476	228700	Delivery version v.05 to the Market (include BPD v0.4 + BPD v0.3)	◆	0d	Wed 17/08/11	Wed 17/08/11	Eurosystem
478	228800	Second Workshop with the Market on BPD contents	◆	1d	Thu 08/09/11	Thu 08/09/11	Eurosystem,CSDs,CBs
479	228820	Feedback by market participants on BPD v0.5	◆	25d	Thu 18/08/11	Wed 21/09/11	CSDs,CBs
486	230000	[Deliverable] - Business Process Description V 1.0 (BPD)	◆	0d	Fri 18/11/11	Fri 18/11/11	Eurosystem
487	**304100**	**User Handbook (UHB)**		**661d**	**Mon 28/02/11**	**Tue 17/09/13**	
488	**311100**	**User Handbook V1.0**		**475d**	**Mon 28/02/11**	**Thu 27/12/12**	
505	324100	[Deliverable] -User Hand Book (UHB) V1.0	◆	0d	Thu 27/12/12	Thu 27/12/12	Eurosystem
506	**325100**	**User Handbook V 2.0**		**77d**	**Mon 03/06/13**	**Tue 17/09/13**	
517	335200	[Deliverable] - User Hand Book V2.0 (UHB)	◆	0d	Tue 17/09/13	Tue 17/09/13	Eurosystem



Task ▨ Task ▨ Critical Milestone ◆ Milestone ◆ Critical Task ▨ Project Summary ▬ Group By Summary ▬

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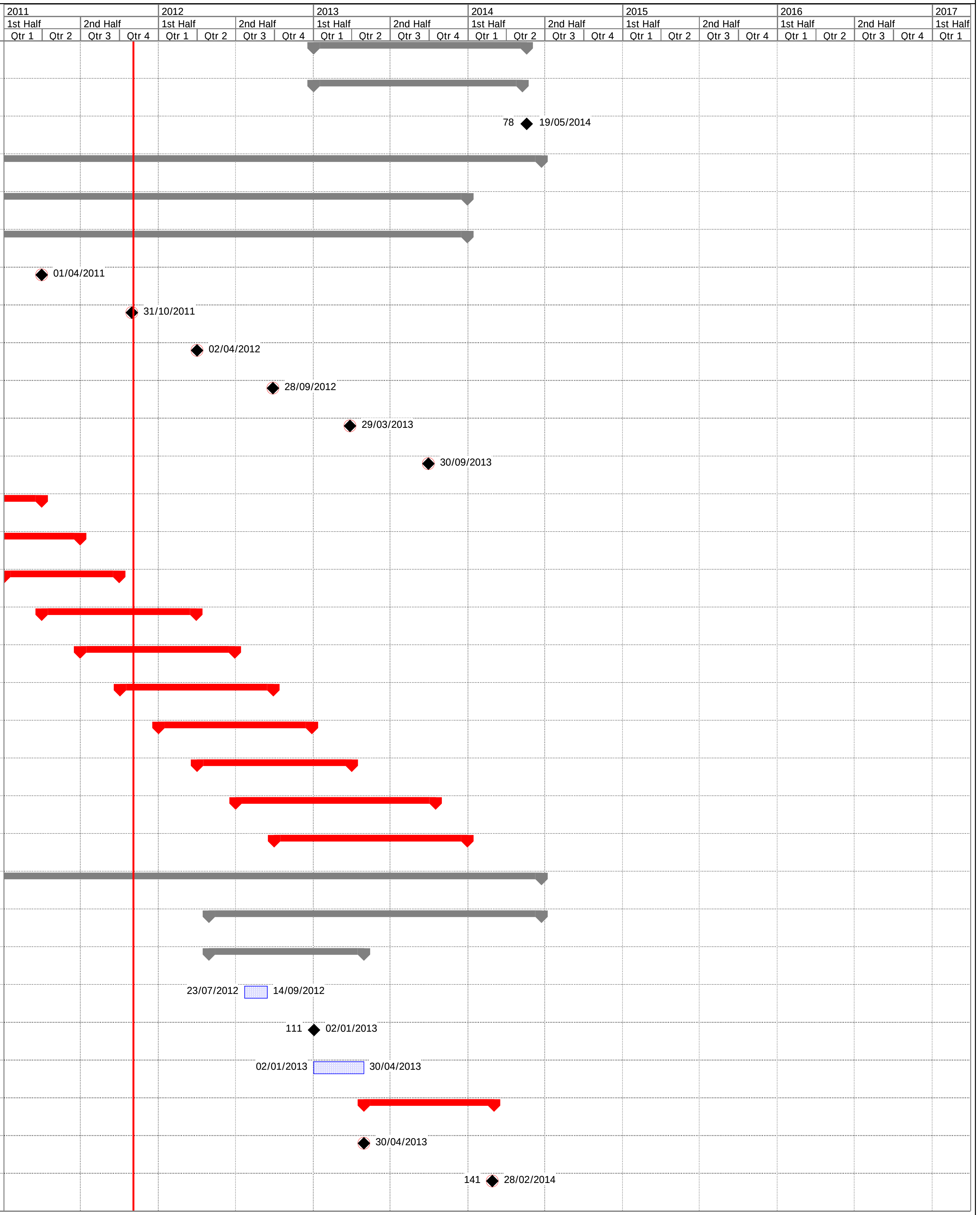
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
518	**34101**	**T2S Glossary**		**353d**	**Wed 02/01/13**	**Mon 19/05/14**	
519	**34114**	**Internal Eurosystem Preparation [T2S Glossary]**		**347d**	**Wed 02/01/13**	**Fri 09/05/14**	
532	35100	[Deliverable] - T2S Glossary V1.0		0d	Mon 19/05/14	Mon 19/05/14	Eurosystem
533	**414300**	**DEVELOPMENT**		**1615d**	**Tue 01/04/08**	**Mon 23/06/14**	
534	**414400**	**SOFTWARE AND 4CB TESTING**		**1232d**	**Wed 01/04/09**	**Mon 30/12/13**	
541	**339100**	**Application Development & Internal Testing**		**1232d**	**Wed 01/04/09**	**Mon 30/12/13**	
543	351130	Development Process - M2 - UDFS/IDFS stabilised and integrated in the development process iterations		0d	Fri 01/04/11	Fri 01/04/11	Eurosystem
544	353130	Development process - M3 – Interfaces specifications frozen (UDFS/GUI): iteration 5 technically integrated and tested		0d	Mon 31/10/11	Mon 31/10/11	Eurosystem
545	354130	Development Process - M4 - Start of 4CB IAC		0d	Mon 02/04/12	Mon 02/04/12	Eurosystem
546	355140	Development process – M5 – Technical stability		0d	Fri 28/09/12	Fri 28/09/12	Eurosystem
547	361101	Development process – M6 – Functional stability		0d	Fri 29/03/13	Fri 29/03/13	Eurosystem
548	339200	Development process – M7 – 4CB Internal Acceptance check point – Progress status		0d	Mon 30/09/13	Mon 30/09/13	Eurosystem
559	**350100**	**Iteration 3**		**197d**	**Thu 01/07/10**	**Thu 31/03/11**	
563	**351100**	**Iteration 4**		**196d**	**Fri 01/10/10**	**Thu 30/06/11**	
568	**352100**	**Iteration 5**		**195d**	**Mon 03/01/11**	**Fri 30/09/11**	
573	**353100**	**Iteration 6**		**261d**	**Fri 01/04/11**	**Fri 30/03/12**	
579	**354100**	**Iteration 7**		**261d**	**Fri 01/07/11**	**Fri 29/06/12**	
585	**355100**	**Iteration 8**		**260d**	**Mon 03/10/11**	**Fri 28/09/12**	
591	**356100**	**Iteration 9**		**257d**	**Mon 02/01/12**	**Fri 28/12/12**	
597	**357100**	**Iteration 10**		**256d**	**Mon 02/04/12**	**Mon 01/04/13**	
603	**365200**	**Iteration 11**		**332d**	**Mon 02/07/12**	**Wed 16/10/13**	
617	**369700**	**Iteration 12**		**318d**	**Mon 01/10/12**	**Mon 30/12/13**	
622	**370100**	**INFRASTRUCTURE**		**1615d**	**Tue 01/04/08**	**Mon 23/06/14**	
633	**377150**	**4CB - Infrastructure Test**		**550d**	**Mon 30/04/12**	**Mon 23/06/14**	
634	**377155**	**Preparation Non functional test cases**		**257d**	**Mon 30/04/12**	**Tue 30/04/13**	
641	377650	Exchanges with the market (non functional test cases)	◆	40d	Mon 23/07/12	Fri 14/09/12	Eurosystem,CSDs,CBs
648	380110	[Deliverable] - T2S Non-functional Testing Scenarios	◆	0d	Wed 02/01/13	Wed 02/01/13	Eurosystem
650	380250	Finish Preparation Infrastructure test		85d	Wed 02/01/13	Tue 30/04/13	Eurosystem
651	**380300**	**Execution Non functional test cases**		**214d**	**Tue 30/04/13**	**Mon 03/03/14**	
652	378101	Start Execution Infrastructure test		0d	Tue 30/04/13	Tue 30/04/13	Eurosystem
659	386100	[Deliverable] - Non Functional Testing Report	◆	0d	Fri 28/02/14	Fri 28/02/14	Eurosystem



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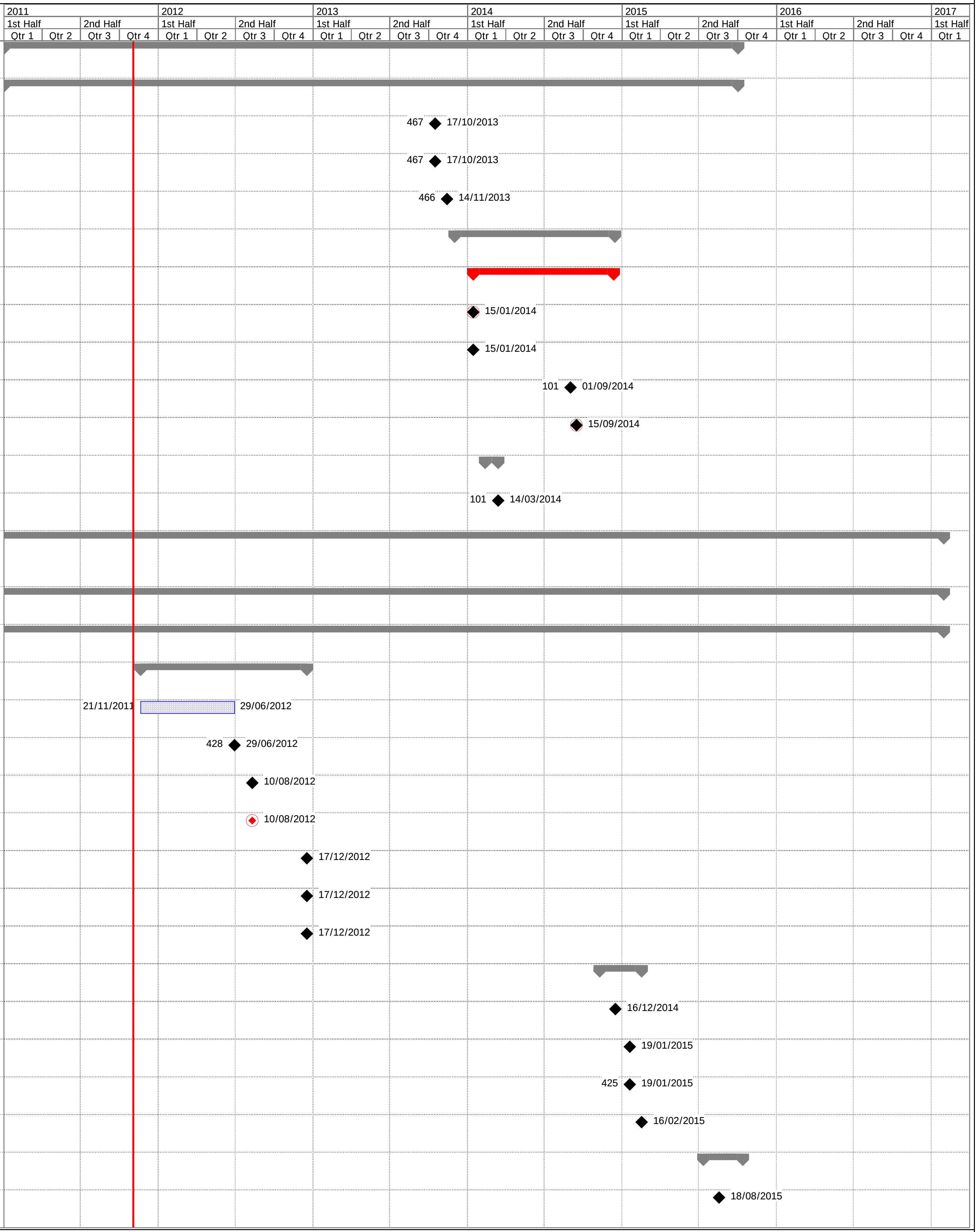
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
664	**388100**	**EUROSYSTEM ACCEPTANCE TEST**		**1225d**	**Mon 03/01/11**	**Fri 02/10/15**	
665	**389200**	**EAT PREPARATION**		**1225d**	**Mon 03/01/11**	**Fri 02/10/15**	
983	451300	[Deliverable] - CSDs Market specific test cases for EAT V1.0	◆	0d	Thu 17/10/13	Thu 17/10/13	CSDs
984	451700	[Deliverable] - CBs Market specific test cases for EAT V1.0	◆	0d	Thu 17/10/13	Thu 17/10/13	CBs
1045	451400	[Deliverable] - EAT Documentation V1.0 (EAT Test Sets)		0d	Thu 14/11/13	Thu 14/11/13	Eurosystem
1071	**482300**	**EAT EXECUTION**		**265d**	**Mon 02/12/13**	**Mon 15/12/14**	
1074	**485100**	**Execution Phase EAT Critical**		**236d**	**Wed 15/01/14**	**Fri 12/12/14**	
1075	464150	**Synchronization Point [SP5: Start of Eurosystem Acceptance Test]**		0d	Wed 15/01/14	Wed 15/01/14	Eurosystem
1076	486120	Start EAT - Eurosystem Acceptance Test (following the Entry Criteria)		0d	Wed 15/01/14	Wed 15/01/14	Eurosystem
1089	493130	[Deliverable] EAT Assessment Report	◆	0d	Mon 01/09/14	Mon 01/09/14	Eurosystem
1090	493160	Go-no go decision with CSDs to start the User Testing	◆	0d	Mon 15/09/14	Mon 15/09/14	T2SPB
1094	**498100**	**EAT Status update (recurrent task during EAT phase until 1 month prior the start of UT)**		**23d**	**Wed 12/02/14**	**Fri 14/03/14**	
1099	451800	[Deliverable] - EAT Status update (recurrent task)	◆	0d	Fri 14/03/14	Fri 14/03/14	Eurosystem
1194	**524100**	**CLIENT READINESS**		**2134d**	**Mon 17/11/08**	**Mon 30/01/17**	
1195	**524200**	**SYNCHRONISATION AND ON-BOARDING**		**2134d**	**Mon 17/11/08**	**Mon 30/01/17**	
1196	**534200**	**CSD READINESS**		**1950d**	**Fri 31/07/09**	**Mon 30/01/17**	
1275	**536000**	**CSDs Feasibility Assessment**		**280d**	**Mon 21/11/11**	**Mon 17/12/12**	
1276	536100	Preparation of impact assessment and adaptation plan by CSDs	◆	160d	Mon 21/11/11	Fri 29/06/12	CSDs
1277	213100	[Deliverable] - CSD Feasibility Assessment	◆	0d	Fri 29/06/12	Fri 29/06/12	CSDs
1280	538200	Assessment of feasibility confirmation	◆	0d	Fri 10/08/12	Fri 10/08/12	Eurosystem
1281	214100	**Synchronization Point [SP2 - Feasibility Confirmation by CSD/CB]**	◆	0d	Fri 10/08/12	Fri 10/08/12	Eurosystem
1283	540800	Confirmation of T2S programme plan status and achieved milestones		0d	Mon 17/12/12	Mon 17/12/12	Eurosystem
1284	553000	Update on CSD Feasibility Assessment	◆	0d	Mon 17/12/12	Mon 17/12/12	CSDs
1285	553100	**Synchronisation Point [SP3 - T2S Programme Plan Comprehensiveness]**	◆	0d	Mon 17/12/12	Mon 17/12/12	Eurosystem,CSD
1546	**625200**	**Proof of Eligibility to Participate in T2S (Wave 1)**		**67d**	**Mon 10/11/14**	**Mon 16/02/15**	
1551	625460	Send Check List of Implementation Guide for Eligibility Criteria to the CSDs	◆	0d	Tue 16/12/14	Tue 16/12/14	Eurosystem
1552	625500	Delivery the Proof of Eligibility to Participate in T2S by CSDs to ECB: CSDs submit their application to access T2S services with a self-assessment report	◆	0d	Mon 19/01/15	Mon 19/01/15	CSDs
1553	625600	[Deliverable] - Proof of Eligibility to Participate in T2S (Wave 1)	◆	0d	Mon 19/01/15	Mon 19/01/15	CSDs
1555	625800	PB provides confirmation to the CSDs	◆	0d	Mon 16/02/15	Mon 16/02/15	T2SPB
1556	**625900**	**Proof of Eligibility to Participate in T2S (Wave 2)**		**67d**	**Mon 13/07/15**	**Tue 13/10/15**	
1561	626500	Send Check List of Implementation Guide for Eligibility Criteria to the CSDs	◆	0d	Tue 18/08/15	Tue 18/08/15	Eurosystem



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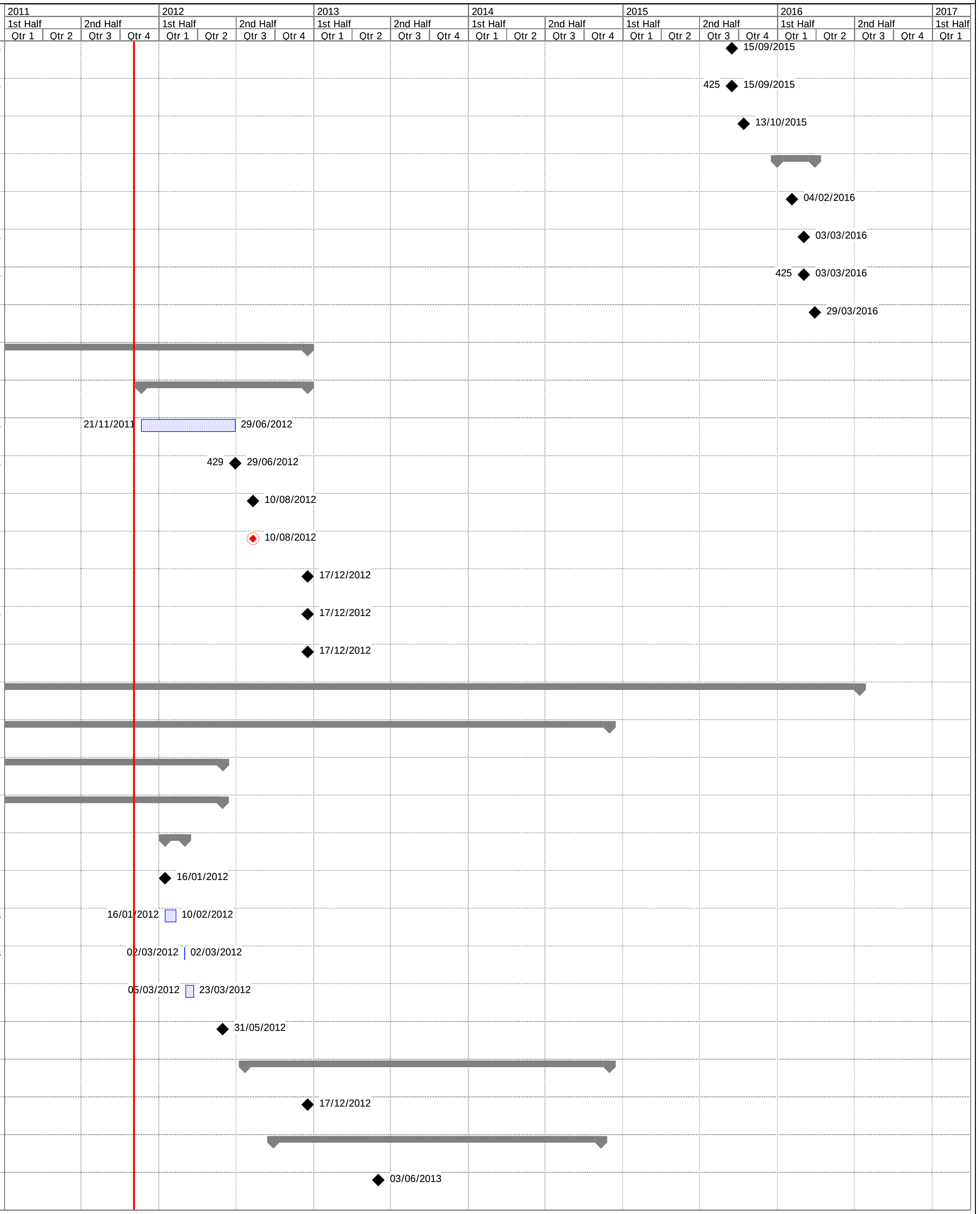
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
1562	626600	Delivery the Proof of Eligibility to Participate in T2S by CSDs to ECB: CSDs submit their application to access T2S services with a self-assessment report	◆	0d	Tue 15/09/15	Tue 15/09/15	CSDs
1563	626700	[Deliverable] - Proof of Eligibility to Participate in T2S (Wave 2)	◆	0d	Tue 15/09/15	Tue 15/09/15	CSDs
1565	626900	PB provides confirmation to the CSDs	◆	0d	Tue 13/10/15	Tue 13/10/15	T2SPB
1566	**627000**	**Proof of Eligibility to Participate in T2S (Wave 3)**		**67d**	**Fri 01/01/16**	**Tue 29/03/16**	
1571	627800	Send Check List of Implementation Guide for Eligibility Criteria to the CSDs	◆	0d	Thu 04/02/16	Thu 04/02/16	Eurosystem
1572	627900	Delivery the Proof of Eligibility to Participate in T2S by CSDs to ECB: CSDs submit their application to access T2S services with a self-assessment report	◆	0d	Thu 03/03/16	Thu 03/03/16	CSDs
1573	628000	[Deliverable] - Proof of Eligibility to Participate in T2S (Wave 3)	◆	0d	Thu 03/03/16	Thu 03/03/16	CSDs
1575	628400	PB provides confirmation to the CSDs	◆	0d	Tue 29/03/16	Tue 29/03/16	T2SPB
1576	**544100**	**CB READINESS**		**882d**	**Fri 31/07/09**	**Mon 17/12/12**	
1581	**536300**	**CBs Feasibility Assessment**		**280d**	**Mon 21/11/11**	**Mon 17/12/12**	
1582	536310	Preparation of impact assessment and adaptation plan by CBs	◆	160d	Mon 21/11/11	Fri 29/06/12	CBs
1583	546500	[Deliverable] - CB Feasibility Assessment	◆	0d	Fri 29/06/12	Fri 29/06/12	CBs
1586	546595	Assessment of feasibility confirmation	◆	0d	Fri 10/08/12	Fri 10/08/12	Eurosystem
1587	546600	**Synchronization Point [SP2 - Feasibility Confirmation by CSD/CB]**	◆	0d	Fri 10/08/12	Fri 10/08/12	Eurosystem
1589	540900	Confirmation of T2S programme plan status and achieved milestones		0d	Mon 17/12/12	Mon 17/12/12	Eurosystem
1590	553200	Update on CB Feasibility Assessment	◆	0d	Mon 17/12/12	Mon 17/12/12	CBs
1591	546800	**Synchronisation Point [SP3 - T2S Programme Plan Comprehensiveness]**	◆	0d	Mon 17/12/12	Mon 17/12/12	Eurosystem,CB
1633	**516600**	**USER TRAINING AND TESTING**		**1953d**	**Fri 02/01/09**	**Wed 13/07/16**	
1634	**555100**	**TRAINING PREPARATION**		**1119d**	**Mon 02/08/10**	**Mon 01/12/14**	
1635	**556100**	**Preparation of the T2S Training Framework**		**480d**	**Mon 02/08/10**	**Thu 31/05/12**	
1645	**558100**	**Training Framework Phase**		**436d**	**Thu 30/09/10**	**Thu 31/05/12**	
1654	**559700**	**Consultation of Public Training Framework V0.1 with CSDs and CBs**		**35d**	**Mon 16/01/12**	**Fri 02/03/12**	
1655	559800	Delivery of Public Training Framework V0.1 to the CSDs and CBs for advice	◆	0d	Mon 16/01/12	Mon 16/01/12	Eurosystem
1656	559900	Feedback from CSDs and CBs on Public Training Framework v0.1	◆	20d	Mon 16/01/12	Fri 10/02/12	CSDs,CBs
1658	556500	Workshop with CSDs and CBs on Public Training Framework V0.1 (in case of need)	◆	1d	Fri 02/03/12	Fri 02/03/12	ECB,4CB,CSDs,CBs
1659	556600	Integration of CSDs and CBs feedback in Public Training Framework v0.2		15d	Mon 05/03/12	Fri 23/03/12	Eurosystem
1668	562100	[Deliverable] - T2S Public Training Framework V1.0	◆	0d	Thu 31/05/12	Thu 31/05/12	Eurosystem
1678	**563100**	**Training Materials preparation**		**603d**	**Mon 23/07/12**	**Mon 01/12/14**	
1685	566400	Publication of T2S Training Calendar		0d	Mon 17/12/12	Mon 17/12/12	Eurosystem
1686	**566500**	**Internal Eurosystem Preparation [Training Materials]**		**540d**	**Fri 28/09/12**	**Mon 10/11/14**	
1700	568100	[Deliverable] - Basic Training Materials	◆	0d	Mon 03/06/13	Mon 03/06/13	Eurosystem



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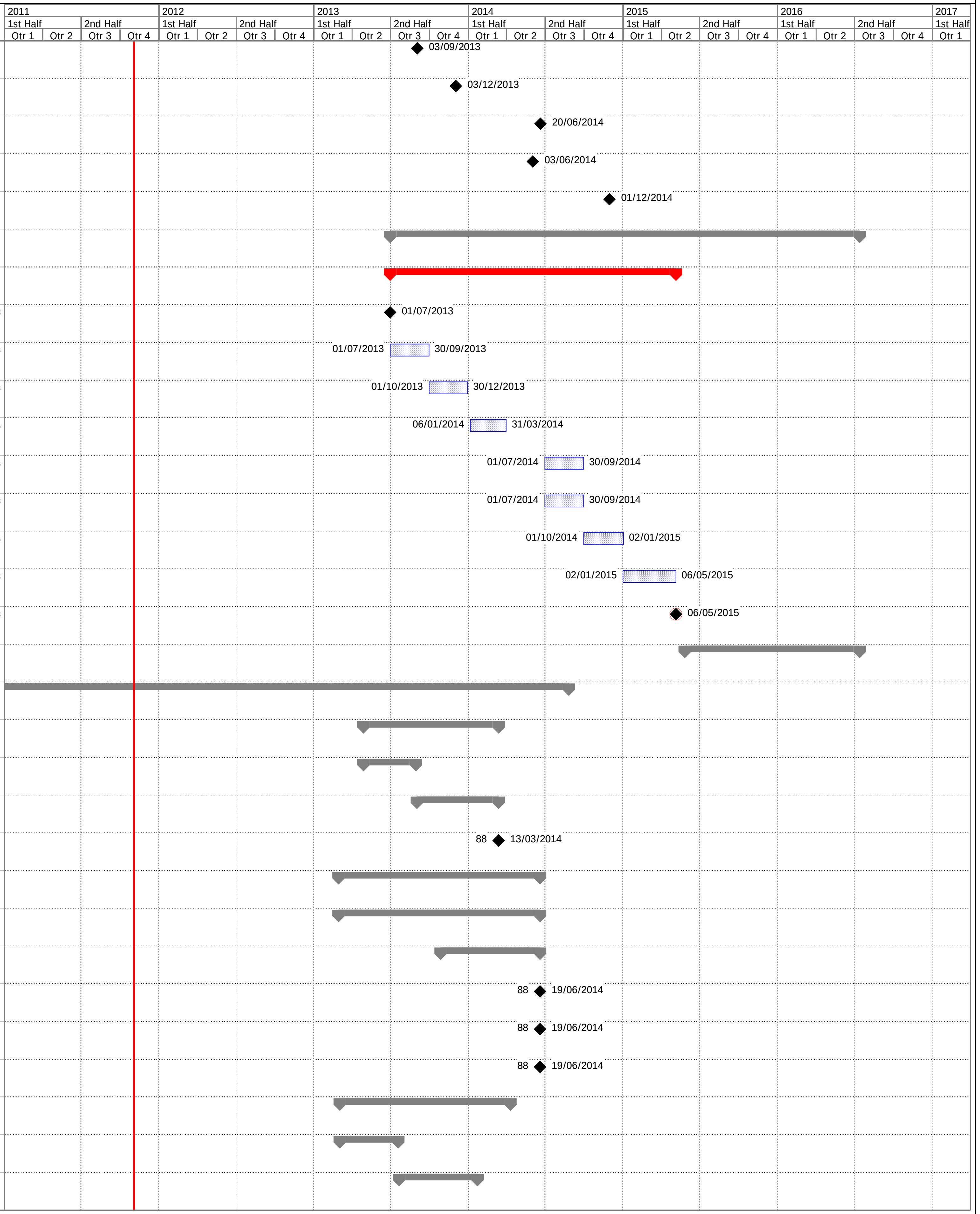
1702	568400	[Deliverable] - Technical Training Materials	◆	0d	Tue 03/09/13	Tue 03/09/13	Eurosystem
1704	568600	[Deliverable] - Functional Training Materials	◆	0d	Tue 03/12/13	Tue 03/12/13	Eurosystem
1706	568800	[Deliverable] - Operational Training Materials	◆	0d	Fri 20/06/14	Fri 20/06/14	Eurosystem
1708	569000	[Deliverable] - Testing Training Materials	◆	0d	Tue 03/06/14	Tue 03/06/14	Eurosystem
1710	569200	[Deliverable] - Migration Training Materials	◆	0d	Mon 01/12/14	Mon 01/12/14	Eurosystem
1711	**574200**	**TRAINING EXECUTION**		**786d**	**Mon 01/07/13**	**Wed 13/07/16**	
1712	**575100**	**Training Session**		**471d**	**Mon 01/07/13**	**Wed 06/05/15**	
1713	575101	Start training session	◆	0d	Mon 01/07/13	Mon 01/07/13	Eurosystem,CSDs,CBs
1714	575900	First series of basic training sessions	◆	66d	Mon 01/07/13	Mon 30/09/13	Eurosystem,CSDs,CBs
1715	576100	Training sessions for technical advanced training	◆	62d	Tue 01/10/13	Mon 30/12/13	Eurosystem,CSDs,CBs
1716	578100	Training sessions for functional advanced training	◆	61d	Mon 06/01/14	Mon 31/03/14	Eurosystem,CSDs,CBs
1717	577100	Training session for operational advanced training	◆	66d	Tue 01/07/14	Tue 30/09/14	Eurosystem,CSDs,CBs
1718	580100	Training sessions on testing	◆	66d	Tue 01/07/14	Tue 30/09/14	Eurosystem,CSDs,CBs
1719	580200	Second series of basic training sessions	◆	63d	Wed 01/10/14	Fri 02/01/15	Eurosystem,CSDs,CBs
1720	579100	First series of Migration training sessions	◆	88d	Fri 02/01/15	Wed 06/05/15	Eurosystem,CSDs,CBs
1721	580150	CSDs and CBs training sessions finalised before wave 1	◆	0d	Wed 06/05/15	Wed 06/05/15	Eurosystem,CSDs,CBs
1722	**581100**	**Refresh-training before go-live**		**300d**	**Thu 28/05/15**	**Wed 13/07/16**	
1726	**583100**	**USER TESTING PREPARATION**		**1463d**	**Fri 02/01/09**	**Wed 27/08/14**	
1734	**592200**	**T2S User Testing Calendar**		**224d**	**Mon 29/04/13**	**Thu 13/03/14**	
1735	**592300**	**Internal Eurosystem Preparation [T2S User Testing Calendar]**		**90d**	**Mon 29/04/13**	**Fri 30/08/13**	
1739	**593400**	**Market consultation on T2S User Testing calendar**	◆	**134d**	**Mon 02/09/13**	**Thu 13/03/14**	
1756	597300	[Deliverable] - User Testing Calendar	◆	0d	Thu 13/03/14	Thu 13/03/14	Eurosystem
1757	**616200**	**Certification Test Sets**		**334d**	**Fri 01/03/13**	**Thu 19/06/14**	
1758	**616300**	**Internal Eurosystem Preparation [Certification Test Sets]**		**334d**	**Fri 01/03/13**	**Thu 19/06/14**	
1762	**616540**	**Market Consultation/Information on Certification test sets**	◆	**164d**	**Mon 28/10/13**	**Thu 19/06/14**	
1780	634600	[Deliverable] - CSD Certification Test Cases	◆	0d	Thu 19/06/14	Thu 19/06/14	Eurosystem
1781	634700	[Deliverable] - CB Certification Test Cases	◆	0d	Thu 19/06/14	Thu 19/06/14	Eurosystem
1782	634800	[Deliverable] - DCP Certification Test Cases	◆	0d	Thu 19/06/14	Thu 19/06/14	Eurosystem
1807	**603100**	**UT Registration Guide**		**284d**	**Mon 04/03/13**	**Fri 11/04/14**	
1808	**603200**	**Internal Eurosystem Preparation [UT Registration Guide]**		**100d**	**Mon 04/03/13**	**Fri 19/07/13**	
1812	**606140**	**Market information on UT Registration Guide**	◆	**128d**	**Mon 22/07/13**	**Wed 22/01/14**	



Task	▨	Task	▨	Critical Milestone	◆	Milestone	◆	Critical Task	▨	Project Summary	▬	Group By Summary ▬

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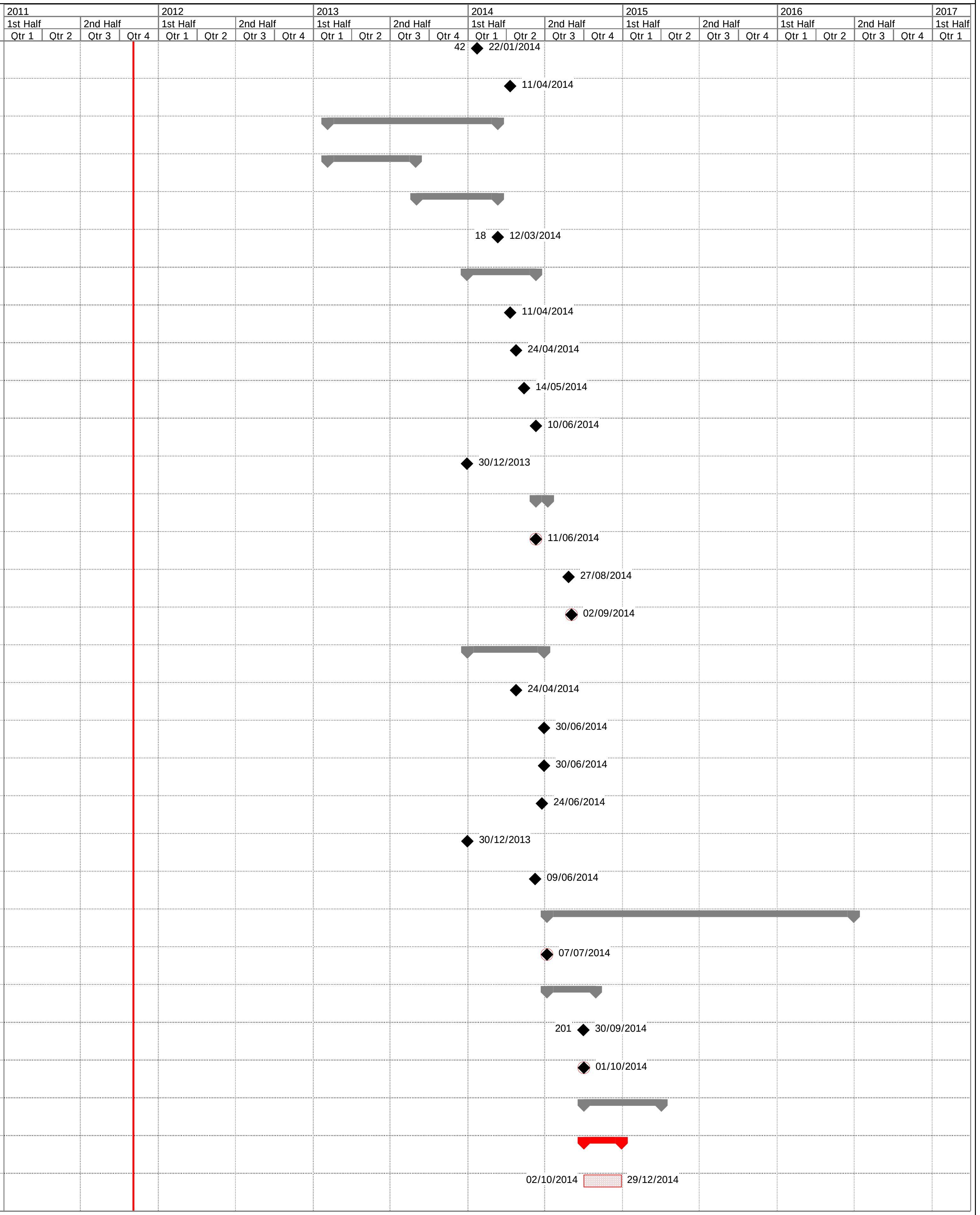
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
1827	607200	[Deliverable] - Registration Guide for User Testing	◆	0d	Wed 22/01/14	Wed 22/01/14	Eurosystem
1828	627100	Completed UT Registration Guide for User Testing (network registration)	◆	0d	Fri 11/04/14	Fri 11/04/14	CSDs,CBs
1829	**611100**	**User Testing Guide**		**283d**	**Mon 04/02/13**	**Wed 12/03/14**	
1830	**611200**	**Internal Eurosystem Preparation [User Testing Guide]**		**150d**	**Mon 04/02/13**	**Fri 30/08/13**	
1834	**612240**	**Market consultation on User Testing Guide**	◆	**133d**	**Mon 02/09/13**	**Wed 12/03/14**	
1849	616100	[Deliverable] - User Testing Guide	◆	0d	Wed 12/03/14	Wed 12/03/14	Eurosystem
1857	**626100**	**[Predecessors] UT Environment Preparation**		**114d**	**Mon 30/12/13**	**Wed 11/06/14**	
1858	629100	Completed network connectivity set-up by CSDs,CBs with the Network Service Provider	◆	0d	Fri 11/04/14	Fri 11/04/14	CSDs,CBs
1859	626150	Delivery of Connectivity Set-up report by CSDs/CBs	◆	0d	Thu 24/04/14	Thu 24/04/14	CSDs,CBs
1860	628150	Send UT Registration Guide to the CSDs/CBs	◆	0d	Wed 14/05/14	Wed 14/05/14	Eurosystem
1861	628200	UT Registration Guide filled in by CSDs/CBs	◆	0d	Tue 10/06/14	Tue 10/06/14	CSDs,CBs
1864	629200	Readiness of interconnected system (T2,CCBM2)	◆	0d	Mon 30/12/13	Mon 30/12/13	Eurosystem
1865	**630100**	**UT Environment Preparation**		**20d**	**Wed 11/06/14**	**Tue 08/07/14**	
1869	634200	UT environment ready	◆	0d	Wed 11/06/14	Wed 11/06/14	Eurosystem
1870	634300	Delivery updated version of the EAT Status update	◆	0d	Wed 27/08/14	Wed 27/08/14	Eurosystem
1871	497100	**Synchronization Point [SP6 - Eurosystem Ready for User Testing]**	◆	0d	Tue 02/09/14	Tue 02/09/14	Eurosystem
1872	**635900**	**Predecessor of Connectivity before Interoperability Testing**		**126d**	**Mon 30/12/13**	**Mon 30/06/14**	
1873	641100	Delivery MOP	◆	0d	Thu 24/04/14	Thu 24/04/14	Eurosystem
1874	641130	Internal system adapted according to UDFS specifications by CBs	◆	0d	Mon 30/06/14	Mon 30/06/14	CBs
1875	641150	Internal system adapted according to UDFS specifications by CSDs/CBs	◆	0d	Mon 30/06/14	Mon 30/06/14	CSDs,CBs
1876	643100	Completed Registration to the (testing) network (Users, ECB)	◆	0d	Tue 24/06/14	Tue 24/06/14	Eurosystem,CSDs
1877	644100	Completed training sessions on Connectivity	◆	0d	Mon 30/12/13	Mon 30/12/13	Eurosystem,CSDs
1878	644200	Interim verification of the List of Potential Show stopper from CSDs (dependencies with local regulation)	◆	0d	Mon 09/06/14	Mon 09/06/14	CSDs,CBs
1879	**636100**	**USER TESTING EXECUTION**		**517d**	**Mon 07/07/14**	**Wed 29/06/16**	
1880	645100	**Synchronization Point [SP7 - Start Connectivity Testing]**	◆	0d	Mon 07/07/14	Mon 07/07/14	Eurosystem,CSDs,CBs
1881	**645150**	**Connectivity Testing for Interoperability wave 1**		**82d**	**Mon 07/07/14**	**Wed 29/10/14**	
1886	646160	[Deliverable] - User Testing Stage Report (Wave 1) V1.0 [Connectivity phase]	◆	0d	Tue 30/09/14	Tue 30/09/14	Eurosystem
1890	649200	**Synchronization Point [SP8 - Start Bilateral Interoperability Testing]**	◆	0d	Wed 01/10/14	Wed 01/10/14	Eurosystem,CSDs,CBs
1891	**649250**	**Acceptance Phase**		**126d**	**Thu 02/10/14**	**Thu 02/04/15**	
1892	**647200**	**CSD Acceptance phase wave 1**	◆	**60d**	**Thu 02/10/14**	**Mon 29/12/14**	
1893	647300	CSD Acceptance wave 1	◆	60d	Thu 02/10/14	Mon 29/12/14	CSDs,CBs



Task ▨ Task ▨ Critical Milestone ◆ Milestone ◆ Critical Task ▨ Project Summary ▬ Group By Summary ▬

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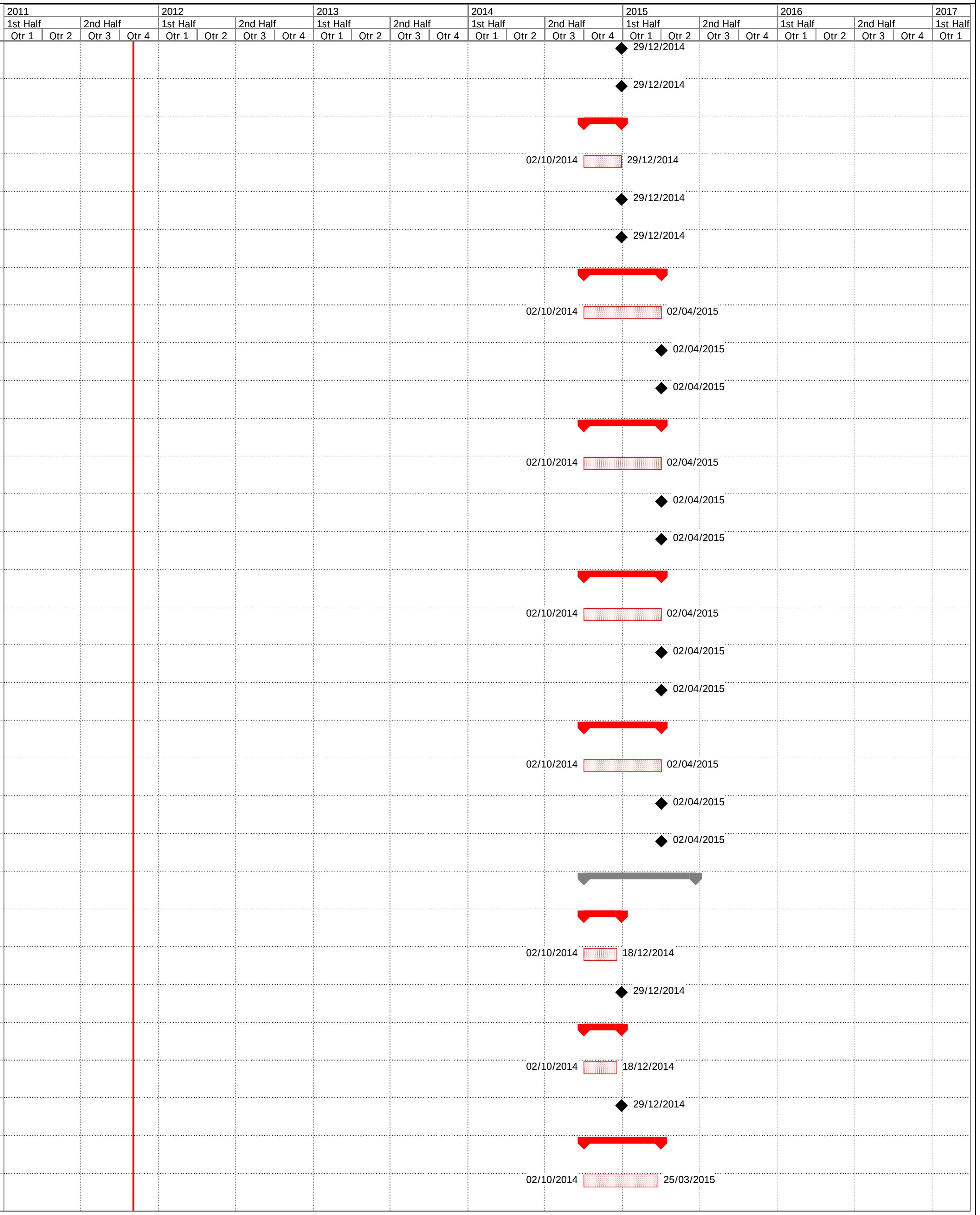
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
1894	647360	[Deliverable] - CSD's T2S Compliance Confirmation (Wave 1)	◆	0d	Mon 29/12/14	Mon 29/12/14	CSDs,CBs
1895	647330	[Deliverable] - CSD's T2S Non-Compliance Notification (Wave 1)	◆	0d	Mon 29/12/14	Mon 29/12/14	CSDs,CBs
1896	**649000**	**CB Acceptance phase wave 1**	◆	**60d**	**Thu 02/10/14**	**Mon 29/12/14**	
1897	649020	CB Acceptance wave 1	◆	60d	Thu 02/10/14	Mon 29/12/14	CSDs,CBs
1898	649040	[Deliverable] - CB's T2S Compliance Confirmation (Wave 1)	◆	0d	Mon 29/12/14	Mon 29/12/14	CSDs,CBs
1899	649060	[Deliverable] - CB's T2S Non-Compliance Notification (Wave 1)	◆	0d	Mon 29/12/14	Mon 29/12/14	CSDs,CBs
1900	**647350**	**CSD Acceptance phase wave 2**	◆	**126d**	**Thu 02/10/14**	**Thu 02/04/15**	
1901	647400	CSD Acceptance wave 2	◆	126d	Thu 02/10/14	Thu 02/04/15	CSDs,CBs
1902	647460	[Deliverable] - CSD's T2S Compliance Confirmation (Wave 2)	◆	0d	Thu 02/04/15	Thu 02/04/15	CSDs,CBs
1903	647430	[Deliverable] - CSD's T2S Non-Compliance Notification (Wave 2)	◆	0d	Thu 02/04/15	Thu 02/04/15	CSDs,CBs
1904	**649300**	**CB Acceptance phase wave 2**	◆	**126d**	**Thu 02/10/14**	**Thu 02/04/15**	
1905	649400	CB Acceptance wave 2	◆	126d	Thu 02/10/14	Thu 02/04/15	CSDs,CBs
1906	649500	[Deliverable] - CB's T2S Compliance Confirmation (Wave 2)	◆	0d	Thu 02/04/15	Thu 02/04/15	CSDs,CBs
1907	649600	[Deliverable] - CB's T2S Non-Compliance Notification (Wave 2)	◆	0d	Thu 02/04/15	Thu 02/04/15	CSDs,CBs
1908	**647450**	**CSD Acceptance phase wave 3**	◆	**126d**	**Thu 02/10/14**	**Thu 02/04/15**	
1909	647500	CSD Acceptance wave 3	◆	126d	Thu 02/10/14	Thu 02/04/15	CSDs,CBs
1910	647560	[Deliverable] - CSD's T2S Compliance Confirmation (Wave 3)	◆	0d	Thu 02/04/15	Thu 02/04/15	CSDs,CBs
1911	647530	[Deliverable] - CSD's T2S Non-Compliance Notification (Wave 3)	◆	0d	Thu 02/04/15	Thu 02/04/15	CSDs,CBs
1912	**649700**	**CB Acceptance phase wave 3**	◆	**126d**	**Thu 02/10/14**	**Thu 02/04/15**	
1913	649800	CB Acceptance wave 3	◆	126d	Thu 02/10/14	Thu 02/04/15	CSDs,CBs
1914	649850	[Deliverable] - CB's T2S Compliance Confirmation (Wave 3)	◆	0d	Thu 02/04/15	Thu 02/04/15	CSDs,CBs
1915	649900	[Deliverable] - CB's T2S Non-Compliance Notification (Wave 3)	◆	0d	Thu 02/04/15	Thu 02/04/15	CSDs,CBs
1916	**647550**	**Certification Phase**		**184d**	**Thu 02/10/14**	**Mon 22/06/15**	
1917	**647600**	**CSD Certification phase wave 1**	◆	**60d**	**Thu 02/10/14**	**Mon 29/12/14**	
1918	647700	CSD Certification wave 1	◆	55d	Thu 02/10/14	Thu 18/12/14	CSDs,CBs
1920	647850	[Deliverable] - Eurosystem T2S Certification (Wave 1)	◆	0d	Mon 29/12/14	Mon 29/12/14	Eurosystem
1921	**647890**	**CB Certification phase wave 1**	◆	**60d**	**Thu 02/10/14**	**Mon 29/12/14**	
1922	647900	CB Certification wave 1	◆	55d	Thu 02/10/14	Thu 18/12/14	CSDs,CBs
1924	647960	[Deliverable] - Eurosystem T2S Certification (Wave 1)	◆	0d	Mon 29/12/14	Mon 29/12/14	Eurosystem
1925	**647990**	**CSD Certification phase wave 2**	◆	**125d**	**Thu 02/10/14**	**Wed 01/04/15**	
1926	648000	CSD Certification wave 2	◆	120d	Thu 02/10/14	Wed 25/03/15	CSDs,CBs



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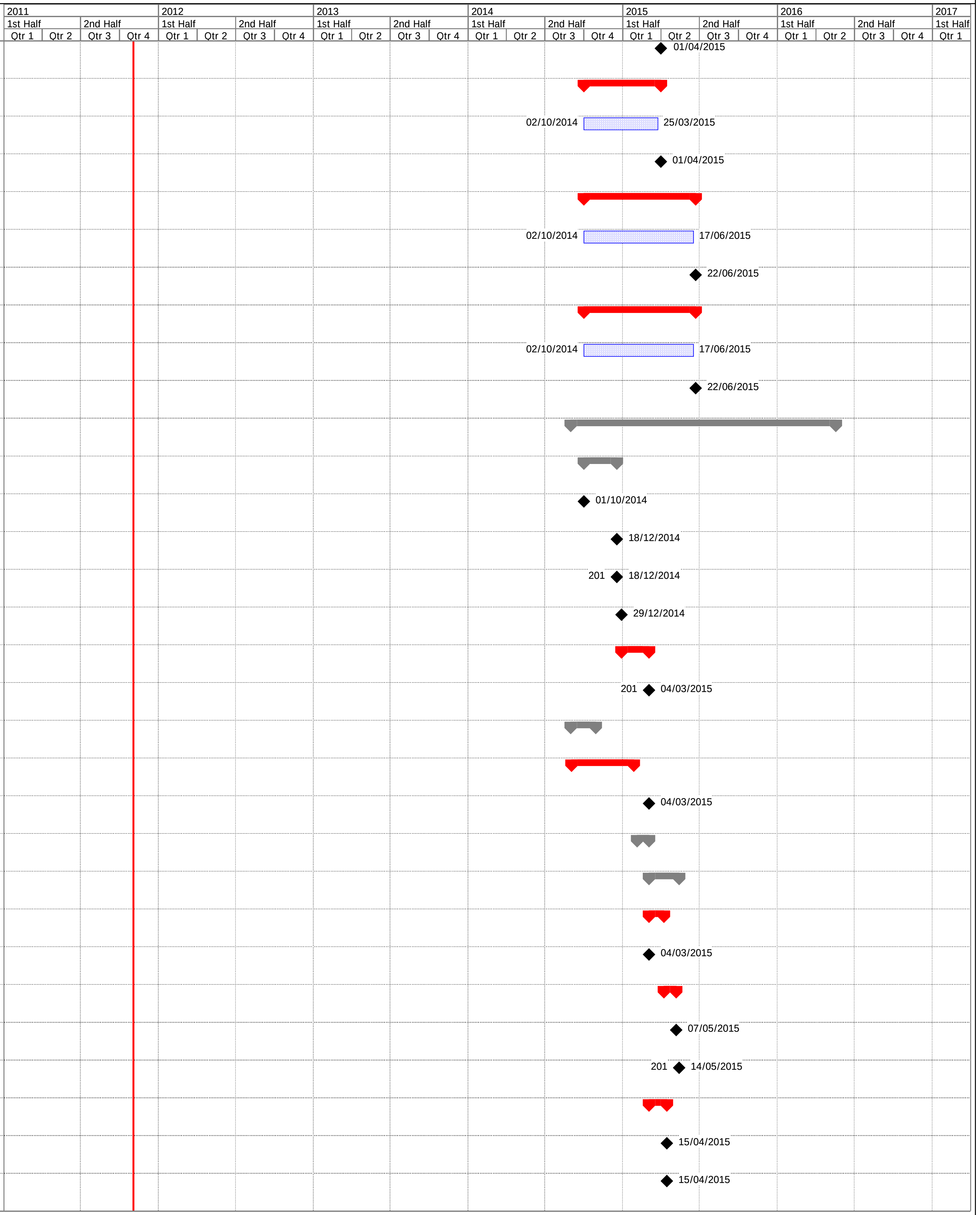
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
1928	648250	[Deliverable] - Eurosystem T2S Certification (Wave 2)	◆	0d	Wed 01/04/15	Wed 01/04/15	Eurosystem
1929	**648290**	**CB Certification phase wave 2**	◆	**125d**	**Thu 02/10/14**	**Wed 01/04/15**	
1930	648300	CB Certification wave 2	◆	120d	Thu 02/10/14	Wed 25/03/15	CSDs,CBs
1932	648360	[Deliverable] - Eurosystem T2S Certification (Wave 2)	◆	0d	Wed 01/04/15	Wed 01/04/15	Eurosystem
1933	**648390**	**CSD Certification phase wave 3**	◆	**184d**	**Thu 02/10/14**	**Mon 22/06/15**	
1934	648400	CSD Certification wave 3	◆	179d	Thu 02/10/14	Wed 17/06/15	CSDs,CBs
1936	648550	[Deliverable] - Eurosystem T2S Certification (Wave 3)	◆	0d	Mon 22/06/15	Mon 22/06/15	Eurosystem
1937	**648590**	**CB Certification phase wave 3**	◆	**184d**	**Thu 02/10/14**	**Mon 22/06/15**	
1938	648600	CB Certification wave 3	◆	179d	Thu 02/10/14	Wed 17/06/15	CSDs,CBs
1940	648650	[Deliverable] - Eurosystem T2S Certification (Wave 3)	◆	0d	Mon 22/06/15	Mon 22/06/15	Eurosystem
1941	**650100**	**Interoperability - Community - Business Day Testing Wave 1**		**447d**	**Mon 01/09/14**	**Wed 18/05/16**	
1942	**652100**	**Interoperability Bilateral Testing Wave 1**		**55d**	**Wed 01/10/14**	**Thu 18/12/14**	
1944	653110	Start Interoperability Bilateral Testing Wave 1	◆	0d	Wed 01/10/14	Wed 01/10/14	Eurosystem,CSDs
1999	714200	Finish Interoperability Bilateral Testing Wave 1	◆	0d	Thu 18/12/14	Thu 18/12/14	
2001	714280	[Deliverable] - User Testing Stage Report (Wave 1) V1.1 Interoperability Bilateral phase]	◆	0d	Thu 18/12/14	Thu 18/12/14	Eurosystem
2002	714300	**Synchronization Point [SP9.1 - Start Multilateral Interoperability Testing (wave 1)]**	◆	0d	Mon 29/12/14	Mon 29/12/14	Eurosystem,CSDs,CBs
2003	**722000**	**Interoperability Multilateral testing Wave 1**	◆	**45d**	**Tue 30/12/14**	**Wed 04/03/15**	
2007	723100	[Deliverable] - User Testing Stage Report (Wave 1) V1.2 [Interoperability Multilateral phase]	◆	0d	Wed 04/03/15	Wed 04/03/15	Eurosystem
2040	**726400**	**Connectivity Testing for Migration wave 1**		**42d**	**Mon 01/09/14**	**Wed 29/10/14**	
2044	**726800**	**Migration Wave 1**	◆	**100d**	**Wed 03/09/14**	**Tue 27/01/15**	
2053	730100	**Synchronization Point [SP10.1 - Start Community Testing Wave 1]**	◆	0d	Wed 04/03/15	Wed 04/03/15	Eurosystem,CSDs,CBs
2054	**730200**	**Connectivity Testing for Community wave 1**		**20d**	**Thu 05/02/15**	**Wed 04/03/15**	
2057	**731100**	**Community testing Wave 1**		**50d**	**Wed 04/03/15**	**Thu 14/05/15**	
2058	**732100**	**Community Testing Wave 1 - [First Window]**		**25d**	**Wed 04/03/15**	**Wed 08/04/15**	
2059	732101	Start Community Test Wave 1	◆	0d	Wed 04/03/15	Wed 04/03/15	Eurosystem,CSDs,CBs
2090	**762100**	**Community Testing Wave 1 - [Second Window]**		**20d**	**Thu 09/04/15**	**Thu 07/05/15**	
2118	789200	Finish Community Test Wave 1	◆	0d	Thu 07/05/15	Thu 07/05/15	Eurosystem,CSDs
2120	789400	[Deliverable] - User Testing Stage Report (Wave 1) V1.3 [Community phase]	◆	0d	Thu 14/05/15	Thu 14/05/15	Eurosystem
2121	**789500**	**DCP-DCAH Certification phase wave 1**	◆	**30d**	**Thu 05/03/15**	**Wed 15/04/15**	
2124	789800	[Deliverable] - Certification report for DCPs (Wave 1)	◆	0d	Wed 15/04/15	Wed 15/04/15	Eurosystem
2127	792000	[Deliverable] - Certification report for DCAH (Wave 1)	◆	0d	Wed 15/04/15	Wed 15/04/15	Eurosystem



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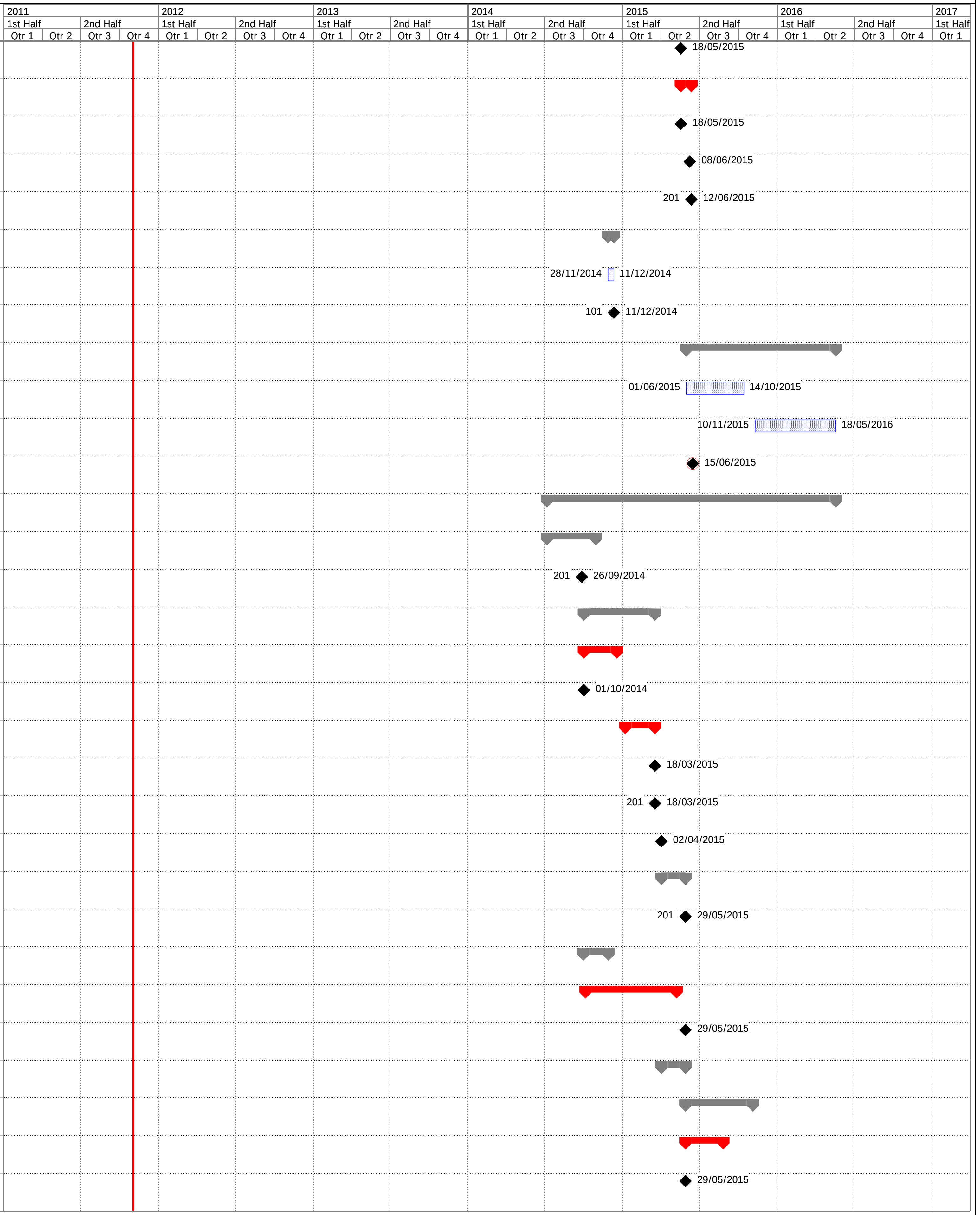
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
2128	796000	**Synchronization Point [SP11.1 - Start Business Day Testing Wave 1]**	◆	0d	Mon 18/05/15	Mon 18/05/15	Eurosystem,CSDs,CBs
2129	**796100**	**Business day test Wave 1**		**19d**	**Mon 18/05/15**	**Fri 12/06/15**	
2130	796200	Start Business day test Wave 1	◆	0d	Mon 18/05/15	Mon 18/05/15	
2151	831200	Finish Business day test Wave 1	◆	0d	Mon 08/06/15	Mon 08/06/15	Eurosystem,CSDs
2153	832300	[Deliverable] - User Testing Stage Report (Wave 1) V1.4 [Business day phase]	◆	0d	Fri 12/06/15	Fri 12/06/15	Eurosystem
2154	**832400**	**Progress Report Wave 1(recurrent task during UT phase until End of User Testing Wave 1)**	◆	**10d**	**Fri 28/11/14**	**Thu 11/12/14**	
2155	832500	Preparation Progress Report Wave 1 (recurrent task)	◆	10d	Fri 28/11/14	Thu 11/12/14	CSDs,CBs
2156	832600	[Deliverable] - Progress Report Wave 1	◆	0d	Thu 11/12/14	Thu 11/12/14	CSDs,CBs
2157	**836100**	**Support Testing for other waves**	◆	**258d**	**Mon 01/06/15**	**Wed 18/05/16**	
2158	836200	Support Community Test of wave 2	◆	100d	Mon 01/06/15	Wed 14/10/15	CSDs
2159	836300	Support Community Test of wave 3	◆	140d	Tue 10/11/15	Wed 18/05/16	CSDs
2160	833100	**Synchronization Point [SP12.1 - End of User Testing Execution Phase Wave 1]**	◆	0d	Mon 15/06/15	Mon 15/06/15	Eurosystem,CSDs,CBs
2161	**840100**	**Interoperability - Community - Business Day Testing Wave 2**		**487d**	**Mon 07/07/14**	**Wed 18/05/16**	
2162	**840200**	**Connectivity Testing for Interoperability wave 2**		**82d**	**Mon 07/07/14**	**Wed 29/10/14**	
2167	840560	[Deliverable] - User Testing Stage Report (Wave 2) V2.0 [Connectivity phase]	◆	0d	Fri 26/09/14	Fri 26/09/14	Eurosystem
2168	**842100**	**Interoperability Bilateral testing Waves 2**		**115d**	**Wed 01/10/14**	**Wed 18/03/15**	
2169	**843100**	**Interoperability Bilateral Testing Waves 2 [First Window]**		**55d**	**Wed 01/10/14**	**Thu 18/12/14**	
2170	843101	Start Interoperability Bilateral Testing Waves 2	◆	0d	Wed 01/10/14	Wed 01/10/14	Eurosystem,CSDs,CBs
2199	**879100**	**Interoperability Bilateral Testing Wave 2 [Second Window]**		**50d**	**Thu 08/01/15**	**Wed 18/03/15**	
2225	912150	Finish Interoperability Bilateral Testing Wave 2	◆	0d	Wed 18/03/15	Wed 18/03/15	Eurosystem,CSDs
2227	914180	[Deliverable] - User Testing Stage Report (Wave 2) V2.1 [Interoperability Bilateral phase]	◆	0d	Wed 18/03/15	Wed 18/03/15	Eurosystem
2228	913000	**Synchronization Point [SP9.2 - Start Multilateral Interoperability Testing (wave 2)]**	◆	0d	Thu 02/04/15	Thu 02/04/15	Eurosystem,CSDs,CBs
2229	**911000**	**Interoperability Multilateral testing Wave 2**	◆	**40d**	**Fri 03/04/15**	**Fri 29/05/15**	
2233	913100	[Deliverable] - User Testing Stage Report (Wave 2) V2.2 [Interoperability Multilateral phase]	◆	0d	Fri 29/05/15	Fri 29/05/15	Eurosystem
2266	**917300**	**Connectivity Testing for Migration wave 2**		**42d**	**Wed 01/10/14**	**Fri 28/11/14**	
2270	**917700**	**Migration Wave 2**	◆	**150d**	**Mon 06/10/14**	**Fri 08/05/15**	
2280	920100	**Synchronization Point [SP10.2 - Start Community Testing Wave 2]**	◆	0d	Fri 29/05/15	Fri 29/05/15	Eurosystem,CSDs,CBs
2281	**920200**	**Connectivity Testing for Community wave 2**		**40d**	**Fri 03/04/15**	**Fri 29/05/15**	
2284	**922100**	**Community Testing Wave 2**		**115d**	**Fri 29/05/15**	**Wed 04/11/15**	
2285	**922200**	**Community Testing Wave 2 - [First Window]**		**65d**	**Fri 29/05/15**	**Wed 26/08/15**	
2286	922101	Start Community Test Wave 2	◆	0d	Fri 29/05/15	Fri 29/05/15	Eurosystem,CSDs



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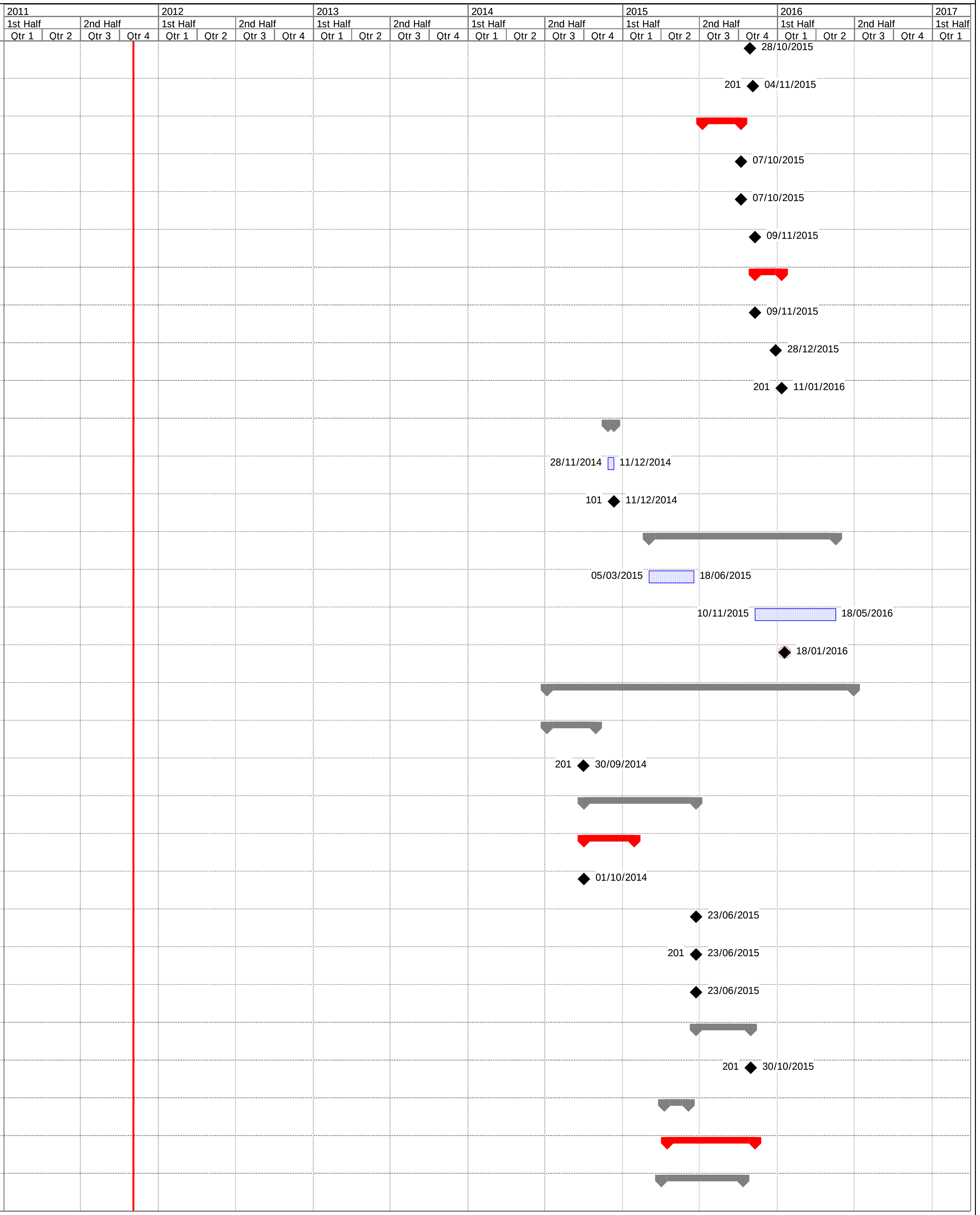
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
2345	954000	Finish Community Test Wave 2	◆	0d	Wed 28/10/15	Wed 28/10/15	Eurosystem,CSDs
2347	979300	[Deliverable] - User Testing Stage Report (Wave 2) V2.3 [Community phase]	◆	0d	Wed 04/11/15	Wed 04/11/15	Eurosystem
2348	**979400**	**DCP-DCAH Certification phase wave 2**	◆	**65d**	**Thu 09/07/15**	**Wed 07/10/15**	
2351	979700	[Deliverable] - Certification report for DCPs (Wave 2)	◆	0d	Wed 07/10/15	Wed 07/10/15	Eurosystem
2354	981000	[Deliverable] - Certification report for DCAH (Wave 2)	◆	0d	Wed 07/10/15	Wed 07/10/15	Eurosystem
2355	1024400	**Synchronization Point [SP11.2 - Start Business Day Testing Wave 2]**	◆	0d	Mon 09/11/15	Mon 09/11/15	Eurosystem,CSDs,CBs
2356	**986100**	**Business day test Wave 2**		**44d**	**Mon 09/11/15**	**Mon 11/01/16**	
2357	986200	Start Business day test Wave 2	◆	0d	Mon 09/11/15	Mon 09/11/15	Eurosystem,CSDs
2378	1021200	Finish Business day test Wave 2	◆	0d	Mon 28/12/15	Mon 28/12/15	Eurosystem,CSDs
2380	1022300	[Deliverable] - User Testing Stage Report (Wave 2) V2.4 [Business day phase]	◆	0d	Mon 11/01/16	Mon 11/01/16	Eurosystem
2381	**1022500**	**Progress Report Wave 2 (recurrent task during UT phase End of User Testing Wave 2)**	◆	**10d**	**Fri 28/11/14**	**Thu 11/12/14**	
2382	1022600	Preparation Progress Report Wave 2 (recurrent task)	◆	10d	Fri 28/11/14	Thu 11/12/14	CSDs,CBs
2383	1022700	[Deliverable] - Progress Report Wave 2 (recurrent task)	◆	0d	Thu 11/12/14	Thu 11/12/14	CSDs,CBs
2384	**1022800**	**Support Testing for other waves**	◆	**319d**	**Thu 05/03/15**	**Wed 18/05/16**	
2385	1022900	Support Community Test of wave 1	◆	75d	Thu 05/03/15	Thu 18/06/15	CSDs
2386	1023000	Support Community Test of wave 3	◆	140d	Tue 10/11/15	Wed 18/05/16	CSDs
2387	1023100	**Synchronization Point [SP12.2 - End of User Testing Execution Phase Wave 2]**	◆	0d	Mon 18/01/16	Mon 18/01/16	Eurosystem,CSDs,CBs
2388	**2200000**	**Interoperability - Community - Business Day Testing Wave 3**		**517d**	**Mon 07/07/14**	**Wed 29/06/16**	
2389	**2200100**	**Connectivity Testing for Interoperability wave 3**		**82d**	**Mon 07/07/14**	**Wed 29/10/14**	
2394	2200600	[Deliverable] - User Testing Stage Report (Wave 3) V3.0 [Connectivity phase]	◆	0d	Tue 30/09/14	Tue 30/09/14	Eurosystem
2395	**2201000**	**Interoperability Bilateral testing Wave 3**		**185d**	**Wed 01/10/14**	**Tue 23/06/15**	
2396	**2202000**	**Interoperability Bilateral Testing Wave 3 [First Window]**		**80d**	**Wed 01/10/14**	**Wed 28/01/15**	
2397	2203000	Start Interoperability Bilateral Test Wave 3	◆	0d	Wed 01/10/14	Wed 01/10/14	Eurosystem,CSDs
2455	2273000	Finish Interoperability Bilateral Testing Wave 3 Second window	◆	0d	Tue 23/06/15	Tue 23/06/15	Eurosystem,CSDs
2457	2273080	[Deliverable] - User Testing Stage Report (Wave 3) V3.1 Interoperability Bilateral phase]	◆	0d	Tue 23/06/15	Tue 23/06/15	Eurosystem
2458	2273500	**Synchronization Point [SP9.3 - Start Multilateral Interoperability Testing (wave 3)]**	◆	0d	Tue 23/06/15	Tue 23/06/15	Eurosystem,CSDs,CBs
2459	**2273100**	**Interoperability Multilateral testing Wave 3**	◆	**93d**	**Wed 24/06/15**	**Fri 30/10/15**	
2463	2275000	[Deliverable] - User Testing Stage Report(Wave 3) V3.2 [Interoperability Multilateral phase]	◆	0d	Fri 30/10/15	Fri 30/10/15	Eurosystem
2496	**2282050**	**Connectivity Testing for Migration wave 3**		**40d**	**Fri 10/04/15**	**Fri 05/06/15**	
2500	**2282400**	**Migration Wave 3**	◆	**148d**	**Fri 17/04/15**	**Mon 09/11/15**	
2504	**2276000**	**[Predecessors] Community test**		**138d**	**Thu 02/04/15**	**Mon 12/10/15**	



Task	▨	Task	▨	Critical Milestone	◆	Milestone	◆	Critical Task	▨	Project Summary	▬	Group By Summary	▬

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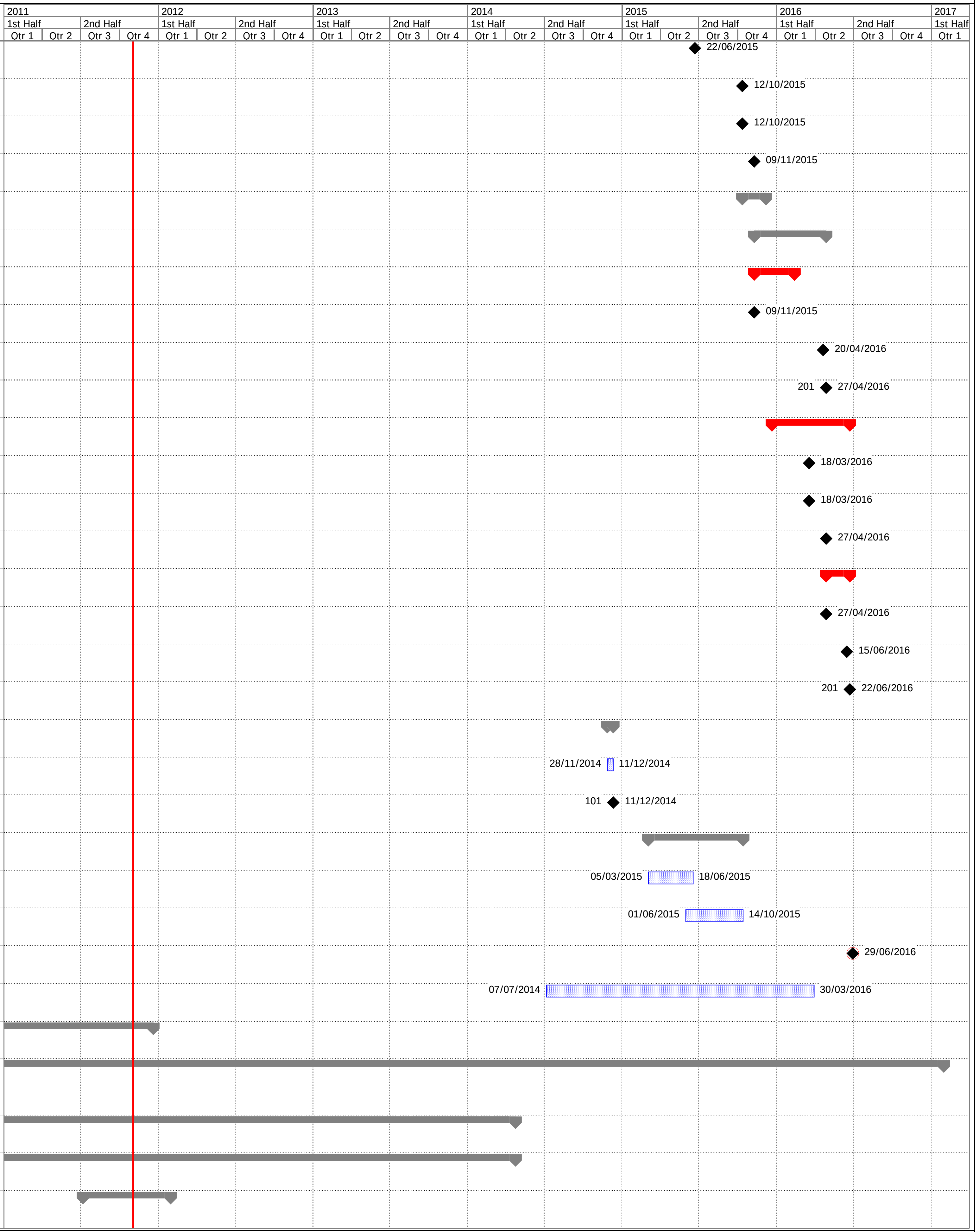
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
2505	2276100	Delivery certification Step1 (CSDs able to use T2S functionalities)	◆	0d	Mon 22/06/15	Mon 22/06/15	CSDs
2507	2281000	Confirmation that CSDs participants are ready (wave 3)	◆	0d	Mon 12/10/15	Mon 12/10/15	CSDs
2508	2282000	Confirmation that CB members are ready (wave 3)	◆	0d	Mon 12/10/15	Mon 12/10/15	CBs
2510	2284000	**Synchronization Point [SP10.3 - Start Community Testing Wave 3]**	◆	0d	Mon 09/11/15	Mon 09/11/15	Eurosystem,CSDs,CBs
2511	**2284100**	**Connectivity Testing for Community wave 3**		**40d**	**Tue 13/10/15**	**Mon 07/12/15**	
2514	**2285000**	**Community testing Wave 3**		**125d**	**Mon 09/11/15**	**Wed 27/04/16**	
2515	**2286000**	**Community Testing Wave 3 [First Window]**		**70d**	**Mon 09/11/15**	**Fri 12/02/16**	
2516	2287000	Start Community Test Wave 3	◆	0d	Mon 09/11/15	Mon 09/11/15	Eurosystem,CSDs
2575	2319800	Finish Community Test Wave 3	◆	0d	Wed 20/04/16	Wed 20/04/16	Eurosystem,CSDs
2577	2345100	[Deliverable] - User Testing Stage Report (Wave 3) V3.3 [Community phase]	◆	0d	Wed 27/04/16	Wed 27/04/16	Eurosystem
2578	**2346000**	**DCP-DCAH Certification phase wave 3**	◆	**135d**	**Tue 22/12/15**	**Wed 22/06/16**	
2581	2346300	[Deliverable] - Certification report for DCPs (Wave 3)	◆	0d	Fri 18/03/16	Fri 18/03/16	Eurosystem
2584	2346700	[Deliverable] - Certification report for DCAH (Wave 3)	◆	0d	Fri 18/03/16	Fri 18/03/16	Eurosystem
2585	2351100	**Synchronization Point [SP11.3 - Start Business Day Testing Wave 3]**	◆	0d	Wed 27/04/16	Wed 27/04/16	Eurosystem,CSDs,CBs
2586	**2352000**	**Business day test Wave 3**		**40d**	**Wed 27/04/16**	**Wed 22/06/16**	
2587	2353000	Start Business day test Wave 3	◆	0d	Wed 27/04/16	Wed 27/04/16	Eurosystem,CSDs
2608	2389000	Finish Business day test Wave 3	◆	0d	Wed 15/06/16	Wed 15/06/16	Eurosystem,CSDs
2610	2390200	[Deliverable] - User Testing Stage Report (Wave 3) V3.4 [Business day phase]	◆	0d	Wed 22/06/16	Wed 22/06/16	Eurosystem
2611	**2391000**	**Progress Report Wave 3 (recurrent task during UT phase End of User Testing Wave 3)**	◆	**10d**	**Fri 28/11/14**	**Thu 11/12/14**	
2612	2391100	Preparation Progress Report Wave 3 (recurrent task)	◆	10d	Fri 28/11/14	Thu 11/12/14	CSDs,CBs
2613	2391200	[Deliverable] - Progress Report Wave 3 (recurrent task)	◆	0d	Thu 11/12/14	Thu 11/12/14	CSDs,CBs
2614	**2394400**	**Support Testing for other waves**	◆	**161d**	**Thu 05/03/15**	**Wed 14/10/15**	
2615	2394500	Support Community Test of wave 1	◆	75d	Thu 05/03/15	Thu 18/06/15	CSDs
2616	2394600	Support Community Test of wave 2	◆	100d	Mon 01/06/15	Wed 14/10/15	CSDs
2617	2394200	**Synchronization Point [SP12.3 - End of User Testing Execution Phase Wave 3]**	◆	0d	Wed 29/06/16	Wed 29/06/16	Eurosystem,CSDs,CBs
2618	2394300	Defects and Release Management during UT phases		452d	Mon 07/07/14	Wed 30/03/16	Eurosystem
2619	**1310100**	**CONTRACTUAL FRAMEWORK**		**602d**	**Tue 01/09/09**	**Wed 21/12/11**	
2748	**1027100**	**OPERATIONAL READINESS**		**1984d**	**Mon 15/06/09**	**Mon 30/01/17**	
2749	**1027200**	**NETWORK AND CONNECTIVITY**		**1260d**	**Mon 15/06/09**	**Thu 24/04/14**	
2750	**1028100**	**NETWORK AND CONNECTIVITY**		**1260d**	**Mon 15/06/09**	**Thu 24/04/14**	
2809	**1063480**	**Tender process for Value-Added Services (VA-NSPs)**		**147d**	**Fri 08/07/11**	**Tue 31/01/12**	



Task ▨	Task ▨	Critical Milestone ◆	Milestone ◆	Critical Task ▨	Project Summary ▬	Group By Summary ▬

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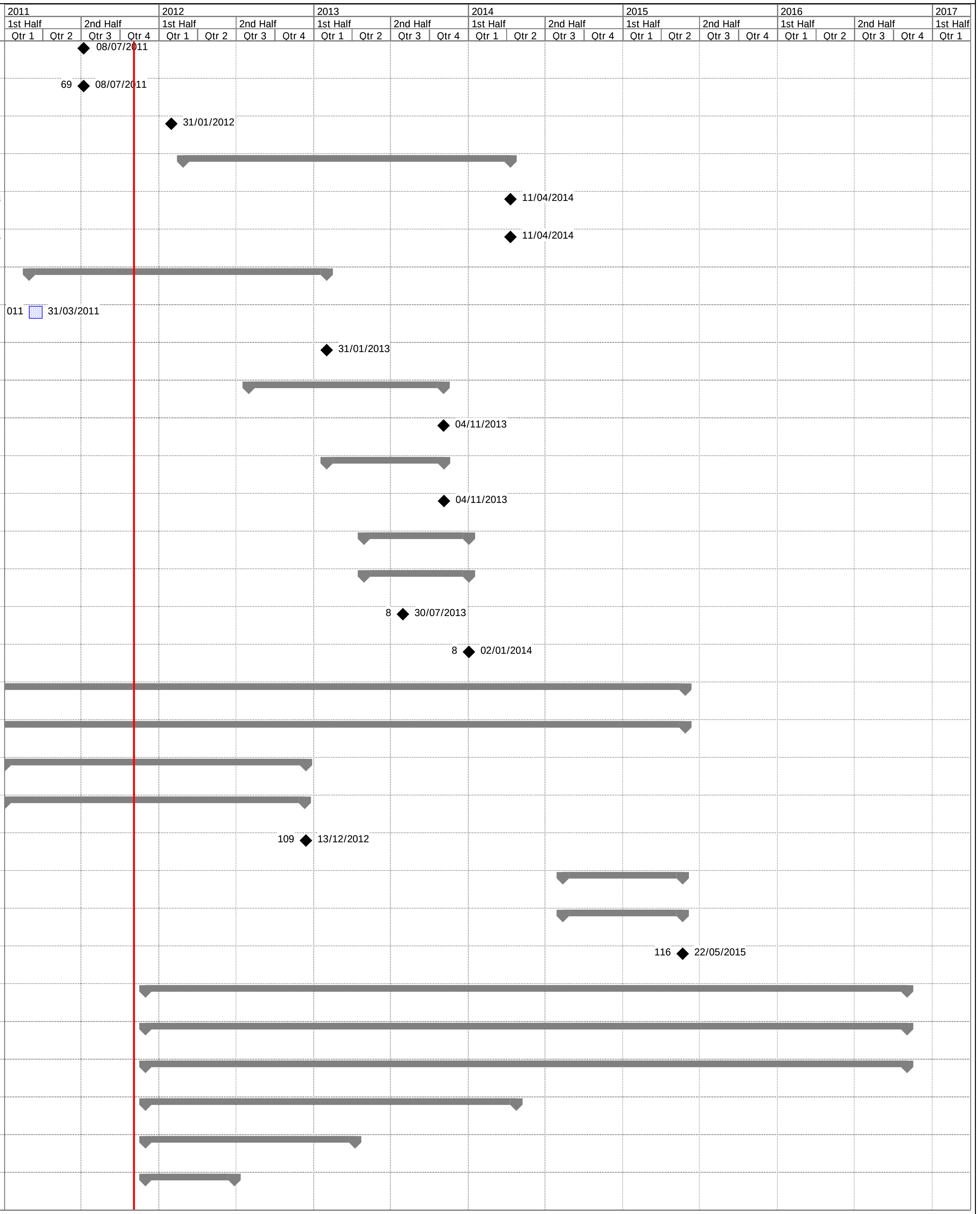
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
2810	1063490	Publication of Selection Documents		0d	Fri 08/07/11	Fri 08/07/11	TFUC,Eurosystem
2811	1059100	[Deliverable] - Tender for Network Connectivity (VAN)		0d	Fri 08/07/11	Fri 08/07/11	Eurosystem
2814	1061100	Signature of Network Service Provider Agreement		0d	Tue 31/01/12	Tue 31/01/12	Eurosystem
2815	**1062000**	**CSDs - Network Service Provider negotiations**		**543d**	**Tue 28/02/12**	**Fri 11/04/14**	
2818	1063120	CSD: Network Agreement Contract signed	◆	0d	Fri 11/04/14	Fri 11/04/14	CSDs
2821	1063190	CB: Network Agreement Contract signed	◆	0d	Fri 11/04/14	Fri 11/04/14	CBs
2822	**1060500**	**Tender process for Dedicated line (DL-NSPs) (to be updated after PB meeting in June)**		**498d**	**Tue 01/03/11**	**Thu 31/01/13**	**Eurosystem**
2823	1060600	Analysis with CSDs		23d	Tue 01/03/11	Thu 31/03/11	Eurosystem
2829	1061000	Contract Signature for dedicated link	◆	0d	Thu 31/01/13	Thu 31/01/13	Eurosystem
2837	**1064100**	**Implementation Phase 2 - VAN Network**		**322d**	**Wed 01/08/12**	**Mon 04/11/13**	
2842	1067100	Start of VAN Networks connectivity tests with CSDs/CBs (Finish acceptance VAN Networks by 4CB)		0d	Mon 04/11/13	Mon 04/11/13	Eurosystem
2843	**1077300**	**Implementation - Phase 2 - Dedicated Links**		**196d**	**Fri 01/02/13**	**Mon 04/11/13**	**Eurosystem**
2847	1077700	Start of DL connectivity tests with DiCoAs		0d	Mon 04/11/13	Mon 04/11/13	Eurosystem
2849	**1037100**	**Implementation - Phase 3 - Network - Connectivity Guides**		**173d**	**Tue 30/04/13**	**Thu 02/01/14**	
2850	**1038100**	**Internal Eurosystem Preparation [Connectivity Guide]**		**173d**	**Tue 30/04/13**	**Thu 02/01/14**	
2852	1042200	[Deliverable] - Connectivity Guide for VAN and Direct connectivity (Testing) V1.0	◆	0d	Tue 30/07/13	Tue 30/07/13	Eurosystem
2855	1043100	[Deliverable] - Connectivity Guide for VAN and Direct connectivity V2.0	◆	0d	Thu 02/01/14	Thu 02/01/14	Eurosystem
2856	**1081100**	**INFORMATION SECURITY**		**1221d**	**Wed 01/09/10**	**Fri 29/05/15**	
2857	**1082100**	**INFORMATION SECURITY**		**1221d**	**Wed 01/09/10**	**Fri 29/05/15**	
2858	**1084280**	**T2S Threat Catalogue**		**508d**	**Mon 03/01/11**	**Thu 13/12/12**	
2859	**1084290**	**Internal Eurosystem Preparation [T2S Threat Catalogue]**		**505d**	**Mon 03/01/11**	**Mon 10/12/12**	
2867	1091500	[Deliverable] - T2S Threat Catalogue		0d	Thu 13/12/12	Thu 13/12/12	Eurosystem
2906	**1107250**	**Risk analysis on T2S Compliance with T2S Information Security policy [Risk evaluation table & Risk treatment plan]**		**197d**	**Wed 13/08/14**	**Fri 22/05/15**	
2907	**1107260**	**Internal Eurosystem Preparation [Risk analysis on T2S Compliance with T2S Information Security policy]**		**197d**	**Wed 13/08/14**	**Fri 22/05/15**	
2920	1108100	[Deliverable] - Risk Analysis on T2S Compliance with T2S Information Security policy	◆	0d	Fri 22/05/15	Fri 22/05/15	Eurosystem
2932	**1109200**	**OPERATIONS**		**1275d**	**Thu 01/12/11**	**Wed 02/11/16**	
2933	**1110100**	**OPERATIONAL PROCEDURES**		**1275d**	**Thu 01/12/11**	**Wed 02/11/16**	
2934	**1111100**	**Manual of Operational Procedures (MOP)**		**1275d**	**Thu 01/12/11**	**Wed 02/11/16**	
2935	**1111150**	**Production MOP V1.0 (before starting User Test)**		**616d**	**Thu 01/12/11**	**Thu 24/04/14**	
2936	**1112050**	**First set of review cycles**		**348d**	**Thu 01/12/11**	**Mon 08/04/13**	
2937	**1112100**	**Internal Eurosystem Preparation [MOP V0.1]**		**150d**	**Thu 01/12/11**	**Wed 27/06/12**	



Task	▨	Task	▨	Critical Milestone	◆	Milestone	◆	Critical Task	🟥	Project Summary	▬	Group By Summary	▬

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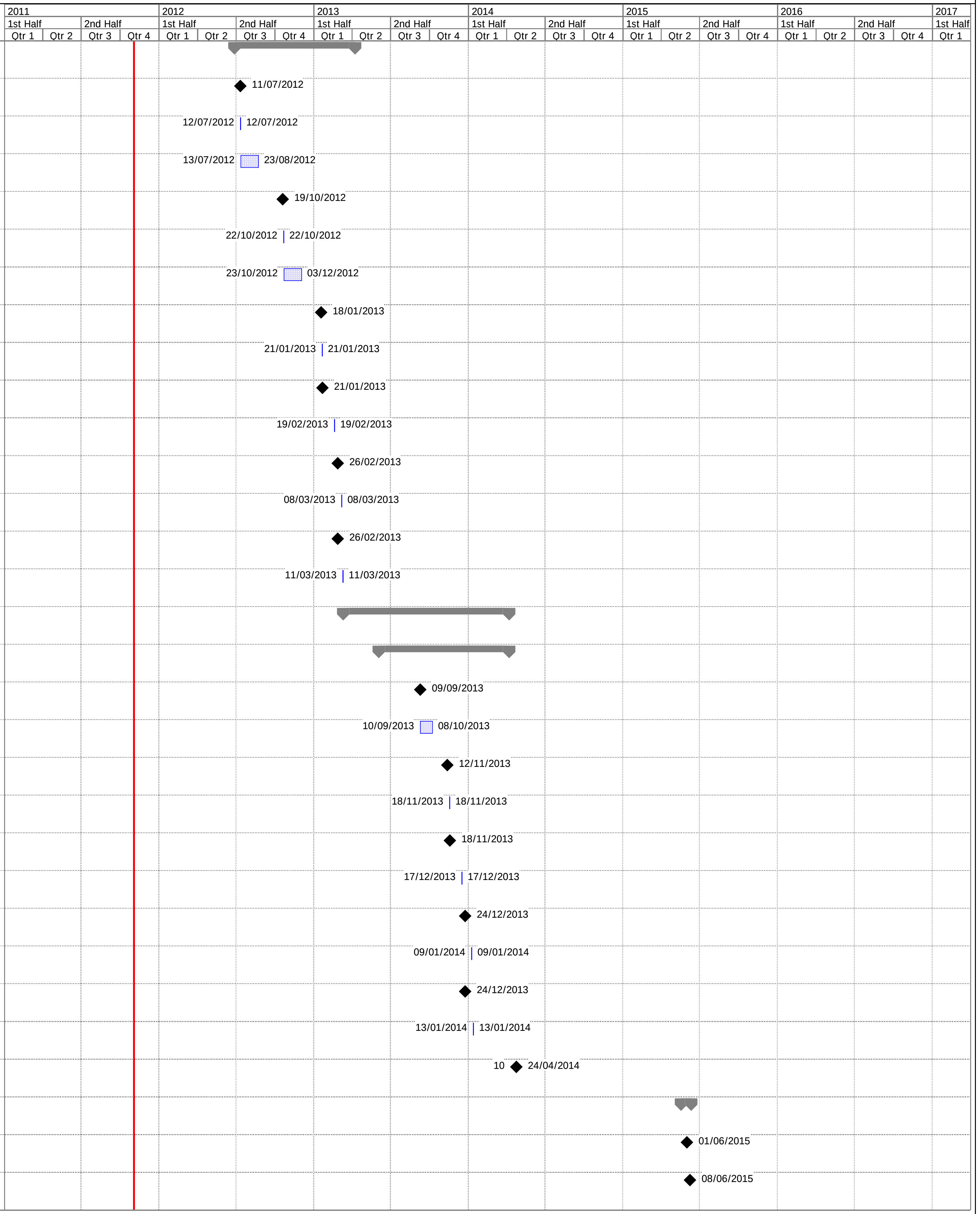
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
2942	**1113500**	**First Market consultation on Manual of Operational Procedures (MOP)**	◆	**198d**	**Thu 28/06/12**	**Mon 08/04/13**	
2944	1114100	Submission MOP V0.1 to OMG (1st cycle)	◆	0d	Wed 11/07/12	Wed 11/07/12	Eurosystem
2945	1115150	OMG Meeting	◆	1d	Thu 12/07/12	Thu 12/07/12	OMG
2946	1115100	Review MOP V0.1 by OMG	◆	30d	Fri 13/07/12	Thu 23/08/12	OMG
2948	1118100	Submission new version of MOP V0.2 to OMG (2th cycle)	◆	0d	Fri 19/10/12	Fri 19/10/12	Eurosystem
2949	1119150	OMG Meeting	◆	1d	Mon 22/10/12	Mon 22/10/12	OMG
2950	1119100	Review MOP V0.2 by OMG	◆	30d	Tue 23/10/12	Mon 03/12/12	OMG
2952	1119600	Submission MOP V0.3 to OMG (3th cycle)	◆	0d	Fri 18/01/13	Fri 18/01/13	Eurosystem
2953	1119700	OMG Meeting	◆	1d	Mon 21/01/13	Mon 21/01/13	OMG
2954	1119800	Approval MOP V0.3 by OMG	◆	0d	Mon 21/01/13	Mon 21/01/13	OMG
2957	1122000	OMG Meeting after PB meeting	◆	1d	Tue 19/02/13	Tue 19/02/13	OMG
2958	1123000	Submission MOP V0.3 to CSG	◆	0d	Tue 26/02/13	Tue 26/02/13	Eurosystem
2959	1123100	CSG Meeting for guidance on MOP V0.3	◆	1d	Fri 08/03/13	Fri 08/03/13	CSG
2960	1123200	Submission MOP V0.3 to NECSG	◆	0d	Tue 26/02/13	Tue 26/02/13	Eurosystem
2961	1123300	NECSG Meeting for guidance on MOP V0.3	◆	1d	Mon 11/03/13	Mon 11/03/13	NCSG
2963	**1124000**	**Second set of review cycles**		**275d**	**Tue 12/03/13**	**Mon 07/04/14**	
2966	**1124300**	**Second Market consultation on Manual of Operational Procedures (MOP)**	◆	**215d**	**Tue 04/06/13**	**Mon 07/04/14**	
2968	1125100	Submission MOP V0.4 to OMG (4th cycle)	◆	0d	Mon 09/09/13	Mon 09/09/13	Eurosystem
2969	1126100	Review MOP V0.4 by OMG	◆	20d	Tue 10/09/13	Tue 08/10/13	OMG
2971	1127100	Submission MOP V1.0 to OMG (5th cycle)	◆	0d	Tue 12/11/13	Tue 12/11/13	Eurosystem
2972	1128100	OMG Meeting	◆	1d	Mon 18/11/13	Mon 18/11/13	OMG
2973	1128200	Approval of MOP V1.0 by OMG	◆	0d	Mon 18/11/13	Mon 18/11/13	OMG
2976	1130200	OMG Meeting after PB	◆	1d	Tue 17/12/13	Tue 17/12/13	OMG
2977	1130300	Submission MOP V1.0 to the CSG	◆	0d	Tue 24/12/13	Tue 24/12/13	Eurosystem
2978	1130400	CSG Meeting for approval of MOP V1.0	◆	1d	Thu 09/01/14	Thu 09/01/14	CSG
2979	1130500	Submission MOP V1.0 to the NECSG	◆	0d	Tue 24/12/13	Tue 24/12/13	Eurosystem
2980	1130600	NECSG Meeting for approval of MOP V1.0	◆	1d	Mon 13/01/14	Mon 13/01/14	NCSG
2983	1140100	[Deliverable] - Manual of Operational Procedures (MOP) V1.0 for Business Day Test wave 1	◆	0d	Thu 24/04/14	Thu 24/04/14	Eurosystem
2984	**1140200**	**Production MOP V1.2 (revised MOP V1.0 before Start Operation in T2S wave 1)**		**18d**	**Tue 19/05/15**	**Thu 11/06/15**	
2986	1144100	Submission MOP V1.2 before operations to OMG	◆	0d	Mon 01/06/15	Mon 01/06/15	Eurosystem
2987	1145100	Approval MOP V1.2 before operations by OMG	◆	0d	Mon 08/06/15	Mon 08/06/15	OMG



Task	▨	Task	▨	Critical Milestone	◆	Milestone	◆	Critical Task	▨	Project Summary	▬	Group By Summary	▬

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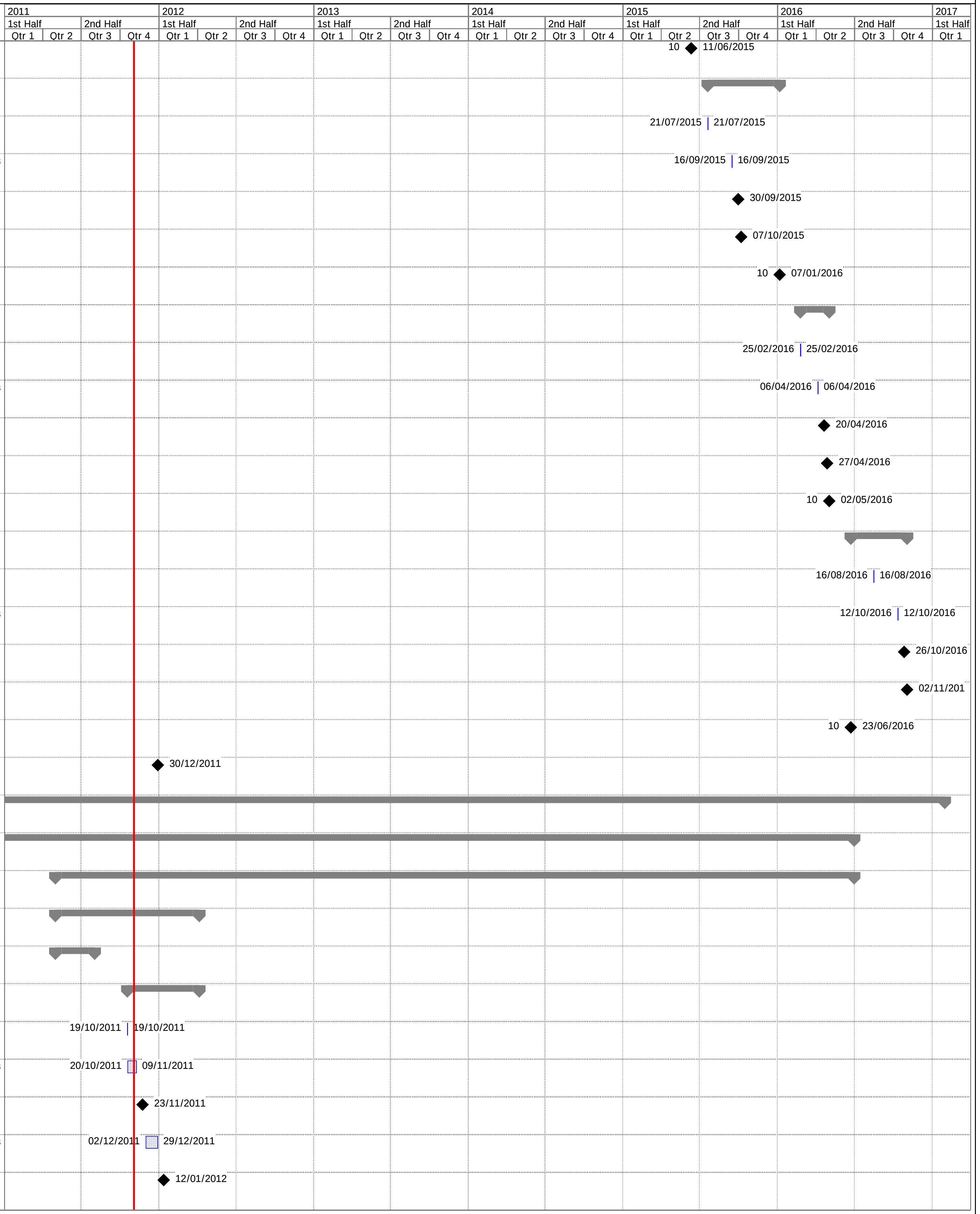
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
2988	1121100	[Deliverable] - Manual of Operational Procedures (MOP) V1.2 before Start Operation in T2S Wave 1	◆	0d	Thu 11/06/15	Thu 11/06/15	Eurosystem
2989	**1121200**	**Production MOP V1.3 (revised MOP V1.2 after Start Operation in T2S wave 1 and during Business Day Test wave 2)**		**121d**	**Tue 21/07/15**	**Thu 07/01/16**	
2990	1121300	Monthly Telco (Recurring task)	◆	1d	Tue 21/07/15	Tue 21/07/15	Eurosystem
2991	1121400	Quarterly meeting (Recurring task)	◆	1d	Wed 16/09/15	Wed 16/09/15	Eurosystem,CSDs,CBs
2993	1143160	Submission MOP V1.3 after Start Operation in T2S wave 1 to OMG	◆	0d	Wed 30/09/15	Wed 30/09/15	Eurosystem
2994	1143170	Approval MOP V1.3 after Start Operation in T2S wave 1 by OMG	◆	0d	Wed 07/10/15	Wed 07/10/15	OMG
2995	1145200	[Deliverable] - Manual of Operational Procedures (MOP) V1.3 during Business Day Test Wave 2	◆	0d	Thu 07/01/16	Thu 07/01/16	Eurosystem
2996	**1145300**	**Production MOP V1.4 (revised MOP V1.3 after Start Operation in T2S wave 2 and during Business Day Test wave 3)**		**50d**	**Thu 25/02/16**	**Mon 02/05/16**	
2997	1145400	Monthly Telco (Recurring task)	◆	1d	Thu 25/02/16	Thu 25/02/16	Eurosystem
2998	1145450	Quarterly meeting (Recurring task)	◆	1d	Wed 06/04/16	Wed 06/04/16	Eurosystem,CSDs,CBs
3000	1145600	Submission MOP V1.4 after Start Operation in T2S wave 2 to OMG	◆	0d	Wed 20/04/16	Wed 20/04/16	Eurosystem
3001	1145700	Approval MOP V1.4 after Start Operation in T2S wave 2 by OMG	◆	0d	Wed 27/04/16	Wed 27/04/16	OMG
3002	1145800	[Deliverable] - Manual of Operational Procedures (MOP) V1.4 during Business Day Test Wave 3	◆	0d	Mon 02/05/16	Mon 02/05/16	Eurosystem
3003	**1145900**	**Production MOP V2.0 (Operational activities after Start Operation in T2S wave 3)**		**97d**	**Thu 23/06/16**	**Wed 02/11/16**	
3004	1145950	Monthly Telco (Recurring task)	◆	1d	Tue 16/08/16	Tue 16/08/16	Eurosystem
3005	1145960	Quarterly meeting (Recurring task)	◆	1d	Wed 12/10/16	Wed 12/10/16	Eurosystem,CSDs,CBs
3007	1146020	Submission MOP V2.0 after Start Operation in T2S wave 3 to OMG	◆	0d	Wed 26/10/16	Wed 26/10/16	Eurosystem
3008	1146040	Approval MOP V2.0 after Start Operation in T2S wave 3 by OMG	◆	0d	Wed 02/11/16	Wed 02/11/16	OMG
3009	1146050	[Deliverable] - Manual of Operational Procedures (MOP) V2.0 after start of operations in T2S of wave 3	◆	0d	Thu 23/06/16	Thu 23/06/16	Eurosystem
3017	1110200	**SERVICE LEVEL AGREEMENT**		0d	Fri 30/12/11	Fri 30/12/11	
3018	**1187100**	**MIGRATION**		**1956d**	**Thu 23/07/09**	**Mon 30/01/17**	
3019	**1187200**	**MIGRATION PREPARATION**		**1800d**	**Thu 23/07/09**	**Thu 30/06/16**	
3027	**1200100**	**Preparation phase**		**1337d**	**Mon 02/05/11**	**Thu 30/06/16**	
3028	**1201100**	**Processes and tools for Data Migration**		**244d**	**Mon 02/05/11**	**Thu 05/04/12**	
3029	**1201200**	**Internal Eurosystem Preparation [Processes and tools for Data Migration]**		**67d**	**Mon 02/05/11**	**Tue 02/08/11**	
3033	**1203400**	**Market consultation on Processes and tools for Data Migration**	◆	**122d**	**Wed 19/10/11**	**Thu 05/04/12**	
3034	1204170	Meeting with CSDs/CBs	◆	1d	Wed 19/10/11	Wed 19/10/11	PMG
3035	1204180	Feedbacks from CSDs/CBs	◆	15d	Thu 20/10/11	Wed 09/11/11	CSDs,CBs
3037	1204210	Submission User Requirements for data migration tools to CSDs/CBs (1st review cycle)	◆	0d	Wed 23/11/11	Wed 23/11/11	Eurosystem
3039	1204350	Feedbacks from CSDs/CBs	◆	20d	Fri 02/12/11	Thu 29/12/11	CSDs,CBs
3041	1205200	Submission User Requirements for data migration tools to CSDs/CBs (2nd review cycle)	◆	0d	Thu 12/01/12	Thu 12/01/12	Eurosystem



Task	▨	Task	▨	Critical Milestone	◆	Milestone	◆	Critical Task	▨	Project Summary	▬	Group By Summary	▬

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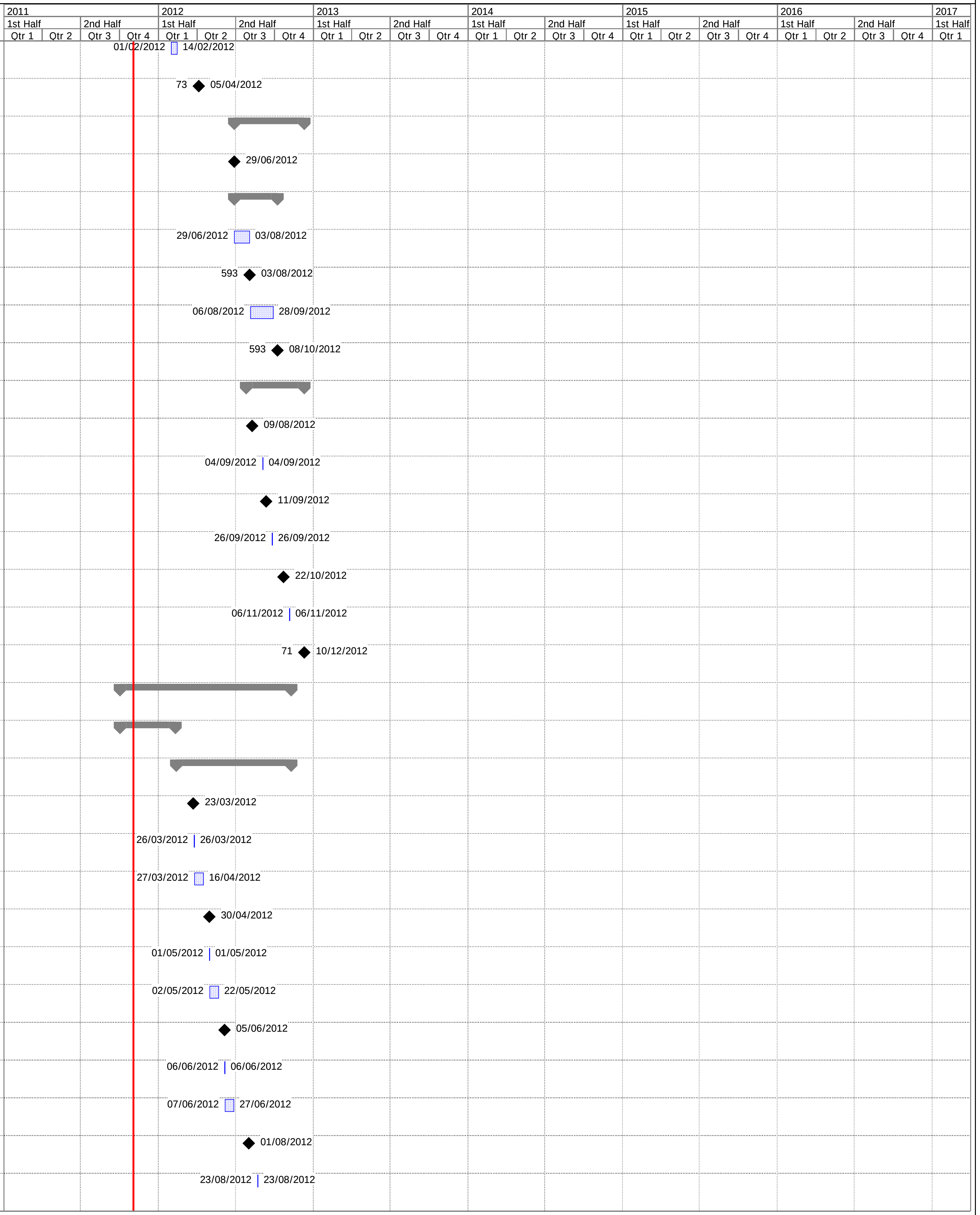
3043	1205350	Feedbacks from CSDs/CBs	◆	10d	Wed 01/02/12	Tue 14/02/12	CSDs,CBs
3049	1206100	[Deliverable] - User Requirements for data migration tools V1.0	◆	0d	Thu 05/04/12	Thu 05/04/12	Eurosystem
3050	**1207100**	**Composition of Migration Waves & Dates**		**116d**	**Fri 29/06/12**	**Mon 10/12/12**	
3051	1207150	Reception of Proposal of migration waves plus migration dates for each CSD/CB (as part of the feasibility study)	◆	0d	Fri 29/06/12	Fri 29/06/12	CSDs,CBs
3052	**1207200**	**Eurosystem consultation: review of CSDs proposal by the Eurosystem**	◆	**71d**	**Fri 29/06/12**	**Mon 08/10/12**	
3053	1209100	Coordination by Eurosystem of proposal for the Composition of migration waves (incl. CSD/CBs views)	◆	26d	Fri 29/06/12	Fri 03/08/12	Eurosystem,CSDs,CBs
3054	546350	[Deliverable] - Composition and Timing Migration Waves by CSDs/CBs	◆	0d	Fri 03/08/12	Fri 03/08/12	CSDs,CBs
3055	1209130	Evaluation by Eurosystem of proposal for the timing of migration waves (incl. CSD/CBs views)	◆	40d	Mon 06/08/12	Fri 28/09/12	Eurosystem,CSDs,CBs
3056	1209150	Confirmation of the Timing and Composition of Migration Waves by Eurosystem	◆	0d	Mon 08/10/12	Mon 08/10/12	Eurosystem
3057	**1209160**	**Market Consultation on Composition of Migration Waves & Dates (only whether CSDs proposal conflicts with migration criteria)**	◆	**96d**	**Fri 27/07/12**	**Mon 10/12/12**	
3059	1209200	Submission revised proposal of Composition of migration waves & dates V 0.1 to MSG (1st review cycle)	◆	0d	Thu 09/08/12	Thu 09/08/12	Eurosystem
3060	1209300	Migration Sub Group (MSG) Meeting	◆	1d	Tue 04/09/12	Tue 04/09/12	PMG
3062	1209500	Submission Composition of migration waves & dates V0.2 to MSG (2st review cycle)	◆	0d	Tue 11/09/12	Tue 11/09/12	Eurosystem
3063	1209600	Migration Sub Group (MSG) Meeting	◆	1d	Wed 26/09/12	Wed 26/09/12	PMG
3068	1211000	Submission Composition of migration waves & dates V1.0 to CSG	◆	0d	Mon 22/10/12	Mon 22/10/12	Eurosystem
3069	1212000	CSG Meeting: approval of Composition of migration waves & dates V1.0	◆	1d	Tue 06/11/12	Tue 06/11/12	CCG
3075	1218000	[Deliverable] - Confirmation of composition and timing of Migration Waves V1.0	◆	0d	Mon 10/12/12	Mon 10/12/12	Eurosystem
3076	**1218100**	**Migration profiles & Registration Guide**		**289d**	**Mon 03/10/11**	**Fri 09/11/12**	
3077	**1218200**	**Internal Eurosystem Preparation [Migration profiles & Registration Guide]**		**95d**	**Mon 03/10/11**	**Fri 10/02/12**	
3080	**1220400**	**Market Consultation on Migration profiles & Registration Guide**	◆	**194d**	**Mon 13/02/12**	**Fri 09/11/12**	
3082	1222200	Submission Migration profiles and Registration Guide V0.1 to MSG (1st review cycle)	◆	0d	Fri 23/03/12	Fri 23/03/12	Eurosystem
3083	1222300	Migration Sub Group (MSG) Meeting	◆	1d	Mon 26/03/12	Mon 26/03/12	PMG
3084	1222250	Review Migration profiles & Registration Guide V0.1 by MSG	◆	15d	Tue 27/03/12	Mon 16/04/12	OMG
3086	1222500	Submission Migration profiles and Registration Guide V0.2 to MSG (2st review cycle)	◆	0d	Mon 30/04/12	Mon 30/04/12	Eurosystem
3087	1222600	Migration Sub Group (MSG) Meeting	◆	1d	Tue 01/05/12	Tue 01/05/12	PMG
3088	1222650	Review Migration profiles & Registration Guide V0.2 by MSG	◆	15d	Wed 02/05/12	Tue 22/05/12	OMG
3090	1222800	Submission Migration profiles and Registration Guide V0.3 to PMG	◆	0d	Tue 05/06/12	Tue 05/06/12	Eurosystem
3091	1222900	Migration Sub Group (PMG) Meeting	◆	1d	Wed 06/06/12	Wed 06/06/12	PMG
3092	1222850	Review Migration profiles & Registration Guide V0.2 by MSG	◆	15d	Thu 07/06/12	Wed 27/06/12	OMG
3097	1221300	Submission to PMG Migration profiles and Registration Guide V0.5	◆	0d	Wed 01/08/12	Wed 01/08/12	Eurosystem
3098	1221400	PMG Meeting	◆	1d	Thu 23/08/12	Thu 23/08/12	PMG



Task	▨	Task	▨	Critical Milestone	◆	Milestone	◆	Critical Task	▨	Project Summary	▬	Group By Summary	▬

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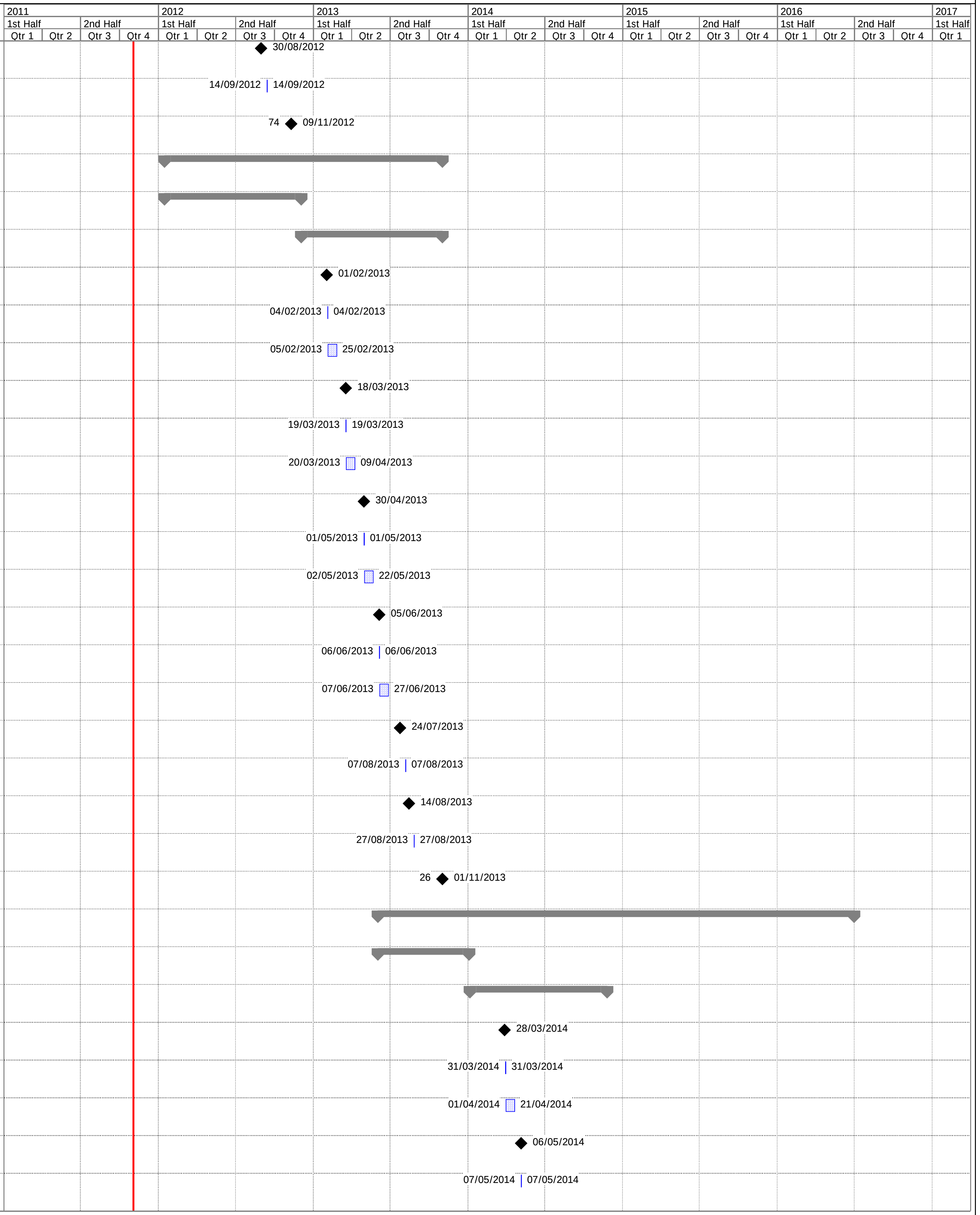
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
3100	1221600	Submission to CSG Migration profiles and Registration Guide V1.0	◆	0d	Thu 30/08/12	Thu 30/08/12	Eurosystem
3101	1221700	CSG Meeting	◆	1d	Fri 14/09/12	Fri 14/09/12	CSDs
3106	1222100	[Deliverable] - Registration Guide for Migration V1.0	◆	0d	Fri 09/11/12	Fri 09/11/12	Eurosystem
3107	**1228100**	**Standard Migration plans (including Fallback and Roll-back Procedures)**		**464d**	**Mon 16/01/12**	**Fri 01/11/13**	
3108	**1228200**	**Internal Eurosystem Preparation [Standard Migration plans (including Fallback and Roll-back Procedures)]**		**230d**	**Mon 16/01/12**	**Mon 03/12/12**	
3113	**1229500**	**Market consultation on Standard Migration plan and Tailored**	◆	**234d**	**Tue 04/12/12**	**Fri 01/11/13**	
3115	1230200	Submission Standard Migration Plan and Tailored V0.1 (per CSD) to MSG (1st review cycle)	◆	0d	Fri 01/02/13	Fri 01/02/13	Eurosystem
3116	1230300	Migration Sub Group (MSG) Meeting	◆	1d	Mon 04/02/13	Mon 04/02/13	PMG
3117	1230250	Review Standard Migration Plan and Tailored V0.1 by OMG	◆	15d	Tue 05/02/13	Mon 25/02/13	OMG
3119	1230500	Submission Standard Migration Plan V0.2 to MSG (2st review cycle)	◆	0d	Mon 18/03/13	Mon 18/03/13	Eurosystem
3120	1230600	Migration Sub Group (MSG) Meeting	◆	1d	Tue 19/03/13	Tue 19/03/13	PMG
3121	1230550	Review Standard Migration Plan and Tailored V0.1 by OMG	◆	15d	Wed 20/03/13	Tue 09/04/13	OMG
3123	1230800	Submission Standard Migration Plan V0.3 to PMG (3st review cycle)	◆	0d	Tue 30/04/13	Tue 30/04/13	Eurosystem
3124	1230900	Migration Sub Group (PMG) Meeting	◆	1d	Wed 01/05/13	Wed 01/05/13	PMG
3125	1230850	Review Standard Migration Plan and Tailored V0.1 by OMG	◆	15d	Thu 02/05/13	Wed 22/05/13	OMG
3127	1231100	Submission Standard Migration Plan V0.4 to MSG (4st review cycle)	◆	0d	Wed 05/06/13	Wed 05/06/13	Eurosystem
3128	1231200	Migration Sub Group (MSG) Meeting	◆	1d	Thu 06/06/13	Thu 06/06/13	PMG
3129	1231150	Review Standard Migration Plan and Tailored V0.1 by OMG	◆	15d	Fri 07/06/13	Thu 27/06/13	OMG
3134	1232000	Submission to PMG Standard Migration Plan and Tailored V0.6 (per CSD)	◆	0d	Wed 24/07/13	Wed 24/07/13	Eurosystem
3135	1232100	PMG Meeting	◆	1d	Wed 07/08/13	Wed 07/08/13	PMG
3137	1232300	Submission to CSG Standard Migration Plan and Tailored V1.0 (per CSD)	◆	0d	Wed 14/08/13	Wed 14/08/13	Eurosystem
3138	1232400	CSG Meeting	◆	1d	Tue 27/08/13	Tue 27/08/13	CSG
3143	1232800	[Deliverable] - Standard Migration Plan V1.0	◆	0d	Fri 01/11/13	Fri 01/11/13	Eurosystem
3144	**1232900**	**Migration Weekend Script (including Fallback and Roll-back Procedures)**		**797d**	**Mon 03/06/13**	**Thu 30/06/16**	
3145	**1233000**	**Internal Eurosystem Preparation [Migration Weekend Script for wave 1]**		**150d**	**Mon 03/06/13**	**Fri 03/01/14**	
3150	**1233340**	**Market consultation on Migration Weekend Script**	◆	**230d**	**Mon 06/01/14**	**Tue 25/11/14**	
3152	1233400	Submission Detailed migration script V0.1 for each migration group to MSG (1st review cycle)	◆	0d	Fri 28/03/14	Fri 28/03/14	Eurosystem
3153	1233500	Migration Sub Group (MSG) Meeting	◆	1d	Mon 31/03/14	Mon 31/03/14	PMG
3154	1233450	Review Detailed migration script V0.1 by OMG	◆	15d	Tue 01/04/14	Mon 21/04/14	OMG
3156	1233700	Submission Detailed migration script V0.2 for each migration group to MSG (2st review cycle)	◆	0d	Tue 06/05/14	Tue 06/05/14	Eurosystem
3157	1233800	Migration Sub Group (MSG) Meeting	◆	1d	Wed 07/05/14	Wed 07/05/14	PMG



Task ▨ Task ▨ Critical Milestone ◆ Milestone ◆ Critical Task ▨ Project Summary ▬ Group By Summary ▬

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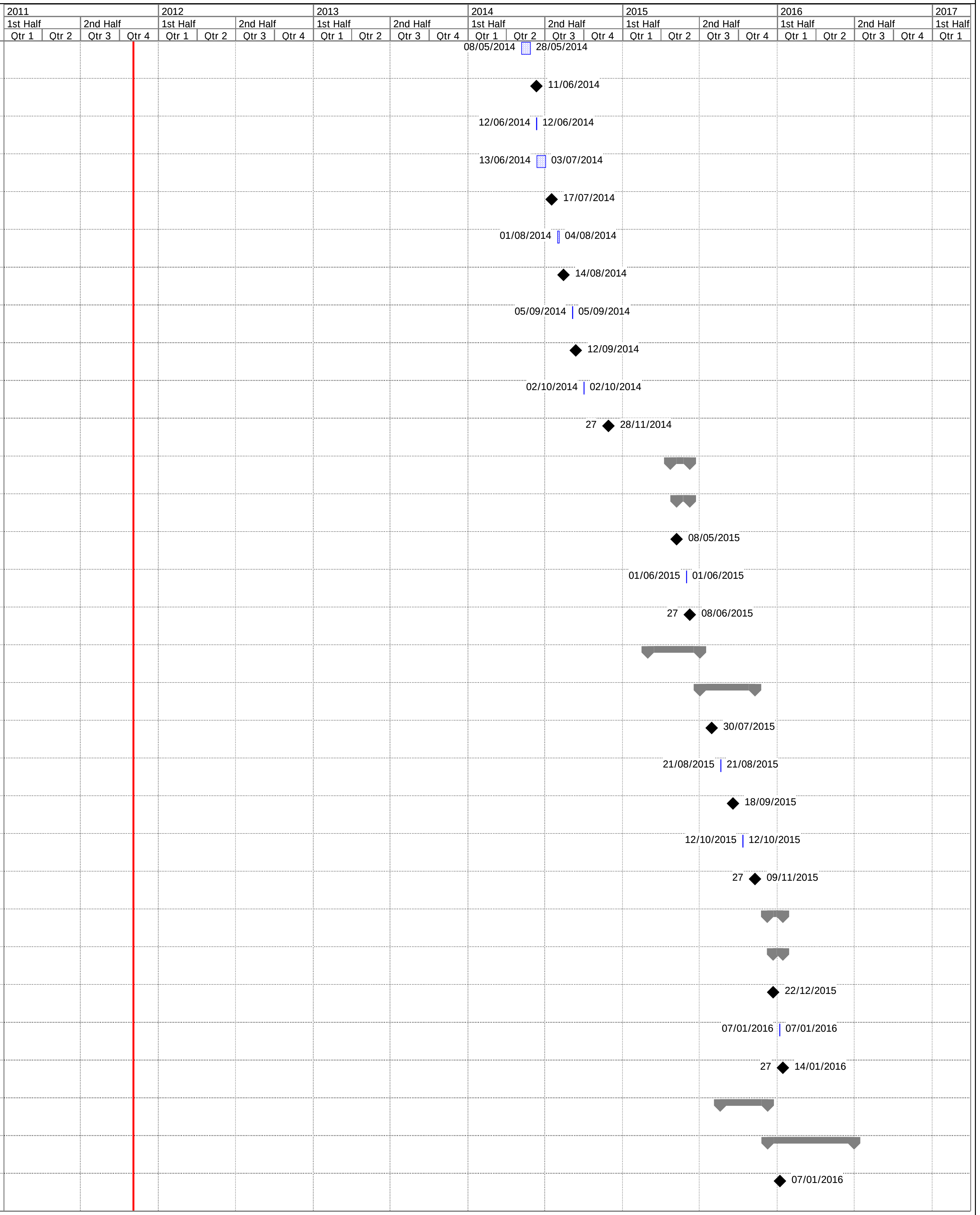
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
3158	1233850	Review Detailed migration script V0.2 by OMG	◆	15d	Thu 08/05/14	Wed 28/05/14	OMG
3160	1234000	Submission Detailed migration script V0.3 for each migration group to PMG (3st review cycle)	◆	0d	Wed 11/06/14	Wed 11/06/14	Eurosystem
3161	1234100	Migration Sub Group (PMG) Meeting	◆	1d	Thu 12/06/14	Thu 12/06/14	PMG
3162	1234150	Review Detailed migration script V0.3 by OMG	◆	15d	Fri 13/06/14	Thu 03/07/14	OMG
3164	1234300	Submission Detailed migration script V0.4 for each migration group to T2S Board	◆	0d	Thu 17/07/14	Thu 17/07/14	Eurosystem
3165	1234400	PB Meeting	◆	2d	Fri 01/08/14	Mon 04/08/14	PMG
3167	1234600	Submission to PMG of Detailed migration script V0.5for each migration group	◆	0d	Thu 14/08/14	Thu 14/08/14	Eurosystem
3168	1234700	PMG Meeting	◆	1d	Fri 05/09/14	Fri 05/09/14	PMG
3170	1234900	Submission to CSG of Detailed migration script V1.0 for each migration group	◆	0d	Fri 12/09/14	Fri 12/09/14	Eurosystem
3171	1235000	CSG Meeting	◆	1d	Thu 02/10/14	Thu 02/10/14	CSG
3176	1235400	[Deliverable] - Detailed Migration Weekend Script V1.0 Wave 1	◆	0d	Fri 28/11/14	Fri 28/11/14	Eurosystem
3177	**1235500**	**Review Migration Weekend Script for wave 1 before Start Operation in T2S**		**31d**	**Fri 24/04/15**	**Mon 08/06/15**	
3179	**1235650**	**Market consultation Migration Weekend Script for wave 1 before Start Operation in T2S**	◆	**21d**	**Fri 08/05/15**	**Mon 08/06/15**	
3180	1235700	Submission Detailed migration script V1.1 for migration wave 1	◆	0d	Fri 08/05/15	Fri 08/05/15	Eurosystem
3181	1235800	Migration Sub Group (MSG) Meeting	◆	1d	Mon 01/06/15	Mon 01/06/15	PMG
3183	1236000	[Deliverable] - Detailed Migration Weekend Script V1.2 Wave 1	◆	0d	Mon 08/06/15	Mon 08/06/15	Eurosystem
3184	**1236400**	**Internal Eurosystem Preparation [Migration Weekend Script for wave 2]**		**90d**	**Mon 02/03/15**	**Thu 02/07/15**	
3187	**1236640**	**Market consultation Migration Weekend Script for wave 2**	◆	**92d**	**Fri 03/07/15**	**Mon 09/11/15**	
3189	1236700	Submission Detailed migration script V2.0 for migration wave 2	◆	0d	Thu 30/07/15	Thu 30/07/15	Eurosystem
3190	1236800	Migration Sub Group (MSG) Meeting	◆	1d	Fri 21/08/15	Fri 21/08/15	PMG
3192	1237000	Submission draft version of Detailed migration script V2.1 for migration wave 2 to MSG	◆	0d	Fri 18/09/15	Fri 18/09/15	Eurosystem
3193	1237100	Migration Sub Group (MSG) Meeting	◆	1d	Mon 12/10/15	Mon 12/10/15	PMG
3196	1237300	[Deliverable] - Detailed Migration Weekend Script V2.2 Wave 2	◆	0d	Mon 09/11/15	Mon 09/11/15	Eurosystem
3197	**1237350**	**Review Migration Weekend Script for wave 2 before Start Operation in T2S wave 2**		**26d**	**Wed 09/12/15**	**Thu 14/01/16**	
3199	**1237450**	**Market consultation Migration Weekend Script for wave 2 before Start Operation in T2S**	◆	**16d**	**Tue 22/12/15**	**Thu 14/01/16**	
3200	1235720	Submission draft version of Detailed migration script V2.3 for migration wave 2	◆	0d	Tue 22/12/15	Tue 22/12/15	Eurosystem
3201	1235820	Migration Sub Group (MSG) Meeting	◆	1d	Thu 07/01/16	Thu 07/01/16	PMG
3203	1236020	[Deliverable] - Detailed Migration Weekend Script V2.4 Wave 2	◆	0d	Thu 14/01/16	Thu 14/01/16	Eurosystem
3204	**1237400**	**Internal Eurosystem Preparation [Migration Weekend Script for wave 3]**		**80d**	**Thu 20/08/15**	**Wed 09/12/15**	
3207	**1237540**	**Market consultation on Migration Weekend Script for wave 3**	◆	**149d**	**Thu 10/12/15**	**Thu 30/06/16**	
3209	1237600	Submission draft version of Detailed migration script V3.0 for migration wave 3	◆	0d	Thu 07/01/16	Thu 07/01/16	Eurosystem



Task ▨	Task ▨	Critical Milestone ◆	Milestone ◆	Critical Task ▨	Project Summary	Group By Summary

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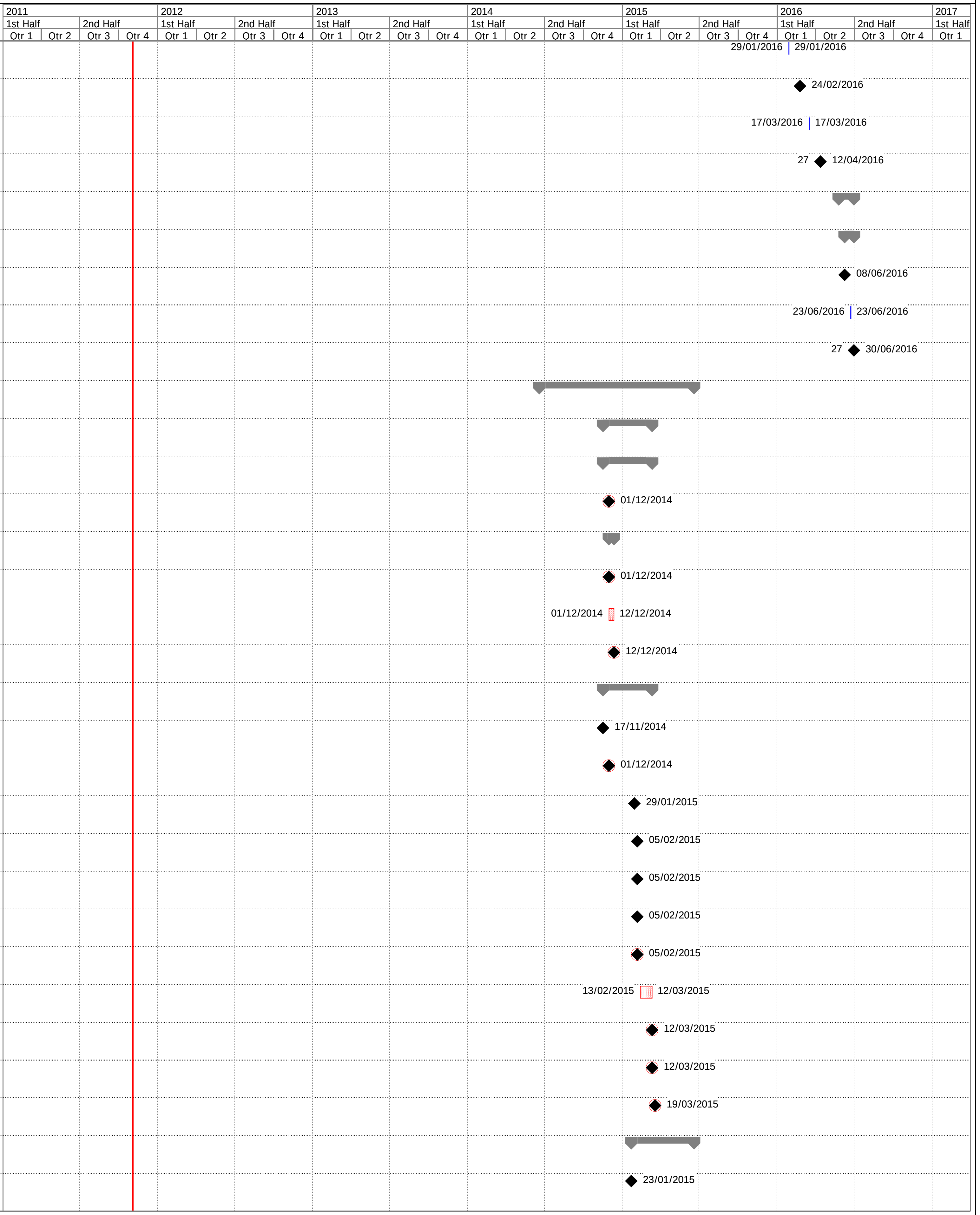
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
3210	1237700	Migration Sub Group (MSG) Meeting	◆	1d	Fri 29/01/16	Fri 29/01/16	PMG
3212	1237900	Submission draft version of Detailed migration script V3.1 for migration wave 3 to MSG	◆	0d	Wed 24/02/16	Wed 24/02/16	Eurosystem
3213	1238000	Migration Sub Group (MSG) Meeting	◆	1d	Thu 17/03/16	Thu 17/03/16	PMG
3216	1238200	[Deliverable] - Detailed Migration Weekend Script V3.2 Wave 3	◆	0d	Tue 12/04/16	Tue 12/04/16	Eurosystem
3217	**1234650**	**Review Migration Weekend Script for wave 3 before Start Operation in T2S wave 3**		**26d**	**Thu 26/05/16**	**Thu 30/06/16**	
3219	**1235710**	**Market consultation Migration Weekend Script for wave 3 before Start Operation in T2S**	◆	**16d**	**Wed 08/06/16**	**Thu 30/06/16**	
3220	1235740	Submission draft version of Detailed migration script V3.3 for migration wave 3	◆	0d	Wed 08/06/16	Wed 08/06/16	Eurosystem
3221	1235840	Migration Sub Group (MSG) Meeting	◆	1d	Thu 23/06/16	Thu 23/06/16	PMG
3223	1236040	[Deliverable] - Detailed Migration Weekend Script V3.4 Wave 3	◆	0d	Thu 30/06/16	Thu 30/06/16	Eurosystem
3239	**1269100**	**PRE-MIGRATION TASKS (WAVE 1)**		**255d**	**Fri 20/06/14**	**Fri 19/06/15**	
3240	**1235410**	**Implementation Migration phase (wave 1)**		**80d**	**Mon 17/11/14**	**Thu 12/03/15**	
3241	**1244100**	**Preparation of Migration Weekend (wave 1)**		**80d**	**Mon 17/11/14**	**Thu 12/03/15**	
3242	124410	Start preparation of Migration Weekend	◆	0d	Mon 01/12/14	Mon 01/12/14	Eurosystem
3243	**1245100**	**[Predecessors] Preparation of Production Environment**		**10d**	**Mon 01/12/14**	**Fri 12/12/14**	
3244	387100	Network ready for Production		0d	Mon 01/12/14	Mon 01/12/14	Eurosystem
3246	1246200	Collection of Registration Forms from CSDs / CBs (wave 1 + CSDs/CBs with Common Static Data)	◆	10d	Mon 01/12/14	Fri 12/12/14	Eurosystem
3247	1247100	Registration Form filled in (wave 1 + CSDs/CBs with Common Static Data)	◆	0d	Fri 12/12/14	Fri 12/12/14	CSDs,CBs
3248	**1249100**	**Preparation of production environment**		**80d**	**Mon 17/11/14**	**Thu 12/03/15**	
3249	1258200	T2S helpdesk is operational and contact details have been communicated to all relevant T2S parties	◆	0d	Mon 17/11/14	Mon 17/11/14	Eurosystem
3250	1250100	**Synchronization Point [SP13 - Eurosystem ready for Production]**	◆	0d	Mon 01/12/14	Mon 01/12/14	Eurosystem
3253	1252150	Input Registration Data completed	◆	0d	Thu 29/01/15	Thu 29/01/15	Eurosystem
3254	1256100	PROD environment available for users	◆	0d	Thu 05/02/15	Thu 05/02/15	Eurosystem
3255	1255200	Completed network registration by CSDs (wave 1)	◆	0d	Thu 05/02/15	Thu 05/02/15	CSDs
3256	1255300	Completed network registration by CBs (wave 1)	◆	0d	Thu 05/02/15	Thu 05/02/15	CBs
3257	1257100	**Synchronization Point [SP14.1 -Ready to connect to Production wave 1]**	◆	0d	Thu 05/02/15	Thu 05/02/15	Eurosystem,CSDs
3258	1255100	Prod Connectivity testing (wave 1)	◆	20d	Fri 13/02/15	Thu 12/03/15	CSDs
3259	1263100	Successful connectivity tests CSD (wave 1)	◆	0d	Thu 12/03/15	Thu 12/03/15	CSDs
3260	1255400	Successful connectivity tests CB (wave 1)	◆	0d	Thu 12/03/15	Thu 12/03/15	CBs
3266	1272100	**Synchronization Point [SP15.1 - Ready to upload Static Data wave 1]**	◆	0d	Thu 19/03/15	Thu 19/03/15	Eurosystem,CSDs
3268	**1268200**	**Migration Common Static Data**	◆	**105d**	**Fri 23/01/15**	**Fri 19/06/15**	
3269	1268300	Start Static Data identification and collection (for all CSDs/CBs with Common Static Data)	◆	0d	Fri 23/01/15	Fri 23/01/15	CSDs,CBs



Task ▨	Task ▨	Critical Milestone ◆	Milestone ◆	Critical Task ▨	Project Summary ▬	Group By Summary ▬

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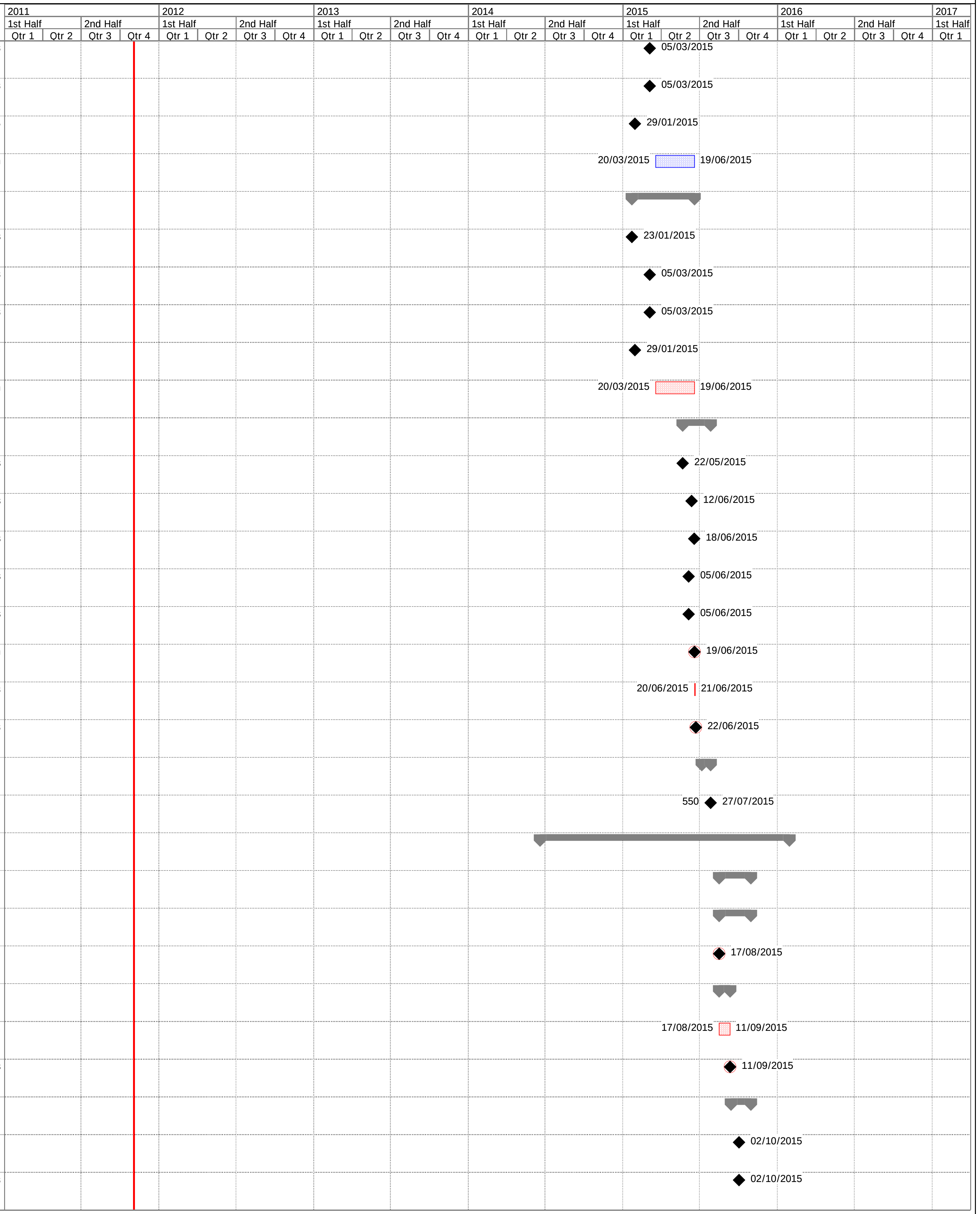
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
3270	1268400	Relevant Static Data ready by CSDs (for all CSDs with Common Static Data)	◆	0d	Thu 05/03/15	Thu 05/03/15	CSDs
3271	1268500	Relevant Static Data ready by CBs (for all CBs with Common Static Data)	◆	0d	Thu 05/03/15	Thu 05/03/15	CBs
3272	1268600	T2S System Configuration parameters finalised	◆	0d	Thu 29/01/15	Thu 29/01/15	ECB,4CB
3273	1268700	Common Static Data input by CSDs and CBs and Maintenance Static Data (for all CSDs/CBs with Common Static Data)	◆	65d	Fri 20/03/15	Fri 19/06/15	CBs, CSDs,Eurosystem
3275	**1269200**	**Migration Proprietary Static Data (wave 1)**		**105d**	**Fri 23/01/15**	**Fri 19/06/15**	
3276	1270100	Start Static Data identification and collection (wave 1)	◆	0d	Fri 23/01/15	Fri 23/01/15	CSDs,CBs
3277	1271200	Relevant Static Data ready by CSDs (wave1)	◆	0d	Thu 05/03/15	Thu 05/03/15	CSDs
3278	1271300	Relevant Static Data ready by CBs (wave1)	◆	0d	Thu 05/03/15	Thu 05/03/15	CBs
3279	1270400	T2S System Configuration parameters finalised	◆	0d	Thu 29/01/15	Thu 29/01/15	Eurosystem
3280	1273100	Proprietary Static Data input by CSDs and CBs and Maintenance Static Data (wave 1)	◆	65d	Fri 20/03/15	Fri 19/06/15	CBs, CSDs,Eurosystem
3282	**1275000**	**MIGRATION WEEKEND (WAVE 1)**		**48d**	**Fri 22/05/15**	**Mon 27/07/15**	
3283	1272200	Final verification of the list of showstoppers wave 1 (dependencies with local regulation)	◆	0d	Fri 22/05/15	Fri 22/05/15	CSDs,CBs
3284	1277000	Confirmation that migration script has been integrated in internal plans (wave 1)	◆	0d	Fri 12/06/15	Fri 12/06/15	CSDs,CBs
3285	1277200	Internal staff trained for change-over Weekend and operations (wave 1)	◆	0d	Thu 18/06/15	Thu 18/06/15	CSDs,CBs
3286	1277300	Confirmation that internal control mechanisms are in place (wave 1)	◆	0d	Fri 05/06/15	Fri 05/06/15	CSDs,CBs
3287	1277400	External communication has been rolled-out (wave 1)	◆	0d	Fri 05/06/15	Fri 05/06/15	CSDs,CBs
3288	1275100	**Synchronization Point [SP16.1 - Ready for T2S Go-Live (Wave 1)]**	◆	0d	Fri 19/06/15	Fri 19/06/15	CSDs,CBs,Eurosystem
3289	1276100	Dynamic data upload by CSDs/CBs	◆	2d	Sat 20/06/15	Sun 21/06/15	Eurosystem,CSDs
3290	1279100	**Wave 1 Start Operations in T2S**	◆	0d	Mon 22/06/15	Mon 22/06/15	Eurosystem,CSDs
3291	**1279200**	**Migration closing phase Wave 1**		**15d**	**Tue 07/07/15**	**Mon 27/07/15**	
3294	835100	[Deliverable] - End of Migration Report (Wave 1)	◆	0d	Mon 27/07/15	Mon 27/07/15	Eurosystem
3295	**1280200**	**PRE-MIGRATION TASKS (WAVE 2)**		**416d**	**Fri 20/06/14**	**Fri 29/01/16**	
3296	**1281000**	**Implementation Migration phase (wave 2)**		**55d**	**Mon 17/08/15**	**Fri 30/10/15**	
3297	**1281100**	**Preparation of Migration Weekend (wave 2)**		**55d**	**Mon 17/08/15**	**Fri 30/10/15**	
3298	1281200	Start preparation of Migration Weekend (wave 2)	◆	0d	Mon 17/08/15	Mon 17/08/15	Eurosystem
3299	**1281300**	**[Predecessors] Preparation of Production Environment**		**20d**	**Mon 17/08/15**	**Fri 11/09/15**	
3300	1281400	Collection of Registration Forms from CSDs/CBs (wave 2)	◆	20d	Mon 17/08/15	Fri 11/09/15	Eurosystem
3301	1281500	Registration Form filled in (CSDs/CBs) (wave 2)	◆	0d	Fri 11/09/15	Fri 11/09/15	CSDs,CBs
3302	**1281600**	**Preparation of production environment**		**35d**	**Mon 14/09/15**	**Fri 30/10/15**	
3305	1283400	PROD environment available for users	◆	0d	Fri 02/10/15	Fri 02/10/15	Eurosystem
3306	1283350	Completed network registration by CSDs (wave 2)	◆	0d	Fri 02/10/15	Fri 02/10/15	CSDs



Task ▨ Task ▨ Critical Milestone ◆ Milestone ◆ Critical Task ▨ Project Summary ▬ Group By Summary ▬

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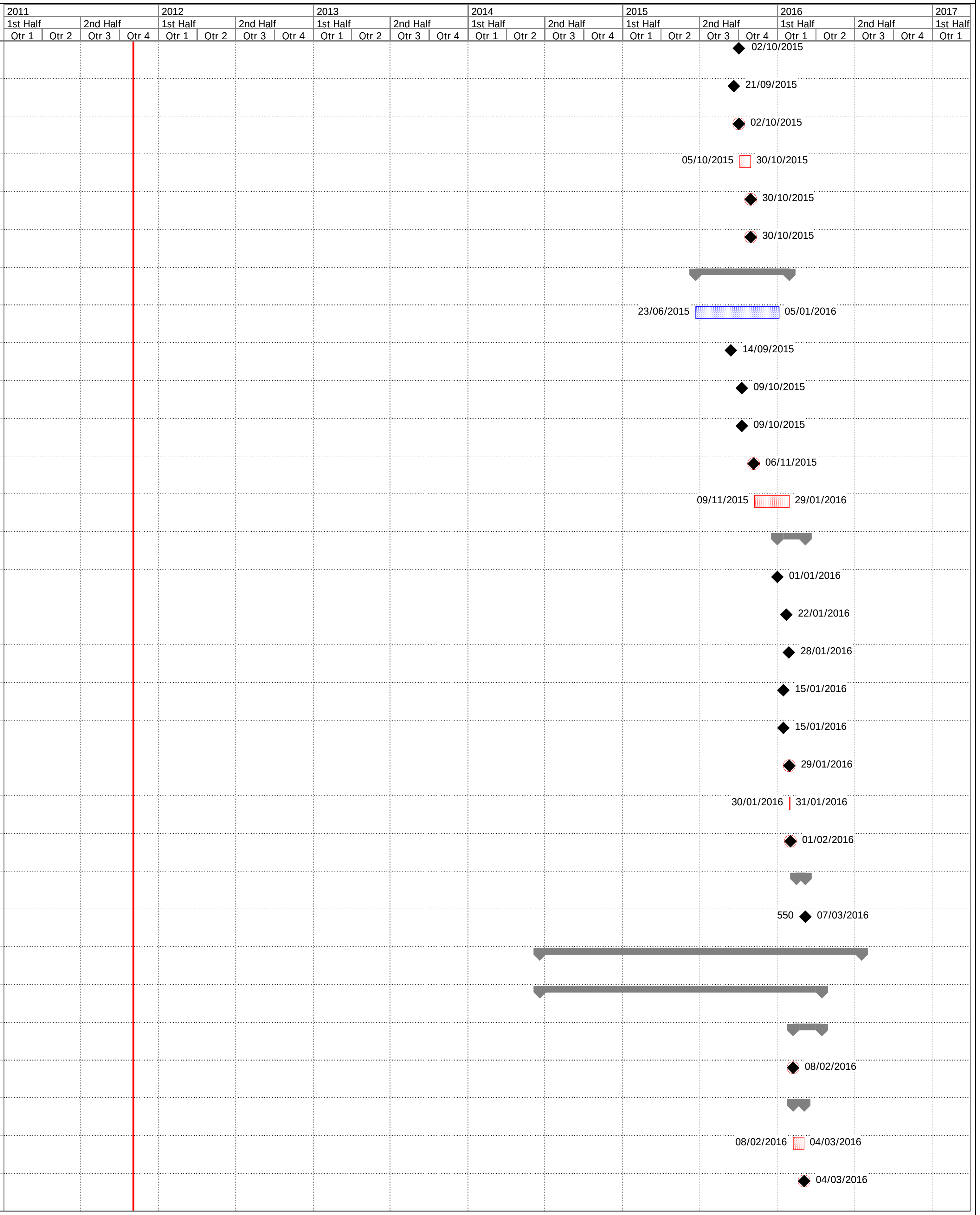
ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
3307	1283380	Completed network registration by CBs (wave 2)	◆	0d	Fri 02/10/15	Fri 02/10/15	CBs
3308	1283700	T2S helpdesk is operational and contact details have been communicated to all relevant T2S parties	◆	0d	Mon 21/09/15	Mon 21/09/15	Eurosystem
3309	1283500	**Synchronization Point [SP14.2 - Ready to connect to Production wave 2]**	◆	0d	Fri 02/10/15	Fri 02/10/15	Eurosystem,CSDs
3310	1283300	Prod Connectivity testing (wave 2)	◆	20d	Mon 05/10/15	Fri 30/10/15	CSDs
3311	1283370	Successful connectivity tests CSD (wave 2)	◆	0d	Fri 30/10/15	Fri 30/10/15	CSDs
3312	1283390	Successful connectivity tests CB (wave 2)	◆	0d	Fri 30/10/15	Fri 30/10/15	CBs
3318	**1283100**	**Migration Proprietary Static Data (wave 2)**		**158d**	**Tue 23/06/15**	**Fri 29/01/16**	
3319	1282100	Common Static Data Maintenance (Production System)	◆	140d	Tue 23/06/15	Tue 05/01/16	Eurosystem,CSDs
3320	1284150	Start Static Data identification and collection (wave 2)	◆	0d	Mon 14/09/15	Mon 14/09/15	CSDs,CBs
3321	1284200	Relevant Static Data ready CSD (wave 2)	◆	0d	Fri 09/10/15	Fri 09/10/15	CSDs
3322	1284300	Relevant Static Data ready CB (wave 2)	◆	0d	Fri 09/10/15	Fri 09/10/15	CBs
3323	1285200	**Synchronization Point [SP15.2 - Ready to upload Static Data wave 2]**	◆	0d	Fri 06/11/15	Fri 06/11/15	Eurosystem,CSDs
3324	1286100	Proprietary Static Data input by CSDs and CBs and Maintenance Static Data	◆	59d	Mon 09/11/15	Fri 29/01/16	Eurosystem,CSDs
3326	**1287000**	**MIGRATION WEEKEND (WAVE 2)**		**48d**	**Fri 01/01/16**	**Mon 07/03/16**	
3327	1287050	Final verification of the list of showstoppers wave 3 (dependencies with local regulation)	◆	0d	Fri 01/01/16	Fri 01/01/16	CSDs
3328	1287200	Confirmation that migration script has been integrated in internal plans (Wave 2)	◆	0d	Fri 22/01/16	Fri 22/01/16	CSDs,CBs
3329	1287300	Internal staff trained for change-over Weekend and operations (Wave 2)	◆	0d	Thu 28/01/16	Thu 28/01/16	CSDs,CBs
3330	1287400	Confirmation that internal control mechanisms are in place (Wave 2)	◆	0d	Fri 15/01/16	Fri 15/01/16	CSDs,CBs
3331	1287500	External communication has been rolled-out (Wave 2)	◆	0d	Fri 15/01/16	Fri 15/01/16	CSDs,CBs
3332	1287100	**Synchronization Point [SP16.2 - Ready for Migration Wave 2]**	◆	0d	Fri 29/01/16	Fri 29/01/16	Eurosystem,CSDs
3333	1288100	Dynamic data upload	◆	2d	Sat 30/01/16	Sun 31/01/16	Eurosystem,CSDs
3334	1291100	**Wave 2 Start Operations in T2S**	◆	0d	Mon 01/02/16	Mon 01/02/16	Eurosystem,CSDs
3335	**1291200**	**Migration closing phase Wave 2**		**15d**	**Tue 16/02/16**	**Mon 07/03/16**	
3338	1025100	[Deliverable] - End of Migration Report (Wave 2)	◆	0d	Mon 07/03/16	Mon 07/03/16	Eurosystem
3339	**1293000**	**PRE-MIGRATION TASKS (WAVE 3)**		**543d**	**Fri 20/06/14**	**Mon 18/07/16**	
3340	**1293100**	**Implementation Migration phase (wave 3)**		**475d**	**Fri 20/06/14**	**Fri 15/04/16**	
3341	**1293200**	**Preparation of Migration Weekend (wave 3)**		**52d**	**Mon 08/02/16**	**Fri 15/04/16**	
3342	1293300	Start preparation of Migration Weekend (wave 3)	◆	0d	Mon 08/02/16	Mon 08/02/16	Eurosystem
3343	**1293400**	**[Predecessors] Preparation of Production Environment**		**20d**	**Mon 08/02/16**	**Fri 04/03/16**	
3344	1293500	Collection of Registration Forms from CSDs/CBs (wave 3)	◆	20d	Mon 08/02/16	Fri 04/03/16	Eurosystem
3345	1293600	Registration Form filled in (CSDs/CBs) (wave 3)	◆	0d	Fri 04/03/16	Fri 04/03/16	CSDs,CBs

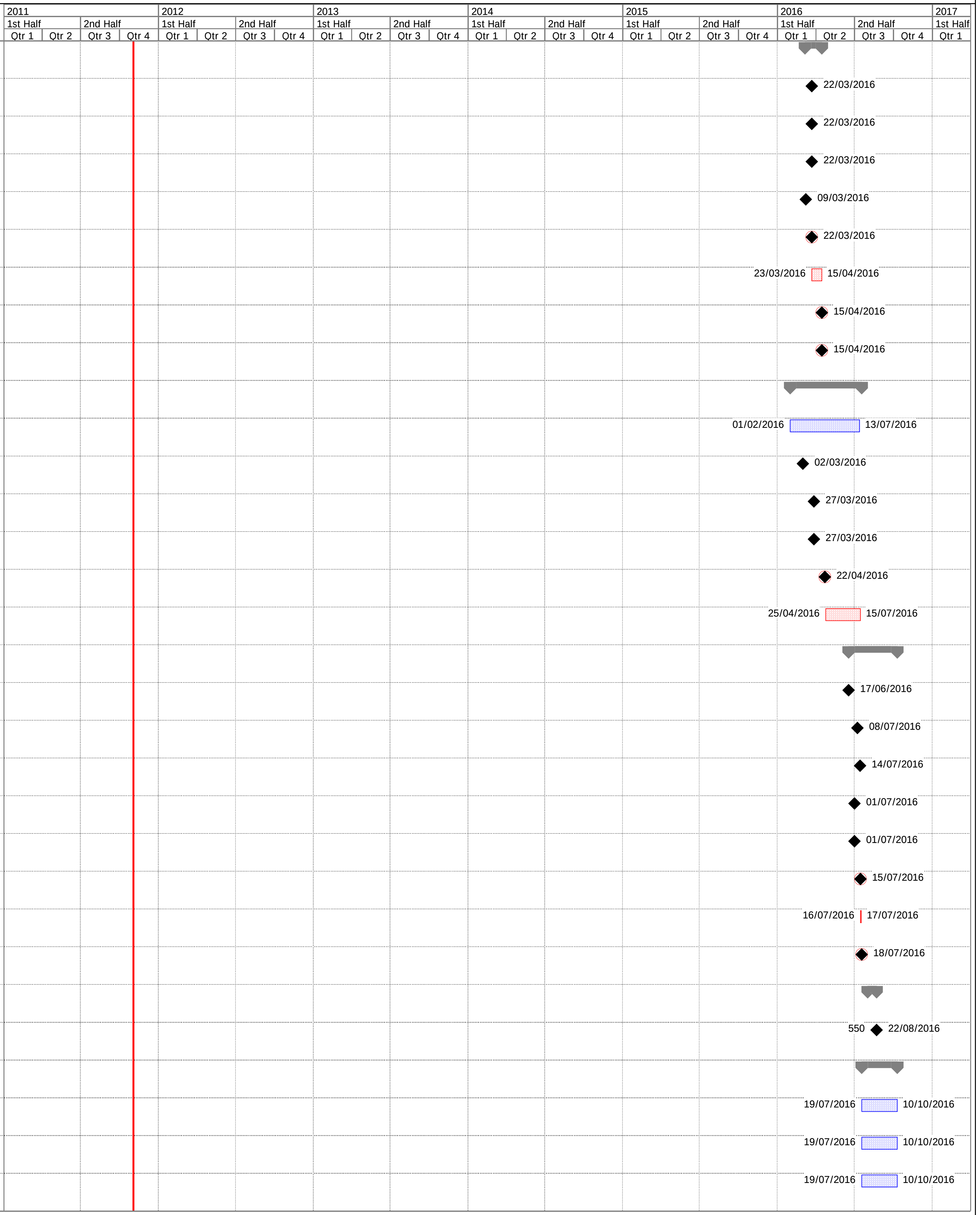


Task ▨ Task ▨ Critical Milestone ◆ Milestone ◆ Critical Task ▨ Project Summary ▬ Group By Summary ▬

T2S Detailed Plan with Critical Path

31/10/2011

ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
3346	**1293700**	**Preparation of production environment**		**32d**	**Mon 07/03/16**	**Fri 15/04/16**	
3349	1294500	PROD environment available for users	◆	0d	Tue 22/03/16	Tue 22/03/16	Eurosystem
3350	1294200	Completed network registration by CSDs (wave 3)	◆	0d	Tue 22/03/16	Tue 22/03/16	CSDs
3351	1294350	Completed network registration by CBs (wave 3)	◆	0d	Tue 22/03/16	Tue 22/03/16	CBs
3352	1294800	T2S helpdesk is operational and contact details have been communicated to all relevant T2S parties	◆	0d	Wed 09/03/16	Wed 09/03/16	Eurosystem
3353	1294600	**Synchronization Point [SP14.3 - Ready to connect to Production wave 3]**	◆	0d	Tue 22/03/16	Tue 22/03/16	Eurosystem,CSDs
3354	1294400	Prod Connectivity testing (wave 3)	◆	20d	Wed 23/03/16	Fri 15/04/16	CSDs
3355	1294300	Successful connectivity tests CSD (wave 3)	◆	0d	Fri 15/04/16	Fri 15/04/16	CSDs
3356	1294370	Successful connectivity tests CB (wave 3)	◆	0d	Fri 15/04/16	Fri 15/04/16	CBs
3362	**1296100**	**Migration Proprietary Static Data (wave 3)**		**125d**	**Mon 01/02/16**	**Mon 18/07/16**	
3363	1296200	Common Static Data Maintenance (Production System)	◆	120d	Mon 01/02/16	Wed 13/07/16	Eurosystem,CSDs
3364	1297150	Start Static Data identification and collection (wave 3)	◆	0d	Wed 02/03/16	Wed 02/03/16	CSDs,CBs
3365	1297200	Relevant Static Data ready CSD (wave 3)	◆	0d	Sun 27/03/16	Sun 27/03/16	CSDs
3366	1297300	Relevant Static Data ready CB (wave 3)	◆	0d	Sun 27/03/16	Sun 27/03/16	CBs
3367	1298200	**Synchronization Point [SP15.3 - Ready to upload Static Data]**	◆	0d	Fri 22/04/16	Fri 22/04/16	Eurosystem,CSDs
3368	1299100	Proprietary Static Data input by CSDs and CBs and Maintenance Static Data	◆	60d	Mon 25/04/16	Fri 15/07/16	Eurosystem,CSDs
3370	**1299200**	**MIGRATION WEEKEND (WAVE 3)**		**83d**	**Fri 17/06/16**	**Mon 10/10/16**	
3371	1299250	Final verification of the list of showstoppers wave 3 (dependencies with local regulation)	◆	0d	Fri 17/06/16	Fri 17/06/16	CSDs
3372	1299300	Confirmation that migration script has been integrated in internal plans (Wave 3)	◆	0d	Fri 08/07/16	Fri 08/07/16	CSDs,CBs
3373	1299400	Internal staff trained for change-over Weekend and operations (Wave 3)	◆	0d	Thu 14/07/16	Thu 14/07/16	CSDs,CBs
3374	1299500	Confirmation that internal control mechanisms are in place (Wave 3)	◆	0d	Fri 01/07/16	Fri 01/07/16	CSDs,CBs
3375	1299600	External communication has been rolled-out (Wave 3)	◆	0d	Fri 01/07/16	Fri 01/07/16	CSDs,CBs
3376	1300100	**Synchronization Point [SP16.3 - Ready for Migration Wave 3]**	◆	0d	Fri 15/07/16	Fri 15/07/16	Eurosystem,CSDs
3377	1301100	Dynamic data upload	◆	2d	Sat 16/07/16	Sun 17/07/16	Eurosystem,CSDs
3378	1304100	**Wave 3 Start Operations in T2S**	◆	0d	Mon 18/07/16	Mon 18/07/16	Eurosystem,CSDs
3379	**1304200**	**Migration closing phase Wave 3**		**15d**	**Tue 02/08/16**	**Mon 22/08/16**	
3382	2394000	[Deliverable] - End of Migration Report (Wave 3)	◆	0d	Mon 22/08/16	Mon 22/08/16	Eurosystem
3383	**1309900**	**Closing phase**		**60d**	**Tue 19/07/16**	**Mon 10/10/16**	
3384	1310000	Post-launch Assessment	◆	60d	Tue 19/07/16	Mon 10/10/16	Eurosystem
3385	1311000	Post-launch Support Assessment	◆	60d	Tue 19/07/16	Mon 10/10/16	Eurosystem
3386	1312000	Report on the result of each wave	◆	60d	Tue 19/07/16	Mon 10/10/16	Eurosystem

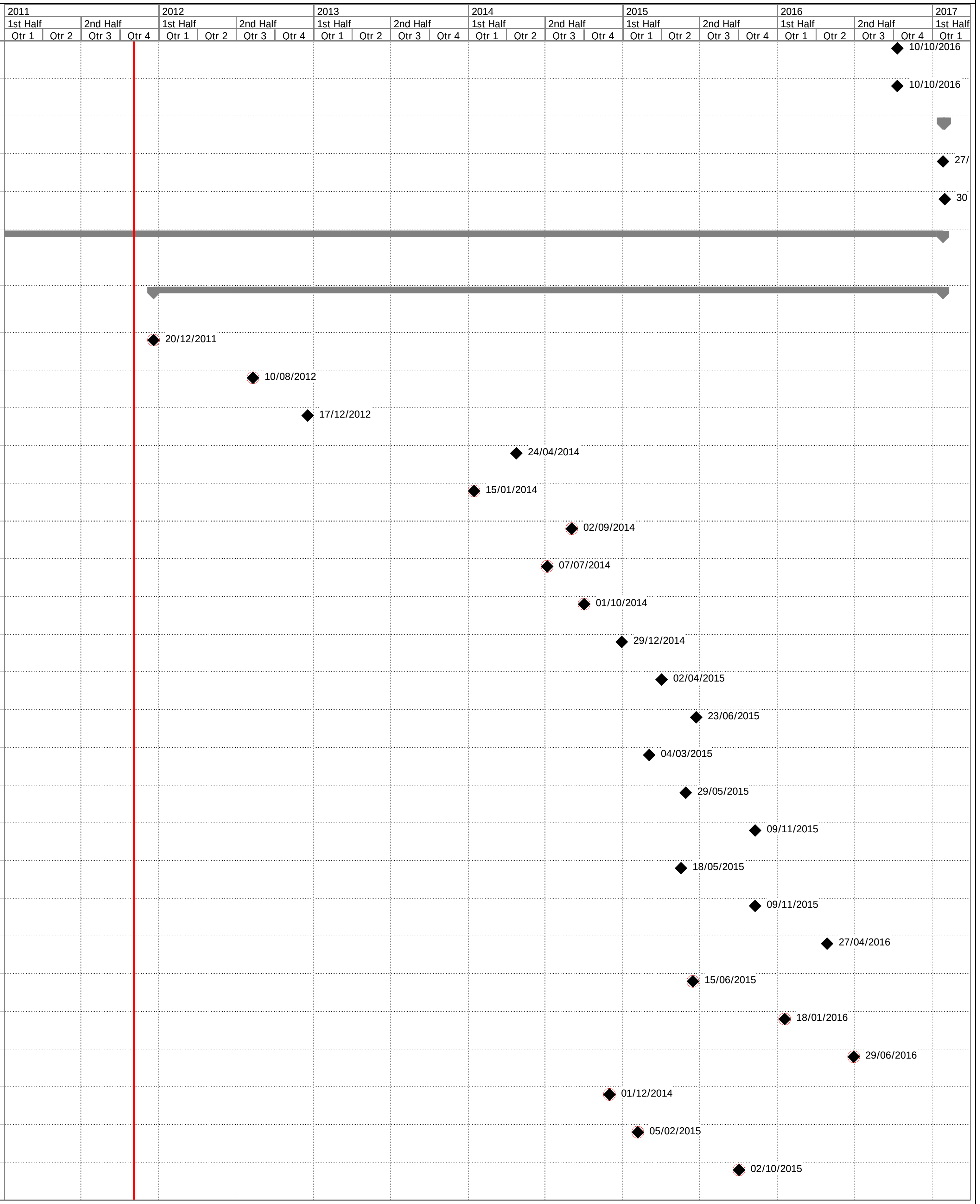


Task	▨	Task	▨	Critical Milestone	◆	Milestone	◆	Critical Task	▨	Project Summary	▬	Group By Summary	▬

T2S Detailed Plan with Critical Path

31/10/2011

ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
3387	1312500	Lessons learnt	◆	0d	Mon 10/10/16	Mon 10/10/16	Eurosystem
3388	1313000	**Synchronization Point [SP17 - Closing of migration]**	◆	0d	Mon 10/10/16	Mon 10/10/16	Eurosystem,CSDs
3433	**1309500**	**TENTATIVE CONTINGENCY MIGRATION - MIGRATION WEEKEND**		**4d**	**Fri 27/01/17**	**Mon 30/01/17**	
3434	1309600	**Synchronization Point [SP16.5 - Ready for Contingency Migration Weekend]**	◆	0d	Fri 27/01/17	Fri 27/01/17	Eurosystem,CSDs
3436	1309800	**Contingency Wave Start Operations in T2S**	◆	0d	Mon 30/01/17	Mon 30/01/17	Eurosystem,CSDs
3779	**2000100**	**PROGRAMME PLANNING & MONITORING**		**1932d**	**Thu 20/08/09**	**Fri 27/01/17**	
3848	**2005100**	**SYNCHRONISATION POINT**		**1323d**	**Tue 20/12/11**	**Fri 27/01/17**	
3849	2006100	SP1 - Start Feasibility Confirmed	◆	0d	Tue 20/12/11	Tue 20/12/11	
3850	2007100	SP2 - Feasibility Confirmation by CSD/CB	◆	0d	Fri 10/08/12	Fri 10/08/12	
3851	2007200	SP3 - T2S Programme Plan Comprehensiveness	◆	0d	Mon 17/12/12	Mon 17/12/12	
3852	2008100	SP4 - Network Service Provider Confirmed	◆	0d	Thu 24/04/14	Thu 24/04/14	
3853	2009200	SP5 - Start of Eurosystem Acceptance Test	◆	0d	Wed 15/01/14	Wed 15/01/14	
3854	2009100	SP6 - Eurosystem Ready for User Testing	◆	0d	Tue 02/09/14	Tue 02/09/14	
3855	2010100	SP7 - Start Connectivity Testing	◆	0d	Mon 07/07/14	Mon 07/07/14	
3856	2011100	SP8 - Start Bilateral Interoperability Testing	◆	0d	Wed 01/10/14	Wed 01/10/14	
3857	2011200	SP9.1 - Start Multilateral Interoperability Testing (wave 1)	◆	0d	Mon 29/12/14	Mon 29/12/14	
3858	2011300	SP9.2 - Start Multilateral Interoperability Testing (wave 2)	◆	0d	Thu 02/04/15	Thu 02/04/15	
3859	2011400	SP9.3 - Start Multilateral Interoperability Testing (wave 3)	◆	0d	Tue 23/06/15	Tue 23/06/15	
3860	2012100	SP10.1 - Start Community Testing (wave 1)	◆	0d	Wed 04/03/15	Wed 04/03/15	
3861	2012200	SP10.2 - Start Community Testing (wave 2)	◆	0d	Fri 29/05/15	Fri 29/05/15	
3862	2012300	SP10.3 -Start Community Testing (wave 3)	◆	0d	Mon 09/11/15	Mon 09/11/15	
3863	2012400	SP11.1 - Start Business Day Testing (wave 1)	◆	0d	Mon 18/05/15	Mon 18/05/15	
3864	2012500	SP11.2 - Start Business Day Testing (wave 2)	◆	0d	Mon 09/11/15	Mon 09/11/15	
3865	2012600	SP11.3 - Start Business Day Testing (wave 3)	◆	0d	Wed 27/04/16	Wed 27/04/16	
3866	2013100	SP12.1 - End of User Testing Execution Phase (wave 1)	◆	0d	Mon 15/06/15	Mon 15/06/15	
3867	2013200	SP12.2 - End of User Testing Execution Phase (wave 2)	◆	0d	Mon 18/01/16	Mon 18/01/16	
3868	2013300	SP12.3 - End of User Testing Execution Phase (wave 3)	◆	0d	Wed 29/06/16	Wed 29/06/16	
3869	2014100	SP13 - Eurosystem ready for Production	◆	0d	Mon 01/12/14	Mon 01/12/14	
3870	2015100	SP14.1 - Ready to connect to Production (wave 1)	◆	0d	Thu 05/02/15	Thu 05/02/15	
3871	2015200	SP14.2 - Ready to connect to Production (wave 2)	◆	0d	Fri 02/10/15	Fri 02/10/15	

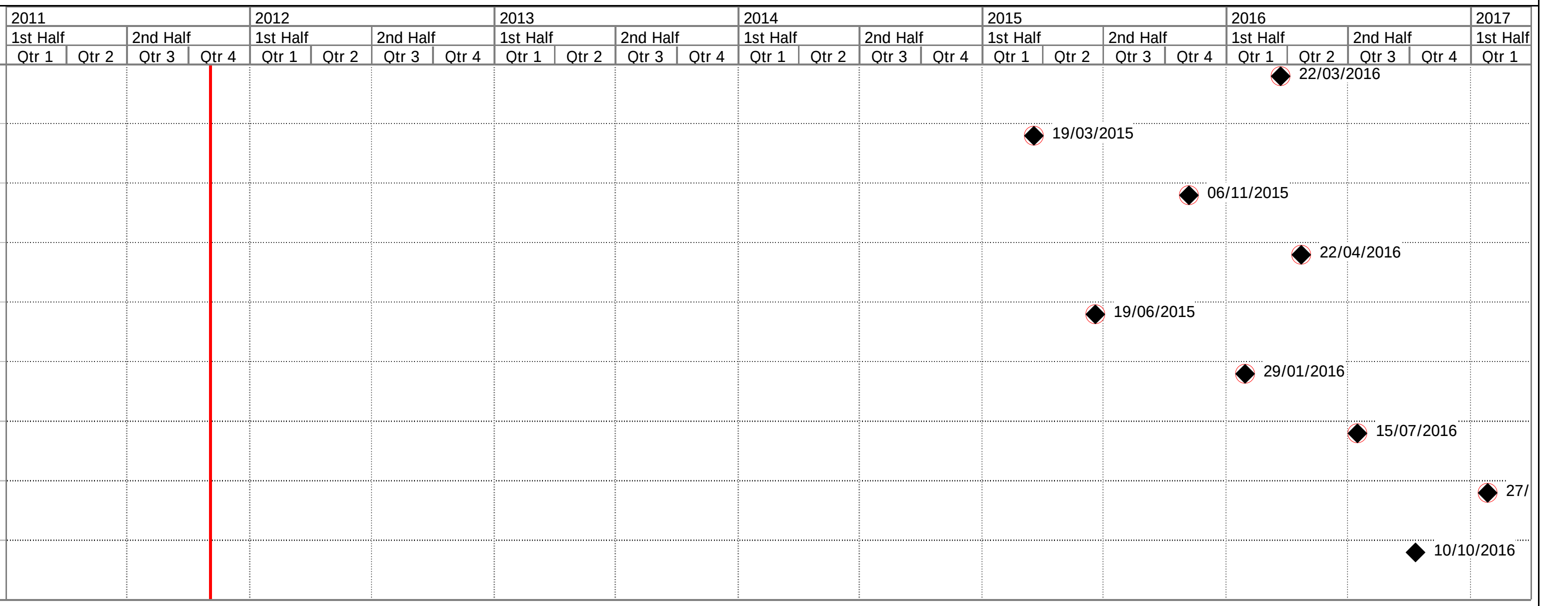


Task ▨ Task ▨ Critical Milestone ◆ Milestone ◆ Critical Task ▨ Project Summary ▬ Group By Summary ▬

T2S Detailed Plan with Critical Path

31/10/2011

ID	ID Number (Number 1)	Task Name	CSD/CB relevant activities	Duration	Start	Finish	Resource Group for PMG
3872	2015300	SP14.3 - Ready to connect to Production (wave 3)	◆	0d	Tue 22/03/16	Tue 22/03/16	
3873	2016100	SP15.1 - Ready to upload Static Data (wave 1)	◆	0d	Thu 19/03/15	Thu 19/03/15	
3874	2016200	SP15.2 - Ready to upload Static Data (wave 2)	◆	0d	Fri 06/11/15	Fri 06/11/15	
3875	2016300	SP15.3 - Ready to upload Static Data (wave 3)	◆	0d	Fri 22/04/16	Fri 22/04/16	
3876	2017100	SP16.1 - Ready for T2S Go-Live (wave 1)	◆	0d	Fri 19/06/15	Fri 19/06/15	
3877	2017200	SP16.2 - Ready for Migration Wave 2	◆	0d	Fri 29/01/16	Fri 29/01/16	
3878	2017300	SP16.3 - Ready for Migration Wave 3	◆	0d	Fri 15/07/16	Fri 15/07/16	
3879	2017400	SP16.5 - Ready for Contingency Migration Weekend	◆	0d	Fri 27/01/17	Fri 27/01/17	
3880	2018300	SP17 - Closing of migration	◆	0d	Mon 10/10/16	Mon 10/10/16	



Task	▨	Task	▨	Critical Milestone	◆	Milestone	◆	Critical Task	▨	Project Summary	▬	Group By Summary	▬

FRAMEWORK AGREEMENT

SCHEDULE 2 – ANNEX 4

T2S PROGRAMME PLAN ASSUMPTIONS

Disclaimer:

Planning is an ongoing process and Annexes with planning elements are subject to change during the lifetime of a project. Planning workshops with CSDs and CBs will continue to agree on the planning for Connectivity, User Testing and Migration. Subsequent plan updates follow the process, documented in the Schedule 2, Section 7.

Annexes 2, 3, 4, 7, 8, 9 and 10 document the planning status as at 31 Oct. 2011.

1. Generic assumptions

For consultation, depending on the complexity and scope of changes, the review period should vary between *1 week and 2 months*.

2. From Specification Phase to Start of User Testing (UT)

The preparation of the UDFS V1.2 and the BPD (Business Process Description) are vital for the end of the specification phase (SP1: synchronisation point) and for the start of the CSDs'/CBs' internal assessment.

- Prior to the publication of UDFS V1.2 a review of UDFS V1.0 by the Market and 2 months of market consultation are planned.
- CSDs/CBs will have 8 months after the delivery of UDFS 1.2 to confirm their feasibility assessment.
- Between the completion of SP1 and the completion of SP2, 8 months are necessary.
- *After the delivery of UDFS V1.2* CSDs/CBs will have 24 months for adapting their internal systems.

Registration for CSDs/CBs :

- 1 month is required to fill in the Registration Guide

Training Sessions:

- the training sessions required for UT will start at least 12 months before UT
- the training sessions required for Migration rehearsal will start at least 6 months before each Migration rehearsal.

The Eurosystem will confirm the acceptance test for the VAN at the latest 9 months prior to the start of UT.

The CSDs should finalised the negotiations with the NSP at least 3 months prior the start of the connectivity tests.

The *Dedicated lines Connectivity specifications* are delivered at least 1 year before starting the UT.

The first delivery of the Manual of Operational Procedure (MOP) will be ready 6 months before the start of UT. A revised version of the MOP will be delivered 1 month before each go-live.

Pilot testing:

- A pilot testing might be offered only to the CSDs participating to the UT Wave 1.
- Takes place in parallel of the EAT and before the UT starts.
- This pilot testing is lasting 3 months

3. UT

The *UT is split into the following stages*:

- Bilateral stages:
  - Connectivity
  - Interoperability (IO) Bilateral
  - CSD Acceptance
  - CSD/CB Certification
- Multilateral stages:
  - IO Multilateral
  - Community
  - Business Day

The Eurosystem Acceptance Test Assessment Report is an *entry criteria for the UT*.

Before starting the UT, the Eurosystem will provide enough assurance as regard the capacity of the T2S application/infrastructure to meet the non-functional requirements.

3.1 UT Waves

The T2S Programme Plan is based on the assumption that the UT and migration will be done by migration waves. There is a *maximum of four migration waves* (and contingency wave) spread over a maximum of 18 months (from go-live wave 1 to go-live contingency).

The assumptions for UT duration are as follow:

- Wave 1: 12 months (including pilot testing).
- Wave 2: 18 months
- Wave 3 and subsequent waves: at least 18 months.

All CSDs and CBs having links with the CSDs and CBs migrating must participate in IO Multilateral, Community and BD.

CSD/CB can start *UT* when they want, planning enough time to complete all their testing within the defined time line.

3.2 Connectivity

Connectivity Testing VAN: the T2S Programme Plan assumes 1 month for connectivity and is a predecessor of the UT (IO Phase).

Connectivity Testing for Dedicated lines: further information will be provided in the future.

3.3 IO

IO testing is divided in two: IO Bilateral and IO Multilateral.

IO environment remains available for IO Bilateral and Multilateral during the Community and Business Day testing.

3.4 Migration Test

Migration Test runs in parallel with IO, Community Testing and Business Day.

3.5 CSD/CB Certification

CSD Certification runs in parallel of the IO Bilateral.

A CSD/CB has to be certified to participate to the IO Multilateral.

3.6 CSD Acceptance

CSD Acceptance starts together with the bilateral IO for all waves (SP8 – Start bilateral IO).

CSD Acceptance lasts up to 6 months.

3.7 Community

3.7.1 DCP/DCAH Certification

DCP/DCAH Certification runs in parallel of the Community Testing.

3.8 Business Day

Business Day Test: the following assumptions are taken for the duration:

- Wave 1: 3 weeks
- Wave 2 and subsequent waves: 1 months

3.9 Transition phase between stages:

From bilateral to multilateral stages, two weeks are planned in parallel of the bilateral stage.

From multilateral to community stages, 4 weeks are planned. 3 weeks run in parallel of the multilateral stage and 1 week between multilateral and community stages.

The *IO exit criteria and Community entry criteria* have to be met within:

- Wave 1: 3 months

- Wave 2 and subsequent waves: at least 6 months

From community to business day stages, 4 weeks are planned. 3 weeks run in parallel of the community stage and 1 week between community and business day stages.

The *Community exit criteria and BD entry criteria* have to be met within:

- Wave 1: 4.5 months
- Wave 2 and subsequent waves: at least 5 months

At the end of business day stage, 3 weeks are planned. 2 weeks run in parallel of the business day stage and 1 week during the freeze period.

3.10 Other Assumptions for UT

There is a freeze period of two weeks between the end of the UT and the Migration WE of each wave.

4. Pre-Migration and Migration

All CSDs and CBs belonging to the *same wave migrate at the same time*.

Connectivity to production environment: T2S Programme Plan foresees 2 weeks of production connectivity testing.

Production Environment: will be available for Users 3 months before the go-live of wave 1.

CSD/CB Static Data Cleansing according to the T2S migration rules: 1 month planned before Load Static Data.

Load Static Data: 3 months planned before the go-live in parallel to UT.

There is a minimum of *3 months between two migration waves* (Schedule 4).

Migration cannot happen during critical times (e.g. end of the year)

EUROPEAN CENTRAL BANK

EUROSYSTEM

TARGET2-SECURITIES

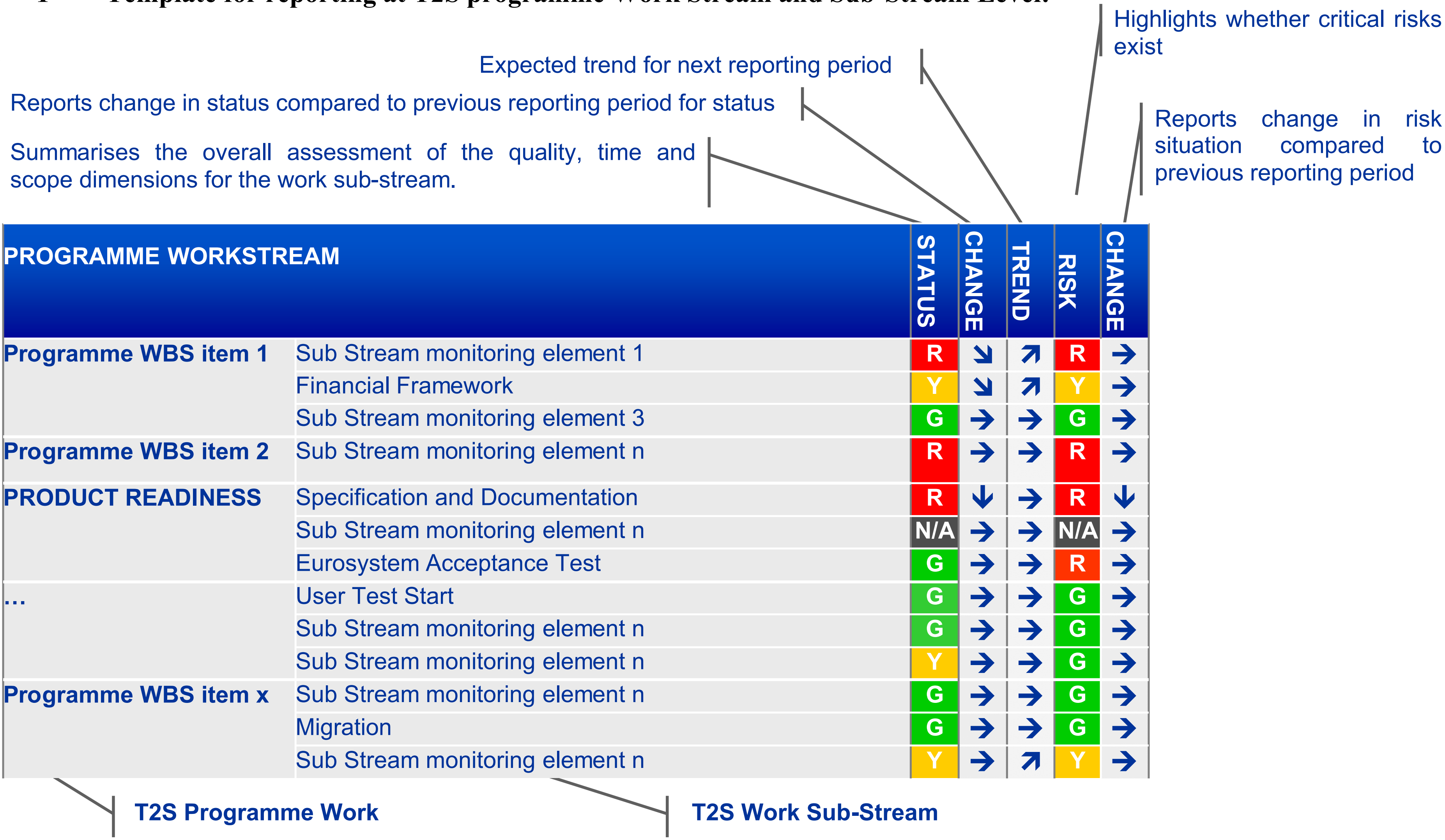
FRAMEWORK AGREEMENT

SCHEDULE 2 - ANNEX 5

T2S PROGRAMME PROGRESS REPORTING TEMPLATES

31 Oct. 2011

1 Template for reporting at T2S programme Work Stream and Sub-Stream Level:



Highlights whether critical risks exist

Expected trend for next reporting period

Reports change in status compared to previous reporting period for status

Summarises the overall assessment of the quality, time and scope dimensions for the work sub-stream.

Reports change in risk situation compared to previous reporting period

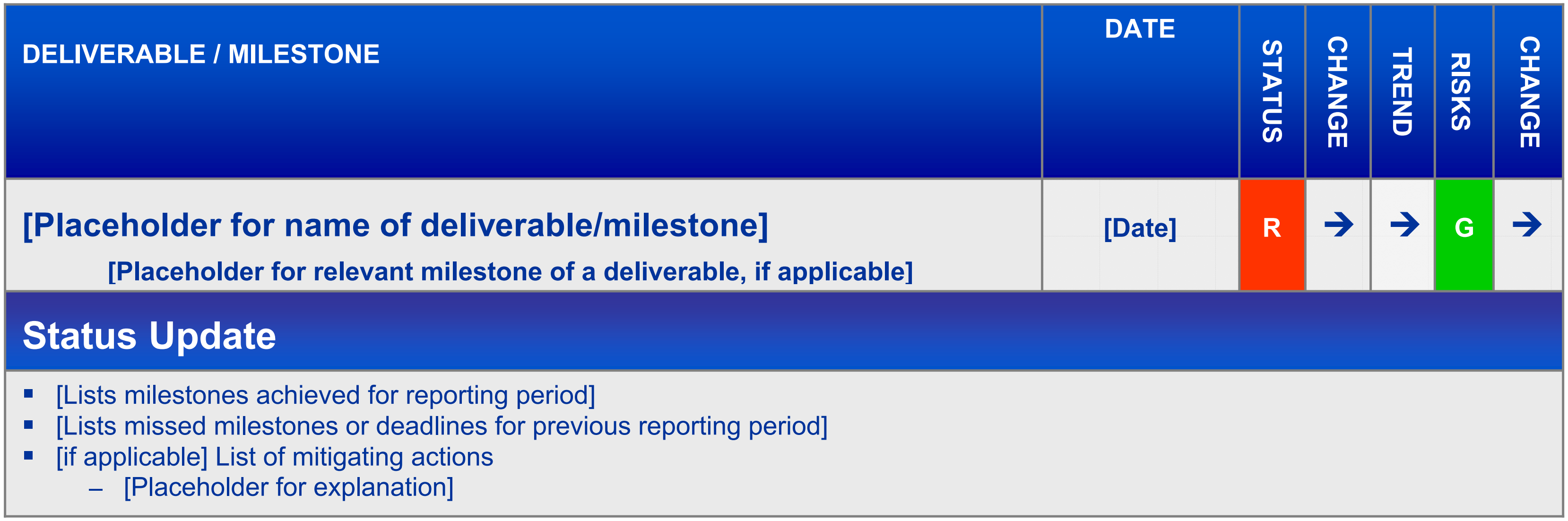
PROGRAMME WORKSTREAM		STATUS	CHANGE	TREND	RISK	CHANGE
Programme WBS item 1	Sub Stream monitoring element 1	R	↘	↗	R	→
	Financial Framework	Y	↘	↗	Y	→
	Sub Stream monitoring element 3	G	→	→	G	→
Programme WBS item 2	Sub Stream monitoring element n	R	→	→	R	→
PRODUCT READINESS	Specification and Documentation	R	↓	→	R	↓
	Sub Stream monitoring element n	N/A	→	→	N/A	→
	Eurosystem Acceptance Test	G	→	→	R	→
…	User Test Start	G	→	→	G	→
	Sub Stream monitoring element n	G	→	→	G	→
	Sub Stream monitoring element n	Y	→	→	G	→
Programme WBS item x	Sub Stream monitoring element n	G	→	→	G	→
	Migration	G	→	→	G	→
	Sub Stream monitoring element n	Y	→	↗	Y	→

T2S Programme Work

T2S Work Sub-Stream

2 Template for reporting the T2S Detailed Status:

T2S Detailed Status for reporting:



DELIVERABLE / MILESTONE	DATE	STATUS	CHANGE	TREND	RISKS	CHANGE
[Placeholder for name of deliverable/milestone] **[Placeholder for relevant milestone of a deliverable, if applicable]**	**[Date]**	🟥 R	→	→	🟩 G	→

Status Update

- [Lists milestones achieved for reporting period]
- [Lists missed milestones or deadlines for previous reporting period]
- [if applicable] List of mitigating actions
  - [Placeholder for explanation]

3 Status Assessment at T2S Programme Work Stream and Sub-Stream Level:

The responsible for each ECB workstream makes his/her assessment according to the conventions defined above.

At aggregated level (Dashboard) the business rule is: if the progress assessment is not uniformly Green for all deliverables/activities belonging to a specific stream or sub-stream, at least a Yellow status is reported at aggregated level.

The detailed information by deliverable or activity is then provided at the Detailed status report level.

4 Status Assessment at CSD/CB level:

Each CSD/CB makes its assessment. This is discussed with the Relationship Manager during the MCR sessions (see T2S Monitoring of Client Readiness Framework, Annex 5).

The various assessments are collected and discussed internally within the Client Readiness Workstream.

Based on the discussion outcomes, the Relationship Manager assesses the overall CSD/CB readiness for the respective activity or milestone, following these business rules:

- In case the assessment is not Green for all CSDs or CBs, the “Green” status is not allocated, i.e. at least Yellow.
- Confidentiality rules applies (see Monitoring of Client Readiness Framework, Annex 5) to explain the overall status if different from Green.

Once discussed, the assessment is reflected in the global progress status dashboard and a detailed status is prepared for all deliverables having a status “Yellow” or “Red”.

EUROPEAN CENTRAL BANK

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FRAMEWORK AGREEMENT

SCHEDULE 2 - ANNEX 6

T2S RISK AND ISSUE REPORTING TEMPLATE

31 Oct. 2011

1 Risk and Issue Reporting

Parties to this agreement who have identified and assessed a programme risk or an issue originating/occurring in their own institution provide the T2S Programme Office with a filled-in risk/issue identification form. The form shall provide at least the following information:

Risk identification form:

- Work stream / Sub-Work stream / Deliverable / Milestone / Synchronisation Point
- Risk name
- Risk description (background)
- Reported by
- Status (raised / mitigation in process / mitigated / accepted)
- Probability (level 1-5)
- Impact (level 1–5)
- Criticality (colour)
- Risk Response
- Root cause category (product & services/external/internal)

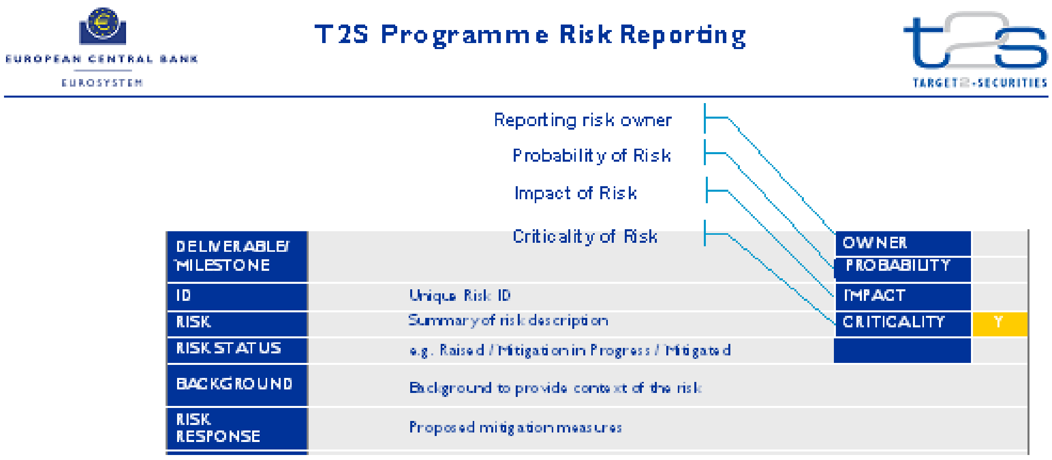
Issue identification form:

- Work stream / Sub-Work stream / Deliverable / Milestone / Synchronisation Point
- Issue name
- Issue description (background)
- Reported by
- Resolution strategy
- Target Date for resolution

The T2S Programme Office includes the information received from risk/issue owners in the forthcoming risk report to be submitted to the T2S Board. For a detailed process description for the reporting and sharing of identified risks/issues, see Annex 2.

Based on the information received from contractual parties, the T2S Programme Office will prepare its regular assessment reports. To that end, it may use the following (sample) templates for the reporting of risks and issues:

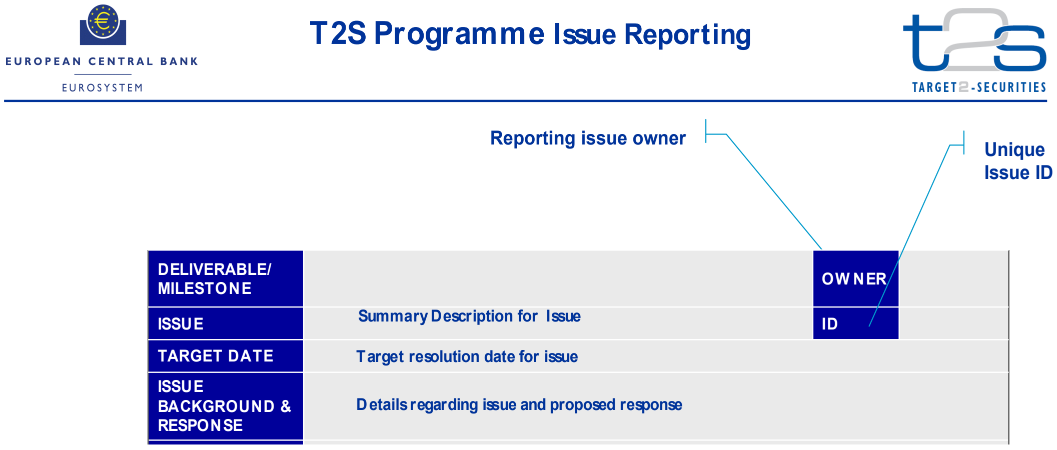
<u>Risk Reporting</u>:



T2S Programme Risk Reporting

DELIVERABLE/ MILESTONE		OWNER PROBABILITY	
ID	Unique Risk ID	IMPACT	
RISK	Summary of risk description	CRITICALITY	Y
RISK STATUS	e.g. Raised / Mitigation in Progress / Mitigated		
BACKGROUND	Background to provide context of the risk		
RISK RESPONSE	Proposed mitigation measures		

<u>Issue Reporting</u>:



T2S Programme Issue Reporting

DELIVERABLE/ MILESTONE		OWNER
ISSUE	Summary Description for Issue	ID
TARGET DATE	Target resolution date for issue	
ISSUE BACKGROUND & RESPONSE	Details regarding issue and proposed response	

EUROPEAN CENTRAL BANK

EUROSYSTEM

TARGET2-SECURITIES

FRAMEWORK AGREEMENT

SCHEDULE 2 – ANNEX 7

T2S PROGRAMME WORK BREAKDOWN STRUCTURE

Disclaimer:

Planning is an ongoing process and Annexes with planning elements are subject to change during the lifetime of a project. Planning workshops with CSDs and CBs will continue to agree on the planning for Connectivity, User Testing and Migration. Subsequent plan updates follow the process, documented in the Schedule 2, Section 7.

Annexes 2, 3, 4, 7, 8, 9 and 10 document the planning status as at 31 Oct. 2011.

Schedule 2 – Annex 7 – T2S Programme Work Breakdown Structure

Programme Workstream	Deliverable Stream	Deliverable Substream
Client Readiness	Contractual Framework	Framework Agreement
		Currency Participation Agreement
	User Training and Testing	Training Preparation
		Training Execution
		User Testing Preparation
		User Testing Execution
	Synchronization and on-boarding	CSD Readiness
		CB Readiness
		Eurosystem Readiness*
	Relationship Management*	CSDs*
		CBs*
		DCPs*
		Market Report*
	Other Documentation*	
Product Readiness	Specification and Documentation	Requirements
		Specifications
		Documentation
	Development	Software & 4CB Testing
		Infrastructure
	Eurosystem Acceptance Test	EAT Preparation
		EAT Execution
Operational Readiness	Operations	Operational Procedures
		Service Level Agreement
	Migration	Migration Preparation
		Pre-Migration Tasks (per waves)
		Migration WE (per waves)
	Network and connectivity	
	Information Security	
Policy and Marketing	Policy Framework and Governance	Harmonisation
		Other policy frameworks*
		Governance*
	Marketing and Communication*	
	Financials*	Liability*
		Financials planning and procedures*
	Relationship Management*	Regulators*
		Public authorities*
		Other External stakeholders*
Legal*	Legal Framework*	L2/L3 Agreement*
		Other Legal Acts*
Programme Planning and Monitoring		

* Elements provided only for information, as they cover Eurosystem internal work.

EUROPEAN CENTRAL BANK
EUROSYSTEM

TARGET2-SECURITIES

FRAMEWORK AGREEMENT

SCHEDULE 2 – ANNEX 8

T2S DELIVERABLES LIST AND MANAGEMENT PROCESS

Disclaimer:

Planning is an ongoing process and Annexes with planning elements are subject to change during the lifetime of a project. Planning workshops with CSDs and CBs will continue to agree on the planning for Connectivity, User Testing and Migration. Subsequent plan updates follow the process, documented in the Schedule 2, Section 7.

Annexes 2, 3, 4, 7, 8, 9 and 10 document the planning status as at 31 Oct. 2011.

1. Document Scope and Objective

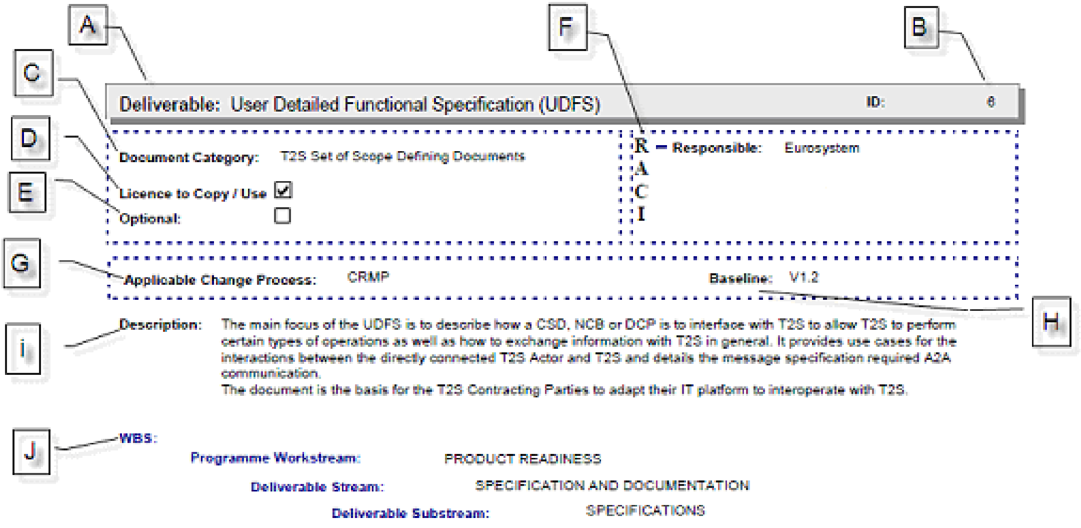
The objective of this document is to provide a baseline catalogue of T2S deliverables that are of interest for CSDs and CBs and that describes the scope of and the respective responsibilities for each deliverable. This catalogue defines a deliverable only once, even though the programme requires several versions of a deliverable, such as regular updates or a dedicated version of a deliverable specific to a migration wave.

The deliverable monitoring is part of the Monitoring Framework process as defined in the main document of the Schedule 2.

2. T2S Deliverables

2.1 Deliverable Specification

This annex provides a standardised definition of each T2S deliverable. The standardised definition documents not only a deliverable's purpose and scope, but also additional characteristics relating to responsibilities and Change Management.



Deliverable: User Detailed Functional Specification (UDFS) ID: 6

Document Category: T2S Set of Scope Defining Documents

Licence to Copy / Use ☑

Optional: □

R – Responsible: Eurosystem
A
C
I

Applicable Change Process: CRMP Baseline: V1.2

Description: The main focus of the UDFS is to describe how a CSD, NCB or DCP is to interface with T2S to allow T2S to perform certain types of operations as well as how to exchange information with T2S in general. It provides use cases for the interactions between the directly connected T2S Actor and T2S and details the message specification required A2A communication.
The document is the basis for the T2S Contracting Parties to adapt their IT platform to interoperate with T2S.

WBS:
Programme Workstream: PRODUCT READINESS
Deliverable Stream: SPECIFICATION AND DOCUMENTATION
Deliverable Substream: SPECIFICATIONS

Label	Attribute Name	Description
A	Deliverable	This attribute documents the name of the deliverable.
B	ID	This attribute specifies the unique identifier of the deliverable. The Operational Plan and the Synchronisation Point (if relevant) use the identifier to reference the underlying deliverable.
C	Document Category	This attribute specifies the category of document to which the deliverable belongs (see below table in this annex).
D	License to Copy/Use	Each deliverable has an attribute that states who owns the Intellectual Property Rights and whether a licence to copy or use exists for the other parties as set out in the FA (article 28) and CPA (article 31).
E	Optional	This attribute specifies whether this deliverable is optional or mandatory. Value Description Ticked Optional Empty Mandatory
F	RACI	The attribute defines the responsibilities and accountabilities for a deliverable.
G	Applicable Change Management Process	This attribute specifies which Change Management process applies to the deliverable, e.g. Value Description CRMP Change and Release Management Process according to Framework Agreement Schedule 9 …
H	Baseline	The attribute specifies the version of the deliverable from which the Change Management process specified by the attribute “Applicable Change Management Process” applies.
i	Description	The attribute provides a short description of the scope and content of the deliverable.
J	Work Breakdown Structure (WBS)	This attribute specifies the classification in the WBS of the T2S Programme Plan under which the deliverable is managed and reported.

2.2 Responsible, Accountable, Consulted, Informed (RACI)

2.2.1 Responsible

This classifier assigns to a deliverable *those who do the actual work* by specifying the Party, i.e. Eurosystem, CSD or CB, responsible for creating and maintaining the deliverable throughout its life cycle.

2.2.2 Accountable

This classifier assigns to a deliverable *those who are ultimately accountable for the completion of the work*. The body that is accountable is the approving body. The Framework Agreement defines the body that is accountable for the legal documents and the T2S Scope Defining Set of Documents. Schedule 8 of the Framework Agreement defines in its section "Decision-making on relevant matters other than Change Requests" the body that is accountable for all other deliverables.

For the purpose of the Annex 8, Deliverable List, the body mentioned will be the sub-structure that writes a recommendation to approve to the Steering Level.

2.2.3 Consulted

This classifier assigns to a deliverable *those who provide input* as needed by specifying whether or not the Party to the Agreement is consulted regarding the T2S deliverable. The T2S Programme Plan specifies the frequency and the duration of the consultation for the deliverable. Consulted can mean written procedures or workshops. In case Change Request affects a deliverable, then the consultation also applies for subsequent updated versions.

Consulted refers to a formal process where the Responsible expects comments from other Parties to the Agreement (in particular CSDs and CBs). This means that the Responsible submits a DRAFT version and collects the comments. The Responsible analyses all comments and must:

(a) consider the comments and/or produce a new version; or

(b) explain why a comment has not been taken on board.

2.2.4 Informed

This classifier assigns to a deliverable *those who need to be kept up to date* on progress of the particular phase. The Responsible submits a proposal as regard the distribution list (bodies to be informed) to the Accountable body together with the draft document. Being informed might take the form of an early involvement.

2.3 Baseline

The Responsible produces the draft version that upon approval as described in the Section 3 becomes a 'Baseline' (with or without consultation of the other Party). A 'Baseline' serves as basis/reference for the Party to undertake a series of actions required for the T2S Programme completion. Each deliverable has an attribute that specifies the version number that will be considered as 'Baseline'. This version number also appears in the Plan. Any change to the baseline follows a formal change process, as defined thereafter. The latest baseline version available for this release of T2S must be easily identifiable.

Outside of the Legal Acts, the initial baseline number is indicated in the T2S List of deliverables.

2.4 Applicable Process per Document Type

Each deliverable has an attribute that specifies the applicable process for approving the baseline or the changes to it – which is summarised in the table below. Some deliverables are not subject to any formal Change Management process. The deliverables subject to a Change Management process are communicated either in a complete version (with revision marks if technically possible or with indication of a list of changes) or in an intermediate document (e.g. Document Change Notice) to avoid waiting for the next release of the deliverable. The modalities for communication are defined, on a case-by-case basis, in the course of the Change Management process.

Document Category		**Description**[1]	**Initial Baseline number is indicated in**	**Substructure involved**	**Change Management Process**
Legal Acts		Means the FA / CPA and their respective schedules.	N/A	N/A	Specific FA / CPA Process
T2S Scope Defining Set of Documents		means the set of documents defining the scope of T2S composed of the URD, the UDFS, the GUI Business Functionality, GFS Functional Chapter, the Dedicated Link Connectivity Specifications and the Data Migration Tool Specifications and Related Procedures.	The deliverables list	CRG	Change Request (Schedule 9)
T2S Documentation	**T2S Specification**	Means the set of documents, when added to the T2S Scope Defining Set of Documents, provide a full description of T2S. This includes the GFS non-Functional Chapter.	The deliverables list	CRG	Deliverable Change Process (Schedule 2) Unless otherwise specified in the list of deliverables
	T2S Operational Phase Documents	Means the set of documents that describes how T2S provides its services when it is in production. It encompasses the documentation for T2S as a software application and the manuals describing the rules and procedures for operating T2S.	The deliverables list	OMG	Deliverable Change Process (Schedule 2) Unless otherwise specified in the list of deliverables
	T2S Project Documents	Means the set of documents required for planning, monitoring and successfully completing the scheduled activities (e.g. User Testing, Migration, client readiness tracking) in the T2S project lifecycle but not during the operational part, i.e. from the start of the T2S Programme until T2S is live, or during any subsequent preparation for releases.	The deliverables list	PMG	Deliverable Change Process (Schedule 2) Unless otherwise specified in the list of deliverables

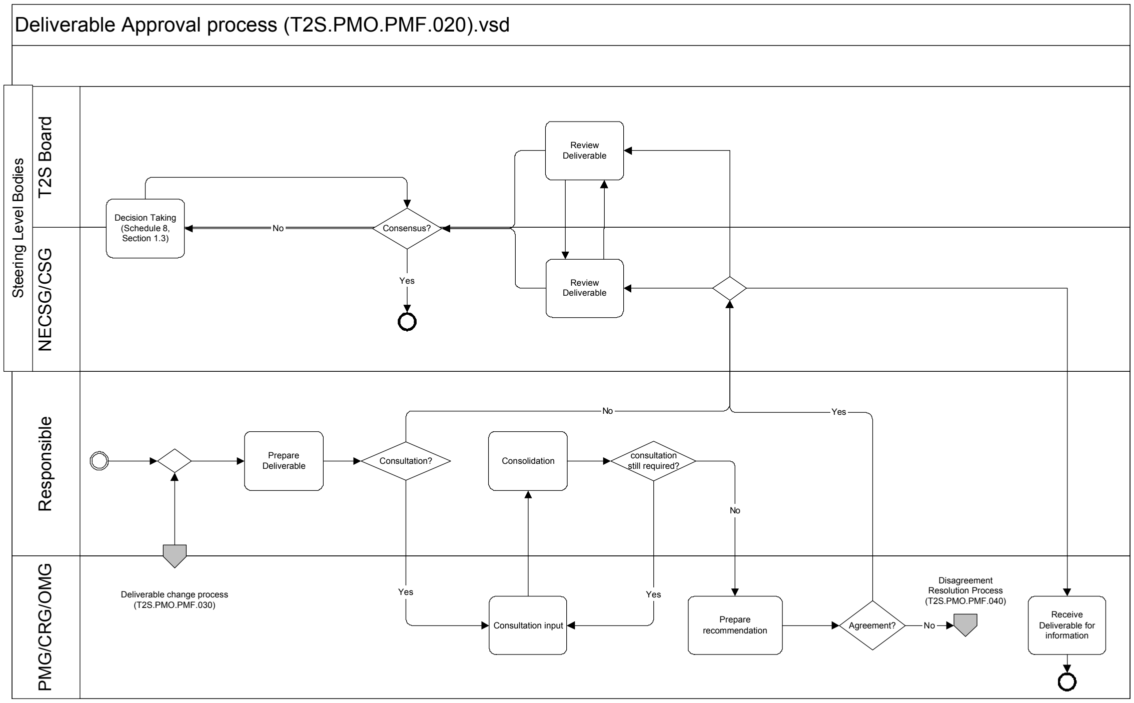
[1] *As included in Schedule 1.*

3. Deliverable Approval and Change Process

This section describes the approval and change process for deliverables which are neither subject to the FA/CPA Change Management process nor to the CRMP (Schedule 9).

3.1 High-Level Deliverable Approval Process – Creation of a Baseline

The following process applies for the approval of the first Baseline for each Deliverable:


Deliverable Approval process (T2S.PMO.PMF.020).vsd
Steering Level Bodies
T2S Board
NECSG/CSG
Responsible
PMG/CRG/OMG
Review Deliverable
Decision Taking (Schedule 8, Section 1.3)
No
Consensus?
Yes
Review Deliverable
No
Yes
Prepare Deliverable
Consultation?
Consolidation
consultation still required?
No
Deliverable change process (T2S.PMO.PMF.030)
Yes
Yes
Consultation input
Prepare recommendation
Agreement?
No
Disagreement Resolution Process (T2S.PMO.PMF.040)
Receive Deliverable for information

3.1.1 Process Actors and their Roles

Process Actor	Process Role
Responsible	As above defined.
PMG/CRG/OMG *(one body only, depending on the deliverable category)*	In this process, the Responsible consults the PMG/ORG/OMG. It is the responsibility of the consulted body to provide comments during the approval process and to proactively and in good faith try achieving agreement among its members.
CSG/NECSG	The CSG/NECSG is responsible for reviewing the Deliverable, taking into account the recommendations supplied by the PMG and taking all necessary steps to reach a consensus at Steering Level.

T2S Board	The T2S Board is responsible for endorsing the Deliverable, taking into account the recommendations supplied by the PMG and taking all necessary steps to reach a consensus at Steering Level. The T2S Board also coordinates the work at Steering Level to reach a consensus following the process described in Schedule 8, Section 1.3.

3.1.2 High-Level Process Description

This section provides an overview of the process for Baseline creation for deliverables.

The Responsible after drafting the deliverable and if applicable, sends the deliverable for consultation of other parties.

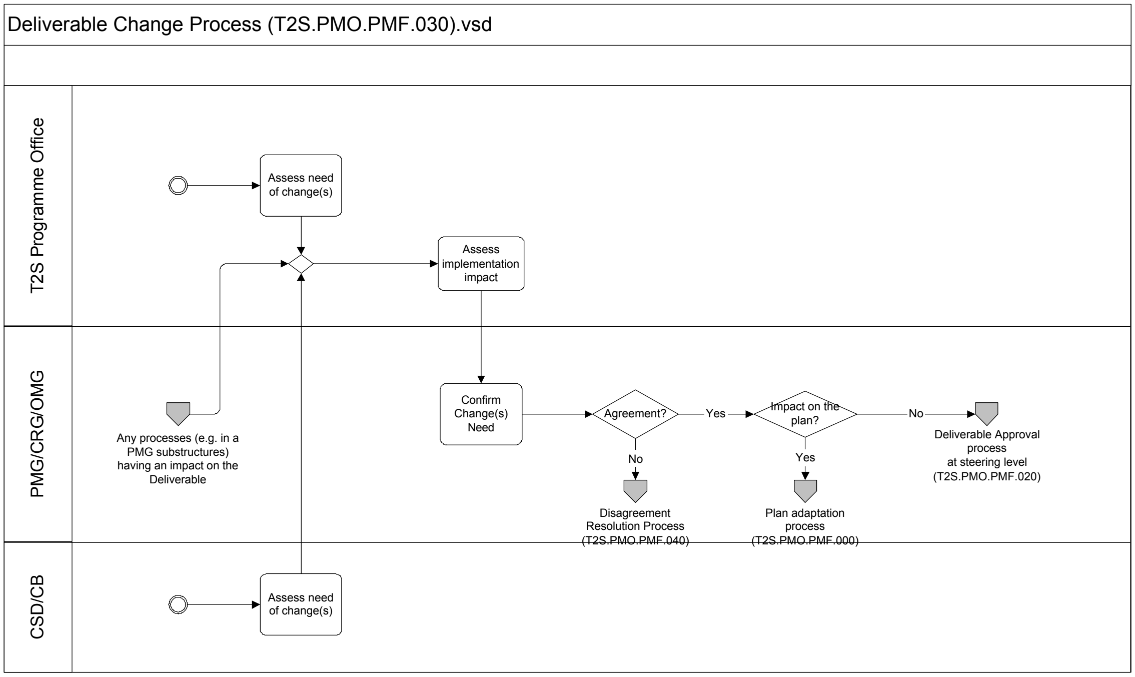
During consultation, in case of diverging views the PMG/CRG/OMG members have the opportunity to inform the NECSG/CSG about their diverging views (in line with the section 7.4 Disagreement Resolution process in Schedule 2).

After consultation and in line with RACI information, the Responsible presents the deliverable for approval to the Steering Level. If consulted, the PMG/CRG/OMG writes a recommendation to approve. This recommendation is attached to the Deliverable submission to the Steering Level.

The Steering Level endorses the deliverable by consensus. The T2S Board coordinates the work at Steering Level to reach a consensus following the process described in Schedule 8, Section 1.3.

3.2 Deliverable Change Process – Updating a Baseline

Each deliverable has a specific Change Management process. This process is described either in the Schedule 9 – Change Request– or in this section. The below process applies to all deliverables for which the 'Applicable Process' clearly foresees *'Deliverable Change Process'* as opposed to other value (e.g. Change Request).


Deliverable Change Process (T2S.PMO.PMF.030).vsd
T2S Programme Office
PMG/CRG/OMG
CSD/CB
Assess need of change(s)
Assess implementation impact
Any processes (e.g. in a PMG substructures) having an impact on the Deliverable
Confirm Change(s) Need
Agreement?
Yes
No
Impact on the plan?
Yes
No
Deliverable Approval process at steering level (T2S.PMO.PMF.020)
Disagreement Resolution Process (T2S.PMO.PMF.040)
Plan adaptation process (T2S.PMO.PMF.000)
Assess need of change(s)

3.2.1 Process Actors and their Roles

Process Actor	Process Role
T2S Programme Office	The T2S Programme Office is in charge of: ▪ identifying, collecting and raising Change Requests (e.g. need to update due to another deliverable); ▪ undertaking the assessment of changes request; ▪ communicating the results of the assessment to the PMG/CRG/OMG; and ▪ implementing the change when the Eurosystem is the Responsible.
CSD, CBs	The CSDs and/or CBs are in charge of: ▪ implementing the change when CSDs and/or CBs are the Responsible; and ▪ identifying and raising Change Requests, if relevant.
PMG/CRG/OMG *(one body only, depending on the Deliverable)*	In this process, the PMG/CRG/OMG is in charge of: ▪ reviewing and discussing the Change Requests; ▪ confirming the need of the change or rejecting the request; and ▪ in case of disagreement, escalation to the NECSG/CSG or T2S Board (in line with the section 7.4 Disagreement Resolution process in Schedule 2).

3.2.2 High Level Process Description

This section provides an overview of the process for Baseline update for deliverables.

The T2S Programme Office and/or CSDs and/or CBs may wish to change a deliverable.

T2S Programme Office collects the change(s) request. Thereafter, the T2S Programme Office assesses the change(s) request (including Plan impact assessment). The PMG/CRG/OMG reviews the change(s) request together with the T2S Programme Office assessment.

After agreement on the change(s) at PMG/CRG/OMG level, the approval process at Steering Level should follow the initial approval process used to create the baseline (see section 3.1).

In case of disagreement, the PMG/CRG/OMG may initiate the disagreement resolution process to get agreement on the proposed change(s) (in line with the section 7.4 Disagreement Resolution process in Schedule 2).

Deliverable: Graphical User Interface (GUI) Business Functionalities

ID: 3

Document Category: T2S Scope Defining Set of Documents

Licence to Copy / Use ☑

Optional: □

R – Responsible: Eurosystem
A – Accountable: CRG
C – Consultation: CSD, CB
I – Information:

Applicable Change Process: CRMP

Baseline:

Description: The scope of this document is to provide a list of business functions- expected for the T2S Graphical User Interface and to provide a brief description covering the purpose and key features of the business functions. It also depicts the framework for logical association of business functions applicable for a business object. (The framework diagrams in this document do not depict certain access features that are purely of technical nature like returning to the previous or exit from a function).

WBS:

Programme Workstream: PRODUCT READINESS

Deliverable Stream: SPECIFICATION AND DOCUMENTATION

Deliverable Substream: SPECIFICATIONS

Deliverable: User Detailed Functional Specification (UDFS)

ID: 6

Document Category: T2S Scope Defining Set of Documents

Licence to Copy / Use ☑

Optional: □

R – Responsible: Eurosystem
A – Accountable: CRG
C – Consultation: CSD, CB
I – Information:

Applicable Change Process: CRMP

Baseline:

Description: This deliverable is the manual that describes how a T2S Actor can interface ist software applications with T2S to enable T2S to execute certain types of operations and to exchange information with T2S. It provides use cases for the interactions between the Directly Connected T2S Actor and T2S and details the message specification required A2A communication. The UDFS also contains the specifications required in order to set-up and manage the direct connectivity with T2S. The document is the basis for the T2S Contracting Parties to adapt their IT platform to interoperate with T2S.

WBS:

Programme Workstream: PRODUCT READINESS

Deliverable Stream: SPECIFICATION AND DOCUMENTATION

Deliverable Substream: SPECIFICATIONS

Deliverable: T2S Connectivity Guide **ID:** 8

Document Category:	T2S Project Documents	**R** –	**Responsible:**	Eurosystem
		A –	**Accountable:**	Eurosystem
Licence to Copy / Use	☑	**C** –	**Consultation:**	
Optional:	□	**I** –	**Information:**	CSD, CB

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: The connectivity guide documents the steps required for T2S Actors to connect to T2S test and production environments. The document will present the technical landscape (tools and network provider selection) used to facilitate the understanding, and will also present the protocols supported. A checklist will summarize the requirements to connect.
The document will cover both A2A and U2A aspects it also covers both VANs and Direct Connectivity. The information provided may vary depending on the provider.

WBS:

Programme Workstream: OPERATIONAL READINESS

Deliverable Stream: NETWORK AND CONNECTIVITY

Deliverable Substream: NETWORK AND CONNECTIVITY

Deliverable: User Hand Book (UHB) **ID:** 9

Document Category:	T2S Specifications	**R** –	**Responsible:**	Eurosystem
		A –	**Accountable:**	CRG
Licence to Copy / Use	☑	**C** –	**Consultation:**	
Optional:	□	**I** –	**Information:**	CSD, CB

Applicable Change Process: Deliverable Change Process (CRG) **Baseline:**

Description: The UHB describes the Graphical User Interface (GUI) of T2S, i.e. U2A communication. It is intended for the business user, who will interact with T2S for updating and querying data. It presents information on the application behaviour, window navigation, windows, fields and validation rules in order to explain how a user can perform specific operations in T2S through the GUI.

WBS:

Programme Workstream: PRODUCT READINESS

Deliverable Stream: SPECIFICATION AND DOCUMENTATION

Deliverable Substream: DOCUMENTATION

Deliverable: Manual of Operational Procedures (MOP) **ID:** 10

Document Category: T2S Operational Phase Documents

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Optional: □

R –	**Responsible:**	Eurosystem
A –	**Accountable:**	OMG
C –	**Consultation:**	CSD, CB
I –	**Information:**	

Applicable Change Process: Deliverable Change Process (OMG) **Baseline:**

Description: This manual provides the detailed procedures to be followed by the T2S Actors and the Eurosystem to ensure the smooth functioning of T2S for normal operations as well as in contingency and exceptional situations (e.g. Disaster Recovery and Business Continuity).

WBS:

Programme Workstream: OPERATIONAL READINESS

Deliverable Stream: OPERATIONS

Deliverable Substream: OPERATIONAL PROCEDURES

Deliverable: Information Security Policy **ID:** 12

Document Category: Legal Acts

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Optional: □

R –	**Responsible:**	Eurosystem
A –	**Accountable:**	Eurosystem
C –	**Consultation:**	CSD, CB
I –	**Information:**	

Applicable Change Process: N/A **Baseline:**

Description: The Information Security Policy for T2S is a high-level document that defines the principle and scope of, allocation of responsibilities for and other relevant aspects of information security for T2S.

WBS:

Programme Workstream: CLIENT READINESS

Deliverable Stream: CONTRACTUAL FRAMEWORK

Deliverable Substream: FRAMEWORK AGREEEMENT

Deliverable: User Testing Strategy **ID:** 17

Document Category:	T2S Project Documents	**R – Responsible:**	Eurosystem
		A – Accountable:	PMG
Licence to Copy / Use	☑	**C – Consultation:**	CSD, CB
Optional:	□	**I – Information:**	

Applicable Change Process: Final **Baseline:**

Description: This strategy document presents the high-level planning, stages and roles of the various T2S Actors in the User Testing phase of T2S. It serves as guideline for Schedule 3 of the Framework Agreement and Currency Participation Agreement on User Testing.

WBS:

Programme Workstream: CLIENT READINESS

Deliverable Stream: USER TRAINING AND TESTING

Deliverable Substream: USER TESTING PREPARATION

Deliverable: User Testing Guide **ID:** 18

Document Category:	T2S Project Documents	**R – Responsible:**	Eurosystem
		A – Accountable:	PMG
Licence to Copy / Use	☑	**C – Consultation:**	CSD, CB
Optional:	□	**I – Information:**	

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: Provides the required information to enable the CSDs/CBs to carry out testing activities.
Provides details on the organisation of testing, processes, roles and responsibilities, monitoring and reporting, test coverage matrixes for each test stage, and the principles of the execution plan for each test stage.

WBS:

Programme Workstream: CLIENT READINESS

Deliverable Stream: USER TRAINING AND TESTING

Deliverable Substream: USER TESTING PREPARATION

Deliverable: Migration Strategy **ID:** 25

Document Category:	T2S Project Documents	**R – Responsible:**	Eurosystem
Licence to Copy / Use	☑	**A – Accountable:**	PMG
Optional:	□	**C – Consultation:**	CSD, CB
		I – Information:	

Applicable Change Process: Final **Baseline:**

Description: The scope of this document is to present the migration approach that will be used to prepare and conduct the migration in T2S. This document covers the framework applicable for the migration, the roles and responsibilities of the parties involved and the activities to be performed to prepare, execute and monitor the migration process.

WBS:

Programme Workstream: OPERATIONAL READINESS

Deliverable Stream: MIGRATION

Deliverable Substream: MIGRATION PREPARATION

Deliverable: Standard Migration Plan **ID:** 26

Document Category:	T2S Project Documents	**R – Responsible:**	Eurosystem
Licence to Copy / Use	☑	**A – Accountable:**	PMG
Optional:	□	**C – Consultation:**	CSD, CB
		I – Information:	

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: This document presents the detailed standard and tailored plans for all T2S Contracting Parties. The tailored migration plan per group of CSDs or individual CSD depending on its specificities.

WBS:

Programme Workstream: OPERATIONAL READINESS

Deliverable Stream: MIGRATION

Deliverable Substream: MIGRATION PREPARATION

Deliverable: Detailed migration weekend script **ID:** 27

Document Category: T2S Project Documents

Licence to Copy / Use ☑

Optional: □

R – Responsible: Eurosystem
A – Accountable: PMG
C – Consultation: CSD, CB
I – Information:

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: The scope of this document is to provide the T2S Actors with the required information to execute the tasks requested for the preparation and execution of the T2S migration weekend. Tasks detailing the pre-migration phase (load static data...) and migration phase (detailed migration sequence of activities and organisation) are covered. Rollback and fallback procedures are presented as potential consequences of the decision points to be taken during the migration WE. More precisely, this document covers the schedule, the roles and responsibilities, and the identification of the success factors. The document takes into account the lessons learnt from the previous waves.

WBS:

Programme Workstream: OPERATIONAL READINESS

Deliverable Stream: MIGRATION

Deliverable Substream: MIGRATION PREPARATION

Deliverable: CSD Certification Test Cases **ID:** 30

Document Category: T2S Project Documents

Licence to Copy / Use □

Optional: □

R – Responsible: Eurosystem
A – Accountable: PMG
C – Consultation:
I – Information: CSD

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: This deliverable specifies the technical requirements that a CSD must fulfil as well as the test cases in a pre-defined, standardised format that a CSD must execute successfully as prerequisite before entering in the Community Testing Stage in User Testing. The successful execution of certification test cases by a CSD ensures that a CSD creates no adverse effects on T2S or T2S Actors.

WBS:

Programme Workstream: CLIENT READINESS

Deliverable Stream: USER TRAINING AND TESTING

Deliverable Substream: USER TESTING PREPARATION

Deliverable: T2S Non-Functional Testing Scenarios **ID:** 32

Document Category: T2S Project Documents

Licence to Copy / Use □

Optional: □

R – **Responsible:** Eurosystem
A – **Accountable:** Eurosystem
C – **Consultation:**
I – **Information:** CSD, CB

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: This deliverable documents the test scenarios and test cases that the Eurosystem will execute to verify that T2S complies with the non-functional user requirements. The non-functional testing comprises performance testing, Disaster Recovery and Business Continuity testing, and compliance with information security requirements.

WBS:

Programme Workstream: PRODUCT READINESS

Deliverable Stream: DEVELOPMENT

Deliverable Substream: INFRASTRUCTURE

Deliverable: CSD/CB´s T2S Non-Compliance Notification **ID:** 35

Document Category: T2S Project Documents

Licence to Copy / Use □

Optional: □

R – **Responsible:** CSD
A – **Accountable:** CSD
C – **Consultation:** Eurosystem (MCR)
I – **Information:**

Applicable Change Process: N/A **Baseline:**

Description: This report is a deliverable of the CSD/CB in which the CSD/CB formally documents the specific reason or reasons for ist refusal to accept T2S. The report must include the acceptance test scenarios and test cases that the CSD/CB considers to have failed to executed successfully in T2S.

WBS:

Programme Workstream: CLIENT READINESS

Deliverable Stream: USER TRAINING AND TESTING

Deliverable Substream: USER TESTING EXECUTION

Deliverable: CSD/CB´s T2S Compliance Confirmation **ID:** 36

Document Category: T2S Project Documents

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Optional: □

R – **Responsible:** CSD
A – **Accountable:** CSD
C – **Consultation:** Eurosystem (MCR)
I – **Information:**

Applicable Change Process: N/A **Baseline:**

Description: This deliverable is a standardised form that the Eurosystem provides to the CSDs/CBs and that a CSD/CB completes and returns to the Eurosystem to confirm ist acceptance of T2S at the end of the CSD/CB Acceptance Testing Phase.

WBS:

Programme Workstream: CLIENT READINESS

Deliverable Stream: USER TRAINING AND TESTING

Deliverable Substream: USER TESTING EXECUTION

Deliverable: Eurosystem T2S Certification **ID:** 37

Document Category: T2S Project Documents

Licence to Copy / Use □

Optional: □

R – **Responsible:** Eurosystem
A – **Accountable:** Eurosystem
C – **Consultation:**
I – **Information:** CSD, CB

Applicable Change Process: N/A **Baseline:**

Description: This deliverable is the assessement of the Euroystem whether or not a CSD, a CB or a DCP successfully completed its certification testing for this specific release of T2S. In case the assessment is negative, the Eurosystem formally documents the specific reason or reasons for its refusal to certify a T2S Actor for this specific release of T2S.

WBS:

Programme Workstream: CLIENT READINESS

Deliverable Stream: USER TRAINING AND TESTING

Deliverable Substream: USER TESTING EXECUTION

Deliverable: Testing Progress Report

ID: 39

Document Category:	T2S Project Documents	**R – Responsible:**	Eurosystem
		A – Accountable:	PMG
Licence to Copy / Use	□	**C – Consultation:**	CSD, CB
Optional:	□	**I – Information:**	

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: Provides the status, the general progress, the measures to mitigate risks that could endanger the timely execution of test activities, and the progress against the planning (Eurosystem reports on the Test Plan, whilst the CSDs/CBs report on their Test Plan). This report will be delivered for the various testing phases of the T2S Programme (EAT and UT Stages). The progress report also includes the list of pending defects identified for the stage, which will be used to allow proper monitoring of the defects identified.

WBS:

Programme Workstream: CLIENT READINESS

Deliverable Stream: USER TRAINING AND TESTING

Deliverable Substream: USER TESTING EXECUTION

Deliverable: T2S Training Framework

ID: 40

Document Category:	T2S Project Documents	**R – Responsible:**	Eurosystem
		A – Accountable:	Eurosystem
Licence to Copy / Use	□	**C – Consultation:**	
Optional:	□	**I – Information:**	CSD, CB

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: The training framework defines the scope of T2S training programme and ist related training objectives. It specifies the required set of training documents and materials, the intended audience definition, the training organisation (train the trainer concept) and the high-level training timeline.

WBS:

Programme Workstream: CLIENT READINESS

Deliverable Stream: USER TRAINING AND TESTING

Deliverable Substream: TRAINING PREPARATION

Deliverable: Registration Guide for User Testing **ID:** 42

Document Category:	T2S Project Documents	**R – Responsible:**	Eurosystem
Licence to Copy / Use	☑	**A – Accountable:**	Eurosystem
Optional:	□	**C – Consultation:**	
		I – Information:	CSD, CB

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: Contains the required details provided by the CSDs/CBs in order to carry out User Testing on the testing environments. Includes the full set of administrative forms required for the participation to the User Tests. It will enable the CSDs/CBs to describe their connectivity data, T2S Services used, initial static data such as accounts, static data for logically segregated testing, etc.

WBS:

Programme Workstream: CLIENT READINESS

Deliverable Stream: USER TRAINING AND TESTING

Deliverable Substream: USER TESTING PREPARATION

Deliverable: Implementation Guide for CSD Eligibility Criteria **ID:** 43

Document Category:	Legal Acts	**R – Responsible:**	Eurosystem
Licence to Copy / Use	□	**A – Accountable:**	Eurosystem
Optional:	□	**C – Consultation:**	
		I – Information:	CSD, CB

Applicable Change Process: N/A **Baseline:**

Description: This deliverable documents and explains the conditions that CSDs must fulfil to participate in T2S. The 5 criteria to be respected are defined under article 4.3 of the Framework Agreement. Also see Del ID 425 on "Proof of eligibility for participation in T2S".

WBS:

Programme Workstream: CLIENT READINESS

Deliverable Stream: SYNCHRONISATION AND ON-BOARDING

Deliverable Substream: CSD READINESS

Deliverable: T2S Release Note **ID:** 44

Document Category:	T2S Project Documents	**R – Responsible:**	Eurosystem
		A – Accountable:	Eurosystem
Licence to Copy / Use	□	**C – Consultation:**	
Optional:	□	**I – Information:**	CSD, CB

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: This deliverable details for T2S Actors Release changes and/or enhancements that the Eurosystem has made in a new version of the T2S software and includes a list of recommended regression tests for T2S Actors. It also documents any known defects in the software release.

WBS:

Programme Workstream: CLIENT READINESS

Deliverable Stream: USER TRAINING AND TESTING

Deliverable Substream: USER TESTING EXECUTION

Deliverable: CB Certification Test Cases **ID:** 45

Document Category:	T2S Project Documents	**R – Responsible:**	Eurosystem
		A – Accountable:	PMG
Licence to Copy / Use	□	**C – Consultation:**	
Optional:	□	**I – Information:**	CB

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: This deliverable documents the technical requirements that a Central Bank must fulfil as well as in a pre-defined, standardised format the test scenarios and test case that a Central Bank must execute successfully in T2S to obtain approval to connect directly to the T2S production environment. The document specifies the mandatory test scenarios and test cases by the role that the Central Bank takes in T2S.

WBS:

Programme Workstream: CLIENT READINESS

Deliverable Stream: USER TRAINING AND TESTING

Deliverable Substream: USER TESTING PREPARATION

Deliverable: DCP Certification Test Cases **ID:** 46

Document Category:	T2S Project Documents	**R – Responsible:**	Eurosystem
Licence to Copy / Use	□	**A – Accountable:**	PMG
Optional:	□	**C – Consultation:**	CSD
		I – Information:	DCP

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: This deliverable documents the technical requirements that a DCP must fulfil as well as in a pre-defined, standardised format the test scenarios and test case that a DCP must execute successfully in T2S to obtain approval to connect directly to the T2S production environment. The document specifies the mandatory test scenarios and test cases by the role that the DCP takes in T2S.

WBS:

Programme Workstream: CLIENT READINESS

Deliverable Stream: USER TRAINING AND TESTING

Deliverable Substream: USER TESTING PREPARATION

Deliverable: General Functional Specification (GFS) **ID:** 49

Document Category:	T2S Scope Defining Set of Documents	**R – Responsible:**	Eurosystem
Licence to Copy / Use	☑	**A – Accountable:**	CRG
Optional:	□	**C – Consultation:**	CSD, CB
		I – Information:	

Applicable Change Process: CRMP **Baseline:**

Description: The specification documents the functional design of T2S and how the user requirements will be implemented from a functional perspective.

WBS:

Programme Workstream: PRODUCT READINESS

Deliverable Stream: SPECIFICATION AND DOCUMENTATION

Deliverable Substream: SPECIFICATIONS

Deliverable: General Technical Design (GTD) **ID:** 50

Document Category:	T2S Specifications	**R** –	**Responsible:**	Eurosystem
		A –	**Accountable:**	CRG
Licence to Copy / Use	☑	**C** –	**Consultation:**	CSD, CB
Optional:	☐	**I** –	**Information:**	

Applicable Change Process: Deliverable Change Process (CRG) **Baseline:**

Description: The document describes the design of T2S from the technical infrastructure and architecture perspective. CSDs and CBs were consulted on specific chapters related to connectivity issues (Chapters 3.5 and 3.6)

WBS:

Programme Workstream: PRODUCT READINESS

Deliverable Stream: SPECIFICATION AND DOCUMENTATION

Deliverable Substream: SPECIFICATIONS

Deliverable: General Specification (GS) **ID:** 51

Document Category:	T2S Specifications	**R** –	**Responsible:**	Eurosystem
		A –	**Accountable:**	Eurosystem
Licence to Copy / Use	☑	**C** –	**Consultation:**	
Optional:	☐	**I** –	**Information:**	CSD, CB

Applicable Change Process: N/A **Baseline:**

Description: The document represents the high-level description of T2S as an executive summary. It aims at giving a global and comprehensive picture of the T2S solution and at explaining how the User Requirements which are not covered by the General Functional Specifications (GFS) and General Technical Design (GTD) will be fulfilled.

WBS:

Programme Workstream: PRODUCT READINESS

Deliverable Stream: SPECIFICATION AND DOCUMENTATION

Deliverable Substream: SPECIFICATIONS

Deliverable: User Requirement Document (URD) **ID:** 64

Document Category: T2S Scope Defining Set of Documents

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Optional: □

R – Responsible: Eurosystem
A – Accountable: CRG
C – Consultation: CSD, CB
I – Information:

Applicable Change Process: CRMP **Baseline:**

Description: In line with the Schedule 1 definition: [means the latest available document setting out the User requirements for T2S Services as published by the ECB as subsequently amended through the Change and Re-lease Management process.] This document defines the requirements for the T2S Services eg: the Cross Border DVP settlement in Central Bank Money.

WBS:

Programme Workstream: PRODUCT READINESS

Deliverable Stream: SPECIFICATION AND DOCUMENTATION

Deliverable Substream: REQUIREMENTS

Deliverable: Tender for Network Connectivity (VAN) **ID:** 69

Document Category: T2S Specifications

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Optional: □

R – Responsible: Eurosystem
A – Accountable: Eurosystem
C – Consultation:
I – Information: CSD, CB

Applicable Change Process: N/A **Baseline:**

Description: The tender defines the requirements that a potential network provider must fulfil to be considered suitable for offering its network services to the T2S community.

WBS:

Programme Workstream: OPERATIONAL READINESS

Deliverable Stream: NETWORK AND CONNECTIVITY

Deliverable Substream: NETWORK AND CONNECTIVITY

Deliverable: Processes and Tools for Data Migration **ID:** 73

Document Category:	T2S Project Documents	**R – Responsible:**	Eurosystem
		A – Accountable:	PMG
Licence to Copy / Use	☑	**C – Consultation:**	CSD, CB
Optional:	□	**I – Information:**	

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: The document defines the steps with their sequencing that a CSD or CB needs to undertake to successfully migrate to T2S. Furthermore, it explains the various options that T2S provides to migrate specific types of data to T2S and to ensure the integrity of migrated data. It also documents the specific migration obligations of CSDs and CBs resulting from the phased migration in multiple waves.

WBS:

Programme Workstream: OPERATIONAL READINESS

Deliverable Stream: MIGRATION

Deliverable Substream: MIGRATION PREPARATION

Deliverable: Registration Guide for Migration **ID:** 74

Document Category:	T2S Project Documents	**R – Responsible:**	Eurosystem
		A – Accountable:	Eurosystem
Licence to Copy / Use	☑	**C – Consultation:**	
Optional:	□	**I – Information:**	CSD, CB

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: This document gathers the full set of administrative forms required for set-up. This version will rely on the registration guide created for testing and will complement it with what is required for production.

WBS:

Programme Workstream: OPERATIONAL READINESS

Deliverable Stream: MIGRATION

Deliverable Substream: MIGRATION PREPARATION

Deliverable: Business Process Description (BPD) ID: 75

Document Category:	T2S Specifications	**R – Responsible:**	Eurosystem
		A – Accountable:	Eurosystem
Licence to Copy / Use	☑	**C – Consultation:**	
Optional:	□	**I – Information:**	CSD, CB

Applicable Change Process: Deliverable Change Process (CRG) **Baseline:**

Description: This document provides end-to-end business process descriptions for the life cycle of the different business operations (e.g. distribution or transformation). It describes which T2S services a CSD and CB may use to correctly and completely process a specific business operation.

WBS:

Programme Workstream: PRODUCT READINESS

Deliverable Stream: SPECIFICATION AND DOCUMENTATION

Deliverable Substream: DOCUMENTATION

Deliverable: T2S Glossary ID: 78

Document Category:	T2S Project Documents	**R – Responsible:**	Eurosystem
		A – Accountable:	Eurosystem
Licence to Copy / Use	☑	**C – Consultation:**	CSD, CB
Optional:	□	**I – Information:**	

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: This document presents, encompasses and harmonises all the definitions included in the various T2S deliverables.

WBS:

Programme Workstream: PRODUCT READINESS

Deliverable Stream: SPECIFICATION AND DOCUMENTATION

Deliverable Substream: DOCUMENTATION

Deliverable: User Testing Calendar **ID:** 88

Document Category:	T2S Project Documents	**R – Responsible:**	Eurosystem
		A – Accountable:	PMG
Licence to Copy / Use	□	**C – Consultation:**	CSD, CB
Optional:	□	**I – Information:**	

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: This document provides on the availability of the testing environments and the process scheduling for each of the test environments (e.g. slow motion, fast forward or business day mode).

WBS:

Programme Workstream: CLIENT READINESS

Deliverable Stream: USER TRAINING AND TESTING

Deliverable Substream: USER TESTING PREPARATION

Deliverable: Eurosystem Acceptance Testing Assessment Report **ID:** 101

Document Category:	T2S Project Documents	**R – Responsible:**	Eurosystem
		A – Accountable:	Eurosystem
Licence to Copy / Use	□	**C – Consultation:**	
Optional:	□	**I – Information:**	CSD, CB

Applicable Change Process: N/A **Baseline:**

Description: The report documents the Eurosystem’s assessment whether T2S fulfils the User Requirements. It documents pending defects with a timeline for their resolution. Where necessary, it includes workarounds for remaining errors.

WBS:

Programme Workstream: PRODUCT READINESS

Deliverable Stream: EUROSYSTEM ACCEPTANCE TEST

Deliverable Substream: EAT EXECUTION

Deliverable: T2S Smooth Cross-CSD Settlement **ID:** 107

Document Category:	T2S Project Documents	**R – Responsible:**	Eurosystem
		A – Accountable:	CRG
Licence to Copy / Use	☑	**C – Consultation:**	CSD
Optional:	☐	**I – Information:**	

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: The document presents the CSD specificities that the T2S users must take into account when instructing securities issued in or when settling with the counterparts in CSDs other than the in which they hold their Securities Account. The document defines and describes the additional conditions required to allow the smooth processing of cross-CSD instructions. This document is also discussed at the AG.

WBS:

Programme Workstream: PRODUCT READINESS

Deliverable Stream: SPECIFICATION AND DOCUMENTATION

Deliverable Substream: DOCUMENTATION

Deliverable: Adaptation to Cross-CSD Settlement **ID:** 109

Document Category:	T2S Project Documents	**R – Responsible:**	Eurosystem
		A – Accountable:	CRG
Licence to Copy / Use	☑	**C – Consultation:**	CSD
Optional:	☐	**I – Information:**	

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: This document is based on the T2S Smooth Cross-CSD settlement deliverable (ID 107), it presents the conclusions of the subgroup working on this topic (detailed anaysis of deliverable 107)..

WBS:

Programme Workstream: PRODUCT READINESS

Deliverable Stream: SPECIFICATION AND DOCUMENTATION

Deliverable Substream: DOCUMENTATION

Deliverable: T2S Training Manual **ID:** 110

Document Category: T2S Project Documents

Licence to Copy / Use ☑

Optional: ☐

R – Responsible: Eurosystem
A – Accountable: Eurosystem
C – Consultation:
I – Information: CSD, CB

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: The Eurosystem provides the CSDs and Central Banks with training on a train-the-trainer basis.If requested by a CSD or a central bank, the Eurosystem can also provide these trainings (train the trainer concept) to the CSD/CB customers.These training materials are in line with internal documents such as the Training Framework and Training material guidelines. This document is delivered by topic: Basic, Technical, Functional, Operational, Testing and Migration. The plan details the versioning and delivery dates for each topic.

WBS:

Programme Workstream: CLIENT READINESS

Deliverable Stream: USER TRAINING AND TESTING

Deliverable Substream: TRAINING PREPARATION

Deliverable: Risk Analysis on T2S Compliance with T2S Information Security Policy **ID:** 116

Document Category: T2S Project Documents

Licence to Copy / Use ☑

Optional: ☐

R – Responsible: Eurosystem
A – Accountable: Eurosystem
C – Consultation: CSD, CB
I – Information:

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: This document presents Eurosystem analysis on the compliance of T2S with the Information Security requirements”and policy, as defined in the FA/CPA.

WBS:

Programme Workstream: OPERATIONAL READINESS

Deliverable Stream: INFORMATION SECURITY

Deliverable Substream: INFORMATION SECURITY

Deliverable: Non Functional Test Report **ID:** 141

Document Category:	T2S Project Documents	**R – Responsible:**	Eurosystem
		A – Accountable:	Eurosystem
Licence to Copy / Use	□	**C – Consultation:**	
Optional:	□	**I – Information:**	CSD, CB

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: This report documents the results of the non-functional testing of T2S by the Eurosystem, (e.g. scalability testing, Disaster Recovery testing and Business Continuity testing).

WBS:

Programme Workstream: PRODUCT READINESS

Deliverable Stream: DEVELOPMENT

Deliverable Substream: INFRASTRUCTURE

Deliverable: User Testing Stage Report **ID:** 201

Document Category:	T2S Project Documents	**R – Responsible:**	Eurosystem
		A – Accountable:	PMG
Licence to Copy / Use	□	**C – Consultation:**	CSD, CB
Optional:	□	**I – Information:**	

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: Includes a check of the exit and entry criteria for a testing stage, an overview of the test results by testing stage, overview of functionalities delivered, resolved defects (defect ID, defect title, severity, T2S Service affected, impacted parties) and remaining known defects for the next testing stage. Used for the go-no-go decision on the next User Testing stage.
It includes the lessons learnt during the test stage.
Provided at the end of: Connectivity set-up, Interoperability, Community, Business Day (By wave).

WBS:

Programme Workstream: CLIENT READINESS

Deliverable Stream: USER TRAINING AND TESTING

Deliverable Substream: USER TESTING EXECUTION

Deliverable: Schedule 5 - Service Description **ID:** 376

Document Category:	Legal Acts	**R – Responsible:**	Eurosystem
Licence to Copy / Use	☑	**A – Accountable:**	Eurosystem
Optional:	□	**C – Consultation:**	CSD, CB
		I – Information:	

Applicable Change Process: FA/CPA **Baseline:**

Description: This deliverable classifies and decomposes the set of services that T2S will deliver. It provides a description from the T2S clients' perspective for each class of service and well as services within each class. It also defines the service boundaries for the services.

WBS:

Programme Workstream: CLIENT READINESS

Deliverable Stream: CONTRACTUAL FRAMEWORK

Deliverable Substream: FRAMEWORK AGREEEMENT

Deliverable: Proof of eligibility for participation in T2S **ID:** 425

Document Category:	T2S Project Documents	**R – Responsible:**	CSD
Licence to Copy / Use	□	**A – Accountable:**	CSD
Optional:	□	**C – Consultation:**	Eurosystem
		I – Information:	

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: This document is the standardised form that CSDs must complete for CSDs to document their compliance with the Eligibility Criteria for Participation in T2S. It describes the type and scope of documentation that the CSDs must provide as proof of eligibility. Also see Del ID 43 on "Implementation Guide for CSD Eligibility Criteria".

WBS:

Programme Workstream: CLIENT READINESS

Deliverable Stream: SYNCHRONISATION AND ON-BOARDING

Deliverable Substream: CSD READINESS

Deliverable: CSD Feasibility Assessment

ID: 430

Document Category: T2S Project Documents

Licence to Copy / Use □

Optional: □

R – Responsible: CSD

A – Accountable: CSD

C – Consultation:

I – Information: Eurosystem

Applicable Change Process: N/A

Baseline:

Description: This deliverable presents the results of the CSD feasibility assessment. It contains a view on their internal adaptation approach and planning. It also presents the efforts the CSD is going to undertake to coordinate the readiness of their clients. As part of this feasibility assessment, CSD will also list the potential showstoppers they have identified. CSDs will include in their assessment a date for their migration to T2S that will be the basis for CSDs for CSD to agree and make their proposal for the composition and timing of migration waves to T2S.

WBS:

Programme Workstream: CLIENT READINESS

Deliverable Stream: SYNCHRONISATION AND ON-BOARDING

Deliverable Substream: CSD READINESS

Deliverable: CB Feasibility Assessment

ID: 440

Document Category: T2S Project Documents

Licence to Copy / Use □

Optional: □

R – Responsible: CB

A – Accountable: CB

C – Consultation:

I – Information: Eurosystem

Applicable Change Process: N/A

Baseline:

Description: This deliverable presents the results of the CB feasibility assessment. It contains a view on their internal adaptation approach and planning. It also presents the efforts the CB is going to undertake to coordinate the readiness of their clients. As part of this feasibility assessment, CB will also list the potential showstoppers they have identified. CBs will include in their assessment a date for their migration to T2S that will be the basis for CBs for CB to agree and make their proposal for the composition and timing of migration waves to T2S.

WBS:

Programme Workstream: CLIENT READINESS

Deliverable Stream: SYNCHRONISATION AND ON-BOARDING

Deliverable Substream: CB READINESS

Deliverable: EAT Documentation **ID:** 466

Document Category:	T2S Project Documents	**R – Responsible:**	Eurosystem
Licence to Copy / Use	☑	**A – Accountable:**	Eurosystem
Optional:	□	**C – Consultation:**	
		I – Information:	CSD, CB

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: Provide, for informational purposes only, details of Eurosystem acceptance test documentation (test calendars etc.) to Contracting CSDs pursuant to ECB's obligations under the Framework Agreement Schedule 3 section 3.2.1 paragraph (ii) and section 3.2.2 paragraph (ii)"

WBS:

Programme Workstream: PRODUCT READINESS

Deliverable Stream: EUROSYSTEM ACCEPTANCE TEST

Deliverable Substream: EAT PREPARATION

Deliverable: CSD Market Specific Test Cases for Eurosystem Acceptance Test **ID:** 467

Document Category:	T2S Project Documents	**R – Responsible:**	CSD
Licence to Copy / Use	☑	**A – Accountable:**	CSD
Optional:	☑	**C – Consultation:**	
		I – Information:	Eurosystem

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: This deliverable documents the market-specific test cases that a CSD would like the Eurosystem to execute as part of its Eurosystem Acceptance Testing in advance of the User Testing Execution Phase.

WBS:

Programme Workstream: PRODUCT READINESS

Deliverable Stream: EUROSYSTEM ACCEPTANCE TEST

Deliverable Substream: EAT PREPARATION

Deliverable: CB Market Specific Test Cases for Eurosystem Acceptance Test **ID:** 470

Document Category:	T2S Project Documents	**R – Responsible:**	CB
		A – Accountable:	CB
Licence to Copy / Use	☑	**C – Consultation:**	
Optional:	☑	**I – Information:**	Eurosystem

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: This deliverable documents the market-specific test cases that a CB would like the Eurosystem to execute as part of its Eurosystem Acceptance Testing in advance of the User Testing Execution Phase.

WBS:

Programme Workstream: PRODUCT READINESS

Deliverable Stream: EUROSYSTEM ACCEPTANCE TEST

Deliverable Substream: EAT PREPARATION

Deliverable: End of Migration report **ID:** 550

Document Category:	T2S Project Documents	**R – Responsible:**	Eurosystem
		A – Accountable:	PMG
Licence to Copy / Use	□	**C – Consultation:**	CSD, CB
Optional:	□	**I – Information:**	

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: This deliverable provides after the go-live of each migration wave the lessons-learnt from the respective migration wave to identify and provide recommendations on potential improvements in the scope and content of the User Testing Phase; migration activities, procedures and checkpoints; and operational procedures and controls.

WBS:

Programme Workstream: OPERATIONAL READINESS

Deliverable Stream: MIGRATION

Deliverable Substream: MIGRATION WEEKEND (WAVE 3)

Deliverable: CSD Proposal on the Composition and Timing of the Migration Waves ID: 593

Document Category:	T2S Project Documents	**R – Responsible:**	CSD/CB
		A – Accountable:	CSD/CB
Licence to Copy / Use	□	**C – Consultation:**	Eurosystem
Optional:	☑	**I – Information:**	

Applicable Change Process: Deliverable Change Process (PMG) **Baseline:**

Description: This deliverable documents the joint proposal of CSDs on the composition and timing of the migration waves for the go-live of the initial T2S release. It forms the basis for the Eurosystem decision on the composition and timing of the migration waves.

WBS:

Programme Workstream: OPERATIONAL READINESS

Deliverable Stream: MIGRATION

Deliverable Substream: MIGRATION PREPARATION

EUROPEAN CENTRAL BANK

EUROSYSTEM

TARGET2-SECURITIES

FRAMEWORK AGREEMENT

SCHEDULE 2 – ANNEX 9

T2S LIST OF SYNCHRONISATION POINTS

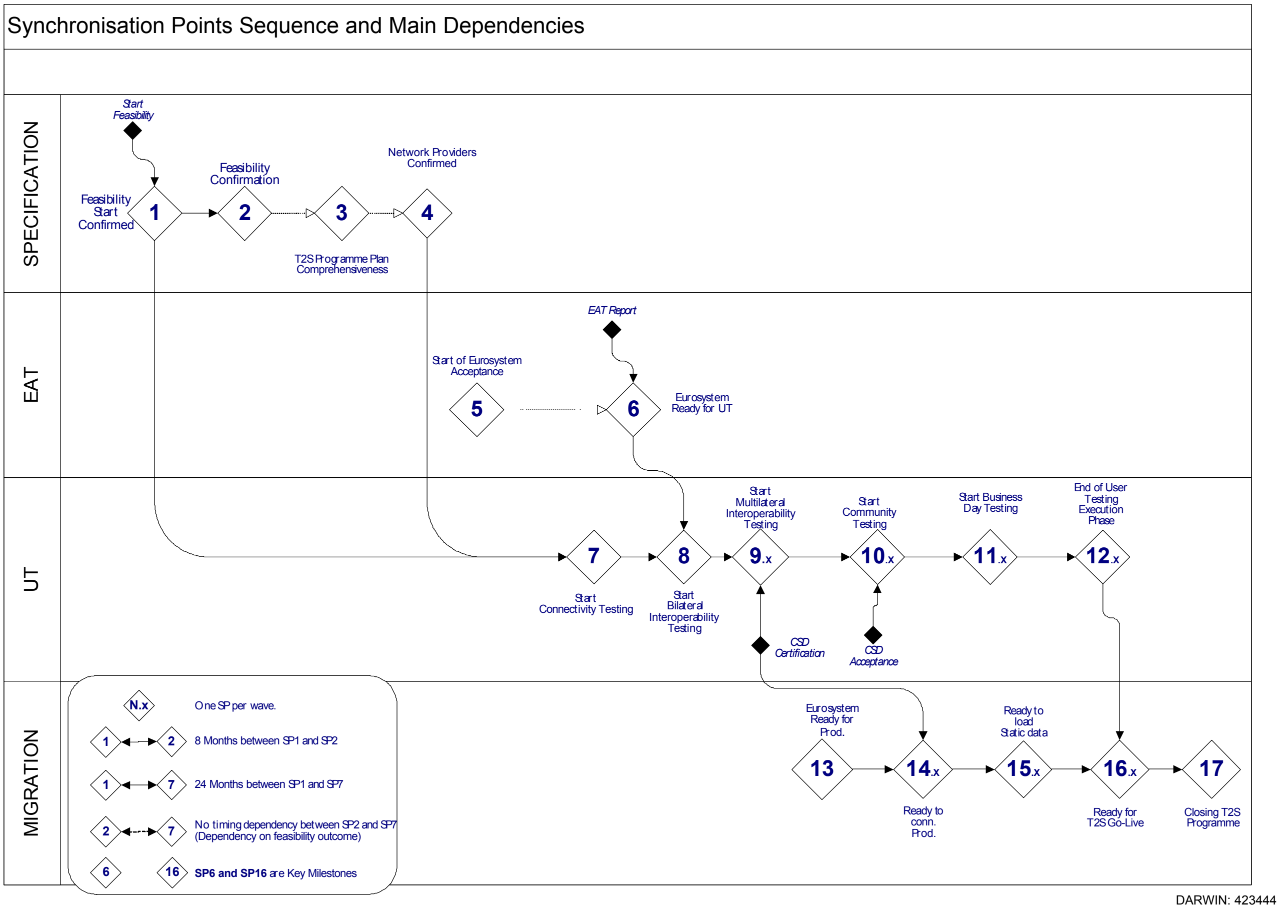
Disclaimer:

Planning is an ongoing process and Annexes with planning elements are subject to change during the lifetime of a project. Planning workshops with CSDs and CBs will continue to agree on the planning for Connectivity, User Testing and Migration. Subsequent plan updates follow the process, documented in the Schedule 2, Section 7.

Annexes 2, 3, 4, 7, 8, 9 and 10 document the planning status as at 31 Oct. 2011.

Introduction:

To ease the readability of the Synchronisation Points here is a drawing presenting the sequencing and main dependencies. For the exact timing please refer to the details of each Synchronisation Points.


Synchronisation Points Sequence and Main Dependencies
SPECIFICATION
EAT
UT
MIGRATION
Start Feasibility
Feasibility Start Confirmed
1
Feasibility Confirmation
2
3
T2S Programme Plan Comprehensiveness
Network Providers Confirmed
4
EAT Report
Start of Eurosystem Acceptance
5
6
Eurosystem Ready for UT
7
Start Connectivity Testing
8
Start Bilateral Interoperability Testing
Start Multilateral Interoperability Testing
9.x
CSD Certification
Start Community Testing
10.x
CSD Acceptance
Start Business Day Testing
11.x
End of User Testing Execution Phase
12.x
Eurosystem Ready for Prod.
13
14.x
Ready to conn. Prod.
Ready to load Static data
15.x
16.x
Ready for T2S Go-Live
17
Closing T2S Programme
N.x
One SP per wave.
1
2
8 Months between SP1 and SP2
1
7
24 Months between SP1 and SP7
2
7
No timing dependency between SP2 and SP7 (Dependency on feasibility outcome)
6
16
SP6 and SP16 are Key Milestones

DARWIN: 42344421

Framework Agreement

SCHEDULE 2 – ANNEX 9 – T2S list of Synchronisation points

SP1 Start CSD/CB Feasibility Assessment Confirmed

20/12/11

SP1 marks the agreement between the Eurosystem and the respective CSDs and CBs that the Euorsystem has provided the specifications and documents to the CSDs and CBs in order for them to confirm that they have started their detailed feasibility assessment for the adaptation of their IT system and processes to T2S.

Plan reference ID: 2006100

Eurosystem:

The Eurosystem confirms that it has provided the specifications and documents in the required scope and quality.

CSDs and CBs:

Each CSD and CB confirms that the Eurosystem has delivered the complete set of specifications and documents for the feasibility assessment. Each CSD and CB has confirmed that it has initiated its feasibility assessment.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ [Deliverable] - General Function Specification (GFS) V 4.0	49	Eurosystem	74100	31/05/10
□ [Deliverable] - Graphical User Interface (GUI) Business Functionalities	3	Eurosystem	281100	28/02/11
□ Delivery GFS Note	49	Eurosystem	74500	01/06/11
□ [Deliverable] - T2S Smooth Cross CSD settlement Report V1.0	107	Eurosystem	259100	30/06/11
□ [Deliverable] - Service Description	376	Eurosystem	1310380	21/07/11
□ [Deliverable] - Legal Act of Implementation Guide for CSD Eligibility Criteria V2.0	43	Eurosystem	623900	24/10/11
□ [Deliverable] - User Detailed Functional Specification (UDFS) V1.2	6	Eurosystem	211100	31/10/11
□ Start feasibility study		CSDs,CBs	211200	02/11/11
□ [Deliverable] - User Requirement Document (URD) 5.01	64	Eurosystem	16100	17/11/11
□ [Deliverable] - Business Process Description V 1.0 (BPD)	75	Eurosystem	230000	18/11/11
□ Confirm comprehensiveness to start feasibility assessment		CSDs,CBs	536200	15/12/11

SP2 Feasibility Confirmation by CSD/CB

10/08/12

SP2 marks the confirmation by CSDs and CBs that the adaptation of their IT systems and processes to interoperate with T2S are feasible from a functional and time perspective.

Plan reference ID: 2007100

Eurosystem:

Based on the documentation from CSDs and CBs, defined as deliverables for this synchronisation point, the Eurosystem confirms that the T2S Programme Plan Assumptions for the overall T2S Programme Plan remain valid. It performs an impact assessment to ensure that any changes in assumptions do not have a material impact on the T2S Programme, and informs the T2S governance bodies if this is the case.

CSDs and CBs:

CSDs and CBs have reviewed the specifications and documents that the Eurosystem delivered for SP1 and confirm that it is feasible to adapt their IT systems and processes to interoperate with T2S. As part of their feasibility assessment, CSDs and CBs have identified their approach to the adaptation of their IT systems as well as impacts on processes and potential changes to their service offering. They have identified and logged potential showstoppers. CSDs and CBs have completed their high-level planning for going live with T2S and communicated their planning to the Eurosystem. The CSDs and CBs have submitted a proposal for the composition of the migration waves.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ SP1 - Start Feasibility Confirmed			2006100	20/12/11
□ [Deliverable] - CSD Feasibility Assessment	430	CSDs	213100	29/06/12
□ [Deliverable] - CB Feasibility Assessment	440	CBs	546500	29/06/12
□ [Deliverable] - Composition and Timing Migration Waves by CSDs/CBs	593	CSDs,CBs	546350	03/08/12
□ Assessment of feasibility confirmation		Eurosystem	538200	10/08/12

SP3 T2S Programme Plan Comprehensiveness

17/12/12

SP 3 marks the mutual assessment and confirmation that the T2S Programme Plan and the CSDs' and the CBs' plans are comprehensive and adequately reflect any agreed additional specifications or deliverables.

Plan reference ID: 2007200

Eurosystem:

The Eurosystem provides a status on the T2S progress so far and confirms that the actual T2S Programme Plan is comprehensive and adequate.

CSDs and CBs:

The objective of this checkpoint is to verify that each CSD and CB has conducted an internal impact assessment for the implementation of the CASG Standards and other harmonisation initiatives on their own project plan to adapt to T2S. It is also an interim verification point to validate the initial assessment made on SP 2.

Checklist:

	Description:	Del ID:	Owner:	Plan ID:	Date:
□	SP2 - Feasibility Confirmation by CSD/CB			2007100	10/08/12
□	Confirmation of the timing and composition of Migration Waves by Eurosystem		Eurosystem	1209150	08/10/12
□	[Deliverable] - Adaptation to Cross CSD settlement Report	109	Eurosystem	262000	20/11/12
□	Update on CB Feasibility Assessment		CBs	553200	17/12/12
□	Update on CSD Feasibility Assessment		CSDs	553000	17/12/12
□	Confirmation of T2S programme plan status and achieved milestones		Eurosystem	540800	17/12/12

SP4 Network Providers Confirmed

24/04/14

SP 4 marks confirmation that the selected network providers fulfil the technical requirements, as required by the tender.

Plan reference ID: 2008100

Eurosystem:

The Eurosystem and the selected Network Service Providers (NSP) undertake proof of concept and Network Acceptance Tests (using testing environment) to demonstrate that the NSPs fulfil the technical requirements, as required in the tender in order to provide certainty to CSDs and CBs of the NSP’s capability to support T2S connectivity. The Eurosystem presents the results of the Network Acceptance Tests confirming the ability of the NSPs to cope with the defined requirements.

CSDs and CBs:

The CSDs and CBs have finalised their contracts with their selected Network Service Provider.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
☐ [Deliverable] - Tender for Network Connectivity (VAN)	69	Eurosystem	1059100	08/07/11
☐ Signature of Network Service Provider Agreement		Eurosystem	1061100	31/01/12
☐ CSD: Network Agreement Contract signed		CSDs	1063120	11/04/14
☐ CB: Network Agreement Contract signed		CBs	1063190	11/04/14

SP5 Start of Eurosystem Acceptance Test

15/01/14

SP 5 marks the start of the Eurosystem acceptance testing.

Plan reference ID: 2009200

Eurosystem:

The Eurosystem has provided to CSDs and CBs the details of EAT documentation (e.g. test cases, test calendars, etc.). The Eurosystem confirms that it is ready to start the acceptance testing.

CSDs and CBs:

CSDs and CBs have reviewed the EAT documentation and potentially have identified specific additional test cases (optional) to increase the coverage of the EAT to market-specific requirements.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ [Deliverable] - CSDs Market specific test cases for EAT V1.0	467	CSDs	451300	17/10/13
□ [Deliverable] - CBs Market specific test cases for EAT V1.0	470	CBs	451700	17/10/13
□ [Deliverable] - EAT Documentation V1.0 (EAT Test Sets)	466	Eurosystem	451400	14/11/13

SP6 Eurosystem Ready for User Testing

02/09/14

SP 6 marks the start of the User Testing.

Plan reference ID: 2009100

Eurosystem:

The Eurosystem confirms that the CSDs and CBs can start User Testing. The Eurosystem has set-up the T2S User Testing environment(s), implemented all supporting processes, trained the support teams and provided the required documentation. It has defined and communicated the test cases for certification of CSDs and CBs.

CSDs and CBs:

The CSDs and CBs have submitted their completed registration guide for User Testing and have finalised their verification test cases.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ [Deliverable] - User Requirements for data migration tools V1.0	73	Eurosystem	1206100	05/04/12
□ [Deliverable] -User Hand Book (UHB) V1.0	9	Eurosystem	324100	27/12/12
□ [Deliverable] - User Hand Book V2.0 (UHB)	9	Eurosystem	335200	17/09/13
□ [Deliverable] - Functional Training Materials	110	Eurosystem	568600	03/12/13
□ [Intermediate Deliverable] Draft Non functional Testing Report for information V1.0	141	Eurosystem	384200	17/12/13
□ [Deliverable] - Registration Guide for User Testing	42	Eurosystem	607200	22/01/14
□ [Deliverable] - User Testing Guide	18	Eurosystem	616100	12/03/14
□ [Deliverable] - User Testing Calendar	88	Eurosystem	597300	13/03/14
□ [Deliverable] - Testing Training Materials	110	Eurosystem	569000	03/06/14
□ [Deliverable] - CB Certification Test Cases	45	Eurosystem	634700	19/06/14
□ [Deliverable] - CSD Certification Test Cases	30	Eurosystem	634600	19/06/14
□ Helpdesk set-up and Ready to support CSDs/CBs		Eurosystem	630200	23/06/14
□ Delivery updated version of the EAT Status update		Eurosystem	634300	27/08/14
□ [Deliverable] EAT Assessment Report	101	Eurosystem	493130	01/09/14

SP7 Start Connectivity Testing

07/07/14

SP 7 marks the start of the connectivity tests by the CSDs and the central banks to the T2S User Testing environment(s).

Plan reference ID: 2010100

Eurosystem:

The Eurosystem confirms the operational readiness of the networks for CSD and CB connectivity testing. The Eurosystem has issued the connectivity guides to the T2S user test environment(s). The Eurosystem confirms helpdesk is in place and problem management processes are operational.

CSDs and CBs:

CSDs and CBs have configured their network connectivity, according to the connectivity guide for the T2S user test environment(s). CSDs and CBs have completed the adaptation of their IT systems, according to T2S specifications and documentation. The starting date presented is the earliest starting date, since this is a bilateral phase, each CSD and CB may decide to start this stage at a later date.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ [Deliverable] - Basic Training Materials	110	Eurosystem	568100	03/06/13
□ [Deliverable] - Connectivity Guide for VAN and Direct connectivity (Testing) V1.0	8	Eurosystem	1042200	30/07/13
□ [Deliverable] - Technical Training Materials	110	Eurosystem	568400	03/09/13
□ Start of VAN Networks connectivity tests with CSDs/CBs (Finish acceptance VAN N		Eurosystem	1067100	04/11/13
□ [Deliverable] - UDFS v.2.0	6	Eurosystem	223150	19/12/13
□ Completed UT Registration Guide for User Testing (network registration)		CSDs,CBs	627100	11/04/14
□ SP4 - Network Service Provider Confirmed			2008100	24/04/14
□ UT environment ready		Eurosystem	634200	11/06/14

SP8 Start Bilateral Interoperability Testing (for all waves) 01/10/14

SP 8 marks the start of the Bilateral Interoperability phase.

Plan reference ID: 2011100

Eurosystem:

The Eurosystem confirms that Eurosystem Acceptance Test results have provided assurance that the quality required to start the User Testing is met. The Eurosystem confirms helpdesk is in place and problem management processes are operational. Documenation on testing processes has been delivered.

CSDs and CBs:

CSDs and CBs confirm their readiness for interoperability testing, including compliance of their adapted IT systems with the CASG Standards and other harmonisation initiatives. They have completed the training of staff involved in testing. They have communicated any identified potential showstoppers to the Eurosystem.
Test cases for acceptance have been communicated and agreed. The CSDs and CBs can now start the Bilateral Interoperability phase where they are going the execute the test cases for acceptance and the test cases required to get the certification. The starting date presented is the earliest starting date, since this is a bilateral phase, CSD and CB may decide to start this stage at a later date.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ Interim verification of the List of Potential Show stopper from CSDs (dependencies w		CSDs,CBs	644200	09/06/14
□ Internal system adapted according to UDFS specifications by CSDs/CBs		CSDs,CBs	641150	30/06/14
□ SP6 - Eurosystem Ready for User Testing			2009100	02/09/14
□ [Deliverable] - User Testing Stage Report (Wave 2) V2.0 [Connectivity phase]	201	Eurosystem	840560	26/09/14
□ [Deliverable] - User Testing Stage Report (Wave 1) V1.0 [Connectivity phase]	201	Eurosystem	646160	30/09/14
□ [Deliverable] - User Testing Stage Report (Wave 3) V3.0 [Connectivity phase]	201	Eurosystem	2200600	30/09/14

SP9.1 Start Multilateral Interoperability Testing (Wave 1)

29/12/14

SP 9.1 marks the start of the Multilateral Interoperability Phase for the CSDs and CBs of the wave 1.

Plan reference ID: 2011200

Eurosystem:

The Eurosystem has monitored the CSD and CB activity during the Bilateral Interoperability and has confirmed the CSD and CB capability to cope with the required T2S knowledge before starting the Multilateral Interoperability. The Eurosystem has issued the certificates for CSDs having passed the Certification test case execution.

CSDs and CBs:

CSDs and CBs have completed the execution of the certification test cases and have been certified. They are now ready to start the multilateral interoperability test phases where they will continue to test T2S in collaboration with other CSDs and CBs. In this phase, the CSDs and CBs will also complete their acceptance testing.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ Confirmation of the timing and composition of Migration Waves by Eurosystem		Eurosystem	1209150	08/10/12
□ [Deliverable] - Registration Guide for Migration V1.0	74	Eurosystem	1222100	09/11/12
□ [Deliverable] - Standard Migration Plan V1.0	26	Eurosystem	1232800	01/11/13
□ Registration Guide for Migration filled in by CSDs/CBs (Wave 1)		CSDs,CBs	727100	03/09/14
□ [Deliverable] - Migration Training Materials	110	Eurosystem	569200	01/12/14
□ [Deliverable] - User Testing Stage Report (Wave 1) V1.1 Interoperability Bilateral ph	201	Eurosystem	714280	18/12/14
□ [Deliverable] - Eurosystem T2S Certification (Wave 1)	37	Eurosystem	647960	29/12/14
□ [Deliverable] - Eurosystem T2S Certification (Wave 1)	37	Eurosystem	647850	29/12/14

SP9.2 Start Multilateral Interoperability Testing (Wave 2)

02/04/15

SP 9.2 marks the start of the Multilateral Interoperability Phase for the CSDs and CBs of the wave 2.

Plan reference ID: 2011300

Eurosystem:

The Eurosystem has monitored the CSD and CB activity during the Bilateral Interoperability and has confirmed the CSD and CB capability to cope with the required T2S knowledge before starting the Multilateral Interoperability. The Eurosystem has issued the certificates for CSDs having passed the Certification test case execution.

CSDs and CBs:

CSDs and CBs have completed the execution of the certification test cases and have been certified. They are now ready to start the multilateral interoperability test phases where they will continue to test T2S in collaboration with other CSDs and CBs. In this phase, the CSDs and CBs will also complete their acceptance testing.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ Registration Guide for Migration filled in by CSDs/CBs (Wave 2)		CSDs,CBs	917100	06/10/14
□ [Deliverable] - User Testing Stage Report (Wave 2) V2.1 [Interoperability Bilateral p	201	Eurosystem	914180	18/03/15
□ [Deliverable] - Eurosystem T2S Certification (Wave 2)	37	Eurosystem	648250	01/04/15
□ [Deliverable] - Eurosystem T2S Certification (Wave 2)	37	Eurosystem	648360	01/04/15

SP9.3 Start Multilateral Interoperability Testing (Wave 3)

23/06/15

SP 9.3 marks the start of the Multilateral Interoperability Phase for the CSDs and CBs of the wave 3.

Plan reference ID: 2011400

Eurosystem:

The Eurosystem has monitored the CSD and CB activity during the Bilateral Interoperability and has confirmed the CSD and CB capability to cope with the required T2S knowledge before starting the Multilateral Interoperability. The Eurosystem has issued the certificates for CSDs having passed the Certification test case execution.

CSDs and CBs:

CSDs and CBs have completed the execution of the certification test cases and have been certified. They are now ready to start the multilateral interoperability test phases where they will continue to test T2S in collaboration with other CSDs and CBs. In this phase, the CSDs and CBs will also complete their acceptance testing.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ Registration Guide for Migration filled in by CSDs/CBs (Wave 3)		CSDs,CBs	2282500	17/04/15
□ [Deliverable] - Eurosystem T2S Certification (Wave 3)	37	Eurosystem	648550	22/06/15
□ [Deliverable] - Eurosystem T2S Certification (Wave 3)	37	Eurosystem	648650	22/06/15
□ [Deliverable] - User Testing Stage Report (Wave 3) V3.1 Interoperability Bilateral ph	201	Eurosystem	2273080	23/06/15

SP10.1 Start Community Testing (Wave 1)

04/03/15

SP 10.1 marks the start of Community Testing Phase.

Plan reference ID: 2012100

Eurosystem:

Eurosystem confirms the necessary information for DCP/ DCAH certification and migration dress rehearsal has been provided. The Eurosystem is ready to to initiate community testing.

CSDs and CBs:

CSDand CB Acceptance process has been finalized. CSDs and CBs have successfully completed interoperability tests and have proved that their adapted IT platforms interoperate correctly with T2S. CSDs and CBs confirm their internal operational readiness to enter this test phase, i.e. internal staff trained, required procedures are operational, and local operations are familiar with the operation of T2S. CSDs and CBs have trained their communities and agreed certification processes/approach with their respective DCPs. CSDs and CBs are ready to execute migration tests and dress rehearsals.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ Confirmation that CB members are ready (Wave 1)		CBs	728300	04/02/15
□ Confirmation that test cases and supporting data and processes are ready for Comm		CSDs,CBs	728400	04/02/15
□ Confirmation that CSD participants are ready (Wave 1)		CSDs	728200	04/02/15
□ [Deliverable] - User Testing Stage Report (Wave 1) V1.2 [Interoperability Multilateral	201	Eurosystem	723100	04/03/15

SP10.2 Start Community Testing (Wave 2)

29/05/15

SP 10.2 marks the start of Community Testing Phase.

Plan reference ID: 2012200

Eurosystem:

Eurosystem confirms the necessary information for DCP/ DCAH certification and migration dress rehearsal has been provided. The Eurosystem is ready to to initiate community testing.

CSDs and CBs:

CSD and CB Acceptance process has been finalized. CSDs and CBs have successfully completed interoperability tests and have proved that their adapted IT platforms interoperate correctly with T2S. CSDs and CBs confirm their internal operational readiness to enter this test phase, i.e. internal staff trained, required procedures are operational, and local operations are familiar with the operation of T2S. CSDs and CBs have trained their communities and agreed certification processes/approach with their respective DCPs. CSDs and CBs are ready to execute migration tests and dress rehearsals.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ SP10.1 - Start Community Testing (wave 1)			2012100	04/03/15
□ Confirmation that CB members are ready (Wave 2)		CBs	918300	30/04/15
□ Confirmation that test cases and supporting data and processes are ready for Comm		CSDs,CBs	918400	30/04/15
□ Confirmation that CSD participants are ready (Wave 2)		CSDs	918200	30/04/15
□ [Deliverable] - User Testing Stage Report (Wave 2) V2.2 [Interoperability Multilateral	201	Eurosystem	913100	29/05/15

SP10.3 Start Community Testing (Wave 3)

09/11/15

SP 10.3 marks the start of Community Testing Phase.

Plan reference ID: 2012300

Eurosystem:

Eurosystem confirms the necessary information for DCP/ DCAH certification and migration dress rehearsal has been provided. The Eurosystem is ready to to initiate community testing.

CSDs and CBs:

CSDand CB Acceptance process has been finalized. CSDs and CBs have successfully completed interoperability tests and have proved that their adapted IT platforms interoperate correctly with T2S. CSDs and CBs confirm their internal operational readiness to enter this test phase, i.e. internal staff trained, required procedures are operational, and local operations are familiar with the operation of T2S. CSDs and CBs have trained their communities and agreed certification processes/approach with their respective DCPs. CSDs and CBs are ready to execute migration tests and dress rehearsals.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ SP10.1 - Start Community Testing (wave 1)			2012100	04/03/15
□ Confirmation that test cases and supporting data and processes are ready for Comm		CSDs	2283000	12/10/15
□ Confirmation that CB members are ready (wave 3)		CBs	2282000	12/10/15
□ Confirmation that CSDs participants are ready (wave 3)		CSDs	2281000	12/10/15
□ [Deliverable] - User Testing Stage Report(Wave 3) V3.2 [Interoperability Multilateral	201	Eurosystem	2275000	30/10/15

SP11.1 Start Business Day Testing (Wave 1)

18/05/15

SP 11.1 marks the start of Business Day Testing Phase

Plan reference ID: 2012400

Eurosystem:

The Eurosystem confirms the team readiness to support the simulation of several consecutive business days of T2S operation. These business operations days will be executed after a migration rehearsal for the respective CSD and CB migration wave. The Eurosystem has provided the detailed migration playbook (Script) for the migration WE execution. DCP/DCAH Certification process has been completed.

CSDs and CBs:

CSDs and CBs learned from the Community testing phase and have adapted their operational processes accordingly.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ [Deliverable] - Manual of Operational Procedures (MOP) V1.0 for Business Day Test	10	Eurosystem	1140100	24/04/14
□ [Deliverable] - Operational Training Materials	110	Eurosystem	568800	20/06/14
□ [Deliverable] - Certification report for DCPs (Wave 1)	46	Eurosystem	789800	15/04/15
□ [Deliverable] - Certification report for DCAH (Wave 1)	46	Eurosystem	792000	15/04/15
□ [Deliverable] - User Testing Stage Report (Wave 1) V1.3 [Community phase]	201	Eurosystem	789400	14/05/15

SP11.2 Start Business Day Testing (Wave 2)

09/11/15

SP 11.2 marks the start of Business Day Testing Phase

Plan reference ID: 2012500

Eurosystem:

The Eurosystem confirms the team readiness to support the simulation of several consecutive business days of T2S operation. These business operations days will be executed after a migration rehearsal for the respective CSD and CB migration wave. The Eurosystem has provided the detailed migration playbook (Script) for the migration WE execution. DCP/DCAH Certification process has been completed.

CSDs and CBs:

CSDs and CBs learned from the Community testing phase and have adapted their operational processes accordingly.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ SP10.1 - Start Community Testing (wave 1)			2012100	04/03/15
□ [Deliverable] - Certification report for DCAH (Wave 2)	46	Eurosystem	981000	07/10/15
□ [Deliverable] - Certification report for DCPs (Wave 2)	46	Eurosystem	979700	07/10/15
□ [Deliverable] - User Testing Stage Report (Wave 2) V2.3 [Community phase]	201	Eurosystem	979300	04/11/15

SP11.3 Start Business Day Testing (Wave 3)

27/04/16

SP 11.3 marks the start of Business Day Testing Phase

Plan reference ID: 2012600

Eurosystem:

The Eurosystem confirms the team readiness to support the simulation of several consecutive business days of T2S operation. These business operations days will be executed after a migration rehearsal for the respective CSD and CB migration wave. The Eurosystem has provided the detailed migration playbook (Script) for the migration WE execution. DCP/DCAH Certification process has been completed.

CSDs and CBs:

CSDs and CBs learned from the Community testing phase and have adapted their operational processes accordingly.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ SP10.1 - Start Community Testing (wave 1)			2012100	04/03/15
□ [Deliverable] - Certification report for DCAH (Wave 3)	46	Eurosystem	2346700	18/03/16
□ [Deliverable] - Certification report for DCPs (Wave 3)	46	Eurosystem	2346300	18/03/16
□ [Deliverable] - User Testing Stage Report (Wave 3) V3.3 [Community phase]	201	Eurosystem	2345100	27/04/16

SP12.1 End of User Testing Execution Phase (Wave 1)

15/06/15

SP 12.1 marks the end of User Testing by CSDs and CBs.

Plan reference ID: 2013100

Eurosystem:

The Eurosystem confirms compliance of Eurosystem, CSDs and CBs as well as directly connected parties, with exit criteria for the user test. The Eurosystem provides a test report on the results of the user test that documents remaining defects and a plan for their resolution.

CSDs and CBs:

The CSDs and CBs confirm the Eurosystem Final User Test Report regarding the remaining defects and the priorities for their resolution. CSDs and CBs assess their operational readiness status and provide a clear status on the readiness to go-live with T2S to their respective community. CSDs have assessed whether their DCPs fulfil any specific requirements for local processing.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ [Deliverable] - User Testing Stage Report (Wave 1) V1.4 [Business day phase]	201	Eurosystem	832300	12/06/15

SP12.2 End of User Testing Execution Phase (Wave 2)

18/01/16

SP 12.2 marks the end of User Testing by CSDs and CBs.

Plan reference ID: 2013200

Eurosystem:

The Eurosystem confirms compliance of Eurosystem, CSDs and CBs as well as directly connected parties, with exit criteria for the user test. The Eurosystem provides a test report on the results of the user test that documents remaining defects and a plan for their resolution.

CSDs and CBs:

The CSDs and CBs confirm the Eurosystem Final User Test Report regarding the remaining defects and the priorities for their resolution. CSDs and CBs assess their operational readiness status and provide a clear status on the readiness to go-live with T2S to their respective community. CSDs have assessed whether their DCPs fulfil any specific requirements for local processing.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ [Deliverable] - User Testing Stage Report (Wave 2) V2.4 [Business day phase]	201	Eurosystem	1022300	11/01/16

SP12.3 End of User Testing Execution Phase (Wave 3)

29/06/16

SP 12.3 marks the end of User Testing by CSDs and CBs.

Plan reference ID: 2013300

Eurosystem:

The Eurosystem confirms compliance of Eurosystem, CSDs and CBs as well as directly connected parties, with exit criteria for the user test. The Eurosystem provides a test report on the results of the user test that documents remaining defects and a plan for their resolution.

CSDs and CBs:

The CSDs and CBs confirm the Eurosystem Final User Test Report regarding the remaining defects and the priorities for their resolution. CSDs and CBs assess their operational readiness status and provide a clear status on the readiness to go-live with T2S to their respective community. CSDs have assessed whether their DCPs fulfil any specific requirements for local processing.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ [Deliverable] - User Testing Stage Report (Wave 3) V3.4 [Business day phase]	201	Eurosystem	2390200	22/06/16

SP13 Eurosystem ready for Production 01/12/14

SP13 marks the confirmation of Eurosystem to the CSDs and CBs that the T2S production environment is ready.

Plan reference ID: 2014100

Eurosystem:

The Eurosystem confirms to the CSDs and CBs that the production environment is ready to connect. The environment is ready for the creation of the initial production set-up of system entities, users, access rights and other configuration data,to be performed according to the information received in the registration guides.

CSDs and CBs:

CSDs and CBs have submitted their registration guides for migration and have verified that there are no showstoppers for their connectivity to the T2S production environment.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ Final Network Acceptance Tests (PROD)		Eurosystem	1066200	11/10/13
□ [Deliverable] - Non Functional Testing Report	141	Eurosystem	386100	28/02/14
□ T2S helpdesk is operational and contact details have been communicated to all rele		Eurosystem	1258200	17/11/14
□ Network ready for Production		Eurosystem	387100	01/12/14

SP14.1 Ready to connect to Production (Wave 1)

05/02/15

SP 14.1 marks the confirmation from the CSDs and CBs that they can technically connect to the T2S production environment.

Plan reference ID: 2015100

Eurosystem:

The Eurosystem delivers the connectivity guide for the T2S production environment and the technical helpdesk is ready to support CSDs and CBs connectivity activities to the production environment.

CSDs and CBs:

CSDs and CBs have implemented the required configurations to connect to the production environment and can connect successfully to the T2S production environment.

Checklist:

	Description:	Del ID:	Owner:	Plan ID:	Date:
□	[Deliverable] - User Requirements for data migration tools V1.0	73	Eurosystem	1206100	05/04/12
□	[Deliverable] - Registration Guide for Migration V1.0	74	Eurosystem	1222100	09/11/12
□	[Deliverable] - Connectivity Guide for VAN and Direct connectivity V2.0	8	Eurosystem	1043100	02/01/14
□	T2S helpdesk is operational and contact details have been communicated to all rele		Eurosystem	1258200	17/11/14
□	SP13 - Eurosystem ready for Production			2014100	01/12/14
□	Registration Form filled in (wave 1 + CSDs/CBs with Common Static Data)		CSDs,CBs	1247100	12/12/14
□	[Deliverable] - CSD's T2S Compliance Confirmation (Wave 1)	36	CSDs,CBs	647360	29/12/14
□	[Deliverable] - Proof of Eligibility to Participate in T2S (Wave 1)	425	CSDs	625600	19/01/15
□	Input Registration Data completed		Eurosystem	1252150	29/01/15
□	Completed network registration by CBs (wave 1)		CBs	1255300	05/02/15
□	Completed network registration by CSDs (wave 1)		CSDs	1255200	05/02/15
□	PROD environment available for users		Eurosystem	1256100	05/02/15

SP14.2 Ready to connect to Production (Wave 2)

02/10/15

SP 14.2 marks the confirmation from the CSDs and CBs that they can technically connect to the T2S production environment.

Plan reference ID: 2015200

Eurosystem:

The Eurosystem delivers the connectivity guide for the T2S production environment and the technical helpdesk is ready to support CSDs and CBs connectivity activities to the production environment.

CSDs and CBs:

CSDs and CBs have implemented the required configurations to connect to the production environment and can connect successfully to the T2S production environment.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ SP14.1 - Ready to connect to Production (wave 1)			2015100	05/02/15
□ [Deliverable] - CSD's T2S Compliance Confirmation (Wave 2)	36	CSDs,CBs	647460	02/04/15
□ Registration Form filled in (CSDs/CBs) (wave 2)		CSDs,CBs	1281500	11/09/15
□ [Deliverable] - Proof of Eligibility to Participate in T2S (Wave 2)	425	CSDs	626700	15/09/15
□ T2S helpdesk is operational and contact details have been communicated to all rele		Eurosystem	1283700	21/09/15
□ Input Registration Data completed (wave 2)		Eurosystem	1262100	02/10/15
□ Completed network registration by CSDs (wave 2)		CSDs	1283350	02/10/15
□ Completed network registration by CBs (wave 2)		CBs	1283380	02/10/15

SP14.3 Ready to connect to Production (Wave 3)

22/03/16

SP 14.3 marks the confirmation from the CSDs and CBs that they can technically connect to the T2S production environment.

Plan reference ID: 2015300

Eurosystem:

The Eurosystem delivers the connectivity guide for the T2S production environment and the technical helpdesk is ready to support CSDs and CBs connectivity activities to the production environment.

CSDs and CBs:

CSDs and CBs have implemented the required configurations to connect to the production environment and can connect successfully to the T2S production environment.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ SP14.1 - Ready to connect to Production (wave 1)			2015100	05/02/15
□ [Deliverable] - CSD's T2S Compliance Confirmation (Wave 3)	36	CSDs,CBs	647560	02/04/15
□ [Deliverable] - Proof of Eligibility to Participate in T2S (Wave 3)	425	CSDs	628000	03/03/16
□ Registration Form filled in (CSDs/CBs) (wave 3)		CSDs,CBs	1293600	04/03/16
□ T2S helpdesk is operational and contact details have been communicated to all rele		Eurosystem	1294800	09/03/16
□ Completed network registration by CSDs (wave 3)		CSDs	1294200	22/03/16
□ Input registration data completed (wave 3)		Eurosystem	1261050	22/03/16
□ Completed network registration by CBs (wave 3)		CBs	1294350	22/03/16

SP15.1 Ready to upload static data (Wave 1)

19/03/15

SP 15.1 marks the start of the upload of the required static and configuration data for the migration to T2S.

Plan reference ID: 2016100

Eurosystem:

The Eurosystem has tested the migration utilities for static and configuration data successfully with CSDs and CBs during User Testing.

CSDs and CBs:

CSDs and CBs have established the processes to ensure the update and synchronisation of static and configuration data. They have established the required control mechanisms for reconciliation. They have performed a quality assurance of the static data that needs to be loaded in T2S on their respective operational systems.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ T2S System Configuration parameters finalised		Eurosystem	1270400	29/01/15
□ SP14.1 - Ready to connect to Production (wave 1)			2015100	05/02/15
□ Relevant Static Data ready by CBs (wave1)		CBs	1271300	05/03/15
□ Relevant Static Data ready by CSDs (wave1)		CSDs	1271200	05/03/15
□ Successful connectivity tests CSD (wave 1)		CSDs	1263100	12/03/15
□ Successful connectivity tests CB (wave 1)		CBs	1255400	12/03/15

SP15.2 Ready to upload static data (Wave 2)

06/11/15

SP 15.2 marks the start of the upload of the required static and configuration data for the migration to T2S.

Plan reference ID: 2016200

Eurosystem:

The Eurosystem has tested the migration utilities for static and configuration data successfully with CSDs and CBs during User Testing.

CSDs and CBs:

CSDs and CBs have established the processes to ensure the update and synchronisation of static and configuration data. They have established the required control mechanisms for reconciliation. They have performed a quality assurance of the static data that needs to be loaded in T2S on their respective operational systems.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ SP15.1 - Ready to upload Static Data (wave 1)			2016100	19/03/15
□ Relevant Static Data ready CSD (wave 2)		CSDs	1284200	09/10/15
□ Relevant Static Data ready CB (wave 2)		CBs	1284300	09/10/15
□ Successful connectivity tests CB (wave 2)		CBs	1283390	30/10/15
□ Successful connectivity tests CSD (wave 2)		CSDs	1283370	30/10/15

SP15.3 Ready to upload static data (Wave 3)

22/04/16

SP 15.3 marks the start of the upload of the required static and configuration data for the migration to T2S.

Plan reference ID: 2016300

Eurosystem:

The Eurosystem has tested the migration utilities for static and configuration data successfully with CSDs and CBs during User Testing.

CSDs and CBs:

CSDs and CBs have established the processes to ensure the update and synchronisation of static and configuration data. They have established the required control mechanisms for reconciliation. They have performed a quality assurance of the static data that needs to be loaded in T2S on their respective operational systems.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ SP15.1 - Ready to upload Static Data (wave 1)			2016100	19/03/15
□ Relevant Static Data ready CSD (wave 3)		CSDs	1297200	27/03/16
□ Relevant Static Data ready CB (wave 3)		CBs	1297300	27/03/16
□ Successful connectivity tests CB (wave 3)		CBs	1294370	15/04/16
□ Successful connectivity tests CSD (wave 3)		CSDs	1294300	15/04/16

SP16.1 Ready for T2S Go-Live (Wave 1)

19/06/15

SP 16.1 marks the latest checkpoint prior to the migration WE execution.

Plan reference ID: 2017100

Eurosystem:

The Eurosystem confirms that the production environment is ready for the migration of CSDs and CBs to T2S. The Eurosystem has defined and agreed the organisation and timeline of the migration weekend with the relevant stakeholders. The Eurosystem has established the necessary control mechanisms and decision points to ensure a successful execution of the migration procedures or to allow a rollback in contingency situations. The Eurosystem in conjunction with CSDs and CBS has defined the roles and responsibilities of each stakeholder. It has established a formal communication plan and escalation process.

CSDs and CBs:

CSDs and CBs confirm that the final migration dress rehearsal has been successful. They confirm to follow the agreed procedures and processes for the migration weekend. CSDs and CBs have ensured staff availability for the migration weekend CSDs and CBs have established the necessary internal controls on the migration process to ensure the completeness and the correctness of their migration.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ [Deliverable] - Detailed Migration Weekend Script V1.0 Wave 1	27	Eurosystem	1235400	28/11/14
□ SP15.1 - Ready to upload Static Data (wave 1)			2016100	19/03/15
□ [Deliverable] - Risk Analysis on T2S Compliance with T2S Information Security polic	116	Eurosystem	1108100	22/05/15
□ Final verification of the list of showstoppers wave 1 (dependencies with local regulati		CSDs,CBs	1272200	22/05/15
□ External communication has been rolled-out (wave 1)		CSDs,CBs	1277400	05/06/15
□ Confirmation that internal control mechanisms are in place (wave 1)		CSDs,CBs	1277300	05/06/15
□ Confirmation that migration script has been integrated in internal plans (wave 1)		CSDs,CBs	1277000	12/06/15
□ Internal staff trained for change-over Weekend and operations (wave 1)		CSDs,CBs	1277200	18/06/15

SP16.2 Ready for T2S Migration Wave 2

29/01/16

SP 16.2 marks the latest checkpoint prior to the migration WE execution.

Plan reference ID: 2017200

Eurosystem:

The Eurosystem confirms that the production environment is ready for the migration of CSDs and CBs to T2S. The Eurosystem has defined and agreed the organisation and timeline of the migration weekend with the relevant stakeholders. The Eurosystem has established the necessary control mechanisms and decision points to ensure a successful execution of the migration procedures or to allow a rollback in contingency situations. The Eurosystem in conjunction with CSDs and CBS has defined the roles and responsibilities of each stakeholder. It has established a formal communication plan and escalation process.

CSDs and CBs:

CSDs and CBs confirm that the final migration dress rehearsal has been successful. They confirm to follow the agreed procedures and processes for the migration weekend. CSDs and CBs have ensured staff availability for the migration weekend CSDs and CBs have established the necessary internal controls on the migration process to ensure the completeness and the correctness of their migration.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ Final verification of the list of showstoppers wave 1 (dependencies with local regulati		CSDs,CBs	1272200	22/05/15
□ [Deliverable] - Risk Analysis on T2S Compliance with T2S Information Security polic	116	Eurosystem	1108100	22/05/15
□ SP14.2 - Ready to connect to Production (wave 2)			2015200	02/10/15
□ SP15.2 - Ready to upload Static Data (wave 2)			2016200	06/11/15
□ [Deliverable] - Detailed Migration Weekend Script V2.2 Wave 2	27	Eurosystem	1237300	09/11/15
□ External communication has been rolled-out (Wave 2)		CSDs,CBs	1287500	15/01/16
□ Confirmation that internal control mechanisms are in place (Wave 2)		CSDs,CBs	1287400	15/01/16
□ Confirmation that migration script has been integrated in internal plans (Wave 2)		CSDs,CBs	1287200	22/01/16
□ Internal staff trained for change-over Weekend and operations (Wave 2)		CSDs,CBs	1287300	28/01/16

SP16.3 Ready for T2S Migration Wave 3

15/07/16

SP 16.3 marks the latest checkpoint prior to the migration WE execution.

Plan reference ID: 2017300

Eurosystem:

The Eurosystem confirms that the production environment is ready for the migration of CSDs and CBs to T2S. The Eurosystem has defined and agreed the organisation and timeline of the migration weekend with the relevant stakeholders. The Eurosystem has established the necessary control mechanisms and decision points to ensure a successful execution of the migration procedures or to allow a rollback in contingency situations. The Eurosystem in conjunction with CSDs and CBs has defined the roles and responsibilities of each stakeholder. It has established a formal communication plan and escalation process.

CSDs and CBs:

CSDs and CBs confirm that the final migration dress rehearsal has been successful. They confirm to follow the agreed procedures and processes for the migration weekend. CSDs and CBs have ensured staff availability for the migration weekend CSDs and CBs have established the necessary internal controls on the migration process to ensure the completeness and the correctness of their migration.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ Final verification of the list of showstoppers wave 1 (dependencies with local regulati		CSDs,CBs	1272200	22/05/15
□ [Deliverable] - Risk Analysis on T2S Compliance with T2S Information Security polic	116	Eurosystem	1108100	22/05/15
□ [Deliverable] - Detailed Migration Weekend Script V3.2 Wave 3	27	Eurosystem	1238200	12/04/16
□ SP15.3 - Ready to upload Static Data (wave 3)			2016300	22/04/16
□ External communication has been rolled-out (Wave 3)		CSDs,CBs	1299600	01/07/16
□ Confirmation that internal control mechanisms are in place (Wave 3)		CSDs,CBs	1299500	01/07/16
□ Confirmation that migration script has been integrated in internal plans (Wave 3)		CSDs,CBs	1299300	08/07/16
□ Internal staff trained for change-over Weekend and operations (Wave 3)		CSDs,CBs	1299400	14/07/16

SP17 Closing T2S Programme

10/10/16

SP 17 marks the end of the T2S Programme.

Plan reference ID: 2018300

Eurosystem:

The Eurosystem confirms that the production environment is ready for the migration of CSDs and CBs to T2S. The Eurosystem has defined and agreed the organisation and timeline of the migration weekend with the relevant stakeholders. The Eurosystem has established the necessary control mechanisms and decision points to ensure a successful execution of the migration procedures or to allow a rollback in contingency situations. The Eurosystem in conjunction with CSDs and CBs has defined the roles and responsibilities of each stakeholder. It has established a formal communication plan and escalation process.

CSDs and CBs:

All contracting CSDs and CBs are operational on T2S. They have identified any major pending issues and have communicated them to the Eurosystem for investigation and resolution.

Checklist:

Description:	Del ID:	Owner:	Plan ID:	Date:
□ [Deliverable] - End of Migration Report (Wave 1)	550	Eurosystem	835100	27/07/15
□ [Deliverable] - End of Migration Report (Wave 2)	550	Eurosystem	1025100	07/03/16
□ [Deliverable] - End of Migration Report (Wave 3)	550	Eurosystem	2394000	22/08/16

FRAMEWORK AGREEMENT

SCHEDULE 2 – ANNEX 10

T2S LIST OF MILESTONES ON THE CRITICAL PATH

Disclaimer:

Planning is an ongoing process and Annexes with planning elements are subject to change during the lifetime of a project. Planning workshops with CSDs and CBs will continue to agree on the planning for Connectivity, User Testing and Migration. Subsequent plan updates follow the process, documented in the Schedule 2, Section 7.

Annexes 2, 3, 4, 7, 8, 9 and 10 document the planning status as at 31 Oct. 2011.

ID Number*	Milestone Description	Date**	Responsible for delivery
172200	WS - Delivery IDFS V0.85 to the Development Coordination	15/02/2011***	Eurosystem
124150	Final Validation Pillar II by the SGMS	04/03/2011***	SGMS
134150	Final Validation Pillar III by the SGMS	01/07/2011***	SGMS
211100	[Deliverable] - UDFS v1.2	31/10/2011***	Eurosystem
345101	Development Process - M1 - Technical Readiness for integration	30/09/2010***	Eurosystem
351130	Development Process - M2 - UDFS/IDFS stabilised and integrated in the development process iterations	01/04/2011***	Eurosystem
353130	Development process - M3 – Interfaces specifications frozen (UDFS/GUI): iteration 5 technically integrated and tested	31/10/2011***	Eurosystem
354130	Development Process - M4 - Start of 4CB IAC	02/04/2012	Eurosystem
355140	Development process – M5 – Technical stability	28/09/2012	Eurosystem
361101	Development process – M6 – Functional stability	29/03/2013	Eurosystem
339200	Development process – M7 – 4CB Internal Acceptance check point – Progress status	30/09/2013	Eurosystem
378101	Start Execution Infrastructure test	30/04/2013	Eurosystem
386100	[Deliverable] - Outcome of the Non Functional Testing	28/02/2014	Eurosystem
493160	Go-no go decision for the start of the User Testing	15/09/2014	Eurosystem

ID Number*	Milestone Description	Date**	Responsible for delivery
580150	CSDs and CBs training session finalised	06/05/2015	Eurosystem, CSDs, CBs
634200	UT environment ready	18/06/2014	Eurosystem
124410	Start preparation of Migration Weekend (wave 1)	01/12/2014	Eurosystem
387100	Network ready for Production	01/12/2014	Eurosystem
1246100	Prod environment availability for 4CB teams	01/12/2014	Eurosystem
1247100	Registration Form filled in (wave 1 + CSDs/CBs with common static data)	12/12/2014	CSDs
1263100	Successful connectivity tests CSD (wave 1 + CSDs with common static data)	12/03/2015	CSDs
1255400	Successful connectivity tests CB (wave 1 + CBs with common static data)	12/03/2015	CBs
1279100	Wave 1 Start Operations in T2S	22/06/2015	Eurosystem, CSDs, CBs
1281200	Start preparation of Migration Weekend (wave 2)	17/08/2015	Eurosystem
1281500	Registration Form filled in (CSDs/CBs) (wave 2)	11/09/2015	CSDs
1283370	Successful connectivity tests CSD (wave 2 + CSDs with common static data)	30/10/2015	CSDs
1283390	Successful connectivity tests CB (wave 2 + CBs with common static data)	30/10/2015	CBs
1291100	Wave 2 Start Operations in T2S	01/02/2016	Eurosystem, CSDs, CBs
1293300	Start preparation of Migration Weekend (wave 3)	08/02/2016	Eurosystem

ID Number*	Milestone Description	Date**	Responsible for delivery
1293600	Registration Form filled in (CSDs/CBs) (wave 3)	04/03/2016	CSDs
1294300	Successful connectivity tests CSD (wave 3 + CSDs with common static data)	15/04/2016	CSDs
1294370	Successful connectivity tests CB (wave 3 + CBs with common static data)	15/04/2016	CBs
1304100	Wave 3 Start Operations in T2S	18/07/2016	Eurosystem, CSDs, CBs
2006100	SP1 - Start Feasibility	20/12/2011	Eurosystem
2007100	SP2 - Feasibility Confirmation by CSd/CB	10/08/2012	CSDs, CBs
2009200	SP5 - Eurosystem ready for EAT	30/12/2013	Eurosystem
2009100	SP6 - Eurosystem Ready for User Testing	02/09/2014	Eurosystem
2010100	SP7 - Start Connectivity Test	07/07/2014	Eurosystem, CSDs, CBs
2011100	SP8 - Start Interoperability Bilateral Test	01/10/2014	Eurosystem, CSDs, CBs
2013100	SP12.1 - End of Testing (wave 1)	15/06/2015	Eurosystem, CSDs, CBs
2013200	SP12.2 - End of Testing (wave 2)	18/01/2016	Eurosystem, CSDs, CBs
2013300	SP12.3 - End of Testing (wave 3)	29/06/2016	Eurosystem, CSDs, CBs
2014100	SP13.1 - Eurosystem ready for Production (wave 1)	01/12/2014	CSDs, CBs
2014200	SP13.2 - Eurosystem ready for Production (wave	11/09/2015	CSDs, CBs

ID Number*	Milestone Description	Date**	Responsible for delivery
	2)		
2014300	SP13.3 - Eurosystem ready for Production (wave 3)	04/03/2016	CSDs, CBs
2015100	SP14.1 - Ready to connect to Production Environment (wave 1)	05/02/2015	Eurosystem
2015200	SP14.2 - Ready to connect to Production Environment (wave 2)	02/10/2015	Eurosystem
2015300	SP14.3 - Ready to connect to Production Environment (wave 3)	22/03/2016	Eurosystem
2016100	SP15.1 - Ready to upload Static Data (wave 1)	19/03/2015	Eurosystem, CSDs, CBs
2016200	SP15.2 - Ready to upload Static Data (wave 2)	06/11/2015	Eurosystem, CSDs, CBs
2016300	SP15.3 - Ready to upload Static Data (wave 3)	22/04/2016	Eurosystem, CSDs, CBs
2017100	SP16.1 - Ready for Migration Weekend and Start Operations (wave 1)	19/06/2015	Eurosystem, CSDs, CBs
2017200	SP16.2 - Ready for Migration Weekend and Start Operations (wave 2)	29/01/2016	Eurosystem, CSDs, CBs
2017300	SP16.3 - Ready for Migration Weekend and Start Operations (wave 3)	15/07/2016	Eurosystem, CSDs, CBs
2017400	SP16.5 - Ready for Contingency Migration Weekend	27/01/2017	Eurosystem, CSDs, CBs

*Link with MS Project Plan

** The reference for the dates is the T2S Programme Plan

*** Milestones before the signature of FA, only for information

EUROPEAN CENTRAL BANK

EUROSYSTEM

TARGET2-SECURITIES

FRAMEWORK AGREEMENT

SCHEDULE 3

USER TESTING

Table of contents

Introduction

1.1 Context

A prerequisite for a secure and smooth transfer of settlement activities from the CSDs' proprietary IT environments to T2S is the thorough testing of T2S in combination with the IT systems of the T2S Actors. In this context, the Contracting CSD and the Eurosystem shall cooperate in good faith for the preparation and execution of all User Testing activities according to the T2S Programme Plan and its milestones.

1.2 Structure of Schedule

The Schedule 3 consists of the following sections and Annexes:

Section 1 is the introduction.

Section 2 defines the scope and the objective of User Testing.

Section 3 presents the general responsibilities of the Eurosystem, the Contracting CSD and the PMG substructure for User Testing.

Section 4 describes the objectives of the User Testing preparation phase and the responsibilities of the Eurosystem and the Contracting CSD during this phase.

Section 5 describes the structure of the testing stages for the User Testing Execution Phase with the respective entry and exit criteria for each testing stage as well as the conditions for transitioning between testing stages.

Section 6 presents the description, objectives and responsibilities for the non-functional testing.

Section 7 presents the business processes required to support the successful completion of User Testing including the stage transition process.

Section 8 presents the post-migration testing.

Annex 1 describes the mapping of the testing activities on the test environments.

2 Scope and Objectives

2.1 Scope

The scope of User Testing comprises functional testing and non-functional testing that the Contracting CSD and its community perform in view of assessing:

- the ability to connect to T2S (connectivity testing);
- the compliance of T2S with the T2S Services as defined in Schedule 5 (T2S Service Description) and the T2S Scope Defining Set of Documents (CSDs' Acceptance Tests of the T2S Services);
- the ability to interact properly with T2S (bilateral and multilateral interoperability testing as well as community and business day testing) without negative impact on the T2S Platform or other connected parties (CSD certification and DCP certification);
- the ability to migrate static and Transactional Data from its legacy systems onto T2S (migration testing, mainly assessed during bilateral interoperability testing and community testing);
- the ability to extract static and Transactional Data from T2S for reverse migration; and
- the readiness of operational procedures for live operations.

Although the functional and non-functional tests that the Eurosystem performs do not fall into the scope of User Testing, evidence provided through these tests may be used on a discretionary basis by CSDs as a means to limit their efforts during User Testing.

2.2 Objectives

The objectives of the User Testing are:

- to provide evidence that the T2S Platform meets the user requirements, as defined by the most recently approved version of the most detailed document of the T2S Scope Defining Set of Documents and Schedule 5 (T2S Service Description);
- to ensure readiness of the Contracting CSD and its community as well as its Central Bank and Payment Banks for the Migration to and operation on the T2S Platform;

- to allow the Contracting CSD to verify and ensure its compliance with Legal and Regulatory Requirements during the Operational Phase of T2S.

3 General Responsibilities of the Contracting Parties

This section defines the respective responsibilities of the Eurosystem, the Contracting CSD and the PMG substructure for the preparation and execution of all User Testing activities. This Schedule does not define the roles and responsibilities of the Central Banks, whose currency is available for settlement in T2S, nor of the Payment Banks, but defines the responsibility both of the Eurosystem to ensure that these T2S Stakeholders fulfil their obligations and of the Contracting CSD towards its community.

3.1 General responsibilities of the Eurosystem

The following specifies the general responsibilities of the Eurosystem with regard to the preparation and execution and completion of the User Testing activities:

i. The Eurosystem is responsible for coordinating the User Testing activities and communication between the Contracting CSD and the Central Banks whose currencies are available for settlement in T2S as well as between the Contracting CSD and other CSDs participating in the User Testing activities;

ii. The Eurosystem shall ensure that the User Testing of the Central Banks does not place restrictions on the CSDs testing;

iii. The Eurosystem shall actively take all necessary actions required to facilitate, monitor and support the adequate participation of the Central Banks whose currency is available for settlement in T2S in the testing activities of the Contracting CSD;

iv. The Eurosystem is responsible for preparing and executing the Eurosystem Acceptance Testing (EAT), and for providing regular progress reporting as well as an assessment report confirming the compliance of T2S with the T2S Scope Defining Set of Documents and Schedule 5 (T2S Service Description) before the start of User Testing;

v. The Eurosystem shall provide the reasonable support for testing activities of the Contracting CSD in the different stages of User Testing;

vi. The Eurosystem shall inform the Contracting CSD, in a timely manner, about any developments that may prevent that CSD or its DCP(s) from completing its/their testing activities, and shall propose identified mitigation measures;

vii. The Eurosystem shall ensure that a PMG substructure is in place, in accordance with the T2S governance framework (section 2.4 of Schedule 8 - Governance), for the planning, coordination and monitoring of the User Testing activities;

viii. The Eurosystem shall reconcile and consolidate the individual status reports of CSDs and Central Banks on the progress of their User Testing activities and shall provide a regular status update based on this consolidation to the Contracting CSD through the PMG substructure;

ix. The Eurosystem shall investigate and reconcile different test outcomes by different CSDs or DCPs for delivering a consolidated list of defects to the PMG substructure;

x. The Eurosystem shall undertake the configuration of test environments for the different testing stages as agreed with the PMG substructure. The Eurosystem will provide the necessary data configurations to ensure the logical segregation of data for the test activities of CSDs;

xi. The Eurosystem is responsible for maintaining configuration parameters and the User Testing Calendar (settlement day calendar, operating hours, cut-off times, etc.) for each test environment as agreed with the PMG substructure for User Testing;

xii. Based on the principles of ITIL V3 Service Operation, the Eurosystem shall establish and operate the necessary IT service management processes that include a defect resolution process to remedy errors;

xiii. The Eurosystem shall operate T2S in accordance with the SLAs for User Testing as defined in Schedule 6 (T2S Service Level Agreement).

3.2 General responsibilities of the Contracting CSD

The following specifies the general responsibilities of the Contracting CSD for the preparation and execution of the User Testing activities:

i. The Contracting CSD is responsible for the communication with its community regarding User Testing;

ii. The Contracting CSD is responsible for ensuring the timely completion of all its testing activities and shall report its findings on the execution of its test cases and test scenarios to the Eurosystem on a regular basis;

iii. The Contracting CSD is responsible for supporting and monitoring the timely completion of the testing activities of its community, and specifically of its Directly Connected Parties (DCPs);

iv. The Contracting CSD appoints a single point of contact for all topics related to the User Testing representing the Contracting CSD in the PMG substructure;

v. The Contracting CSD, independent of its migration wave and even after having completed its own testing, shall support other CSDs and CBs in testing of T2S;

vi. The Contracting CSD shall inform the Eurosystem, in a timely manner, about any developments, which may prevent that CSD or its DCP(s) from completing its/their testing activities;

vii. The Contracting CSD shall provide reasonable support to the Eurosystem by providing information on test outcomes;

viii. The Contracting CSD shall participate in the PMG substructure in charge of User Testing as required to ensure the proper functioning of this body and the smooth coordination of the User Testing activities.

3.3 General responsibilities of the PMG Substructure

The PMG substructure shall be composed of the Participating CSDs, euro area NCBs, participating non-euro area NCBs, the 4CB and the ECB. The following specifies the general responsibilities of the PMG substructure in the preparation and execution of the User Testing activities for the initial T2S go-live and new software releases after T2S go-live of the final migration wave that the substructure shall be responsible for:

i. Meet (physically or via conference call) on a regular basis and on an ad hoc basis when requested by one of the members to prepare, plan, coordinate, monitor and review User Testing activities. The PMG substructure determines the frequency of its meetings based on its needs;

ii. Prepare, update and agree the User Testing Calendar in accordance with the TS Programme Plan;

iii. Decide on changes to the opening / closing times of the testing environments and operational hours in line with the provisions of the SLA;

iv. Review the consolidated User Testing status reports from the Eurosystem on the overall progress of CSDs, central banks and their respective communities on User Testing;

v. Review the list of incidents;

vi. Review the software defects, classify the software defects and agree on the contents of a package for a T2S release on the User Testing environments;

vii. In the case that the PMG substructure cannot reach an agreement, it may escalate to the PMG;

viii. Prepare communication on the progress of User Testing via the PMG to the Steering Level;

ix. Coordinate and monitor the participation of the various T2S Actors (Eurosystem, CSDs and non-euro area NCBs, DCPs and Payment Banks) during the different stages of testing. At its own discretion, the CSD may coordinate testing activities directly with other T2S Actors when it does not conflict with the agreed approach of the PMG substructure;

x. Identify, manage, report and escalate risks and issues related to User Testing according to the ‘Programme Plan Preparation,Adaptation and Assessment Review Process’ in section 7.2 of Schedule 2 (T2S Programme Planning and Monitoring);

xi. Request plan changes related to User Testing according to the ‘Programme Plan Preparation, Adaptation and Assessment Review Process’ in section 7.2 of Schedule 2 (T2S Programme Planning and Monitoring);

xii. Request adaptations of User Testing items documented in Annexes 4 to 10 of Schedule 2, according to the ‘Adaptation Process for Updated Annexes without affecting the plan’ in section 7.3 of Schedule 2 (T2S Programme Planning and Monitoring);

xiii. Take or request decisions on User Testing related topics according to the decision-making process defined in section 1.3 of Schedule 8 (Governance).

3.4 General responsibility related to Monitoring Client Readiness

The monitoring and reporting of the progress of an individual CSD with its client relationship manager during User Testing will follow the framework for Monitoring Client Readiness (MCR) as defined in Schedule 2 (T2S Programme Planning and Monitoring).

4 User Testing Preparation Phase

The objective of the User Testing preparation phase is to:

- organise processes and activities required for the User Testing Execution Phase, as defined in section 7 of this Schedule;
- undertake an initial risk assessment for the User Testing Execution Phase as specified by the Schedule 2 risk management framework to ensure the subsequent proactive risk management by the PMG substructure;
- prepare and design all necessary test documentation and testing processes, e.g. User Testing Calendar, Test Plan, test cases for certification, test data.

In this preparation phase for User Testing, the Eurosystem with the support of the Contracting CSD through its participation in the PMG substructure for User Testing establishes the required process framework and prepares the agreed deliverables for the User Testing Execution Phase.

The responsibilities of **the Eurosystem** in this phase are:

i. to establish the processes required for the User Testing Execution Phase, as defined in Section 7 of this Schedule;

ii. to develop a training programme for T2S and deliver a reasonable amount of training to the Contracting CSD;

iii. to prepare and provide the prerequisite deliverables for the Contracting CSD to prepare its User Testing, e.g. the User Testing Guide, the Registration Guide, the Connectivity Guide, and the Manual of Operational Procedures;

iv. to provide to the Contracting CSD the sets of Eurosystem Acceptance Testing (EAT) functional test cases and test scenarios for information purposes, as an input for the Contracting CSD's test preparation.

In this preparation phase for User Testing, the responsibilities of **the Contracting CSD** are:

i. to support the Eurosystem in the preparation of the overall User Testing Calendar by providing the Eurosystem with its proposed Test Plan and User Testing Calendar of its activities.

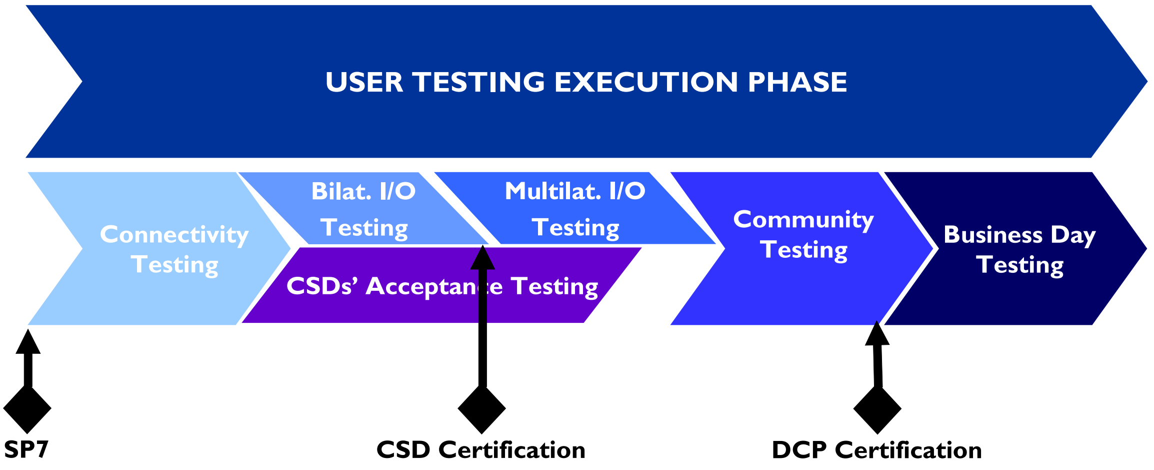
ii. to comply with the processes for User Testing, as defined in Section 7 of this Schedule.

5 User Testing Execution Phase

This section describes the structure of the testing stages for User Testing Execution Phase with the respective entry and exit criteria for each testing stage as well as the conditions for transitioning between testing stages.

5.1 Testing Stage Organisation

The User Testing Execution Phase consists of both independent and sequenced testing stages. The purpose of the different testing stages is to increase gradually the number of T2S Actors involved and expand the scope of the testing.



5.2 Connectivity Testing Stage

5.2.1 Description

Establishing the technical connectivity to a test environment is the first stage of User Testing. This is required for each environment that the Contracting CSD uses for testing, however, the connectivity testing stage is the initial verification that the systems of both the Contracting CSD and the Eurosystem can communicate successfully on the technical and application level. The Contracting CSD shall repeat these tests for each connectivity channel it intends to use while the connection to further T2S test environments might have a reduced connectivity test scope.

The scope of connectivity testing consists of:

- testing the ability to reach the welcome pages of the U2A interface and performing the login to the system;
- exchange of messages on application level;
- push-and-pull services for reports.

When the Contracting CSD has opted for the Dedicated Link Connection, the testing shall also cover the testing of the technical communication protocol (DEP).

5.2.2 Responsibilities

The following set of responsibilities shall apply for the connectivity testing stage:

i. The Eurosystem shall support the connectivity testing of the Contracting CSD and the DCPs;

ii. The Contracting CSD shall acquire T2S specific network Connectivity Services and ensure the timely readiness of its connection to the relevant T2S environment(s);

iii. The Contracting CSD together with the Eurosystem will evaluate the test results at the end of the connectivity testing stage to assess the fulfilment of the exit criteria for this testing stage.

5.2.3 Entry Criteria

The following conditions shall apply for the start of the connectivity testing stage:

- The Eurosystem has confirmed the successful achievement of synchronisation point 4 – Network Providers Confirmed;
- The Eurosystem has confirmed the successful achievement of synchronisation point 7 – Start Connectivity Testing;
- The Contracting CSD has completed the preparation to setup the network connection for the user test environments, according to the T2S Connectivity Guide;
- The Contracting CSD has adapted its IT system according to the T2S Specifications and documentation.

5.2.4 Exit Criteria

The following conditions shall apply for the successful conclusion of the connectivity testing stage:

- The Contracting CSD confirms to the Eurosystem that its IT platform can successfully exchange message-based communication and receive pushed messages on application level with T2S;
- The Contracting CSD confirms the correct setup of communication parameters and security features with its Network Service Provider(s) in order to communicate with the T2S test environment(s).

5.3 CSDs' Acceptance Testing Stage

5.3.1 Description

The CSDs' acceptance testing stage is the period of up to 6 months within the User Testing Execution Phase reserved for CSDs to confirm that T2S complies with Schedule 5 (T2S Service Description) and the T2S Scope Defining Set of Documents. Independently from its migration wave, the Contracting CSD may start its acceptance testing when the Eurosystem confirms its successful achievement of synchronisation point 8 –Start Bilateral Interoperability Testing.

The CSDs' Acceptance Tests of the T2S Services[1] are bilateral between the Eurosystem and the Contracting CSD. The T2S Compliance Confirmation of one CSD does not prejudge the agreement by other CSDs. Executing this testing stage is optional. The Contracting CSD may rely on its test results from its bilateral and multilateral interoperability testing as well as those from its CSD certification testing. Regardless of how a CSD undertakes this testing stage, the Contracting CSD is required to confirm that T2S is compliant with Schedule 5 (T2S Service Description) and the T2S Scope Defining Set of Documents. Article 17 of the Framework Agreement defines the possible consequences of T2S non-conformity based on the results of the CSDs' Acceptance Tests of the T2S Services.

In order for the Contracting CSD to obtain certainty that T2S fulfils the non-functional user requirements, the Eurosystem will prepare and execute non-functional tests based on test cases that will be shared with the Contracting CSD for a quick consultation before the start of non-functional testing by the Eurosystem. The Eurosystem will deliver a test report with the results of the test execution according to the defined scope of the non-functional tests.

5.3.2 Responsibilities

The following set of responsibilities shall apply for the CSDs' acceptance testing stage:

i. In the context of the framework set out in Schedule 2 (T2S Programme Planning and Monitoring) on the monitoring of client readiness, the Eurosystem and the Contracting CSD shall have regular contact to review the progress of the CSDs' acceptance testing stage;

[1] The term "CSDs' Acceptance Tests of the T2S Services" does not indicate that the T2S Services imply any element of a contract for work under German law. Chapter 2 of this Agreement defines the rights and obligations of the Parties that describe the T2S Services.

ii. The Contracting CSD has the obligation to provide regular reporting on the results of its tests in the form of status reports to the Eurosystem. This report shall cover at minimum the number of test cases and test scenarios successfully executed and failed (cases of non-compliance) with the Contracting CSD's assessment of the criticality of identified defects and corresponding measures to compensate for potential delays, when required;

iii. The Contracting CSD has the obligation to provide evidence, if it intends not to accept T2S because of failed test cases that the respective test cases comply with the T2S Scope Defining Set of Documents and Schedule 5 (T2S Service Description);

iv. Based on the bilateral status reporting from the Contracting CSD, the Eurosystem shall monitor the testing. The Eurosystem shall share information about the progress and results of the CSDs' Acceptance Tests of the T2S Services with the CSDs via the PMG substructure on a consolidated basis;

v. The Contracting CSD together with the Eurosystem will evaluate the test results at the end of the CSDs' acceptance testing stage to assess the fulfilment of the exit criteria for this testing stage.

5.3.3 Entry Criteria

The following condition shall apply for the start of the CSDs' acceptance testing stage:

- The Eurosystem has confirmed the successful achievement of synchronisation point 8 – Start Bilateral Interoperability Testing.

5.3.4 Exit Criteria

The following condition shall apply for the end of the CSDs acceptance testing stage:

- The criterion for a CSD to exit the CSDs' acceptance testing stage shall be its declaration that T2S complies with Schedule 5 (T2S Service Description) and the T2S Scope Defining Set of Documents.

5.4 Bilateral Interoperability Testing Stage

5.4.1 Description

In the bilateral interoperability testing stage, the Contracting CSD tests T2S to ensure the readiness of its adapted IT System to interoperate with T2S and verifies that all T2S Services (e.g. settlement processes, migration procedures) in T2S are working as required. It undertakes its testing without interacting with other Participating CSDs and Central Banks. T2S ensures the segregation of the testing activities of the Contracting CSD from other CSDs' test activities on T2S by creating a set of fictitious CSDs under which the Contracting CSD can operate. The objective of this testing stage is to ensure that the CSDs' adapted IT System can interoperate with T2S properly before testing with other CSDs and Central Banks. A CSD can continue performing bilateral testing even when it undertakes multilateral testing.

5.4.2 Responsibilities

The following set of responsibilities shall apply for the bilateral interoperability testing stage:

i. The Eurosystem shall establish the operational procedures and service management required to support the bilateral interoperability testing stage;

ii. The Contracting CSD is responsible for organising its bilateral interoperability testing stage in line with the Test Plan and User Testing Calendar;

iii. The PMG substructure shall be responsible for monitoring the bilateral interoperability testing stage;

iv. The Contracting CSD shall test the migration processes (loading Static Data, loading Transactional Data, migration weekend rehearsals, reverse migration, etc.);

v. The Contracting CSD together with the Eurosystem will evaluate the test results at the end of the bilateral interoperability testing stage to assess the fulfilment of the exit criteria for this testing stage.

5.4.3 Entry Criteria

The following conditions shall apply for the start of the bilateral interoperability testing stage:

- The Contracting CSD has completed the connectivity testing stage successfully;

- The Eurosystem has provided the EAT Assessment Report four weeks before synchronisation point 8 – Start Bilateral Interoperability Testing, covering the full scope of Eurosystem Acceptance Testing and confirming that the Eurosystem considers T2S being ready for start of User Testing;
- The Eurosystem has resolved all reported defects classified with critical severity, identified during EAT. Except otherwise agreed between the Parties, the Eurosystem has resolved all recorded defects classified with high severity;
- For the pending errors from the EAT, the Eurosystem has provided a timetable for implementation of software corrections and for regression testing of those corrections for those test cases that failed because of defects in T2S that are not critical;
- The Eurosystem has confirmed the successful achievement of synchronisation point 8 – Start Bilateral Interoperability Testing for the specific migration wave;
- The Eurosystem has delivered to the Contracting CSD preliminary evidence that the future T2S production environment will meet the non-functional requirements based on the results of the T2S non-functional tests. The Eurosystem executes these tests in the future production environment;
- The Eurosystem has confirmed its operational readiness to support the Contracting CSD;
- The Contracting CSD has confirmed its readiness to start User Testing;
- The Eurosystem and the Contracting CSD have confirmed completion of the training required to ensure the smooth start of testing activities;
- The Eurosystem has provided the documentation required for migration testing and migration dress rehearsals.

5.4.4 Exit Criteria

The following condition shall apply for the end of the bilateral interoperability testing stage:

- The Eurosystem has certified the Contracting CSD according to the requirements in Section 5.4.5 of this Schedule.

5.4.5 CSD Certification

5.4.5.1 Description

The CSD certification, conducted during the User Testing Execution Phase, aims at providing evidence by the Contracting CSD that its adapted IT platform does not harm T2S as the result of inappropriate technical communication or procedures. It runs in parallel to the bilateral interoperability testing stage. The Contracting CSD's participation in the CSD certification testing is mandatory. Certification shall require the Contracting CSD to execute a mandatory set of tests, agreed through the PMG substructure during the User Testing preparation phase. The Eurosystem may exempt the Contracting CSD from performing mandatory test cases that are not in the scope of the Contracting CSD's intended usage of T2S. The Contracting CSD may rely on its test results from its bilateral testing to document its completion of a mandatory certification test case.

CSD certification is bilateral between the Eurosystem and the Contracting CSD. The Eurosystem shall provide written confirmation to the Contracting CSD after determining whether the Contracting CSD has successfully completed its assigned set of mandatory certification test cases, based on a formal report from the Contracting CSD in which the Contracting CSD shall document its fulfilment of the predefined CSD certification testing exit criteria.

The Eurosystem shall retain as evidence for proper certification the Contracting CSD's formal report as well as the Contracting CSD's progress reports on its certification testing and reporting on the level of the test cases and test scenarios.

The certification of the Contracting CSD shall remain valid until:

- the Eurosystem deploys a major release with a significant scope change in the A2A interface or major structural changes to the processing model and/or data model; or

- the Contracting CSD has made major changes to its interface processing for T2S.

In the first case, the Eurosystem shall recommend to the Steering Level whether the new release requires a re-certification of the Participating CSDs and CBs, based on the scope of the changes that the Change Review Group (CRG) has approved for the new T2S release. In the latter case, the Contracting CSD shall assess the scope of the changes and shall decide whether it must undertake a recertification.

5.4.5.2 Responsibilities

The following set of responsibilities shall apply for the CSD certification testing :

i. The Eurosystem shall deliver for review to the Contracting CSD through the PMG substructure the test scenarios and test cases that the Contracting CSD has to execute successfully to achieve its certification;

ii. The Eurosystem shall consult the PMG substructure on the test cases and test scenarios for CSD certification to ensure and agree the proper scope coverage;

iii. In the context of the framework set out in Schedule 2 on the monitoring of client readiness, the Eurosystem and the Contracting CSD shall have regular contact to review the progress of the CSDs' certification testing;

iv. The Contracting CSD shall execute the mandatory test cases and test scenarios for certification within the period foreseen in the T2S Programme plan for the migration wave in which it is participating;

v. The Contracting CSD has the obligation to provide regular reporting on the results of its certification tests in the form of status reports to the Eurosystem, documenting its progress with, at minimum, the number of test cases and test scenarios successfully executed and failed;

vi. Based on the bilateral status reporting from the Contracting CSD, the Eurosystem shall monitor the certification testing. The Eurosystem shall share information about the progress of and results of the CSDs' certification with the CSDs via the PMG substructure on a consolidated basis;

vii. Based on a formal report from the Contracting CSD, the Eurosystem will evaluate the results of the CSDs certification testing to assess whether the Contracting CSD executed the certification test cases completely and successfully;

viii. The Eurosystem will issue the CSD Certificate for the Contracting CSD when the Eurosystem assesses that the Contracting CSD has executed the certification test cases completely and successfully.

5.4.5.3 Entry Criteria

The following conditions shall apply for the start of the CSD certification:

- The Contracting CSD has completed the connectivity testing stage successfully.
- As specified in the T2S Programme Plan, the Eurosystem has delivered to the Contracting CSD its test scenarios and test cases that the Contracting CSD is to execute for its certification.
- The PMG substructure has assessed the test cases and test scenarios for CSD certification to ensure proper scope coverage.

5.4.5.4 Exit Criteria

The following conditions shall apply for the successful conclusion of the CSD certification:

- The Contracting CSD has provided evidence of its successful completion of the mandatory certification test cases and test scenarios;
- The Eurosystem has confirmed in writing to the Contracting CSD that the Contracting CSD has successfully completed all tests required for certification.

5.5 Multilateral Interoperability Testing Stage

5.5.1 Description

In the multilateral interoperability testing stage, the Contracting CSD tests with other Participating CSDs and Central Banks of its migration wave and of previous migration waves. The multilateral interoperability testing stage is the stage in which Participating CSDs of a migration wave begin to test their settlement links with each other and Participating CSDs of a previous migration wave. In this stage, the Contracting CSD also begins the set-up and testing of configuration data and parameters for the intended production set-up (e.g. message subscriptions, cross-CSD links).

5.5.2 Responsibilities

The following set of responsibilities shall apply for the multilateral interoperability testing stage:

i. The PMG substructure shall be responsible for the planning and coordination of the multilateral interoperability testing stage;

ii. The Contracting CSD shall support the Participating CSDs of its own migration wave and of subsequent migration waves when it has links to those Participating CSDs;

iii. The PMG substructure will evaluate the test results at the end of the multilateral interoperability testing stage to assess the fulfilment of the exit criteria for this testing stage.

5.5.3 Entry Criteria

The following conditions shall apply for the start of the multilateral interoperability testing stage:

- The Contracting CSD has completed its CSD certification successfully and confirmed its readiness to start multilateral interoperability testing;

- The PMG substructure has assessed the User Testing Stage Report detailing the severity of all defects reported during the bilateral interoperability testing stage and not yet resolved.

5.5.4 Exit Criteria

The following conditions shall apply for the end of the multilateral interoperability testing stage:

- The PMG substructure determines that the Participating CSDs of a migration wave have successfully completed multilateral interoperability testing.

- No critical software bugs or operational issues remain open. The Eurosystem has resolved all reported defects classified with critical severity. Except the Parties agree otherwise, the Eurosystem has resolved all recorded defects, classified with high severity;

- The PMG substructure has agreed a timetable for implementation of software corrections and for regression testing of those corrections for those test cases that failed because of non-critical defects in T2S.

5.6 Community Testing Stage

5.6.1 Description

The community testing stage is the stage in which the Contracting CSD of a migration wave extends its multilateral testing activities with other Participating CSDs and Central Banks to its community, i.e. the group of T2S Users having a contractual relationship with the Contracting CSD. The main objective of this stage is to validate that the Contracting CSD's participants can interact correctly end-to-end with T2S, either through the Contracting CSDs adapted systems or with T2S directly as DCP.

During the testing stage CSDs and their communities verify the correct functioning of T2S using the target data configuration as configured for the target production environment. The expectation is that processing errors will stem mainly from incorrect data configurations, allowing the Contracting CSD to identify and correct such incorrect configurations, and from DCPs' testing of their interface to T2S. This stage represents the first opportunity of the Contracting CSD's participants to test with T2S, allowing the CSD's participants to verify that their system interoperate correctly with T2S.

The community testing stage allows the Contracting CSD and its community to familiarise themselves with operational procedures and service management relevant to this stage to ensure that the operational procedures as described in the Manual of Operational Procedures (MOP).

5.6.2 Responsibilities

The following set of responsibilities shall apply for the community testing stage:

i. The Contracting CSD shall test the migration process (loading Static Data, loading Transactional Data, migration weekend rehearsals, reverse migration, etc.) together with its community;

ii. The Contracting CSD shall involve its T2S Users and other relevant T2S Stakeholders in the testing activities in order to validate the end-to-end business processes supported by T2S;

iii. The Contracting CSD together with the Eurosystem will evaluate the test results at the end of the community testing stage to assess the fulfilment of the exit criteria for this testing stage.

5.6.3 Entry Criteria

The following conditions shall apply for the start of the community testing stage:

- The Contracting CSD has exited the CSDs' acceptance testing and the multilateral interoperability testing stage successfully and declared its operational readiness for community testing;
- The Eurosystem has confirmed the readiness of its operational teams;
- The Eurosystem has confirmed the readiness of the required Central Banks and their holders of Dedicated Cash Accounts in the tests;
- The PMG substructure confirms the successful completion of multilateral interoperability testing stage that the community testing stage can start.

5.6.4 Exit Criteria

The following conditions shall apply for the successful conclusion of the community testing stage:

- The PMG substructure determines that the CSDs of a migration wave, together with their communities and the relevant Central Banks of the CSDs have successfully executed the migration rehearsals and business days;
- No critical software bugs or operational issues remain open that constitute a significant risk to the go-live of the migration wave. The Eurosystem has resolved all reported defects classified with critical severity. The Eurosystem has resolved all recorded defects classified with high severity except when otherwise agreed between the Parties;
- The PMG substructure has agreed a timetable for implementation of software corrections and for regression testing of those corrections for those test cases that failed because of defects in T2S that are not critical;
- The DCP(s) of the Contracting CSD has/have successfully completed all tests related to its/their DCP certification;

- The relevant operational and the incident management procedures of the Contracting CSD and its community have been carried out successfully;

- The CSDs and Central Banks (of the CSDs) of the respective migration wave confirm their readiness to progress to the business day testing stage.

5.6.5 DCP Certification

5.6.5.1 Description

The DCP certification aims at providing evidence by the participant of the Contracting CSD that its adapted IT platform does not harm T2S as the result of inappropriate technical communication or procedures. DCP certification does not verify the compliance with either the Contracting CSD's adaptation to T2S nor with the Contracting CSD's business processing requirements. When conducted during the User Testing Execution Phase, it runs in parallel to the community testing stage for those participants of the Contracting CSD that request to connect directly to T2S. Participants of the Contracting CSD also have the option to undertake their DCP certification at anytime after the Contracting CSD is operating on T2S. The DCP certification of a CSD participant shall be valid for all Contracting CSDs from which it has authorisation to connect directly to T2S. DCP certification requires connectivity testing before the DCP starts its certification testing.

DCP certification is mandatory for any participant of the Contracting CSD that chooses to connect its IT systems directly to T2S. DCP certification shall require the participant of the Contracting CSD to execute a mandatory set of tests, agreed through the PMG substructure during the User Testing Preparation Phase. When the Contracting CSD allows its participants to connect directly to T2S and the Contracting CSD's participant chooses to connect directly to T2S, the Contracting CSD shall allow the Eurosystem to undertake the certification process directly with the Contracting CSD's participant.

A CSD participant has to certify itself once with the Eurosystem to connect directly to T2S. When the Contracting CSD allows its participants to connect directly to T2S, the Contracting CSD has the obligation to accept the DCP certification of its participant even when the Contracting CSD's participant has certified itself with the Eurosystem through another Participating CSD.

The DCP certification of the Contracting CSD's participant shall remain valid until the Eurosystem deploys a major release with a significant scope change in the Application-to-Application interface or major structural changes to the processing model and/or data model. The Eurosystem shall recommend to the Steering Level whether the new release requires a recertification of the DCPs, based on the scope of changes that the Change Review Group (CRG) has approved for the new T2S release.

5.6.5.2 Responsibilities

The following set of responsibilities shall apply for the DCP certification testing :

i. The Eurosystem shall deliver for review to the Contracting CSD through the PMG substructure the test scenarios and test cases that a Contracting CSD's participant has to execute successfully to achieve its DCP certification;

ii. The Eurosystem shall consult the PMG substructure on the test cases and test scenarios for DCP certification to ensure and agree the proper scope coverage;

iii. The Eurosystem shall monitor the DCP certification testing. The Eurosystem shall share information about the progress and results of the DCP certification with the CSDs via the PMG substructure on a consolidated basis;

iv. The Eurosystem shall provide written confirmation to the Contracting CSD and to its participant after determining whether the participant has successfully completed its assigned set of mandatory certification test cases;

v. The Eurosystem shall retain as evidence for proper DCP certification the documentation of the DCP's certification testing and reporting on the level of the test cases and test scenarios.

5.6.5.3 Entry Criteria

The following conditions shall apply for the start of the DCP certification:

- The Contracting CSD has fulfilled the exit criteria for the CSDs' acceptance testing stage;
- The Contracting CSD and the Eurosystem have fulfilled the exit criteria for the CSD certification testing;
- The Contracting CSD has authorised its respective participant to connect directly to T2S.

5.6.5.4 Exit Criteria

DCP certification has no exit criteria. However, DCP certification is the prerequisite for the Contracting CSD’s participant to take part in community testing of the Contracting CSD as a DCP.

5.7 Business Day Testing Stage

5.7.1 Description

The business day testing stage comprises the simulation of several consecutive business days of T2S operation after completing a migration rehearsal for the respective CSD migration wave using the expected production data set-up. It includes all CSDs of a migration wave and their respective communities as well as their Central Banks and their Payment Banks. CSDs and their communities from previous migration waves participate when deemed necessary, e.g. when links exist.

The objective of the business day testing stage is to verify the correct functioning of T2S under production-like conditions using the target data configuration as expected in the production environment. In this stage of testing, the expectation is that processing errors will stem mainly from incorrectly migrated data (e.g. incorrect positions or missing ISINs) or incorrect configuration (e.g. cross-CSD settlement parameters). This stage enables the T2S Actors, such as the CSDs and their communities, to identify such errors using real business data.

The business day testing stage includes operational procedures and service management to ensure that the operational procedures as described in the Manual of Operational Procedures (MOP) are working as expected.

5.7.2 Responsibilities

The following set of responsibilities shall apply for the business day testing stage:

i. The Eurosystem shall establish the operational procedures and service management required to support the business day testing stage;

ii. The Contracting CSD shall test the migration process (loading Static Data, loading Transactional Data, migration weekend rehearsals, reverse migration, etc.) together with its community;

iii. The Contracting CSD shall involve its T2S Users and other relevant T2S Stakeholders in the testing activities in order to validate the end-to-end business day processes supported by T2S;

iv. The Contracting CSD together with the Eurosystem will evaluate the test results at the end of the business day testing stage to assess the fulfilment of the exit criteria for this testing stage.

5.7.3 Entry criteria

The following conditions shall apply for the start of the business day testing stage:

- The Contracting CSD has fulfilled the exit criteria for the community testing stage;
- The PMG substructure confirms that the CSDs and their Central Banks participating in the respective migration wave have fulfilled the exit criteria for community testing.

5.7.4 Exit criteria

The following conditions shall apply for the successful conclusion of the business day testing stage:

- The PMG substructure determines that the CSDs of a migration wave, together with their communities and the relevant Central Banks have successfully executed the migration rehearsals and business days;
- No critical software bugs or operational issues remain open that constitute a significant risk to the go-live of the migration wave. The Eurosystem has resolved all reported defects classified with critical severity. Except otherwise agreed between the Parties, the Eurosystem has resolved all recorded defects classified with high severity;
- The PMG substructure has agreed a timetable for implementation of software corrections and for regression testing of those corrections for those test cases that failed because of non-critical defects in T2S;
- No client systems have become inoperable due to unexpected communication received from the T2S Platform for at least 15 working days prior to the agreed Business Day testing stage exit date;
- The Eurosystem confirms that testing of operational procedures has been successful;

- The PMG substructure confirms that appropriate fallback arrangements and rollback procedures are established and successfully tested for the Migration;

- The CSDs and Central Banks (of the CSDs) of respective migration wave confirm their readiness to go-live on T2S.

6 Non-functional tests

This section describes the non-functional tests carried out by the Eurosystem in order to confirm non-functional compliance of T2S as well as the non-functional volume tests carried out by the CSDs.

6.1 Description

The non-functional tests aim to check the proper functioning of T2S and are composed of the following tests as defined in the General Technical Design document:

- performance and stress tests;
- business continuity tests;
- security tests.

In principal, the Eurosystem will perform the non-functional tests, involvement of CSDs varies depending on the different types of non-functional test. Prior to the execution, the Eurosystem will provide for a quick consultation these tests to the CSD. After the test execution, the Eurosystem will deliver a test report with results of those tests. Moreover, the CSDs will have the opportunity to execute non-functional tests from an end-to-end perspective and respecting the sizing of the related test environments (see also section 6.5 Performance Tests by CSDs).

6.2 Objectives and responsibilities of performance and stress tests

The main objective of the performance and stress tests is to check that the T2S production environment is able to handle the estimated volume of transactions in the peak hour in terms of the number of settlements and a certain number of concurrent interactive users in compliance with a defined response time.

The test plan for the performance and stress tests includes a global system test aimed to measure throughput, response time and resource consumption of the whole system (infrastructure and applications) and volume tests conducted on specific parts of the system in order to optimise the behaviour of these T2S components.

During the performance and stress tests, different test cases shall be performed aiming to simulate the expected daily workload profiles for User-to-Application mode (U2A) and Application-to-Application (A2A) interactions on the available interfaces by using simulators and/or with the collaboration of the Contracting CSD.

The test plan for the performance and stress tests shall follow a gradual approach to verify, in sequence, that all infrastructure components and services are sized properly to handle the defined peak workload of settlements and the T2S application is able to satisfy the defined performance requirements.

The performance and stress tests shall be performed by the Eurosystem. The T2S Actors shall be invited as observers to the performance and stress tests and the results of these tests shall be delivered to the Contracting CSD.

6.3 Objectives and responsibilities of Business Continuity tests

The main objective of the business continuity tests is to verify the ability of T2S to guarantee the continuity of business services in case of local component failure or regional disaster event. The business continuity tests shall demonstrate that T2S is sufficiently resilient to meet the agreed service levels, even in case of severe incidents. The tests include intra-region and inter-region failover tests to guarantee that the production environment(s) can be switched to another side or region in a failover situation.

The business continuity tests shall be performed before the go-live and on a regular basis after the go-live.

The test plan for the business continuity tests shall include a comprehensive list of test cases including:

- fault tolerance (i.e. resiliency of single component);
- intra-region recovery;
- inter-region recovery (only regions 1 and 2).

In addition, tests shall be performed to validate the rotation between region 1 and region 2 that is closely linked to the disaster recovery test in terms of organisation and operational procedures.

The business continuity tests shall be performed by the Eurosystem. The T2S actors shall be invited as observers to the business continuity tests and the results of these tests shall be delivered to the Contracting CSD.

6.4 Objectives and responsibilities of Security Tests

The main objectives of the security tests are to verify the compliance of the T2S platform with the T2S security requirements. Sscurity tests include:

- Vulnerability assessment;
- Configuration analysis;
- Penetration tests.

The Eurosystem shall perform these security tests, which it shall provide to the Contracting CSD.

6.5 Performance Tests by CSDs

Performance tests are typical non-functional tests that a CSD or DCP may want to perform. Depending on the intended volumes, such tests shall require central coordination and prior approval.

In case the Contracting CSD or its DCP(s) intends to exceed the pre-defined hourly volume limits, the Contracting CSD shall send a request for additional processing capacity for specific performance tests to the Eurosystem at least 5 working days in advance. The request should contain the volumes to be tested and the duration of the test. The Eurosystem will verify whether it can fulfil the request and shall inform the Contracting CSD or its DCP accordingly. If the Eurosystem cannot fulfil the request as specified, the Eurosystem shall propose alternative options in terms of dates, times and/or volumes. In case of conflicting requests, the Eurosystem shall consult the PMG substructure.

7 User Testing Business Processes

This section presents the core business processes that the Eurosystem and Contracting CSDs shall comply with for User Testing. The business process description uses a simplified version of the Business Process Modelling Notation (BPMN) 2.0, as specified in Section 7.1 of Schedule 2 (T2S Programme Planning and Monitoring).

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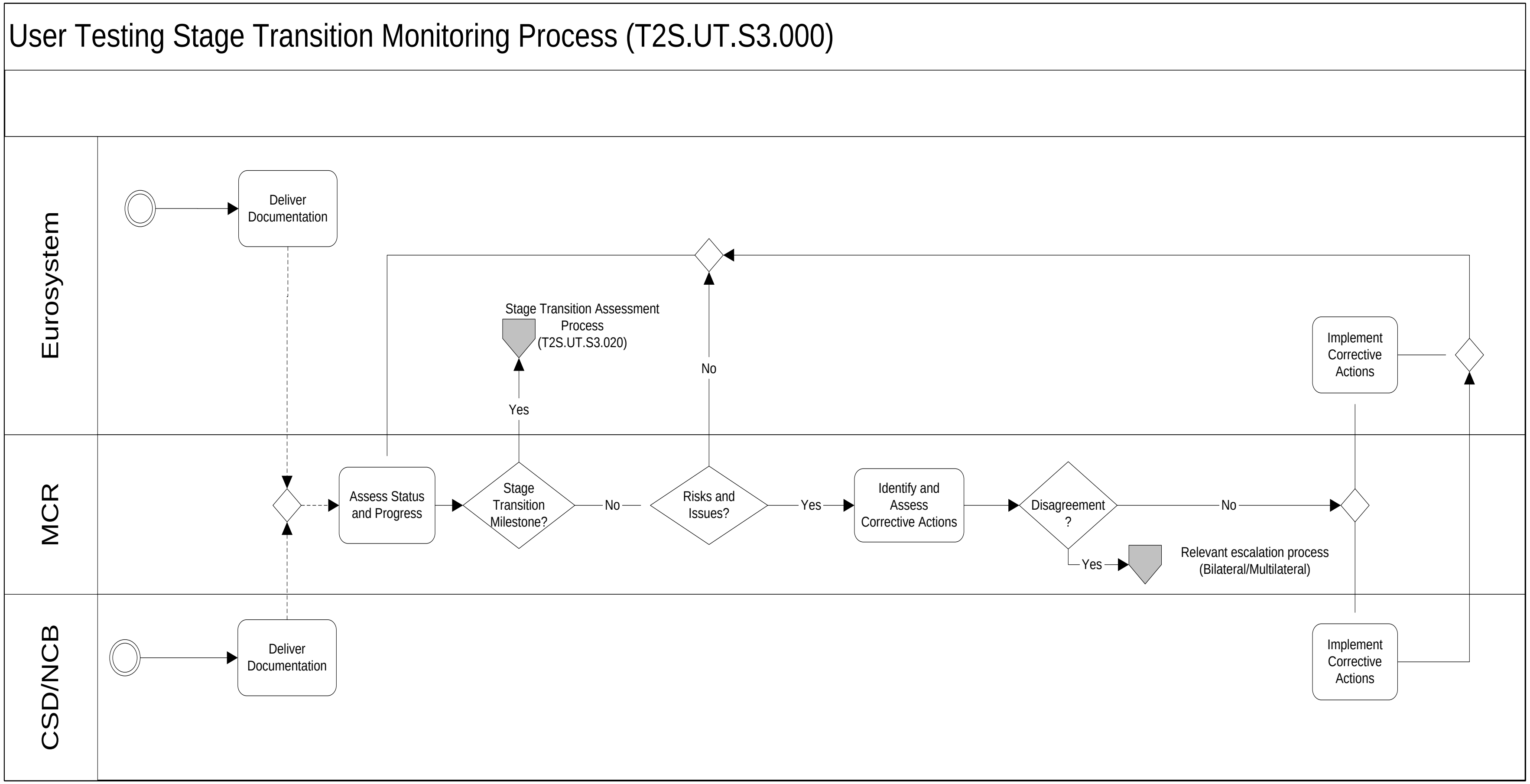
7.1 User Testing Stage Transition Monitoring Process


User Testing Stage Transition Monitoring Process (T2S.UT.S3.000)
Eurosystem
MCR
CSD/NCB
Deliver Documentation
Deliver Documentation
Assess Status and Progress
Stage Transition Milestone?
Yes
Stage Transition Assessment Process (T2S.UT.S3.020)
No
Risks and Issues?
No
Yes
Identify and Assess Corrective Actions
Disagreement ?
No
Yes
Relevant escalation process (Bilateral/Multilateral)
Implement Corrective Actions
Implement Corrective Actions

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7.1.1 Process Actors and their Roles

Process Actor	Process Role
CSD / NCB	In this process, the CSD / NCB is responsible for : ▪ Providing a sufficient level of documentation to the Eurosystem to allow the Eurosystem to assess the Contracting CSD's progress for a testing stage; ▪ Assessing its fulfilment of the entry and exit criteria for a testing stage; ▪ Identifying and assessing the feasibility of proposed correction actions, when required; and ▪ Discussing the feasibility of the proposed corrective actions with the Eurosystem.
Eurosystem	In this process, the Eurosystem is responsible for: ▪ Providing a sufficient level of documentation to the CSD to allow the CSD to assess the Eurosystem's fulfilment of the entry / exit criteria for a testing stage; ▪ Assessing its fulfilment of the entry and exit criteria for a testing stage; ▪ Identifying assessing the feasibility of proposed correction actions, when required; and ▪ Discussing the feasibility of the proposed corrective actions with the CSDs.
Monitoring of Client Readiness (MCR)	In this process, the MCR: ▪ Monitors the Contracting CSD's progress in order to determine whether it has fulfilled the entry or exit criteria for a testing stage; and ▪ Discusses and decides on the feasibility of proposed corrective actions; and ▪ Provides guidance to the PMG substructure when required in the case of multilateral escalation.

7.1.2 Process Description

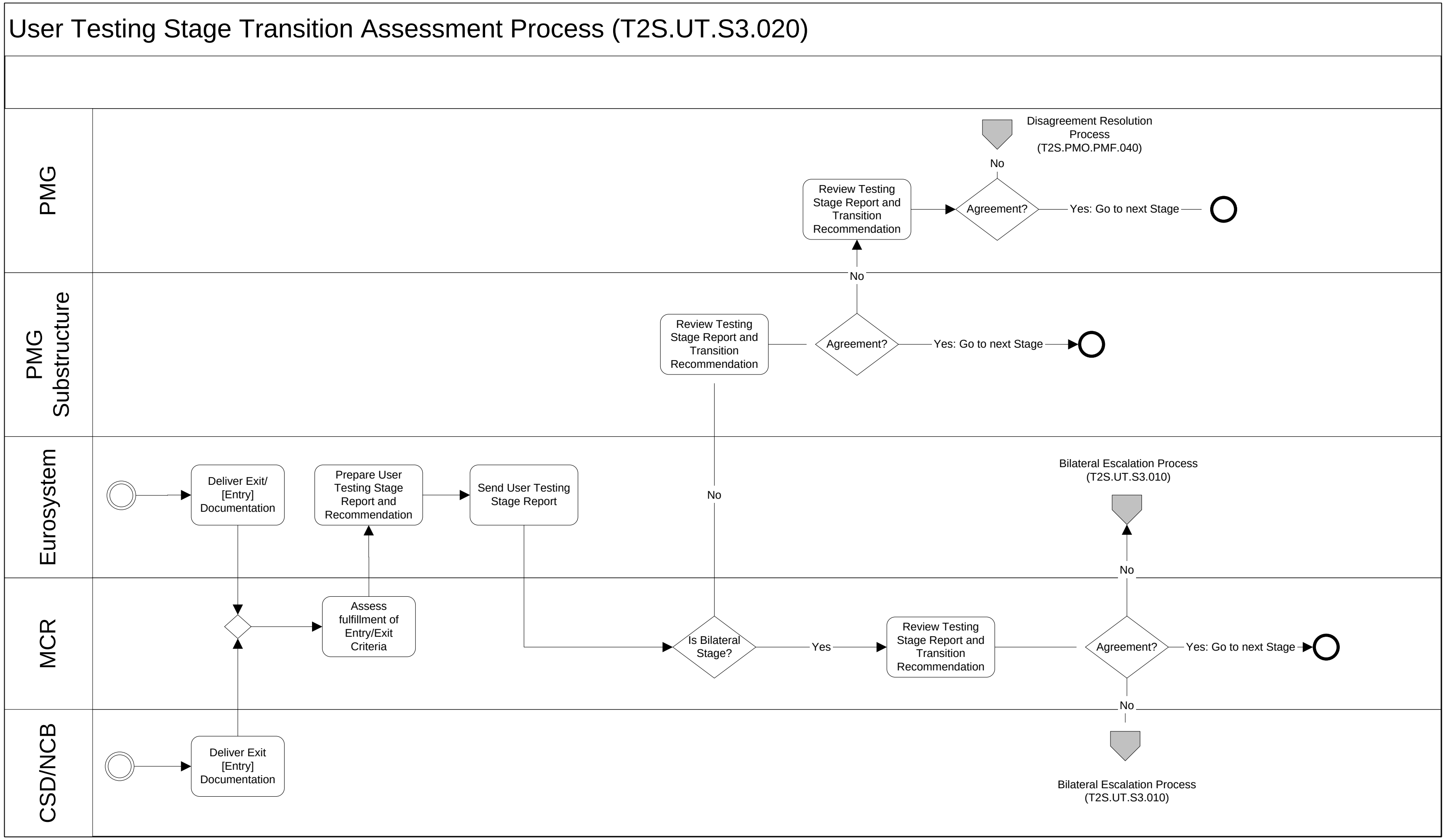
The objective of the User Testing stage transition monitoring process is to ensure bilateral communication between the Eurosystem and the Contracting CSD on the progress of the Contracting CSD's User Testing

- to ensure adequate coordination of the User Testing activities;
- to enable proactive monitoring of the CSD's fulfilment of the exit and/or entry criteria for User Testing stages; and
- to allow for an early identification of issues and corrective measures for their resolution.

Both the Contracting CSD and the Eurosystem provide progress updates for assessing the progress for the current stage of User Testing. The Eurosystem progress update includes any general testing risks and issues encountered that may affect the CSD's timely completion of User Testing stage. The Contracting CSD reports on its progress against its test plan and reports any risks and issues that may affect its timely completion of the testing stage. When the progress update is shortly before the stage transition, then the Eurosystem uses the progress update as input for User Testing stage transition assessment.

When there is sufficient time remaining before the User Testing stage transition assessment, the Contracting CSD and the Eurosystem assess the need for corrective actions to resolve any identified issues and mitigate any identified risks. Both the Contracting CSD and the Eurosystem determine whether the implementation of the corrective measures is feasible and undertake their respective actions. If there is disagreement of the corrective actions, then the Contracting CSD, the Eurosystem or both can initiate the escalation process.

7.2 User Testing Stage Transition Assessment Process


User Testing Stage Transition Assessment Process (T2S.UT.S3.020)
PMG
PMG Substructure
Eurosystem
MCR
CSD/NCB
Deliver Exit/ [Entry] Documentation
Prepare User Testing Stage Report and Recommendation
Send User Testing Stage Report
Assess fulfillment of Entry/Exit Criteria
Deliver Exit [Entry] Documentation
Is Bilateral Stage?
Yes
No
Review Testing Stage Report and Transition Recommendation
Agreement?
Yes: Go to next Stage
No
Bilateral Escalation Process (T2S.UT.S3.010)
No
Bilateral Escalation Process (T2S.UT.S3.010)
Review Testing Stage Report and Transition Recommendation
Agreement?
Yes: Go to next Stage
No
Review Testing Stage Report and Transition Recommendation
Agreement?
Yes: Go to next Stage
No
Disagreement Resolution Process (T2S.PMO.PMF.040)

744 **7.2.1 Process Actors and their Roles**

Process Actor	Process Role
CSD / NCB	In this process, the CSD is responsible for: ▪ Providing a sufficient level of documentation to the Eurosystem to allow the Eurosystem to assess the Contracting CSD's fulfilment of the entry and exit criteria for a testing stage; ▪ Carrying out an assessment of its own fulfilment of the entry and exit criteria for a testing stage; ▪ Assessing the proposed correction actions from the bilateral escalation process.
Eurosystem	In this process, the Eurosystem is responsible for: ▪ Delivering the documentation to the CSD to allow the CSD to assess the Eurosystem's fulfilment of the entry / exit criteria for a testing stage; ▪ Carrying out an assessment of the its own fulfilment of the entry or exit criteria for a testing stage; ▪ Assessing the proposed corrective actions; and ▪ Drafting, agreeing and finalising the User Testing stage transition assessment report.
Monitoring of Client Readiness (MCR)	In this process, the MCR has the obligation to: ▪ Monitor the Contracting CSD's progress in order to determine whether it has fulfilled the entry or exit criteria for a testing stage; ▪ Propose and discuss corrective actions in case of non fulfilment of either the exit or entry criteria for a User Testing Stage; and ▪ Provide guidance to the PMG substructure when required in the case of multilateral escalation.
PMG substructure	In this process, the PMG substructure is responsible for: ▪ Discussing the stage transition assessment report and any recommendations; ▪ Providing the final decision during PMG substructure sessions to go forward to the next stage or into multilateral escalation in case of disagreement.
Project Managers Group (PMG)	In this process, the PMG is responsible for resolving any potential disagreement on the decision to go forward to the next stage or to initiate the disagreement resolution process.

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7.2.2 Process Description

The assessment process for User Testing stage transition defines the steps in assessing and reporting on whether the Eurosystem, CSDs and NCBs are prepared to transition jointly from one stage of User Testing to the next based on the exit criteria of the current stage and/or the entry criteria of the next stage.

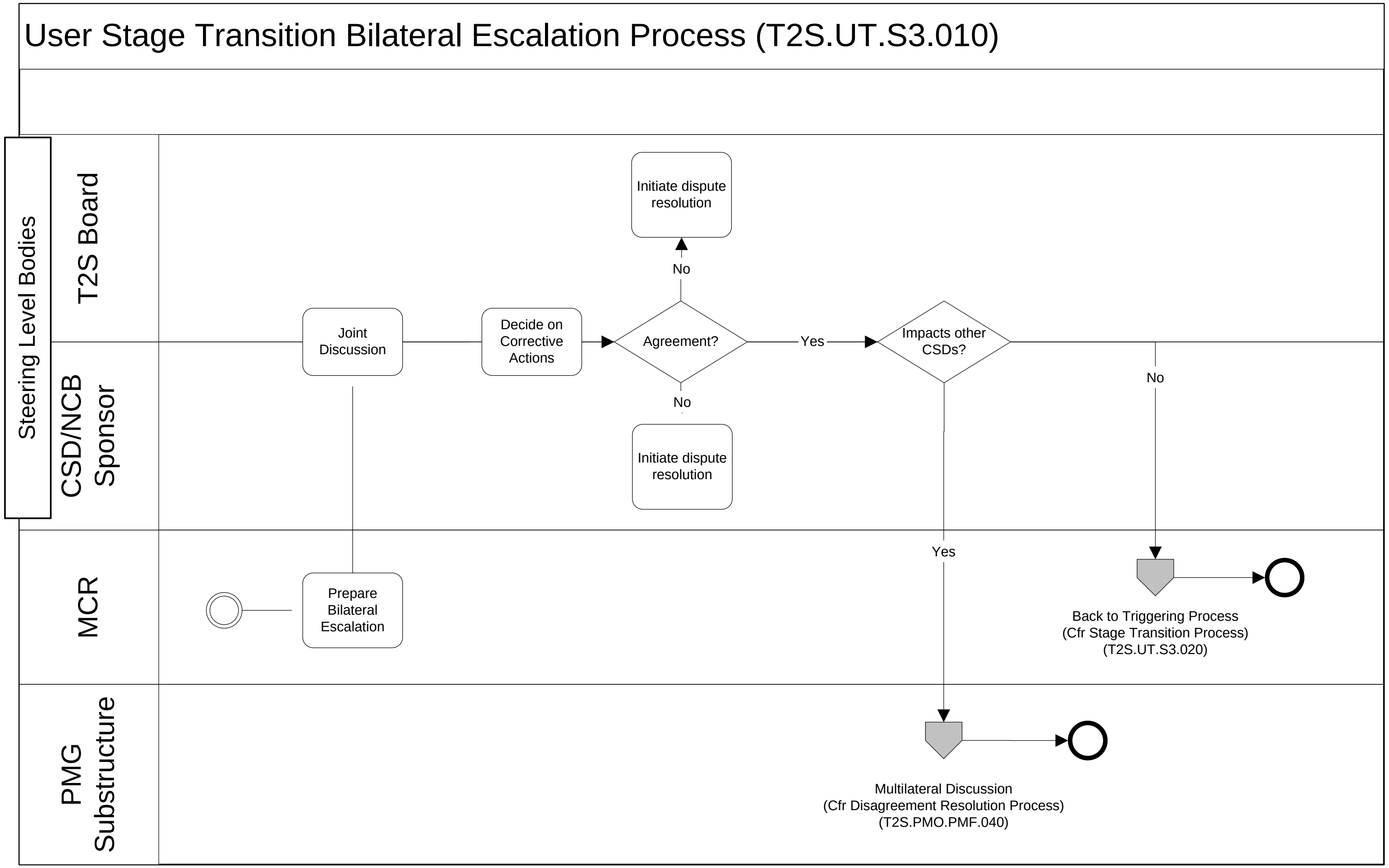
The Eurosystem provides to the Contracting CSD the templates based on which the Contracting CSD assesses its fulfilment of the exit criteria of the current stage of User Testing or/and the entry criteria for the next stage of User Testing. The Contracting CSD assesses its fulfilment of the exit and/or entry criteria for User Testing stages. The Contracting CSD and the Eurosystem jointly review this assessment as part of the monitoring of client readiness to determine whether the Contracting CSDs has fulfilled the applicable exit and/or entry criteria. Should an exit or entry criteria remain unmet, then the Contracting CSD and the Eurosystem identify and assess corrective actions on the part of the Contracting CSD, the Eurosystem or both parties, depending on the source and required resolution of the issue.

The Eurosystem prepares the User Testing stage transition assessment report that documents whether the Contracting CSDs of a migration wave have fulfilled the exit criteria of the current stage of User Testing or/and the entry criteria for the next stage of User Testing. It documents recommendations for corrective actions should exit or entry criteria remain unfulfilled.

If the User Testing stage transition is bilateral, then the Eurosystem provides the report to the Contracting CSD for assessment and both parties agree in the MCR whether there is a need to report risks and issues multilaterally. If the Contracting CSD and the Eurosystem agree on the reports conclusions for a stage transition, then the Contracting CSD formally enters the next testing stage. If no stage transition is possible or disagreements remain, then the MCR escalates the disagreement as defined in section 7.3 on the bilateral escalation process.

If the User Testing Stage transition is Multilateral, then the Eurosystem provides the report to the PMG substructure. If the ‘PMG substructure agrees on the reports conclusions for a stage transitions, then the Contracting CSDs of a migration wave formally enter the next testing stage as a whole. If not stage transition is possible or disagreements remain, then the PMG substructure escalates the disagreement to the PMG. The PMG is responsible for resolving the potential disagreement on the decision to go forward to the next stage of User Testing. If it cannot reach an agreement, then it initiates as covered by the disagreement resolution process as described in Schedule 2 (T2S Programme Planning and Monitoring).

778 7.3 User Testing Stage Transition Bilateral Escalation Process


User Stage Transition Bilateral Escalation Process (T2S.UT.S3.010)
Steering Level Bodies
T2S Board
CSD/NCB Sponsor
MCR
PMG Substructure
Prepare Bilateral Escalation
Joint Discussion
Decide on Corrective Actions
Agreement?
No
Initiate dispute resolution
No
Initiate dispute resolution
Yes
Impacts other CSDs?
No
Yes
Back to Triggering Process (Cfr Stage Transition Process) (T2S.UT.S3.020)
Multilateral Discussion (Cfr Disagreement Resolution Process) (T2S.PMO.PMF.040)

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7.3.1 Process Actors and their Roles

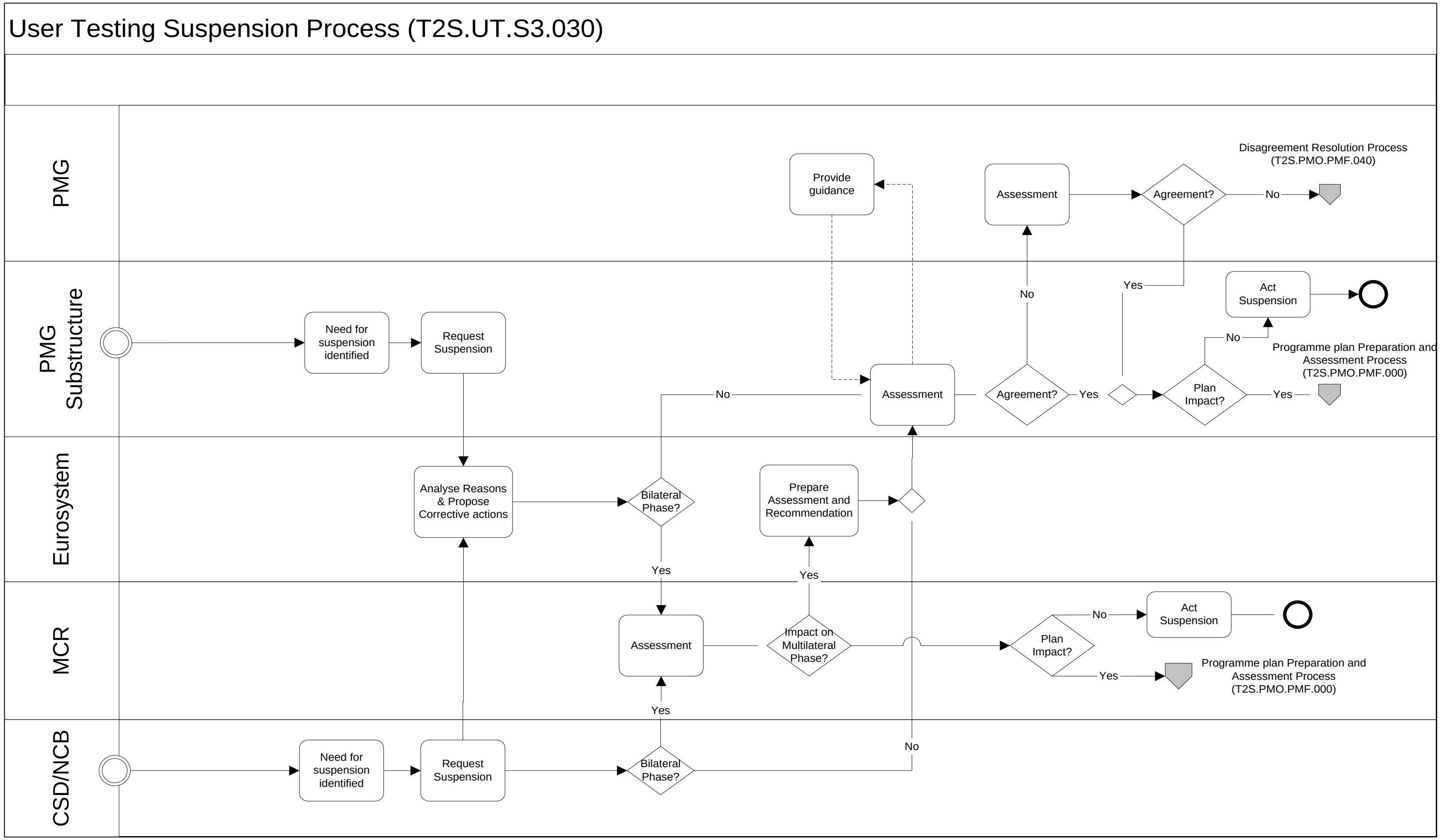
Process Actor	Process Role
T2S Board	In this process, the T2S Board has the responsibility to discuss the escalated issue and attempt to find a resolution with the CSD / NCB sponsor.
CSD/NCB Sponsor	In this process, the CSD/NCB sponsor has the responsibility to discuss the escalated issue and attempt to find a resolution with the T2S Board.
Monitoring of Client Readiness (MCR)	In this process, the MCR prepares the bilateral escalation for the T2S Board and the CSD/NCB sponsor.
PMG substructure	The PMG substructure is responsible for discussing and proposing solutions for a bilateral issue that affects multiple T2S Stakeholders and the successful delivery of T2S.

7.3.2 Process Description

The objective of this process is to resolve bilateral disagreements between the Eurosystem and the Contracting CSD in the User Testing Phase. An example of such a disagreement would be differing assessments on whether the Contracting CSD has fulfilled the entry or exit criteria for a specific stage of User Testing. The monitoring of client readiness identifies and raises any issues on User Testing that it cannot resolve to the Contracting CSD’s Sponsor and the T2S Board. At Steering Level, the Contracting CSD’s Sponsor and the T2S Board will attempt to resolve these disagreements with the objective to avoid entering the disagreement resolution process of Schedule 2 (T2S Programme Planning and Monitoring).

The Steering Level will attempt to resolve the disagreement in a timely manner, taking into account the urgency and the severity of the matter. If the Steering Level has achieved agreement on the disputed issues and the proposed resolution does not affect other T2S Stakeholders, then it submits its resolution to the Contracting CSD and the Eurosystem representatives in MCR for implementation. If the Steering Level has achieved agreement on the disputed issues and the proposed resolution affects other T2S Stakeholders, then it submits its resolution to the PMG substructure for review and a recommendation on its implementation. If ultimately the Steering Level cannot reach an agreement on the resolution of an issue, then it can escalate the issue according to the disagreement resolution process of Schedule 2 (T2S Programme Planning and Monitoring).

801 7.4 User Testing Suspension Process


User Testing Suspension Process (T2S.UT.S3.030)
PMG
PMG Substructure
Eurosystem
MCR
CSD/NCB
Provide guidance
Assessment
Agreement?
No
Disagreement Resolution Process (T2S.PMO.PMF.040)
Yes
Act Suspension
Need for suspension identified
Request Suspension
No
Assessment
Agreement?
Yes
Plan Impact?
No
Yes
Programme plan Preparation and Assessment Process (T2S.PMO.PMF.000)
Analyse Reasons & Propose Corrective actions
Bilateral Phase?
Prepare Assessment and Recommendation
Yes
Yes
Assessment
Impact on Multilateral Phase?
Plan Impact?
No
Act Suspension
Yes
Programme plan Preparation and Assessment Process (T2S.PMO.PMF.000)
Yes
Need for suspension identified
Request Suspension
Bilateral Phase?
No

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7.4.1 Process Actors and their Roles

Process Actor	Process Role
CSD / NCB	The CSD or NCB is responsible for identifying the need to and issuing the request to suspend User Testing.
Eurosystem	The Eurosystem has the responsibility for: ▪ Analysing the CSD or NCB request to suspend User Testing; ▪ Proposing corrective measures to avoid a suspension of User Testing; and ▪ Preparing the assessment of and a recommendation on the suspension request.
Monitoring of Client Readiness (MCR)	In this process, the MCR depicts the bilateral steps of this process for: ▪ Reviewing and discussing the status of User Testing; and ▪ Assessing the status of User Testing and providing guidance to the PMG substructure when required in the case of multilateral escalation.
PMG substructure	In this process, the PMG substructure is responsible for: ▪ Discussing the stage transition assessment report and any recommendations; and ▪ Providing the final decision during PMG substructure sessions to go forward to the next stage or into multilateral escalation in case of disagreement.
Project Managers Group (PMG)	The PMG provides guidance to the PMG substructure in order to resolve disagreements on the potential suspension of User Testing. If the PMG substructure cannot reach an agreement, then the PMG is responsible for resolving any potential disagreement on the decision to suspend or for initiating the disagreement resolution process.

7.4.2 Process Description

This process describes the steps in taking a decision on a request from a Participating CSD or a Central Bank to suspend the current stage of User Testing. Participating CSDs/NCBs individually or the PMG substructure may identify the need to suspend User Testing, e.g. too many unresolved defects of various severities to allow the continuation of proper testing. The individual Participating CSD/NCB or the PMG substructure submits the request with its business justification to suspend User Testing to the Eurosystem.

The Eurosystem analyses the suspension request and, when possible to avoid the suspension to User Testing, proposes corrective action:

- To the individual Participating CSD/NCB that initiated the request when the request is bilateral; and

- To the PMG substructure when it initiated the request as a bilateral request.

- When the suspension request is bilateral, then:
- the Participating CSD/NCB jointly reviews the Eurosystem assessment of the suspension request in MCR; and
- the Participating CSD/NCB and/or Eurosystem implement(s) any identified corrective actions to limit and/or avoid a suspension of User Testing.

If the suspension of User Testing is unavoidable and has no planning impact, then the MCR may initiate the suspension. If the suspension of User Testing is unavoidable and has a planning impact, then the MCR initiates an assessment of the planning impact that follows the programme plan preparation and assessment process in Schedule 2 (T2S Programme Planning and Monitoring).

When the suspension request is multilateral or the bilateral request has a multilateral impact, then Eurosystem prepares the assessment and recommendation for the assessment in the PMG substructure. The PMG substructure may request guidance from the PMG to facilitate a decision on the potential suspension of User Testing. In the case that the PMG substructure cannot reach an agreement, it may revert to the PMG to reach an agreement. If the PMG substructure cannot reach an agreement on the decision to suspend, then it initiates the disagreement resolution process as defined by the disagreement resolution process defined in Schedule 2 (T2S Programme Planning and Monitoring).

If the PMG substructure or the PMG reaches an agreement on the request and the request has no planning impact, then the PMG substructure may initiate the suspension. If the suspension of User Testing is unavoidable and has a planning impact, then the PMG substructure initiates an assessment of the planning impact that follows the programme plan preparation and assessment process in Schedule 2 (T2S Programme Planning and Monitoring).

7.5 Release Management during the User Testing

The Release Management Process (RMP) during the User Testing execution phase ensures that all aspects, technical and non-technical, originating from defect resolutions, are considered together, following the principles laid down in Chapter 5 of Schedule 9 (Change and Release Management). The PMG substructure makes a recommendation to the PMG on packaging the bug fixes in a bug fix release.

7.6 Supporting Processes

7.6.1 IT Service Management processes

As described in chapter 3.1 it is the Eurosystem's responsibility to establish and operate the necessary IT service management processes that includes a defect resolution to remedy errors based on the principles of ITIL V3 Service Operation.

The details of these IT service management processes such as the defect resolution and incident handling will be described in the Manual of Operational Procedures (MOP). The MOP will describe these processes for T2S Operations and the Operations Managers Group (OMG) will be the main stakeholder in this processes. During User Testing the same processes will apply with one major distinction namely that the PMG substructure will be the main stakeholder instead of the OMG. Furthermore, the definitions of the severity of defect and the incident resolution times applicable during User Testing are defined in Schedule 6 (T2S Service Level Agreement).

8 Post-Migration Testing

Post-migration testing shall refer to all testing activities of CSDs, NCBs and Directly Connected Parties (DCPs) after go-live of the final CSD migration wave for the initial release of T2S. Events, such as the migration of a new CSD / NCB to T2S or the implementation of a new release, will require post-migration testing.

The following principles shall apply for post-migration testing:

- The Project Managers Group (PMG) shall perform an impact assessment for a new T2S release or a new NCB/CSD joining T2S on the T2S Actors in order to determine whether all T2S Actors will need to carry out User Testing for the T2S release or whether only affected T2S Actors need to test.

- Based on the impact assessment, the Project Managers Group (PMG) with the support of the PMG substructure on User Testing shall propose a post-migration test plan to the Steering Level for approval.

- The post-migration test plan must ensure that CSDs, NCBs and DCPs will have sufficient time to verify that the delivered T2S functionality according to the agreed requirements and specifications.

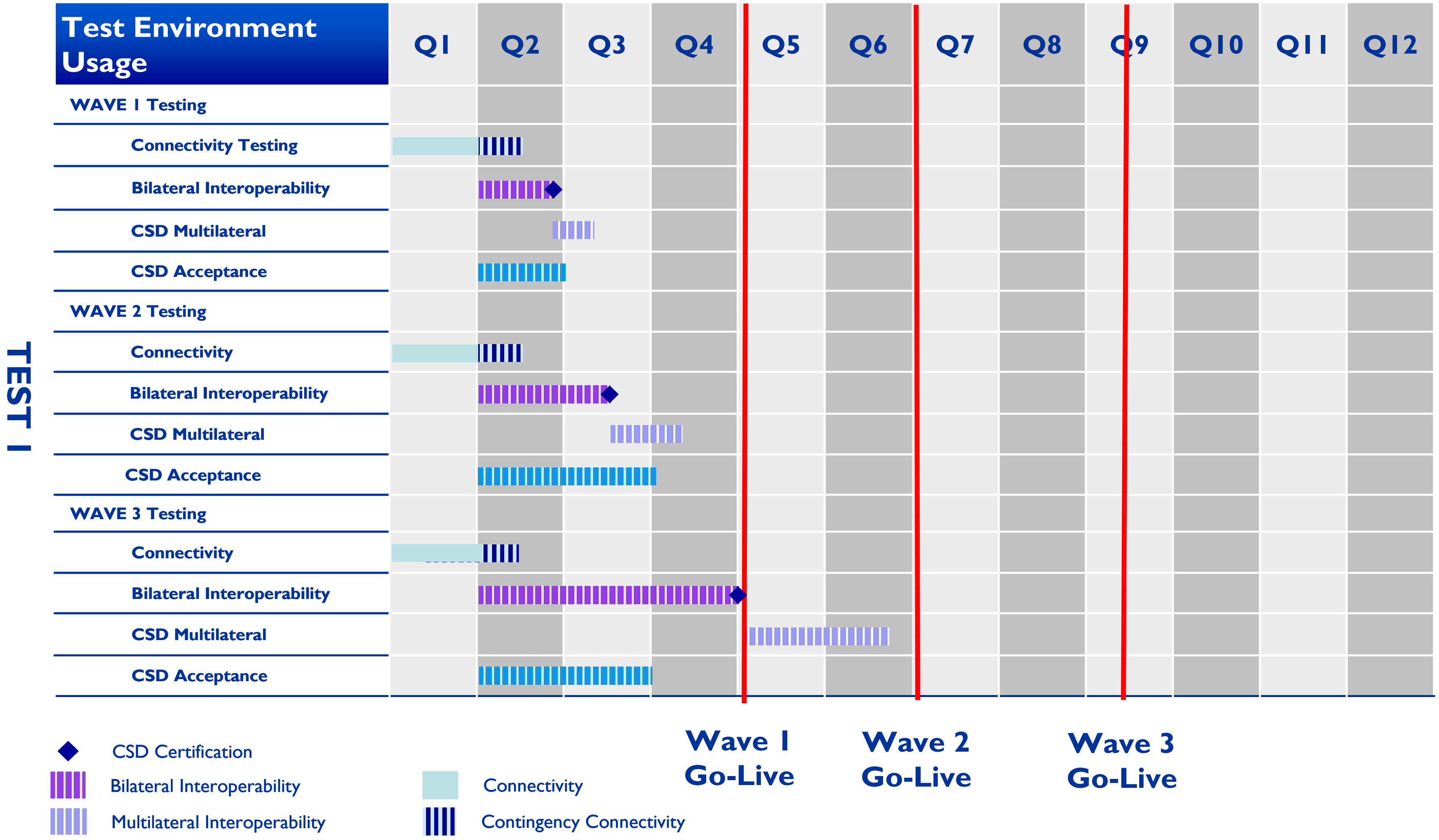
- Post-migration testing shall use the framework as defined in this Schedule.

- The PMG in their impact assessment will make a recommendation to the Steering Level on whether the introduction of the new T2S release will require the recertification of CSDs and/or NCBs. The T2S Board shall take the final decision on whether CSDs and/or NCBs must recertify themselves for a new release of T2S.

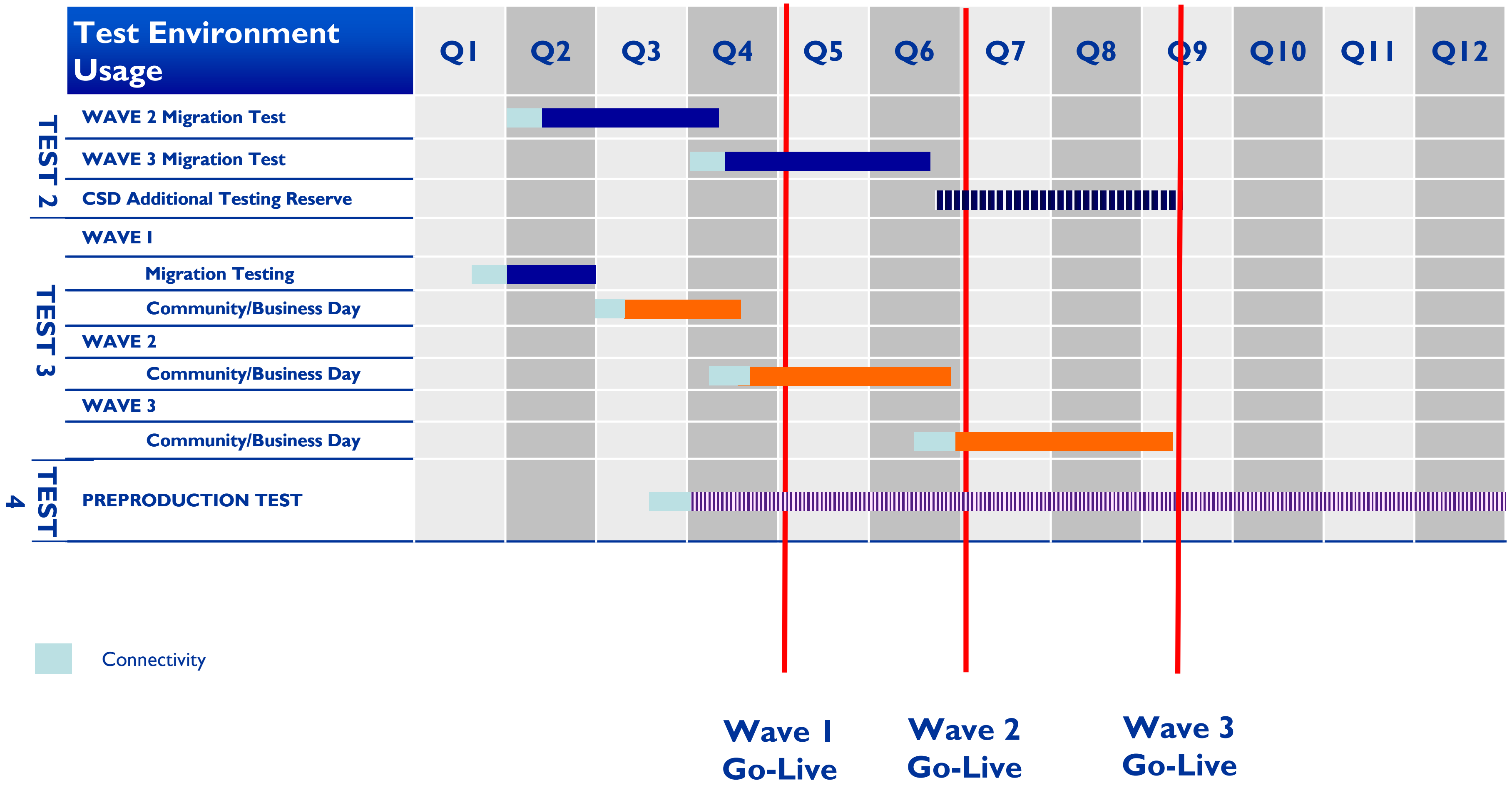
Annex 1 - Mapping of testing activities on the test environments

In accordance with the principles for sharing testing facilities, the Eurosystem will not plan any Eurosystem Acceptance Testing activity on the testing environments used for User Testing.

The following diagram presents the mapping of the testing activities for each migration wave on the test environments.



Disclaimer: the timeline is only used to illustrate the usage of the test environments.


Test Environment Usage
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
TEST 2
WAVE 2 Migration Test
WAVE 3 Migration Test
CSD Additional Testing Reserve
TEST 3
WAVE 1
Migration Testing
Community/Business Day
WAVE 2
Community/Business Day
WAVE 3
Community/Business Day
TEST 4
PREPRODUCTION TEST
Connectivity
Wave 1 Go-Live
Wave 2 Go-Live
Wave 3 Go-Live

EUROPEAN CENTRAL BANK

EUROSYSTEM

TARGET2-SECURITIES

FRAMEWORK AGREEMENT

SCHEDULE 4

MIGRATION

31 October 2011

Framework Agreement

Schedule 4 – Migration

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1 Introduction

This document aims at presenting the provisions related to the framework that will be used to prepare and conduct the migration to T2S of the Contracting CSD, Participating CSDs and their communities, as well as the roles and responsibilities of the contracting parties along the migration process from the preparation phase until the end of the Migration Period.

The document is divided into six chapters, corresponding to the major aspects identified as relevant for the migration framework: i) objective and scope of the Migration Schedule; ii) general responsibilities of the contracting parties; iii) composition of the migration waves; iv) preparation of the migration, v) implementation of the migration and vi) post-migration and closing activities (e.g. reporting on lessons learned, updates of the configuration parameters upfront each migration wave in order to ensure the cross-CSD settlement with the new migrating CSDs).

2 Objective and scope of the Migration Schedule

2.1 Objective

The objective of the T2S migration is to enable a smooth and successful transition to the usage of the T2S Services for the Contracting CSD, Participating CSDs and their communities once the prerequisites for their migration are fulfilled. As stated in the User Requirements Document, "*Migration in the context of T2S means the relocation of data from a CSD to the T2S infrastructure and the associated changes in the processes and technical environment of a CSD on a mutually agreed date*". This covers also the associated changes to the configuration items of a CSD.

2.2 Scope

In terms of activities, the scope of this Migration Schedule covers all activities that are related to the preparation of the T2S production environment for the successful migration of a Contracting CSD, the Participating CSDs and its community. Chapter 5, 6 and 7 provide the relevant information concerning the migration related activities. Although the migration process is interrelated with others processes, in particular the User Testing until the end of Migration Period, the T2S Programme Plan and the Release Management during the Migration Period (if releases/ software updates are envisaged during this period), such other activities will be described separately in the relevant Schedules.

With regards to the users, in the context of the Framework Agreement the T2S migration perimeter consists of all CSDs that have entered into a contractual relationship with the Eurosystem for the use of T2S in view of their connection to T2S during the Migration Period. Other CSDs fall outside this migration perimeter. Whenever relevant, references will be made to coordination of migration activities with other T2S Actors, but the actual provisions applicable to those T2S Actors will be covered as part of the legal relationship with these T2S Actors.

3 General responsibilities of the Contracting Parties

As an overarching principle, the Eurosystem and the Contracting CSD shall cooperate in good faith for the preparation and execution of all T2S migration activities.

3.1 General responsibilities of the Eurosystem

In view of preparing and ensuring a successful migration to T2S of the Contracting CSD, the Participating CSDs and their communities, the Eurosystem shall:

a) cooperate in good faith with the Contracting CSD and the other T2S Actors and provide them with all relevant information to prepare the necessary procedures and processes for all migration activities and related deliverables, identified in Schedule 2 (T2S Programme Planning and Monitoring);

b) coordinate, steer and monitor the T2S migration process. In agreement with the Contracting CSD and the Participating CSDs, it establishes the migration plan, the tasks and the milestones for the migration process and monitors compliance with the agreed procedures and milestones;

c) prepare the life-cycle of the migration process which consists of three phases: (i) the planning phase, which consists of activities related to the preparation of the migration activities that need to be planned in advance in order to mitigate the migration risks; (ii) the implementation phase, which consists of the actual preparations for live operations and (iii) the closing phase, which consists of closing reports aiming at improving the next migration based on lessons learned from the initial migration. The diagram outlining the sequence and interrelations of the migration activities, as well as the milestones of the T2S migration phases are presented in Annex 1 (Migration milestones) to this Schedule;

d) set up a PMG substructure, which will be in charge of coordinating, supporting and monitoring the work related to the migration activities, in accordance with the T2S Governance and the provisions set out in section 3.3 of this Schedule.

e) nominate one person for each Contracting CSD and Participating CSDs as migration correspondent for that CSD, as well as a T2S migration coordinator in charge of monitoring and coordinating all activities to be carried out during the migration process;

f) ensure the readiness of the production environment according to the provisions of Schedule 2 (T2S Programme Planning and Monitoring) in order to enable the Contracting CSD to plan and carry out all activities on the production environment required for its migration to T2S;

g) ensure the readiness of T2S for all migration waves, meaning that the enhancements to the system are reduced to the resolution of blocking and severe defects discovered during the Migration Period;

h) ensure the readiness of the Dedicated Cash Accounts in euro, prior to the T2S Go-Live Date, upon the request of Dedicated Cash Account holders in accordance with the rules and conditions set up by the respective euro-area NCB;

i) provide all reasonable support to non-euro area NCBs in ensuring the readiness of Dedicated Cash Accounts in their currency, prior to the first settlement of securities transactions in their currencies by a CSD located in the country of the non-euro area NCB. The opening of these Dedicated Cash Accounts will be driven by the request of the Dedicated Cash Accounts holders in accordance with the rules and conditions set up by the respective non-euro area NCB;

j) upload and maintain the necessary Common Static Data and system configuration parameters sufficiently in advance of the migration of the Contracting CSD. The Common Static Data will be created upfront with a future “valid from” date;

k) provide support to the Contracting CSD and the Participating CSDs – in particular in accordance with section 21.8 of the URD – for the transfer of:

   i. the Common Static Data as required, typically three months before the migration of the first Investor CSD to T2S, which requires such data, and;

   ii. its CSD Static and the Dynamic Data prior to its migration to T2S;

l) ensure that the collateral management function for the Eurosystem credit operations is provided as of the start of securities transaction settlement in T2S;

m) report progress on the overall migration process on a regular basis and share relevant information with the Contracting CSD and the Participating CSDs on their level of readiness (based on information provided by those);

n) apply an escalation and decision-making process in accordance with the general T2S governance arrangements, as specified in Schedule 8 (Governance);

o) provide support to the Contracting CSD and the Participating CSDs with regard to their migration activities, including during the process of "de-migration" of the Contracting CSD in case the Contracting CSD faces severe problems due to significantly degraded Service Level during the week after its migration to T2S;

p) provide training sessions for the migration to the Contracting CSD and the Participating CSDs and all necessary support to facilitate the training sessions provided by the Contracting CSD or the Participating CSDs to its community;

q) commit to keep the Migration Period as short as possible in order to limit adverse competition effects between migrated CSDs and non-migrated CSDs;

r) aim to ensure a level playing field between the Contracting CSD and the Participating CSDs that migrate earlier or later, including but not limited to the provision of specific functionality following the provisions of the Change and Release Management, as specified in Schedule 9 (Change and Release Management).

3.2 General responsibilities of the Contracting CSD

In view of preparing and ensuring a successful migration to T2S, the Contracting CSD shall:

a) cooperate in good faith with the Eurosystem and with other relevant T2S Actors and provide all relevant information to prepare the necessary procedures and processes for all migration activities and related deliverables, identified in Schedule 2 (T2S Programme Planning and Monitoring);

b) determine, in cooperation with the Participating CSDs, the migration wave in which it shall migrate to T2S and the date of its migration in accordance to the criteria and the conditions specified in sections 4.2 and 4.3 of this Schedule and within the time stipulated in Schedule 2 (T2S Programme Planning and Monitoring);

c) migrate to T2S by the committed date which will be defined in accordance with the process as specified in the section 4.3. of this Schedule;

d) ensure its own readiness for the migration to T2S by the committed date according to the procedures and processes agreed with the Eurosystem and other T2S Actors;

e) take all necessary measures to facilitate the readiness of its community for the migration to T2S by the agreed date according to the procedures and processes agreed with the Eurosystem and other T2S Actors;

f) set up its own migration project, define its migration plan, allocate appropriate resources to the implementation of such a plan, as well as assess and adjust such migration plan and the allocated resources, where necessary, with a view to ensuring a smooth migration to T2S according to the agreed plan; the adjustments to migration plans must be discussed and agreed with the Eurosystem and other T2S Actors as changes may have an impact on all the involved parties;

g) be involved in the decision to go-live, independently of its migration wave; in particular by indicating whether or not the exit criteria for the business day testing are fulfilled and on the level of comfort that all remaining blocking and severe defects will be solved in time in order to avoid any impediments for the later migrating CSDs;

h) upload and maintain the Common Static Data as required, (e.g. all the Securities Reference Data for which the Contracting CSD is responsible according to the agreed mechanism for assigning responsibility in the maintenance of Securities Reference Data), typically with three months before the migration of its first Investor CSD, irrespective of the migration wave where the Contracting CSD is envisaged to join T2S*;*

i) upload and maintain its CSD Static and Dynamic Data prior to its migration to T2S; these data will be created upfront with a future “valid from” date;

j) maintain all the necessary links with the Participating CSDs until the end of the Migration Period in accordance with the provisions agreed between the Contracting CSD and Participating CSDs;

k) provide training sessions to its community sufficiently in advance of community testing;

l) report progress on its readiness for migration according to the agreed procedures, frequency and level of detail, with a particular view to identifying developments that might jeopardise the migration of the Contracting CSD according to the agreed plan;

m) nominate one person for coordinating all migration activities within its own organisation and ensure that such person shall duly and regularly participate in the meetings organised by the Eurosystem until the Contracting CSD has migrated to T2S, and, in particular where this is not practicable, in the written procedures;

n) mitigate the risk that a member of the Contracting CSD's community would impede the migration of that CSD and the rest of its community, by limiting the dependencies between the Contracting CSD and its community as much as possible. In particular, keeping an indirect connection should be envisaged as contingency when the connectivity for a User wishing to connect directly does not work properly at the moment of the migration;

3.3 Cooperation and escalation procedures

The Eurosystem shall apply an escalation and decision-making process for communication in accordance with the general T2S governance arrangements, as specified in Schedule 8 (Governance).

The Eurosystem shall set up a PMG substructure, in accordance with the T2S governance, for the coordination and monitoring of the migration activities. This substructure shall meet on a regular basis and shall at least be composed of the ECB Migration coordinator, the 4CB Migration coordinator, and a Migration coordinator from each CSD (as meant in section 3.2.m of this Schedule).

The role of the substructure in charge of Migration shall be to:

- Coordinate and review Migration activities;
- Monitor the implementation of the Migration plans;
- Review the Contracting CSD's tailored Migration plan;
- Discuss issues raised by the members of the substructure and try to resolve disagreements;

- Communicate with the T2S Programme management office on the planning of Migration activities;

- Prepare communications related to migration to the various T2S Stakeholders and the public at large.

In case of an issue requiring immediate action, the following process shall be followed:

- The Contracting CSD shall request a conference call with the Eurosystem during the next business day or at its earliest convenience;

- The issue shall be discussed during the conference call;

- The Eurosystem shall summarize the outcome of the conference call and distribute it to the members of the substructure in charge of Migration.

The substructure in charge of Migration shall convene at its earliest convenience to:

- Assess the nature of the issue;

- Assess the impact of the issue on the various T2S Actors;

- Assess any potential impact on the organisation and the timing of the migration activities for the various T2S Actors;

- Prepare an action plan, and the necessary communication, if any, to address the issue;

In case no agreement can be reached in the substructure, each party shall be entitled to escalate the problem to the Project Managers Group (PMG), where the situation shall be discussed and rapidly assessed.

If a mutually agreeable solution cannot be found in the PMG, then the general T2S escalation process shall apply whereby the issue is escalated to the Steering Level in order to receive guidance to resolve the issue. The escalation process shall be in accordance with the general T2S governance arrangements, as specified in the Schedule 8 (Governance).

Ultimately there shall be recourse to the dispute resolution process as described in the provisions of the relevant Articles in the core Framework Agreement.

4 Composition of the migration waves

4.1 General migration approach

The migration to T2S will follow a phased approach and will be organised to reach the following objectives:

- give the necessary flexibility for the planning and coordination of the migration activities;
- allow for a gradual build-up of volumes;
- mitigate the risk that the Contracting CSD or any of the Participating CSDs fails to successfully migrate to T2S on the agreed date, thereby avoiding interruptions in the Contracting CSD's business;
- ensure system stability from a functional and technical perspective throughout the migration process.

This phased approach will be implemented via a migration "by CSD" approach, which allows the Contracting CSD, the Participating CSDs and their community to migrate to T2S in different waves and on different pre-defined dates.

The migration will be organised targeting a maximum number of 4 migration waves[1], with a minimum period of 3 months between each wave. In addition, a contingency migration wave is available (not later than 6 months after the date of the last migration wave), to be used in case the Contracting CSD cannot migrate as originally committed. The Contracting CSD and the Participating CSDs participating in the first wave will preferably bring at least one Directly Connected Party to T2S.

[1] The fourth migration wave is optional pending the proposal of the Participating CSDs by synchronization point 2 as defined in the Schedule 2.

The period between the T2S Go-Live Date (i.e date of the first migration wave) and the contingency migration date shall be limited to 18 months. The migration of the Contracting CSD will take place during a weekend and will be driven by settlement date. The migration to T2S will not take place on a “sensitive” weekend during critical periods for CSDs and Central Banks such as corporate actions season, freeze periods or periods of significant market stress, etc.

4.2 Criteria for defining the composition of migration waves

As an objective, the following criteria should be fulfilled for defining the composition of the migration waves:

4.2.1 Criteria applicable to the first migration wave (migration wave 1)

Criterion 1: Functional stabilisation

> The number of transactions, to be migrated with the first wave should not be less than 10 % or more than 40 % of the expected normal volume of transactions, aiming to ensure functional stabilisation with a limited business and operational risk.

Criterion 2: Functional coverage

> The functionalities of the system[2] should be covered as much as possible by the first migrating CSDs.

4.2.2 Criterion applicable to the second and the subsequent migration waves

In order to address the risk of performance issues and to ensure that the anticipated T2S capacity will be sufficient to cope with the normal (and peak) volumes per each wave, some measures may be required to be taken to fulfil the SLA on the production environment, including a fine-tuning of the performance of the system from one wave to the next wave.

Criterion 3: Fine-tuning the performance of the system

> As an objective, the number of transactions to be migrated in the second wave and in each subsequent migration wave should not exceed 50 % [3] of the expected normal number of transactions.

[2] Including those related to non-euro settlement currencies, unless the related risks cannot be managed or accepted.

[3] The 50% limit is the maximum volume per each migration wave and not the accumulated volume of a particular migration wave and the volume of the preceding wave(s) or the future wave.

4.2.3 Criteria applicable to all migration waves

Criterion 4: Readiness of internal system

The Contracting CSDs should ensure the readiness of their internal applications – as well as their technical and operational preparations – in order to be able to perform and complete their migration related activities.

Criterion 5: Certification requirements

The Contracting CSDs, together with their community, should make all endeavours to successfully pass the certification tests, as described in Schedule 2 (T2S Programme Planning and Monitoring) and Schedule 3 (User Testing).

Criterion 6: Structural links

The structural links between the Contracting CSD and the Participating CSDs should be taken into consideration in the migration wave composition based on the preference expressed by the Contracting CSD with whom they would like to migrate in the same wave. In addition, the volume of the transactions settled via the cross- border links will be taken into account (i.e. the more transactions are settled via the links between the CSDs that have preferred the same migration wave, the more this will be considered as justification to be grouped in the same migration wave).

4.3 Process for defining the composition of migration waves

Without prejudice to the right of the Contracting CSD to request the Eurosystem directly to be able to migrate in wave 1, the process envisaged for the composition of the migration waves and the respective migration dates will be determined as follows:

1. The Contracting CSD and the Participating CSDs will prepare a proposal by synchronisation point 2 as defined in Schedule 2 (T2S Programme Planning and Monitoring) for the dates of the migration waves (excluding the T2S Go-Live Date and contingency wave date) and the allocation of individual CSDs to the migration waves, in accordance with the criteria and conditions specified in this Schedule and within the time stipulated in Schedule 2 (T2S Programme Planning and Monitoring);

2. The Eurosystem will consider the proposal expressed by the Contracting CSD and the Participating CSDs against the criteria and conditions specified in this Schedule and within the time stipulated in Schedule 2 (T2S Programme Planning and Monitoring);

3. If the composition and dates of the migration waves, based on the proposal made by the Contracting CSD and the Participating CSDs meet the criteria and conditions specified in this Schedule and are within the time stipulated Schedule 2, the Eurosystem will inform the Contracting CSD and each of the Participating CSDs accordingly, who will commit to its preferred migration date.

4. If the Contracting CSD and the Participating CSDs do not come with a proposal by synchronisation point 2 as defined in Schedule 2 or the proposal made by the Contracting CSD and the Participating CSDs for the composition and dates of the migration waves does not meet the criteria and conditions specified in this Schedule and Schedule 2 (T2S Programme Planning and Monitoring), some Participating CSDs may be allocated to another migration wave, after thorough consideration of the options by the PMG, in particular taking into account the consequences of such reallocation for the affected Participating CSDs. The PMG will submit its proposal/recommendation to the Steering Level for decision. In preparing its proposal, the substructure shall take into consideration any potential detrimental and material impact on the Contracting CSD which is asked to move to another migration wave than its preferred one.

5. When the available means to resolve the issue have been exhausted, in particular the dispute resolution and escalation possibilities laid down in Article 42 of the Framework Agreement, the Eurosystem may decide on the migration date, provided that such date is not earlier than the one indicated by the Contracting CSD as its preferred date and provided further that the Contracting CSD has not indicated a preferred date.

6. Once the composition and dates of the migration waves have been defined and agreed by the contracting parties, this Schedule and Annexes will be amended pursuant to the amendments rules defined in Article 47 of the Framework Agreement.

5 Preparation of the migration

The activities to be carried out for the preparation of the T2S Go-Live Date and the migration of a Contracting CSD and its community need to be well planned in advance in order to mitigate the risks related to the migration process.

5.1 Responsibilities of the Eurosystem

In order to prepare and organise the migration related activities, the Eurosystem – in cooperation with the Contracting CSD – shall:

a) set up a bilateral coordination structure between the Eurosystem, and the Contracting CSD in addition to the multilateral coordination which the PMG will ensure;

b) establish the standard migration plan for all Participating CSDs and the Contracting CSD that will join T2S, including aspects related to the set-up of Securities Accounts and accounts structures, set-up of Dedicated Cash Accounts, major project milestones, the necessary Dynamic Data to be input into the system, as well as checkpoints to be met before the start of the migration weekend;

c) support the Contracting CSD in establishing the tailored migration plan per Contracting CSD or group of Participating CSDs depending on its specificities;

d) establish the detailed migration weekend script for each migration wave which provides the Contracting CSD with the required information to execute the tasks and/or to carry out the actions required during the migration weekend;

e) establish the fall-back arrangements and roll-back procedures specific for each migration wave, in order to manage the necessary processes if the migration needs to be deferred to a later stage due to predictable or unforeseen circumstances, and/or if the activities already performed during the migration weekend need to be unwound if the migration has to be stopped;

f) provide support to the Contracting CSD – in particular in accordance with section 21.8 of the URD – if it has been demonstrated, following the applicable crisis management arrangements, that there is a need to “de-migrate” to its legacy system immediately after its migration in case the Contracting CSD faces severe problems at that time, either due to significantly degraded Service Levels, or because of severe problems at the Contracting CSD itself;

g) define the registration guide/procedures in order to enable the Contracting CSD to describe in detail their participation data, services used and account usage details;

h) establish the structure and elements of the migration profile for each Contracting CSD which gives a structured overview of the set-up of CSDs on their first day of operation in T2S;

i) define the necessary Common and CSD Static Data and Dynamic Data to be uploaded in the system , as well as the relevant message formats;

j) re-plan and reschedule certain migration activities as required, based on a strong coordination and decision-making process between the Eurosystem and the Contracting CSD and Participating CSDs, in the eventuality that an unexpected event (within and out of the control of the CSD) will impede the migration of one or more Participating CSDs on the scheduled date;

k) actively monitor throughout the migration process the level of the Contracting CSD’s preparedness;

l) prepare progress reports to the appropriate bodies on the status of each Contracting CSD based on the information provided by the Contracting CSD and the Participating CSDs according to pre-agreed dashboard indicators;

m) establish the communication framework for the migration process which covers the information exchanged with the Contracting CSD and the Participating CSDs and the market about the migration process and about individual migrations. Communications will be prepared jointly by the Eurosystem and the Contracting CSD and the Participating CSDs, in accordance with the provisions of the core Framework Agreement and section 3.3 of this Schedule.;

n) establish specific operational procedure and rules, if needed, to be followed by the Contracting CSD during the Migration Period where some Participating CSDs will operate under the new operational regime of T2S, while the non-migrated Participating CSDs are still operating according to the current regime.

5.2 Responsibilities of the Contracting CSD

In order to prepare and organise the migration related activities, the Contracting CSD – in cooperation with the Eurosystem - shall:

a) organize, prepare and monitor its own migration process and take appropriate measures in order to ensure its own readiness for joining T2S;

b) monitor and take all necessary measures to facilitate the readiness of its community for the migration to T2S;

c) cooperate with the Eurosystem in preparation of the standard migration plan and the detailed migration weekend script;

d) develop its tailored migration plan (including a fallback plan) based on the standard migration plan, and specify the type of support and tools, if any, that are considered necessary to facilitate the activities meant in section 5.1.f of this Schedule;

e) coordinate the readiness of its community for migration to T2S. The Contracting CSD shall take all necessary measures to facilitate the readiness of the Securities Accounts of its participants in T2S i.e. the creation and availability of Securities Accounts;

f) shall monitor the readiness of Dedicated Cash Accounts on the basis of the confirmation provided by its participants (which the latter obtain from the relevant Central Bank(s)) regarding the creation and availability of Dedicated Cash Accounts in T2S;

g) identify any “critical participants” that might jeopardize the migration of the Contracting CSD and involve them actively in the migration project, monitoring their preparations more closely and possibly envisaging fallback arrangements to settle their transactions;

h) establish and maintain, if needed, interim procedures for handling the links with the non-migrated Participating CSDs, until all Participating CSDs have migrated to T2S;

i) decide individually on the timing for the direct connectivity of members of its community (as of the first day of the migration or after a stabilisation period) provided that the date has been communicated and agreed well in advance with the Eurosystem, and without prejudice to the Contracting CSD’s decision to offer direct connectivity or not;

j) communicate the decision on the migration date of the direct connectivity well in advance to its Directly Connected Parties, in order to allow them to organise and plan their migration activities;

k) ensure indirect connectivity for its Directly Connected Parties, in order to avoid any dependency between the migration of the Contracting CSD and its Directly Connected Parties, in particular if some of its Directly Connected Parties are planned to migrate simultaneously.

6 Implementation of the migration

The implementation phase consists of the actual preparations for live operations and the execution of the tasks on the T2S production environment, in particular all activities that need to be carried out from the moment when the Eurosystem has made the T2S production environment available to the Contracting CSD and Participating CSDs until the successful migration of the Contracting CSD.

6.1 Responsibilities of the Eurosystem

Prior to the start of the implementation phase, the Eurosystem shall:

a) confirm the readiness of the T2S production environment, including the system's compliance with specific non-functional requirements, in particular related to technical performance, business continuity and information;

b) make available to the Contracting CSD the versions of all the functional and operational documentation (e.g. GFS, UDFS, User Handbooks, Manual of Operational Procedures), which are compliant with the T2S production environment and/or will be used for live operations;

c) set up coordination bodies, in accordance with the T2S Governance, for the coordination and monitoring of the activities to be carried out from the moment when the Eurosystem has made the T2S production environment available to the Contracting CSD until the successful migration of the last Contracting CSD, as well as for the decision-making in case an incident occurs which might jeopardise the migration to T2S;

During the implementation phase, the Eurosystem shall:

a) carry out all the pre-migration activities and the activities required during the migration weekend, according to the agreed plan;

b) ensure prior to the T2S Go-Live Date that the complete T2S functionality is available in the T2S production environment and all critical and severe defects encountered during the User Testing have been corrected, so as to avoid the implementation of functional releases during the Migration Period;

c) confirm – prior to the start of first migration wave and the sub-sequent migration waves - the correct functioning of the T2S production environment according to the T2S Scope Defining Set of Documents and other relevant documents, including the successful execution of an inter-region rotation before the first and second migration wave and that the conditions agreed during the previous Go/ No go decision are met;

e) upload and maintain the necessary Common Static Data and configuration data parameters sufficiently in advance of the migration of the Contracting CSD; these data will be created upfront with a future "valid from" date;

f) confirm the start of the activities during the migration weekend and subsequently the successful completion of each migration on the basis of a report prepared in collaboration with the Contracting CSD and the Participating CSDs; The former confirmation will only be given, in particular, if the exit criteria of the User Testing have been successfully completed and a timetable for implementation of the corrections for the remaining severe defects has been mutually agreed with the Contracting CSD and the Participating CSDs.

g) provide support to the Contracting CSD for the transfer of:

i. the Common Static Data as required, typically three months before the migration of the first Investor CSD which requires such data and;

ii. its CSD Static and Dynamic Data prior to the migration of the Contracting CSD to T2S**;**

h) report progress on the activities carried out during the implementation phase by the Eurosystem and the Contracting CSD and the Participating CSDs according to the agreed procedures, frequency and level of detail, with a particular view to identifying aspects that might jeopardise the migration according to the agreed plan;

i) provide support to the Contracting CSD and the Participating CSDs to perform the required actions if needed;

j) provide all necessary support to the non-euro area NCBs that have committed to open Dedicated Cash Accounts in T2S, in order to allow the successful migration of the relevant CSD(s) according to plan.

6.2 Responsibilities of the Contracting CSD

Prior to the T2S Go-Live Date, the Contracting CSD shall:

a) obtain the certification from the Eurosystem for the uploading and the maintenance of Common Static Data on the T2S production environment as a pre-condition to start any activities on the production environment;

b) establish and verify its connectivity to the T2S production environment for each of the networks selected by the Contracting CSD;

c) upload and maintain the Common Static Data as required, typically three months before the migration of its first Investor CSD, irrespective of the migration wave where the Contracting CSD is envisaged to join T2S*;*

Prior to the start of its migration weekend, the Contracting CSD shall:

a) obtain the certification from the Eurosystem for settling securities transactions on T2S;

b) verify and confirm that its internal systems and processes and those of its participants are ready to efficiently interact with T2S;

c) verify and confirm that T2S delivers the expected services as agreed in the T2S Scope Defining Set of Documents, in particular by having obtained the possibility to verify that all critical defects have been solved, including those discovered during the implementation phase;

d) verify the availability of the necessary Dedicated Cash Accounts to be opened by the euro and non-euro area NCBs at the request of the Dedicated Cash Account holders;

e) confirm the validity of the T2S functional and operational documentation;

f) confirm its readiness for migration and that of its community to T2S according to the agreed migration plan;

g) upload and maintain its CSD Static Data as required prior to its migration weekend; these Data will be created upfront with a future “valid from” date;

h) complete all required forms for the registration on the T2S production environment and provide them to the Eurosystem by the agreed time;

i) ensure timely access to relevant Common and CSD Static Data for its community;

j) carry out all the required pre-migration activities according to the agreed migration plan.

During the migration weekend, the Contracting CSD shall:

a) carry out all the activities required during the migration weekend according to the agreed migration plan;

b) upload and maintain its Dynamic Data into the T2S production environment;

c) report on the status of the activities carried out during the migration weekend according to the agreed procedures, frequency and level of detail;

d) confirm the end of its migration based on the successful completion of the activities to be carried out during the migration weekend according to the agreed plan.

7 Closing phase

The closing phase covers the final reporting and the assessment of the lessons learned during the migration process.

7.1 Responsibilities of the Eurosystem

During the closing phase, the Eurosystem shall:

a) provide reports on lessons learned from a migration wave to be applied to the next migration waves;

b) ensure the necessary updates and improvements in the migration plans in order to smoothen the next migration waves.

7.2 Responsibilities of the Contracting CSD

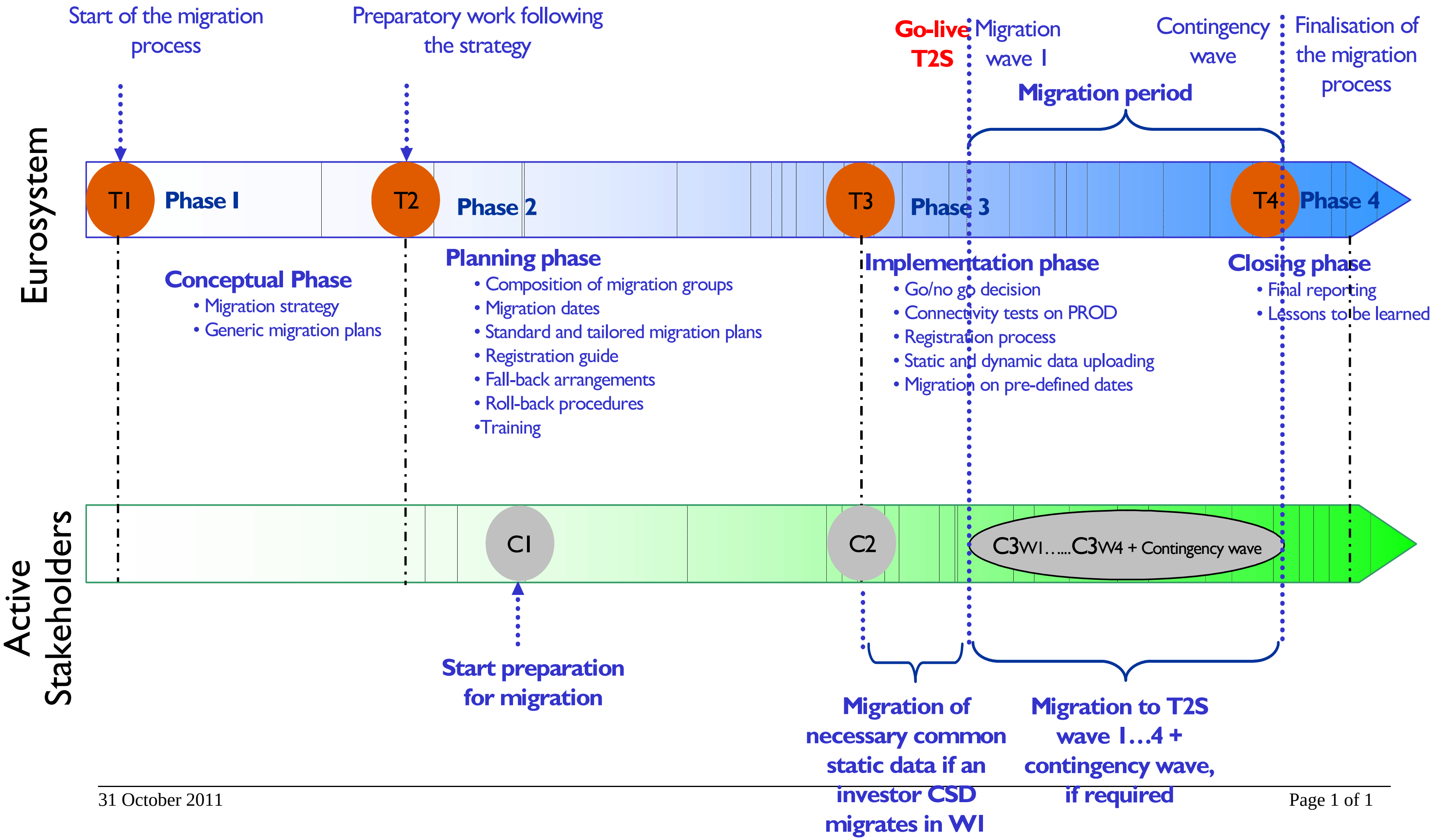
During the closing phase, the Contracting CSD shall:

a) provide feedback to the Eurosystem based on its experience gained during its migration in order to improve the migration of the next waves;

b) update the configuration parameters upfront each migration wave in order to ensure the cross-CSD settlement with the forthcoming migrated CSDs;

c) take all necessary measures to support the migration of the non-migrated Participating CSDs.

Annex 1: Migration milestones


Start of the migration process
Preparatory work following the strategy
Go-live T2S
Migration wave 1
Contingency wave
Finalisation of the migration process
Migration period
Eurosystem
T1
Phase 1
T2
Phase 2
T3
Phase 3
T4
Phase 4
Conceptual Phase
• Migration strategy
• Generic migration plans
Planning phase
• Composition of migration groups
• Migration dates
• Standard and tailored migration plans
• Registration guide
• Fall-back arrangements
• Roll-back procedures
•Training
Implementation phase
• Go/no go decision
• Connectivity tests on PROD
• Registration process
• Static and dynamic data uploading
• Migration on pre-defined dates
Closing phase
• Final reporting
• Lessons to be learned
Active Stakeholders
C1
C2
C3W1…...C3W4 + Contingency wave
Start preparation for migration
Migration of necessary common static data if an investor CSD migrates in W1
Migration to T2S wave 1…4 + contingency wave, if required

EUROPEAN CENTRAL BANK

EUROSYSTEM

TARGET2-SECURITIES

FRAMEWORK AGREEMENT

SCHEDULE 5
T2S SERVICE DESCRIPTION

Table of contents

1 T2S Service Description overview

1.1 Purpose of this note

This note provides a common base for the description of T2S Services, especially pertaining to the Framework Agreement and to the Currency Participation Agreement.

This T2S Service Description for the Operational Phase of T2S focuses on:

(1) providing a common structure for the services that T2S will deliver, i.e. settlement services, liquidity management, Common Static Data services, information services, Connectivity Services, operational and support services as well as the individual services;

(2) the content of the service from the T2S Users' perspective, i.e. what services the T2S Users will receive, and the business perspective of the interchanges between T2S and the T2S Users; and

(3) the boundaries of the services T2S will deliver to its users, i.e. what is within the scope of T2S Services, and what is outside of the scope of T2S Services.

1.2 Scope of the T2S Service Description

1.2.1 Within the scope of the T2S Service Description

T2S is a technical solution to support Central Securities Depositories (CSDs) by providing core, borderless and neutral settlement services. The objective is to achieve harmonised and commoditised settlement in Central Bank Money (CeBM) in euro and other eligible currencies for substantially all securities in Europe.

The Eurosystem manages and operates the T2S Business Application and the technical solution providing the T2S Services, this service provision by the Eurosystem is hereafter referred to simply as “T2S”. The Contracting CSD will maintain full control over the business and contractual relationship with its customers.

The T2S Service Description describes all services T2S will deliver for the T2S Operational Phase including all services delivered to all Participating CSDs, to all Directly Connected Parties (DCPs), and to all participating euro area or non-euro area NCBs, once T2S is in full operation. The T2S Service Description itself is subject to the rules and procedures established for all Annexes of the Framework Agreement.

1.3 Outside of the scope of the T2S Service Description

This Service Description describes only the services T2S will deliver during the Operational Phase. The services delivered by the T2S Programme during the Development Phase and the Migration Period are not described in this note[1].

The Service Description furthermore provides background and relevant information with regard to:

a. The Service Level Agreement (SLA[2]), which will contain all Key Performance Indicators (KPIs), the latter will not be defined nor referenced in the Service Description.

b. The T2S technical architecture is not described in this Service Description and nor are the technical details required to establish the connectivity to T2S.

1.4 T2S Service Description and its relationship to other documents

The Service Description is a high level description of the Services T2S delivers during the Operational Phase thereby identifying the scope of the T2S Services and as such complementing the T2S Scope Defining Set of Documents.

Since, the Service Description is a high level description, in some parts of the Service Description it has been indicated in which documents, e.g. Business Process Description, User Handbook, Manual of Procedures (MoP), further and more detailed information can be found.

[1] Details on the T2S Programme can be found in the Framework Agreement and its relevant Schedules

[2] The SLA is a separate document linked closely to this Service Description. The Service Description describes the services T2S clients receive, the SLA defines the relevant KPISs, as well as their control and reporting procedures. Therefore, these two documentations are closely linked and harmonised

2 Service delivery framework

2.1 Scope of T2S instrument

In principle, T2S covers all securities that comply with the following eligibility criteria, i.e. that:

1. have an ISIN code, as instrument identifier;
2. can be settled via a CSD in T2S;
3. can be settled in book-entry form; and
4. are fungible (from a settlement processes perspective).

Securities that do not fall within the scope of any connected CSD are not part of T2S either.

T2S can settle only securities that are compliant with the above criteria 1 to 3, certain securities, compliant with the first three criteria, but not compliant with criteria 4 (non-fungible from a settlement perspective), may still be entered in and processed by T2S.

T2S can settle most categories of securities in a standardised settlement process. For example, multilateral instructions can be settled using the standard T2S functionalities, no specific processing is required as T2S allows instruction linkages.

2.2 Scope of T2S instruction and transaction type

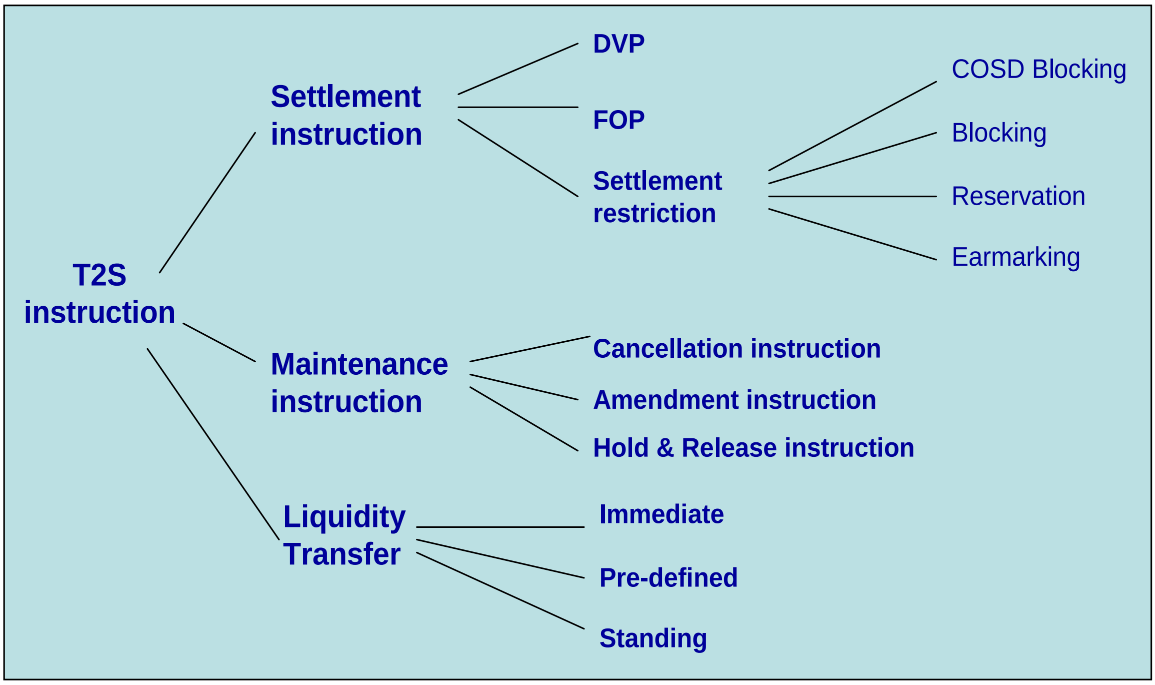
The instruction types covered by T2S are the following:

- Settlement Instruction
- Liquidity Transfer
- Settlement Restriction
- Amendment Instruction
- Cancellation Instruction
- Hold / Release Instruction

T2S settles only settlement transactions with a CeBM cash leg (or no cash leg), it will not provide settlement in Commercial Bank Money (CoBM). T2S provides services for securities settlement and the related cash settlement using a number of transaction types:

- FOP (Free-of-Payment) consists of DFP (Deliver-Free-of-Payment) and RFP (Receive-Free-of Payment). In both cases, securities are delivered / received without payment being made.

- DVP (Delivery-versus-Payment) and RVP (Receive-Versus-Payment) define an exchange of securities for cash. DvP and RvP are both securities settlement mechanisms which link a securities transfer and a funds transfer in such a way as to ensure that delivery occurs if - and only if - the corresponding payment occurs.
- DWP (Deliver-with-Payment) is a type of instruction and settlement mechanism, specifying the delivery of securities together with a cash payment. For example, trade netting by a Central Counterparty (CCP), as an authorised CSD participant, may result in such instructions.
- PFOD (Payment-Free-of-Delivery) defines an exchange of cash without the delivery of securities.



3 T2S SD: Overview T2S Services

T2S deploys a flexible hierarchical party model to allow CSDs and euro area or non-euro area NCBs to manage their accounts and parties in an efficient way. Roles, including some of the key responsibilities, are allocated in line with the differentiation into:

- a securities' perspective (CSDs); and
- a cash accounts' perspective (euro area and non-euro area NCBs).

The structure of this Service Description document is based on the above mentioned differentiation between the securities perspective (CSDs) and the liquidity management perspective (euro area and non-euro area NCBs)[3]:

- CSDs are the gateways through which various market parties can access T2S. Depending on their needs, a CSD's parties may continue to contract with one or more CSDs for the settlement of their trades and collateral operations (and those of their customers) in T2S. Each CSD will set up and maintain its own Security Accounts' structure in T2S. Each CSD is responsible for setting up and maintaining all CSD Static Data relating to the settlement activities of its participants. A T2S Actor settling through more than one CSD in T2S will have Security Account(s) with each of the CSDs it uses for settlement.
- All euro area and all non-euro area NCBs whose currencies are available for settlement in T2S have the responsibility to set up and to maintain Dedicated Cash Accounts (DCAs) in T2S if they have concluded a relevant agreement with eligible entities. Furthermore, they are also responsible for setting up and maintaining all Central Bank Static Data relating to the DCAs of its members. Cash settlements in T2S take place exclusively on T2S DCAs. Only a CeBM account opened on the books of a euro area or a non-euro area NCBs whose currency is available for settlement in T2S may serve as a T2S DCA.

The totality of the T2S Services (level 1 of the service hierarchy description) are broken down into service classes (level 2 of the service hierarchy) and services (level 3). If the latter (level 3) contain functionally diverse components, level 4 of the service hierarchy describes these service components:

[3] A more detailed description of the account structures deployed by T2S can be found in the User Detailed Functional Specifications (UDFS), chapter 1.2.6. Accounts structure and organisation

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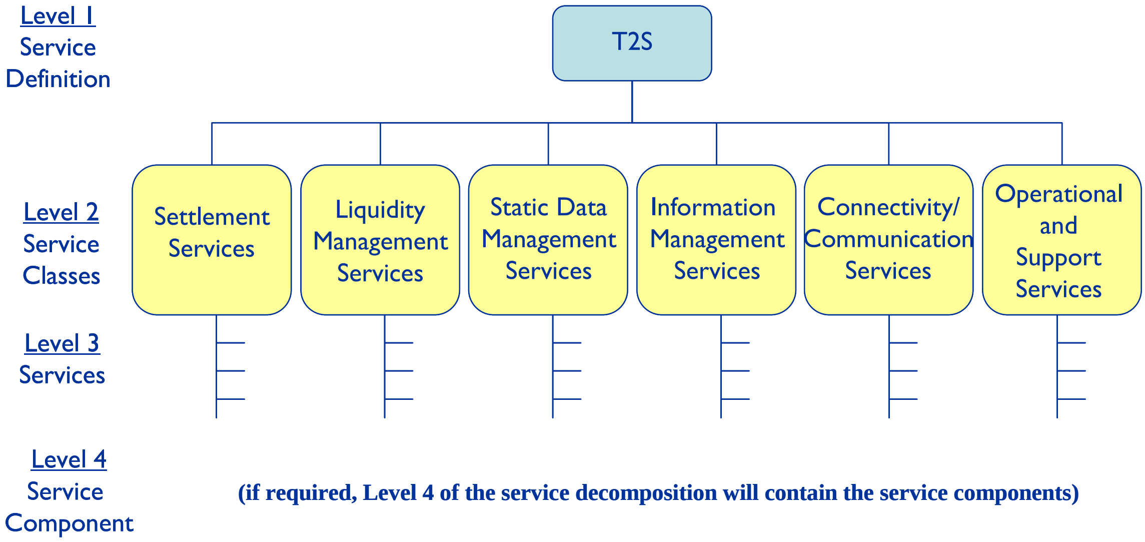
Level 1
Service
Definition
T2S
Level 2
Service
Classes
Settlement Services
Liquidity Management Services
Static Data Management Services
Information Management Services
Connectivity/ Communication Services
Operational and Support Services
Level 3
Services
Level 4
Service
Component
(if required, Level 4 of the service decomposition will contain the service components)

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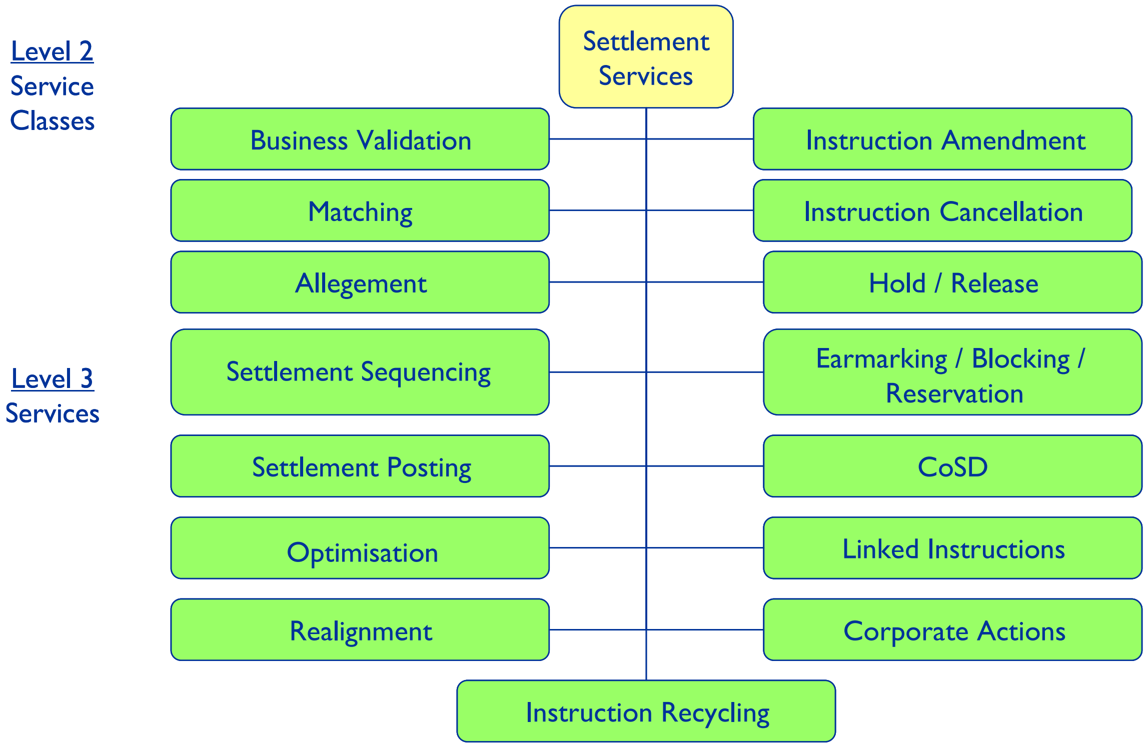
4 T2S SD.SETT: Settlement services service class



4.1 T2S SD.SETT 010: Business validation service

Communication to and from T2S is message-based. Each message contains only one instruction. For a message containing one instruction with the status “already matched”, T2S generates for further T2S processing two instructions.

With the exception of the additional information fields as described below, the business validation service ensures that the content of the received message is valid, i.e. contains all required fields and complies with the rules defined for the content of these fields. These consistency checks ensure that the message can be processed by T2S as intended and is consistent with the relevant rules for this message stored in Common Static Data.

Business validation in T2S consists of two different types of validations:

1. Contextual checks, that is when the validation of one field is dependent on the content of another field, e.g. reference / Common Static Data or other data provided via the Graphical User Interface (GUI); and

2. Event-driven checks, e.g. settlement date change, cancellation instruction arriving.

All incoming messages are validated when they enter T2S and re-validated (as are all pending instructions) at the start of a new T2S Settlement Day. Updates of the Common Static Data used for business validation purposes result in revalidation of all relevant instructions. T2S assigns a status of matched/unmatched at the same time that the instruction is validated.

Messages sent by a T2S Actor to T2S may contain Additional Information Fields which T2S Actors may use for their own purposes. This additional information is neither required for nor related to any T2S process and is therefore neither validated nor further processed within T2S. T2S stores this additional information together with the information it has processed.

Once T2S has successfully validated the compliance of the data - contained in the instruction with the data stored in Common Static Data relevant for the business validation process - the instruction is routed to the relevant processing module of T2S. If settlement-related process indicators are specified by the instructing T2S Actor, T2S checks that they are valid for the type of instruction and the instructing T2S Actor in question. The settlement-related process indicators are used to perform certain actions in the settlement process relating to an instruction. T2S Actors may use the non-settlement-related link indicator “INFO” to link instructions for information purposes.

In the event of instructions being held/released, cancelled, amended or that make use of a previous settlement restriction, T2S verifies that the previous or related reference exists. T2S performs the business validation on the maintenance/new instruction to ascertain that it is valid and consistent with the previous or related instruction. After identifying a validation error, T2S continues to validate as far as possible (taking into account potential interdependencies between the validated data). If validation errors are found, T2S reports all of them in a single message to the T2S Actor and rejects the instruction.

After successful validation, T2S stores the instruction, assigns the corresponding statuses and informs the instructing T2S Actor and its CSD of the validation result, depending on their message subscription preferences. Once validated:

- settlement instructions that require matching are forwarded for matching;
- maintenance instructions are forwarded to the maintenance functionality; and
- settlement restrictions are forwarded for settlement only on their Intended Settlement Date (ISD),

while all other instructions are forwarded directly to the settlement functionality.

T2S must support the CSDs and euro area and non-euro area NCBs s by offering the capability to provide specific validations and processing of messages to fulfil Legal and Regulatory Requirements as well as supervisory requirements in the markets that they service. T2S therefore allows the CSDs and the euro area and non-euro area NCBs to define their own restriction types.

T2S triggers a revalidation of all relevant recycled instructions when settlement-related Common Static Data change. T2S cancels instructions that do not pass the revalidation successfully and informs both the CSD and the instructing T2S Actor of the cancellation.

T2S validates all incoming and recycled instructions against rules and parameters defined in the Common Static Data for the configuration of restriction types. T2S thus checks and validates whether there are any applicable restrictions. If there are, and depending on the type of the restriction, T2S either rejects it or puts the instruction on hold until it is released for further processing.

4.2 T2S SD.SETT 020: Matching service

The settlement instruction Matching service in T2S compares the settlement details provided by the buyer of securities with those provided by the seller of the securities in order to ensure that both parties agree on the settlement-related terms of an instruction.

T2S provides real-time matching, compliant with the rules of the European Securities Services Forum (ESSF)/European Central Depositories Association (ECSDA), throughout the operating day (except during the Maintenance Window). Matching in T2S is mandatory for cross-CSD settlements. Matching for intra-CSD settlements may take place in T2S or in the legacy systems of the CSD.

T2S only attempts to match validated settlement instructions that entered T2S as “unmatched”. If matching is successful, T2S assigns the Match status “matched” to the settlement instructions and informs the T2S Actor of the matching of their settlement instruction. If T2S finds no corresponding unmatched counterpart instruction for the unmatched settlement instruction, the Match status remains unchanged and T2S sends no information to the instructing T2S Actor.

T2S waits for the missing counterpart instruction for a predetermined period before generating an allegement message for the counterpart in the unmatched instruction. T2S sends the allegement message to the relevant counterparty only if the counterpart has subscribed to receive allegement messages.

T2S attempts to match the instruction for 20 working days (T2S calendar) after the Intended Settlement Date or the date of the last status change, in accordance with the ESSF/ECSDA recommendation. After 20 working days, T2S cancels the underlying instruction and informs the relevant T2S Parties.

T2S matches the settlement cash amount with a certain tolerance level (i.e. in the event that there is no perfect match). The tolerance amount has two different bands per currency, depending on the counter value, in line with ECSDA rules. The general tolerance amount proposed by ECSDA for matching the settlement amount field in euro is currently €25 when the counter value is above €100,000 or €2 when it is €100,000 or less. Once T2S has matched two instructions with a difference in the settlement amount that is less than the tolerance amount, T2S shall settle the instruction with the seller's settlement amount.

T2S matches different types of fields:

1. Mandatory matching fields

   Mandatory matching fields are the instruction fields that must have the same values for T2S to determine that two settlement instructions match and are eligible for settlement.

2. Non-mandatory matching fields

   T2S supports two types of non-mandatory matching fields:

   a. Additional matching fields are fields that are initially not mandatory but become mandatory matching fields when either one of the counterparts to the settlement provides a value for them in its instruction. T2S cannot match a filled-in additional matching field with a field with no value (null / zero value).

   b. Optional matching fields are fields that are initially not mandatory:

      i. If only one T2S Party provides content in an optional matching field, T2S may match with a field with no value (null / zero value).

      ii. If both settlement counterparts provide a value for the same field in their instructions, then the optional matching field becomes mandatory for matching.

4.3 T2S SD.SETT 030: Allegement service

T2S uses allegement messages to inform counterparties that relevant information is missing. An allegement message advises an account owner that another T2S Actor has issued instructions against its account for which the account owner has no corresponding instruction in the Securities Settlement System. Allegements will be sent only if the counterparty has subscribed to receive such messages. T2S alleges a T2S Actor when a settlement instruction or a cancellation instruction is missing. Allegement messages may be used for any unmatched instruction that requires matching.

4.3.1 T2S DD.SETT 031: Settlement allegement service component

After the first unsuccessful matching attempt, T2S waits for the missing counterparty instruction for a predetermined period of time before generating an allegement message. If the instruction is still unmatched at the end of this period, an allegement message is generated. T2S sends an allegement message for the unmatched instruction only if the counterparty has subscribed to receive allegement messages.

T2S supports two standard delay periods for sending allegements to the counterparties of the unmatched instruction:

- “Allegement from first unsuccessful matching attempt”, as the standard delay period from the first unsuccessful attempt to match a settlement instruction.
- “Allegement before Intended Settlement Date”, as the standard delay period measured backwards from the FOP cut-off time on the intended Settlement Date.

T2S sends out the allegement at the earliest point in time between the two standard delay periods. T2S calculates the standard delay period in hours and minutes.

If the previous allegement message is no longer valid, T2S sends an allegement removal or an allegement cancellation. An allegement cancellation means the cancellation of an allegement message sent previously, due to a cancellation of the settlement instruction by the sender. An allegement removal acknowledges that an allegement message sent previously is no longer valid, because T2S has in the meantime received the missing instruction from the alleged T2S Party.

4.3.2 T2S SD.SETT 032: Cancellation allegement service component

T2S also provides allegement services in the event of a missing counterpart cancellation instruction, via a status advice message. T2S sends out the cancellation allegement without waiting for any predetermined period to have elapsed. The cancellation instruction remains pending until it matches with a valid counterpart cancellation instruction.

If the cancellation allegement sent via status advice is no longer valid because the revalidation of the settlement instruction has been unsuccessful, the counterparty has responded with a cancellation instruction, or the underlying matched settlement instructions have been settled. T2S sends only the settlement confirmation (in case of settled underlying instructions) and status advices (in case of cancelled underlying instructions) to both parties.

T2S does not send a status advice to the counterparty to communicate cancellation of the previous cancellation allegement.

4.4 T2S SD.SETT 040: Settlement sequencing service

Sequencing is the pre-determined order defined in T2S in which instructions are submitted for settlement.

During the Real-time Settlement, instructions are processed in the order in which they arrive for settlement.

For night-time settlement, sequencing refers to the order in which the settlement of certain sets of instructions is attempted in T2S. Settlement instructions are processed in a particular sequence, (i.e. in a fixed order) to avoid the use of security positions and/or cash resources for any transaction other than those submitted in the sequence concerned. T2S runs two settlement cycles with predefined settlement sequences during the night. In each settlement sequence, T2S will perform a settlement attempt for those settlement transactions selected based on the eligibility criteria of the sequence including:

- all new instructions with the current ISD entered into T2S until the launch of the current settlement sequence. These instructions include, for instance, settlement instructions providing liquidity via lending (securities lending) that are intended to settling instructions that could not be settled in an earlier settlement attempt; and
- all recycled instructions that could not be settled in an earlier settlement attempt. Such recycled instructions include all instructions that could not be settled in the previous settlement attempts, including FOP rebalancing and operations with euro area or non-euro area NCBs that could not be settled during the first settlement cycle, trading-related instructions, and corporate action instructions.

4.5 T2S SD.SETT 050: Settlement posting service

The transactions are settled in T2S by booking the cash and securities debits and credits in accordance with the relevant instructions on the relevant T2S DCAs and Security Accounts (either accounts identified in the instructions being settled or accounts predetermined by default).

The settlement posting service consists of three service components:

- Settlement eligibility check
- Provisioning
- Booking

4.5.1 T2S SD.SETT 051: Settlement eligibility check service component

The settlement eligibility check is the final validation before settlement, as it is necessary to identify the appropriate instructions for the final settlement process. The eligibility check considers:

- the Intended Settlement Date (ISD);
- the potential blocking of the T2S Actor, Security Account, security or T2S DCA from settlement;
- whether or not the instruction should be put on hold; and
- whether the instruction is linked to other instructions,

before an instruction is submitted to the provisioning and booking process. T2S forwards for settlement only those instructions that meet the validation rules/criteria. Settlement instructions which do not meet the validation rules/criteria remain unsettled and are not moved forward when there is any pending intraday restriction.

4.5.2 T2S SD.SETT 052: Provisioning service component

The provisioning or provision-check ensures that the eligible transaction can be forwarded for booking (and thereby finally settled) if, and only if, the booking does not cause the account balances of the relevant securities and the T2S DCA to become negative, with the exception of T2S euro area and of T2S non-euro area NCBs own accounts, T2S transit accounts and Issuer CSD balance accounts, which may have negative balances.

The provision-check covers both settlement legs of the relevant transaction (e.g. the cash and securities legs for a DvP transaction). T2S does not consider reserved/blocked securities quantities or cash amounts on the relevant accounts as available for the provision-check, unless the instruction being settled refers to the initial reservation/blocking instruction.

When an individual external guarantee limit, unsecured credit limit or auto-collateralisation limit is defined by the relevant euro area and non-euro area NCBs (or by the relevant Payment Bank for the settlement of the instructions of the T2S parties for which it provides cash settlement services), T2S ensures that the net cash debit resulting from the booking of any instruction(s) of the relevant T2S parties does not exceed the unused part of this external guarantee limit, unsecured credit limit or auto-collateralisation limit.

T2S performs the provision check in the following sequence:

1. Provision check of available securities position on the Security Account (only for the settlement of securities).
2. Provision check for the T2S DCA and auto-collateralisation (if required).
3. Provision check on the external guarantee limit.
4. If auto-collateralised: provision check on the auto-collateralisation limit of the client of the Payment Bank.
5. Provision check on the unsecured credit limit.

When several instructions are submitted together in a settlement attempt, the provision-check considers the final net balance resulting from the booking of all the relevant instructions (and not from each and every instruction). In other words, in its provision-check T2S takes into account the technical netting effect.

If the provision-check on the net balance is not satisfactory, T2S identifies the instruction(s) responsible for the provision-check’s failure.

These instructions are either:

- submitted for an auto-collateralisation process if the fail originates from a lack of cash; or,
- submitted for partial settlement (only as a last resort, i.e. if auto- collateralisation is not possible or not sufficient and only if the instructions are eligible and are within the partial settlement window) if the fail originates from a lack of securities or from a required substitution of collateral.

4.5.3 T2S SD.SETT 053: Booking service component

Final booking is only posted if the provision-check on the accounts (securities and T2S DCAs) referred to in the settlement instructions (or on the accounts predetermined by default) is satisfactory.

Once booked by T2S on the T2S parties' Security Accounts and T2S DCAs, cash and securities debits and credits are final, i.e. irrevocable and unconditional. The booking must not be conditional on any external event (e.g. such as another booking in the payment or settlement system/arrangement of an external euro area or non-euro area NCBs registrar, commercial bank or CSD), this means that any such condition must have been resolved before the booking in T2S is undertaken.

Because bookings are final, T2S will not automatically unwind credit or debit even if it was done incorrectly.

Each and every transaction is booked on a gross basis. This is without prejudice to the use of the technical netting effects in the provision check when several instructions are submitted together for settlement (either for optimisation purposes or because they are linked by a T2S Actor).

4.6 T2S SD.SETT 060: Optimisation service

T2S optimisation services is intended to determine the optimum balance between maximising the volume and the value of the settlement with the available securities, in order to minimise the number and value of unsettled instructions at the end of the night-time settlement process as well as to minimise the number and value of fails at the end of the Settlement Day.

Optimisation procedures are specific processes aimed at increasing settlement efficiency. Such processes detect and resolve settlement gridlocks, and perform technical netting of obligations in cash and securities, with a view to settle new instructions as well as instructions that could not be settled when previously attempted. Optimisation procedures are available both during the night-time settlement window and during the Real-time Settlement. When several unsettled instructions are optimised together and a chain of instructions is submitted for settlement, T2S includes the securities and cash received during the process of settling the relevant chain of instructions in the optimisation process.

During the night-time settlement window, the T2S optimisation procedure covers all instructions submitted for settlement (either new instructions or recycled instructions that could not be settled when previously attempted).

During the Real-time Settlement, T2S optimisation procedure runs in parallel to real-time settlement processes and covers instructions that could not be settled when previously attempted.

When necessary, T2S combines the four optimisation procedures described below (technical netting/ optimisation algorithms, prioritisation, partial settlement and auto-collateralisation).

4.6.1 T2S SD.SETT 061: Technical netting and optimisation algorithms service component

The technical netting is intended to limit the resources necessary for the settlement of a set of instructions submitted together for settlement. Without prejudice to the fact that booking takes place on a gross basis, T2S reduces, through technical netting, the final net balance to be credited and debited on Security Accounts and/or Dedicated Cash Accounts. When performing its provision-check, T2S considers the final net balance that results from the booking of all the instructions submitted together for settlement (and not that resulting from each and every individual instruction).

During the night-time settlement window, T2S submits all eligible instructions for settlement and optimises all these instructions together. During day-time, real-time settlement optimisation, optimisation algorithms identifying chains of instructions (e.g. such as empty circles, back-to-back instructions) are used to resolve gridlock situations, and so increase the volume and value of settlement and hence, to reduce the value and volume of pending instructions.

4.6.2 T2S SD.SETT 062: Prioritisation service component

Optimisation procedures will take into account the four different priority levels of instructions. T2S automatically assigns predetermined levels of priority for certain specific instructions identified in the Common Static Data. The four different levels of priority identified are:

1. Reserved priority: Only Participating CSDs and euro area or non-euro area NCBs can assign a "reserved priority" for specific instructions such as intraday corporate actions or certain euro area and non-euro area NCBs' specific operations related to the provision/ reimbursement of their credit operations.
2. Top priority: T2S automatically assigns top priority to transactions of trading platforms (MTFs, stock exchanges, etc.) with and without CCP and OTC instructions with CCP. To that end, the parameters for identifying transactions (to which this top priority level must be assigned) are predetermined in Common Static Data and apply by default to all the relevant transactions. T2S does not allow top priority to be assigned to any other category of transactions (either by default or at a transaction level)..
3. High priority: T2S Actors can assign high priority to their settlement instructions; or
4. Normal priority: T2S assigns normal priority to all other instructions, but enables T2S parties to assign them a high priority on an instruction-by-instruction basis.

For levels 3 and 4 only, the instructing T2S Actor may change the priority level of an instruction (only the deliverer may change normal priority to high priority or high priority to normal priority).

T2S optimises and recycles settlement instructions in accordance with their priority levels in such a way that if several instructions compete for use of the same securities and/or cash resources, for settlement purposes preference is given to the instruction with the highest level of priority. In addition to the priority level, T2S also considers the ISD of the instruction so as to favour the settlement of instructions with the earliest settlement date and thus avoid instructions with low priority not being settled.

For Real-time Settlement, the prioritisation applies only to instructions to be recycled in the settlement queue (i.e. failed instructions). Any increase of a position triggers an optimisation for the International Securities Identification Number (ISIN) concerned. T2S recycles instructions if there is insufficient position.

Furthermore, during the Real-time Settlement, the priority level is taken into account by the settlement procedure only for instructions that failed to settle in a previous settlement attempt. These are subsequently submitted for recycling and optimisation procedures.

4.6.3 T2S SD.SETT 063: Partial settlement service component

T2S uses partial settlement for instructions that could not be settled due to the lack of securities providing the settlement instruction fulfils all criteria for partial settlement. A lack of cash does not trigger partial settlement. Instructions linked by T2S Actors are excluded from partial settlement.

The partial settlement procedure is used for all T2S instructions, unless one of the counterparts indicates at instruction level that partial settlement is not allowed (partial indicator set to no/false), and if the following conditions are met:

- the partial settlement threshold criteria are met, set for both securities and cash, and defined as part of the Common Static Data; and
- the partial settlement window is active.

When submitting an unsettled instruction for partial settlement, T2S attempts to settle the maximum quantity of securities available on the Security Account of the seller, taking into account the threshold chosen by the counterparts.

Once partial settlement has been invoked, T2S allows a duly authorised Actor to modify only the priority of the instruction, or to hold, to release or to cancel the pending part of a partially settled instruction. When an instruction is partially settled, T2S does not automatically cancel the original instruction. T2S keeps the original instruction and updates in accordance with the partial settled volumes in the status management.

Reverse collateral instructions are not subject to partial settlement.

T2S uses its own partial settlement parameter to activate and de-activate partial settlement as part of the continuous optimisation process. T2S allows the definition of several T2S parameters for activating and deactivating the partial settlement procedure during the Night-time and Day-time Settlement Periods. The T2S partial settlement parameter defines at which moment in time or based on which event T2S activates or de-activates a partial settlement procedure.

In order to minimise fails due to a lack of securities, T2S allows partial settlement in specific time windows, a predefined period before the end of Real-time Settlement and at the end of the last night time cycle during the night-time settlement. T2S submits to partial settlement all eligible instructions that failed to be settled in a previous attempt during the night and deactivates the partial settlement functionality at the closure of the Night-Time Settlement Period. T2S submits at least once all those instructions for partial settlement that it has identified as eligible for partial settlement before the partial settlement procedure is deactivated.

T2S informs the CSD and/ or the DCP when partial settlement occurs, depending on the message subscription preferences.

4.6.4 T2S SD.SETT 064: Auto-collateralisation service component

T2S provides auto-collateralisation functionality during the whole T2S settlement period in order to facilitate the settlement of underlying securities-related instructions that would fail to settle due to a lack of cash on a Dedicated Cash Account (DCA) and/or insufficient external guarantee headroom on a Credit Memorandum Balance (CMB)[4]. T2S provides the auto-collateralisation service on the basis of the list of eligible collateral, relevant prices and limits provided by the euro area or by the non-euro area NCBs and Payment Banks.

The auto-collateralisation functionality with euro area and non-euro area NCBs and with Payment Banks is available to eligible T2S parties as defined in Common Static Data, provided that auto-collateralisation headroom is available. T2S triggers auto-collateralisation with euro area and non-euro area NCBs in case of lack of cash on the T2S DCA of the Payment Bank to which the settlement instruction is referring. T2S triggers auto-collateralisation with a Payment Bank (client-collateralisation) in of the event of insufficient external guarantee headroom on the CMB of a client of the Payment Bank, that owns the Security Account to which the settlement

[4] Further described in the relevant chapter of the Liquidity Management Services below.

instruction refers.

T2S allows collateral provided for intraday credit provision in CeBM through auto-collateralisation to be pledged or transferred to a separate account (in accordance with the legal framework chosen by the relevant euro area or non-euro area NCBs). Collateral provided for auto-collateralisation with Payment Banks can only be transferred to a separate account of the Payment Bank. Intraday credit granted in CeBM through auto-collateralisation can be used only for the settlement of the underlying instructions. The credit amount provided is equal or less than the collateral value of the securities used as collateral, the collateral value being the price provided for a certain security multiplied by the number or nominal amount of the security concerned.

An intraday credit provision through auto-collateralisation is always fully collateralised in T2S

- Either with securities already held by the buyer via collateral-on-stock, or
- Through collateral-on-flow via the eligible securities that are being purchased.

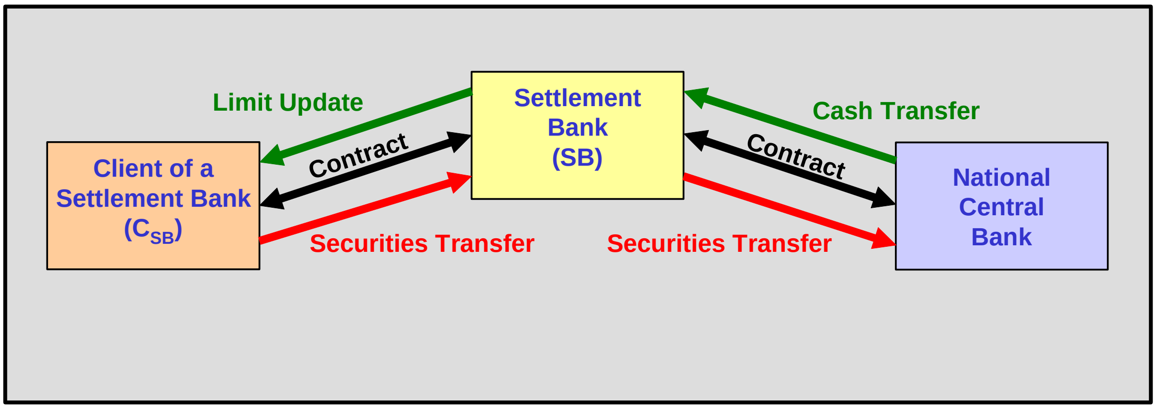
These securities must be recognised as eligible collateral by euro area or non-euro area NCBs or Payment Banks and the relevant Payment Bank or its clients must earmark them for their use as collateral. Duly authorised T2S Actor may also earmark a Security Account from which securities may be used for auto-collateralisation. The security account holding the earmarked securities must be linked to the DCA opened by the euro area or by the non-euro area NCB.

In order to provide intraday credit through auto-collateralisation in T2S to one or several eligible Payment Banks, each euro area and each non-euro area NCB has to open a T2S euro area or non-euro area NCB cash account on which all debits corresponding to its intraday credit provisions through auto-collateralisation will be posted. The T2S euro area or non-euro area NCB cash account is allowed to have a negative cash balance.

The Payment Banks must open one Security Account (via their CSD) dedicated to auto-collateralisation for each of their clients. T2S uses these accounts when transferring the collateral from the client to the Payment Bank. If allowed by the respective euro area or non-euro area NCB, the Payment Banks may use the securities positions received during the client-collateralisation procedure as collateral for auto-collateralisation procedure with the euro area or non-euro area NCBs. In such cases, the Payment Bank has the option to either earmark the Security Accounts for auto-collateralisation purpose only or earmark specific securities positions in the Security Account for auto-collateralisation. The Payment Bank will be able to use such Security Accounts for both (a) receiving collateral in case of client-collateralisation (b) and providing collateral for auto-collateralisation with euro area and non-euro area NCBs.

Each euro area and each non-euro area NCB is required to determine in Common Static Data the collateralisation procedure for which it opts, i.e. (i) transfer to an account opened in the euro area or non-euro area NCB's name, or (ii) transfer to an account pledged in its favour, or (iii) reservation of securities. This must be done for all eligible Payment Banks to which the relevant euro area or non-euro area NCB provides intraday credit through auto-collateralisation.

For each of their Security Accounts, T2S parties may indicate via the T2S earmarking service whether T2S may use securities from that account when generating auto-collateralisation operations with euro area or non-euro area NCBs or Payment Banks on a specific T2S DCA. When such a link exists between a Security Account and a T2S DCA, T2S will use securities from that account in auto-collateralisation operations with either euro area or non-euro area NCB, or with the Payment Bank (acting as credit provider), depending on the earmarking options.



T2S generates auto-collateralisation operations only when they allow the settlement of the underlying settlement transaction(s) and when sufficient headroom exists on the auto-collateralisation limit. When triggering auto-collateralisation, T2S also considers the unsecured credit limit headroom available that could complement the auto-collateralisation operation in the event of auto-collateralisation with Payment Banks (client-collateralisation). Each euro area or non-euro area NCB and each Payment Bank is able to increase or decrease at any moment of the Settlement Day the auto-collateralisation limit of an eligible Payment Bank or client of the Payment Bank.

T2S submits auto-collateralisation instructions for settlement on an all-or-none basis together with the underlying settlement instructions in order to ensure that the amount of intraday credit provided through auto-collateralisation is automatically and exclusively used to settle the underlying instruction(s).

On the basis of the type of collateral movement chosen by each euro area or non-euro area NCB providing credit, T2S will collateralise the intraday credit provided through auto-collateralisation either:

- by transferring the securities from the Security Account of a T2S Actor to the Security Account of the euro area or non-euro area NCB providing the credit;
- by transferring the securities from the account of the bank receiving the credit to another account of this Payment Bank (the second Security Account being pledged to the euro area or non-euro area NCB providing the credit where the securities are in the name of the bank receiving the credit); or
- by reserving the securities on the Security Account of the Payment Bank receiving the credit; in such a case, the securities will be reserved in favour of the euro area or non-euro area NCB providing the credit and T2S will not allow the Security Account holder to use the relevant securities as long as they are reserved.

When auto-collateralisation on flow and on stock are both possible for the settlement of a transaction or a set of transactions, T2S prefers to resorts to auto-collateralisation on flow before auto-collateralisation on stock. When the collateral value of the securities on flow is not sufficient to cover the amount of credit granted, T2S complements collateral on flow with collateral on stock. Finally, when securities being purchased in the underlying transaction are not eligible collateral (e.g. equities for Eurosystem intraday credit) and therefore cannot be used as collateral on flow, T2S uses collateral on stock to secure the amount of intraday credit granted through auto-collateralisation.

Whenever T2S generates and settles an auto-collateralisation operation, it creates and sets on hold the reimbursement of that auto-collateralisation operation - an the exact reverse operation (i.e. same amounts, same accounts, etc). The Payment Banks are able to trigger the reimbursement of their auto-collateralisation operations with euro area or non-euro area NCBs and with their clients at any moment during the daytime real-time settlement by releasing the relevant on hold reimbursement instructions.

Auto-collateralisation provides intraday credit that must be repaid at the end of the day. T2S uses all available liquidity on the cash accounts of the Payment Bank to repay the credit. In normal situations, the Payment Banks have repaid all intraday credit operations with the euro area or non-euro area NCBs before the auto-collateralization reimbursement is initiated. In this is the case, T2S executes only a cash sweep during which the excess liquidity on the payment's bank's cash accounts is transferred to the relevant Real-Time Gross Settlement (RTGS) systems. If, however, there is not sufficient liquidity on the cash account at the end of the day to fully reimburse the pending intraday credit, special end of day procedures are invoked.

The securities that are held on the accounts of the euro area or non-euro area NCB (or pledged) for auto-collateralisation purposes are transferred to the overnight collateral Security Account indicated by the euro area or non-euro area NCB. At the same time, the relevant collateral management system is informed of the move and the credit usage limit for the participant in the RTGS system is increased. This process ensures that the T2S service provides, though a collateralised credit, the same amount of liquidity in the RTGS system as it withdraws[5].

4.7 T2S SD.SETT 070: Realignment service

When T2S matches a pair of settlement instructions, or receives an already matched pair of instructions, it verifies whether the instructions submitted require realignment instructions on accounts other than those of the T2S Parties submitting the instructions (e.g. on the accounts of the Issuer CSD). If T2S identifies a need to realign, it generates the required realignment instructions, on the basis of the cross-CSD links in the Common Static Data, automatically validates the realignment instruction, and links all settlement instructions to ensure all-or-none settlement.

If the Issuer CSD is within T2S and the Investor CSDs are not in T2S, the realignment takes place in T2S on the basis of settlement instructions (usually free-of-payment) to be sent by the Issuer CSD.

T2S does not send realignment instructions to the Issuer CSD if the Issuer CSD is outside T2S:

- The realignment process is handled by the Investor CSDs in coordination with the Issuer CSD outside T2S.
- If at least one Investor CSD is within T2S, the Conditional Securities Delivery (CoSD) mechanism can be used by the Investor CSDs, to block the position in T2S and hold the instruction until the settlement is confirmed in the Issuer CSD's books.

4.8 T2S SD.SETT 080: Instruction recycling service

Recycling occurs in anticipation of finding the required securities and/or cash subsequent settlement runs, so that failed transactions can be settled successfully.

Recycling differs slightly depending on whether it occurs during day-time and night-time settlement. In case of night-time settlement, all unsettled settlement instructions are recycled automatically to the next settlement sequence. In day-time settlement, unsettled settlement

[5] Further details especially on the reimbursement procedures and rules can be found in the User detailed Functional Specifications, especially chapter 1.1.2 Liquidity management, and in the General Functional Specifications (GFS), especially chapter 2.3.5 Liquidity Management

instructions are recycled when new settlement resources (i.e. securities and/or cash) become available.

Unmatched pending instructions are recycled for 20 days before cancellation by T2S. Matched pending instructions which fail to settle are recycled indefinitely.

The T2S settlement optimisation techniques reduce the number of unsettled settlement instructions at the end of the settlement day (EOD).

4.9 T2S SD.SETT 090: Instruction amendment service

T2S Actors may amend only process indicators, irrespective of the status of the underlying settlement instruction (except for instructions with an end-of-life status). The instructing T2S Party has to cancel and reinstruct the settlement if it wishes to modify any other fields.

T2S allows the amendment of the following process indicators until settlement occurs:

- partial settlement (only for settlement instructions);
- linking instructions; and
- settlement priority.

In case of partially settled instructions, the instructing T2S Party may amend the settlement priority only for the pending part of partially settled instructions.

T2S does not allow any settled or cancelled settlement instruction to be modified.

T2S will reject an amendment sent by a CSD participant other than the T2S Party which submitted the original instruction concerned, or its CSD, if the instruction to be amended was sent as non-modifiable by the CSD or an authorised CSD participant.

T2S informs the instructing T2S Party, as well as any T2S Actor duly authorised to access this information, immediately after the successful amendment of an instruction, in accordance with their message subscription preferences.

If the amendment process fails in T2S, then the amendment instruction is rejected. (e.g. original instruction has settled.)

4.10 T2S SD.SETT 100: Instruction cancellation service

Any instructing T2S Actor or its CSD may cancel its settlement instructions unilaterally prior to matching or its settlement restrictions prior to settlement. In such case, T2S verifies that (a) the instruction that the T2S Actor wishes to cancel exists in T2S and that (b) its cancellation is possible. Whether or not T2S Actors are able to cancel their instructions depends on the status of the instruction.

T2S will reject any cancellation request sent by a CSD participant other than the T2S Party which submitted the original instruction concerned, or its CSD, if the instruction to be cancelled has been sent as non-modifiable by the CSD or an authorised CSD participant.

Under the same rules, a CSD may cancel any instruction of any of “its DCP”. Cancellation instructions cannot be cancelled.

Until matching has occurred, T2S allows a T2S Actor to request unilaterally the cancellation of settlement instructions only.

Once matching has occurred, T2S Actors may cancel matched settlement instructions only bilaterally, i.e. both parties must send a cancellation instruction (“binding matching”) for the cancellation to take effect. T2S then matches the cancellation instructions and cancels both settlement instructions.

In the case of bilateral cancellation of settlement instructions, T2S checks whether the cancellation instruction from the counterpart exists and matches the two cancellation instructions. If the counterpart cancellation instruction does not exist, then the cancellation instruction remains pending until it matches with a valid counterpart cancellation instruction. T2S also accepts cancellation instructions entered as already matched.

In the case of a Conditional Settlement (CoSD), T2S allows only the administering T2S Party identified in the Common Static Data to unilaterally request the cancellation of the instruction that triggered the CoSD process (e.g. when the external condition for settlement is not fulfilled), even after T2S has blocked the relevant securities holding for a CoSD. If a CoSD involves more than one administering T2S Party, the CoSD settlement instruction cannot be cancelled unless T2S receives cancellation instructions from each administering T2S Party involved in the initial settlement instruction.

T2S notifies the originator of a cancellation instruction when the cancellation instruction has either been executed (i.e. cancellation of the settlement instruction was successful) or denied (i.e. settlement instruction could not be cancelled). In the latter case, the resulting cancellation status value for the cancellation instruction is “denied”.

If the cancellation process in T2S fails, then the cancellation instruction goes through recycling until it is either processed or rejected if the original instruction has already settled.

If the cancellation mechanism is automatically activated by T2S for a given instruction, T2S informs the CSD or the DCP that the instruction was cancelled by T2S. Automatic cancellation rules are applied to invalid or unmatched or failed/outdated instructions, and are compliant with ECSDA recommendations.

Realignment instructions can not be cancelled by any T2S Actor.

4.11 T2S SD.SETT 110: Hold/release service

Hold and release mechanisms allow T2S Actors to hold or release settlement instructions until their actual settlement or cancellation, even beyond their Intended Settlement Date (ISD). These mechanisms give T2S Actors the flexibility to delay the settlement. T2S Actors may send maintenance instructions to hold and release settlement instructions as many times as required.

T2S allows only the T2S Actor that has put an instruction on hold to release it. If there are two executed hold instructions for the same instruction (i.e. one from the CSD participant and one from the CSD), release instructions must also come from both. If T2S receives a hold instruction for a settlement instruction that is already on hold or has been cancelled from the same T2S Actor who has submitted the initial hold or cancellation instruction, T2S denies the hold instruction.

T2S will reject any hold/release instruction sent by a CSD participant other than the T2S Party which submitted the original instruction, or its CSD, if the instruction to be held/released was sent as non-modifiable by the CSD or an authorised CSD participant.

All instructions on hold at the end of the ISD remain unsettled and T2S recycles them in accordance with the T2S rules for recycling instructions. Furthermore, T2S allows the remaining part of partially settled instructions to be held and to be released.

T2S will reject any hold or release settlement instruction if T2S has already settled or cancelled the underlying settlement instruction. T2S informs the instructing T2S Party accordingly, depending on its message subscription preferences.

4.12 T2S SD.SETT 120: Earmarking, blocking and reservation service

4.12.1 T2S SD.SETT 121: Earmarking service component

In T2S Parties may define that a security position or a security account be earmarked as a settlement restriction. For a position or an account to be earmarked, the securities must be fully available in the relevant account.

Earmarking defines that a security position or security account may be used for one and only one defined purpose. An earmarked position or account can not be used for another purpose unless the earmarking is revoked.

A T2S Actor may earmark a position or an account for a specific purpose such as auto-collateralisation. If there is a conflict regarding use of the earmarked securities for a delivery/ receipt owing to contradictory choices between account level and instruction level (that is to say when a settlement instruction refers to a earmarking purpose which is different from that at account level), the choice at account level overrides the choice at position level (T2S will credit or debit the earmarked position according to the purpose at account level and not according to the purpose at the instruction level). If earmarking is done at the Security Account level for a specific purpose, it will not be possible to earmark securities at position level (in the same account), for a different purpose.

Earmarking is not possible for DCAs.

4.12.2 T2S SD.SETT 122: Blocking service component

In addition to earmarking, T2S Parties may define that securities or cash be blocked at the instruction, position or account level as settlement restrictions. A T2S Actor may block securities or cash for a specific purpose. For the securities or cash to be unblocked, the relevant instruction must contain the reference to the specific purpose.

A blocking of cash or securities prevents the transfer of specific securities/cash from a specific Security Account/T2S DCA.

When a blocking restriction is submitted for settlement, and providing sufficient securities and/or cash are available on the relevant accounts, T2S blocks the number of securities and/or the amount of cash specified in the settlement restriction on the relevant securities and/or T2S DCA(s). If insufficient securities and/or cash is available, only those securities and/or cash will be blocked. No further attempt will be made to block the remaining part.

4.12.3 T2S SD.SETT 123: Reservation service component

As a further settlement restriction, T2S Parties may define that a security or a cash instruction or position be reserved. A T2S Actor may create a reservation without having all the securities or cash specified in the reservation. Any securities or cash arriving will be attributed to the reservation until the reserved volume has been reached.

When a reservation instruction is submitted for settlement, and providing sufficient securities and/or cash are available on the relevant account(s), T2S reserves the number of securities and/or the amount of cash specified in the settlement instruction on the relevant securities and/or T2S

DCA(s). If insufficient securities and/or cash are available, T2S:

- reserves the securities and/or the cash already available on the relevant account; and
- supplements it with any incoming securities and/or cash proceeds arriving on this account, provided that the latter are not defined to be used for any other purpose.

A reservation of cash or securities reserves a securities or cash position for the settlement of one or more settlement instructions. A T2S Actor may refer to an existing reservation in another settlement instruction, by means of the reservation's unique reference number. If such references result is made the provisioning process will include the reserved cash or securities in its provisioning check. The reserved securities/cash will be used first (ahead of unreserved securities/cash) for settlement of the instruction.

4.12.4 T2S SD.SETT 123: Common features of the earmarking, blocking and reservation service component

When several reservations/blockings of securities and/or cash have been performed on the same Security Account and/or T2S DCA, and a T2S Actor submits to T2S a settlement instruction referring to one (or some) of those reservation/blocking instructions, the T2S provision-check does not consider the additional securities and/or cash reserved/blocked through reservation instructions other than those referred to in the instruction being settled. However, if the securities/ cash reserved/ blocked are not sufficient, T2S also takes into account additional securities and/or cash available on the relevant Security Account and T2S DCAs, provided that the latter have not been reserved/blocked for any other purpose.

If at EOD the reserved and blocked cash has not been used for any purpose, T2S releases the relevant cash. In case of a CoSD blocking, T2S releases the blocked cash at the EOD and creates a new CoSD blocking instruction. As regards securities, if blocked or reserved securities have not been used or released at EOD as a result of an instruction from the relevant T2S Actor, T2S does not release them automatically.

4.13 T2S SD.SETT 140: Conditional Security Delivery (CoSD) service

Conditional Security Delivery (CoSD) is a special functionality which manages instructions that require the fulfilment of a settlement condition outside T2S before securities may be settled in T2S[6].

Through the T2S Change and Release Management, CSDs request the T2S Operator to set up and maintain the rules invoking CoSD, as the CoSD rules of one CSD might have an impact on other T2S Parties. These rules are stored as part of the Common Static Data in T2S. Each rule identifies an administering T2S Party to release the instruction for settlement or to cancel the CoSD flagged settlement instruction and determines events which will result in an instruction automatically being submitted to the CoSD functionality by T2S. One settlement instruction might be subject to more than one CoSD rule and in such cases more than one administering T2S Party is assigned to that instruction.

On the ISD, T2S verifies all instructions with that particular ISD in accordance with the CoSD rules. It submits them automatically to the CoSD procedure if one or more CoSD rules are met. In such case, T2S automatically generates a settlement restriction to block the securities position, the cash position, or both.

T2S rejects any cancellation request coming from the instructing parties after the activation of the CoSD process, as only administering parties are allowed to cancel settlement instructions submitted to CoSD.

T2S blocks the securities in the deliverer’s Security Account irrespective of the instruction to which the CoSD rule applies (similar rule applies for cash blocking on the T2S DCA linked to the receiver's Security Account). If two or more CoSD rules apply to the securities delivery instruction or related receiving or realignment instructions and those rules require securities to be blocked, the securities are blocked only once. Likewise, T2S blocks cash only once in the delivering cash account.

In a CoSD, securities, cash or both remain blocked and the instruction concerned remains on hold until T2S receives from the administering parties:

- a release instruction, requesting settlement of the instruction using the previously blocked securities or cash (on the basis of the information contained in the initial

[6] Further details can be found in the User Detailed Functional Specifications (UDFS), especially chapters 1.1.1. Settlement, 2.4 Send Settlement Restriction on Securities Position, 2.6 Send Release Instruction for CoSD by Administering Party, and 2.7 Send Cancellation Instruction for CoSD by Administering 1 Party

instruction); or

- a cancellation instruction. After receiving cancellation instruction(s) from all administering parties T2S will cancel the CoSD instruction and its underlying instructions. In such case the underlying cash/securities are unblocked and the administering parties and instructing parties receive a confirmation message.

A “blocking” status message is sent by T2S to inform the (administering) CSD and/or the DCP that the securities, cash or both have been blocked for the processing of the original instruction. A “hold” status message is sent by T2S to inform the (administering) CSD and/or the DCP that the instruction related to the original instruction is prepared for settlement and waiting for release.

Only the administering T2S Party can send the release message. If the receiving party is outside T2S, the status information is relayed by the CSD responsible for the account within T2S.

If the CoSD blocking cannot take place, T2S recycles the blocking instruction for the following Settlement Day. Cash blocked under CoSD is released at the EOD and regenerated for the following Settlement Day. Settlement instruction that are on CoSD Hold are recycled for the following Settlement Day (i.e. securities remain blocked and the settlement instruction remains on hold).

If the realignment chain changes or revalidation of the instruction submitted to CoSD and its related instructions is unsuccessful, T2S cancels all the instructions but the blocked securities/cash remain blocked.

4.14 T2S SD.SETT 150: Linked instructions service

T2S Actors may link instructions in order to ensure that a settlement instruction settles at the same time, before or after another settlement instruction. Linked instructions are possible on a

- one-to-one;
- one-to-many; or
- many-to-many

basis.

When T2S submits several linked instructions for a settlement attempt, it posts the debits and credits for cash and securities from the relevant transactions if the provision check (including account netting effects) is successful. T2S settles sets of linked instructions according to the highest level of priority accorded to any of the instructions within the set (the whole set of linked instructions settles according to this level of priority).

T2S Actors can link instructions by using the ISO settlement link indicators “AFTER”, “BEFORE” and “WITH”. These link indicators will be used in the settlement process.

When T2S receives an instruction which is linked to one or more other instruction(s), it:

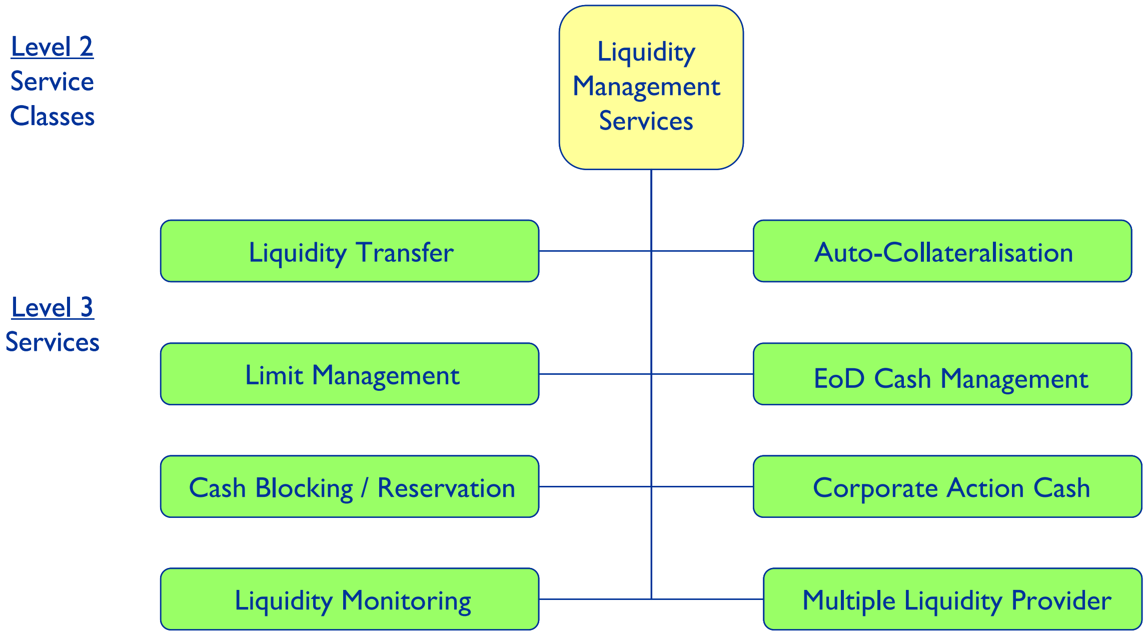
1. Checks that the linked instruction(s) exist.
2. Then validates that the information contained in the new linked instruction is consistent with the instruction which exists and to which it is linked, i.e. the ISD and the Security Account holder used are the same.

Linked instructions are excluded from partial settlement. If at EOD a linked instruction has not been settled it will be recycled.

4.15 T2S SD.SETT 160: Corporate actions service

To support the CSDs in settling corporate action entitlements, T2S uses standard settlement services for security settlement as well as liquidity management/cash settlement.

5 T2S SD.LIM: Liquidity Management Service Class



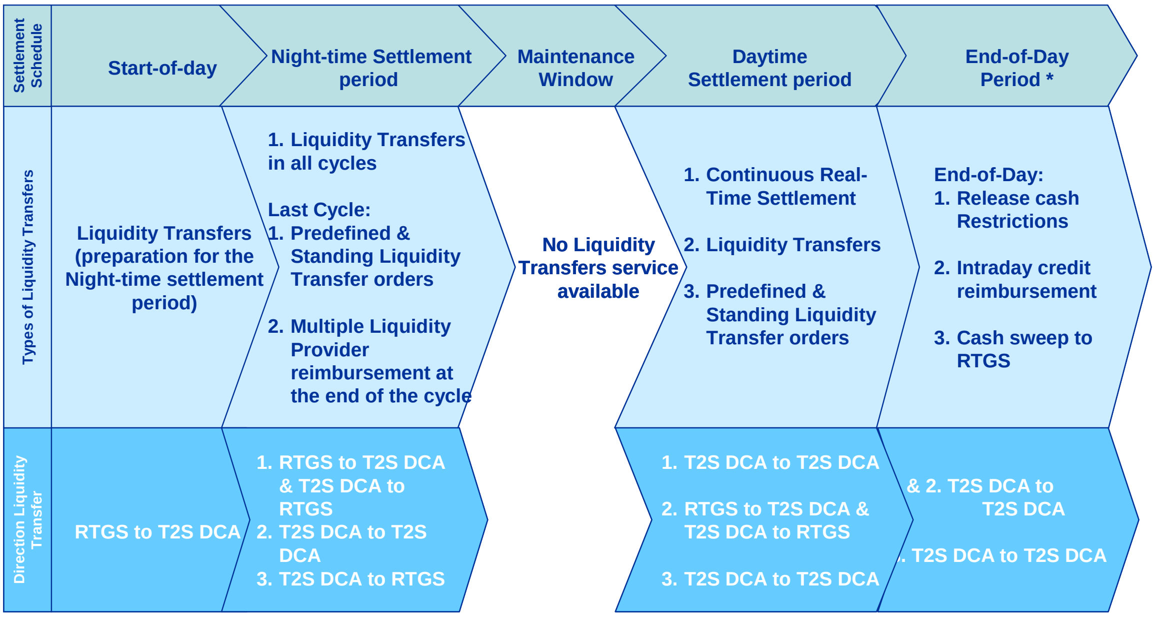
5.1 T2S SD.LIM 010: Liquidity transfer service

A liquidity transfer in T2S is an instruction from a DCA holder to transfer a specified amount of cash balance from its cash account to another cash account. The T2S DCA holders are Payment Banks or euro area or non-euro area NCBs.

T2S allows a T2S DCA holder to receive liquidity on its T2S DCA(s) from any RTGS account (provided that they are denominated in the same currency and that this is permitted by the relevant euro area or non-euro area NCB). In the same way, T2S allows the holder of the T2S DCA to send liquidity from its T2S DCA(s) to any RTGS account (as setup by the relevant euro area or non-euro area NCB in T2S) if the currency is the same.

In addition to liquidity transfers between RTGS accounts and T2S as mentioned above, T2S provides T2S DCA holders with a “multiple liquidity providers” functionality, i.e. T2S DCA holders can receive liquidity from and reimburse to several RTGS accounts.

Liquidity transfers are executed in real time upon receipt. During the execution of the liquidity transfer, if the status of the liquidity transfer order changes, T2S informs the T2S Actor about the new status if the latter’s message subscription rules in the Common Static Data so dictate.



Settlement Schedule	Start-of-day	Night-time Settlement period	Maintenance Window	Daytime Settlement period	End-of-Day Period *
Types of Liquidity Transfers	Liquidity Transfers (preparation for the Night-time settlement period)	1. Liquidity Transfers in all cycles Last Cycle: 1. Predefined & Standing Liquidity Transfer orders 2. Multiple Liquidity Provider reimbursement at the end of the cycle	No Liquidity Transfers service available	1. Continuous Real-Time Settlement 2. Liquidity Transfers 3. Predefined & Standing Liquidity Transfer orders	End-of-Day: 1. Release cash Restrictions 2. Intraday credit reimbursement 3. Cash sweep to RTGS
Direction Liquidity Transfer	RTGS to T2S DCA	1. RTGS to T2S DCA & T2S DCA to RTGS 2. T2S DCA to T2S DCA 3. T2S DCA to RTGS		1. T2S DCA to T2S DCA 2. RTGS to T2S DCA & T2S DCA to RTGS 3. T2S DCA to T2S DCA	& 2. T2S DCA to T2S DCA . T2S DCA to T2S DCA

T2S supports three types of liquidity transfers between T2S DCAs and RTGS cash accounts and between T2S DCAs.

- Immediate liquidity transfer order:
  - Liquidity is transferred in real time on receipt of the instruction from the account holder or a T2S Party with the appropriate rights.
  - Used to transfer liquidity between a T2S DCA and the RTGS account or between two T2S DCA (if these DCA belong to the same Payment Bank or are linked to the same RTGS account).
  - If an immediate liquidity transfer orders cannot be settled, an alert is sent to the Payment Bank that initiated the transfer in line with the message subscription rules in the Common Static Data.
- Pre-defined liquidity transfer order:
  - Liquidity is transferred at a certain time or when a particular business event occurs, as defined by the account holder of the account or a T2S Actor with appropriate rights to debit the account.
  - The transfer is executed only once on the basis of a defined time or event.
  - Liquidity is transferred from a T2S DCA to an RTGS account only (either the specified transfer amount or “all cash” available in the T2S DCA will be transferred).
  - Any duly authorised T2S Actor may amend or delete the predefined liquidity transfer order.

- Standing liquidity transfer order:
  - Liquidity is transferred at a certain time or when a particular business event occurs, as defined by the account holder of the account or a T2S Party with appropriate rights to debit the account.
  - The transfer is executed whenever the event in question occurs until the standing order is deleted.
  - Liquidity is transferred from a T2S DCA to an RTGS account only (either the specified transfer amount or "all cash" available in the T2S DCA will be transferred).
  - Any duly authorised T2S Actor may amend or delete a standing liquidity transfer order.

If insufficient liquidity is available on the accounts to be debited, T2S allows partial execution in the case of pre-defined/ standing liquidity transfers. T2S allows a partial execution of an immediate liquidity transfer only if it is instructed to do so by a CSD acting on behalf of the Payment Bank.

As part of the business validation process, T2S checks that the content of immediate liquidity transfer orders (received from T2S Actors) or liquidity transfers (which have been generated from a standing or predefined liquidity order) is correct, and validates the consistency of the data contained in the immediate liquidity transfer received by T2S with the Common Static Data. A liquidity transfer which has been generated from a standing or predefined liquidity order is not validated by T2S.

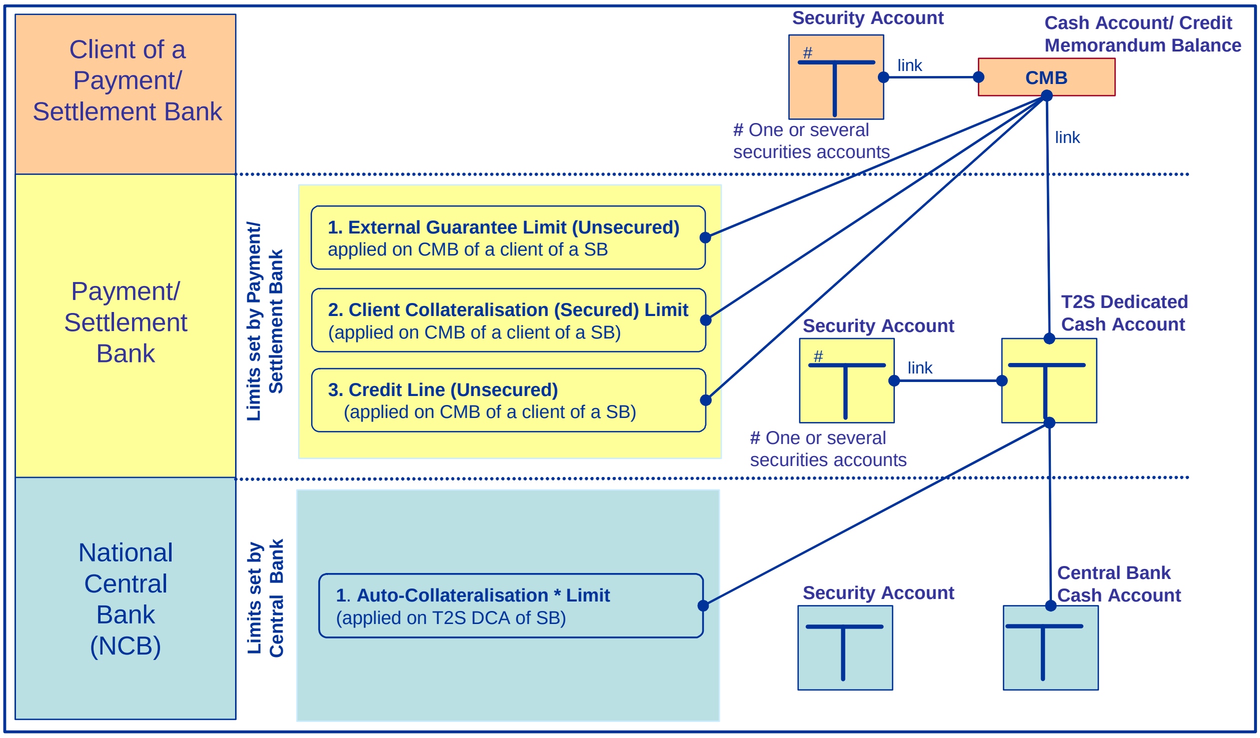
After business validation, T2S communicates the acceptance/ rejection of a liquidity transfer order to the Payment Bank and to the euro area or non-euro area NCB if the liquidity transfer order was sent from the RTGS system. In the event of failure or rejection, T2S sends a list of error/ reason codes. T2S also communicates all changes in status of a liquidity transfer order.

After successful validation the liquidity transfer order is sent to the settlement functionality for processing. The booking function updates the balances on the DCAs involved on a gross basis. In the case of partial execution or of no execution, no further settlement is attempted. T2S communicates all changes in status of a liquidity transfer order in the course of its execution in accordance with the message subscription rules in the Common Static Data, and confirms all executed transfers between T2S and RTGS.

5.2 T2S SD.LIM 020: Limit management service

T2S provides the T2S Actor with different liquidity control mechanisms. A euro area or non-euro area NCB can control its parties' T2S DCA by setting an auto-collateralisation limit for the T2S DCA. Payment Banks can also set different limits at the client level and monitor their utilisation.

A Payment Bank can set up different limits for the liquidity provided to each of its clients, either against collateral or without collateralisation. Using T2S queries, the Payment Bank has a consolidated view of its client's collateral holdings at any given point in time across multiple Security Accounts in either the same or different CSDs. The respective limits are automatically updated when used as a part of the settlement process. T2S performs validations to ensure that these limits are not breached. T2S does not allow cash movements between the Cash Payment Bank and its clients in T2S. The only cash in T2S is the cash on the DCA, which is in CeBM.


Client of a Payment/ Settlement Bank
Security Account
Cash Account/ Credit Memorandum Balance
#
link
CMB
# One or several securities accounts
link
Payment/ Settlement Bank
Limits set by Payment/ Settlement Bank
1. External Guarantee Limit (Unsecured) applied on CMB of a client of a SB
2. Client Collateralisation (Secured) Limit (applied on CMB of a client of a SB)
3. Credit Line (Unsecured) (applied on CMB of a client of a SB)
T2S Dedicated Cash Account
Security Account
#
link
# One or several securities accounts
National Central Bank (NCB)
Limits set by Central Bank
1. Auto-Collateralisation * Limit (applied on T2S DCA of SB)
Security Account
Central Bank Cash Account

Euro area or non-euro area NCBs and Payment Banks can set and monitor the limits they provide to their clients.

- **External guarantee limit:** Cap on credit secured outside T2S that the Payment Bank sets for its client. The external guarantee limit and the unsecured credit limit are identical from the T2S viewpoint, except for the sequence in which they are triggered. Usage of the external guarantee limit is triggered before auto-collateralisation..
- **Client-collateralisation limit:** Cap on the amount of credit extended against securities by a Payment Bank in T2S

- **Unsecured credit limit**: Cap on the amount of credit granted by a Payment Bank (generally unsecured outside T2S)
- **Auto-collateralisation limit:** Cap on the amount of credit extended against securities by a euro area or non-euro area NCB to the Payment Bank.

T2S ensures that all the required provision checks for the Payment Banks and their clients are performed simultaneously and that collateralisation operations are initiated on the basis of the results of the provision check. A Cash Payment Bank client's credit exposure as well as the availability of sufficient headroom on different types of credit limits is determined solely on the basis of information available to T2S.

To prepare for client collateralisation, the T2S actor has to provide and to set up the information required for the link between its Security Account and its DCA, and to provide the necessary information for the Credit Memorandum Balance (CMB) Security Account Link Set and CMB Security Account Link[7].

Furthermore, a T2S Actor can control the use of liquidity by reserving/ blocking cash for specific instructions. The amount of cash reserved/ blocked may not be used to settle instructions, unless the instruction being settled refers to the initial reservation/ blocking instruction.

5.3 T2S SD.LIM 030: End of day (EOD) cash management service

After the cut-off of settlement processing, the EOD processing is conducted in three steps. Information messages are sent to the initiating T2S Actor and other duly authorised T2S Actors in accordance with their message subscription preferences:

1. EOD release of unused cash restrictions:
   - All restrictions on cash (blocked cash, reserved cash) are released for the current T2S Settlement Day.
   - New cash settlement restrictions regarding CoSD blocking are created for the next T2S Settlement Day.
2. EOD release of auto-collateralised positions and transfer of cash balance:
   - The amount of outstanding auto-collateralisation is validated.
   - If there is no pending auto-collateralisation: No action is taken.

[7] Further details can be found in the User Detailed Functional Specifications (UDFS), especially chapter 1.1.2 Liquidity management

- If there are pending auto-collateralisation(s):
    - and the cash on the T2S DCA is sufficient to reimburse fully the pending auto-collateralisation, including possible cash rebalancing: T2S reimburses.
    - and there is insufficient or no cash on the T2S DCA to reimburse the pending auto-collateralisation, T2S:
        - checks for available cash via cash rebalancing from another DCA of the same T2S Actor;
        - releases the associated reverse (unwind) settlement instructions previously created;
        - creates instructions for positions that will not be released (equivalent to the pending amount of auto-collateralisation that cannot be reimbursed out of T2S), to transfer the collateral to the euro area or non-euro area NCB overnight collateral Security Accounts; and
        - rebalances the account to zero.

3. EOD liquidity transfer (cash sweep)
    - Liquidity transfers are created for all T2S DCAs and the euro area or non-euro area NCB Account used for EOD reimbursement with non-zero cash balances.
    - These liquidity transfers are settled in T2S and sent to the RTGS system.

5.4 T2S SD.LIM 040: Corporate action cash service

T2S enables a T2S Actor, receiving cash proceeds from corporate actions on its T2S DCA, to specify whether T2S should keep the cash proceeds on the T2S DCA or to retransfer them from the T2S DCA to the RTGS account (outside T2S) with which the T2S DCA is linked.

In such case, the T2S Actor must define a standing liquidity transfer order for the T2S DCA as part of the Common Static Data to be able to opt for an automated retransfer of cash proceeds to an RTGS account.

T2S allows the T2S DCA holders to use different T2S DCAs for the settlement of the cash leg of trading-related instructions and for the settlement of the cash leg of corporate action instructions.

During the daytime real-time settlement T2S executes the standing liquidity transfer order as an immediate liquidity transfer to transfer the corporate action proceeds to the RTGS account of the T2S Actor.

For the Batch Settlement, as soon as the relevant RTGS becomes available, T2S transfers the liquidity. Without a standing order, the corporate action proceeds are routed to the T2S Actor's DCA.

T2S also provides this setup and service for retransferring 'monetary policy Repo' related cash proceeds from a T2S DCA to an RTGS account.

5.5 T2S SD.LIM 050: Cash blocking and reservation service

T2S allows a T2S Party to use restrictions to block or to reserve a cash balance in a T2S DCA. For that purpose the CSD or the euro area or non-euro area NCB has to define the relevant restriction types as part of the Common Static Data.

Blocking a cash balance involves preventing the transfer of a specified amount of funds in a specific currency in one cash account to any other cash account by linking it to a specific purpose. Blocking in T2S never results in a negative cash balance, i.e. it is not possible to block an amount of funds greater than the available cash balance on a cash account.

Reserving a cash balance prevents the transfer of a specified amount of funds in a specific currency in one cash account to any other cash account except for the purpose for which the funds were reserved. The settlement of the underlying settlement instruction (for which the funds were reserved) results in the actual transfer of the reserved funds to another cash account and the subsequent removal of the reservation.

A T2S Actor may reserve a cash position without yet disposing of the required full amount of cash in that position. Any cash arriving in the reserved position will be attributed to the reservation until the required amount has been reached.

A T2S Actor may refer to an existing reservation/blocking in another settlement instruction, by referring to the unique reference number of the reservation's/blocking. Such reference will be interpreted in such a way that the provisioning process includes the reserved/blocked amount of cash in its provisioning check. The reserved/blocked cash will be used first (ahead of unreserved/unblocked cash) for settlement of the instruction.

During business validation, T2S checks automatically whether one of these restriction types applies to the submitted settlement instruction or to an instruction for an intra-position movement to determine the further processing required. If the validation process finds a match for a restriction type, then the relevant restriction type is applied to the instruction.

5.6 T2S SD.LIM 060: Liquidity monitoring service

T2S provides different functions for monitoring the actual cash balances of the DCAs as well as the CMB limits to monitor the liquidity of the clients of the Payment Bank. T2S calculates the amount of cash required for the settlement and informs the T2S Actor if more liquidity is needed.

Cash related queries allow duly authorised T2S Actors to obtain information about their account balance on the T2S DCA(s), outstanding intraday credit from auto-collateralisation, and potential liquidity based on securities on stock that can be used for auto collateralisation purposes. In addition, T2S provides information showing the overall liquidity.

A T2S Actor may request information on cash needs for instructions pending for settlement during the current Settlement Day, as well as cash forecasts for the following Settlement Day. Information on cash needs and cash forecasts covers T2S DCA liquidity needs.

Information for the on-going Settlement Day is intended to provide a snapshot of the cash required to settle instructions remaining unsettled at the moment of the snapshot. This information includes (as part of the cash required for the current day settlement) the value of potentially available auto-collateralisation.

Information on cash forecasts for the following Settlement Day and in particular for the following night-time settlement window is intended to allow T2S Actors to prepare and dedicate in advance sufficient cash for the settlement of their instructions during the following night-time settlement window. The cash forecasts are based on:

- cash needs resulting from the net balance between:
  - cash proceeds and
  - cash needs

  expected for settlements with the following day as the ISD; and
- the amount of intraday credit that can be obtained through auto-collateralisation;
- the amount of liquidity credit that can be obtained through external guaranteed limits and unsecured credit lines from Payment Banks or euro area or non-euro area NCBs.

Depending on the chosen report configuration, cash forecasts can be received as reports sent out automatically by T2S at certain points/when certain events occur during the T2S Settlement Day. Preliminary information on cash can also be obtained via the query functionality.

However it should be noted, that these cash forecasts (received through the above-mentioned reports and via queries) are only indicative of the final cash needs, as the forecasts are based only on the information available in T2S: T2S does not take corporate action proceeds into account, if the relevant instructions are not submitted to T2S.

The T2S Actor has to be aware that these cash forecasts will change in the course of the Settlement Day depending on new settlement instructions / liquidity transfers submitted to T2S. It is to be expected that the quality of the cash forecast will increase continuously during the day as additional settlement instructions and information become available in T2S.

A T2S Actor is able to define the floor and ceiling amounts per DCA in the Common Static Data. This functionality allows the T2S Actor to receive alerts if the amount of liquidity in the DCA reaches the minimum/maximum the DCA account holder has defined.

5.7 T2S SD.LIM 070: Multiple liquidity provider service

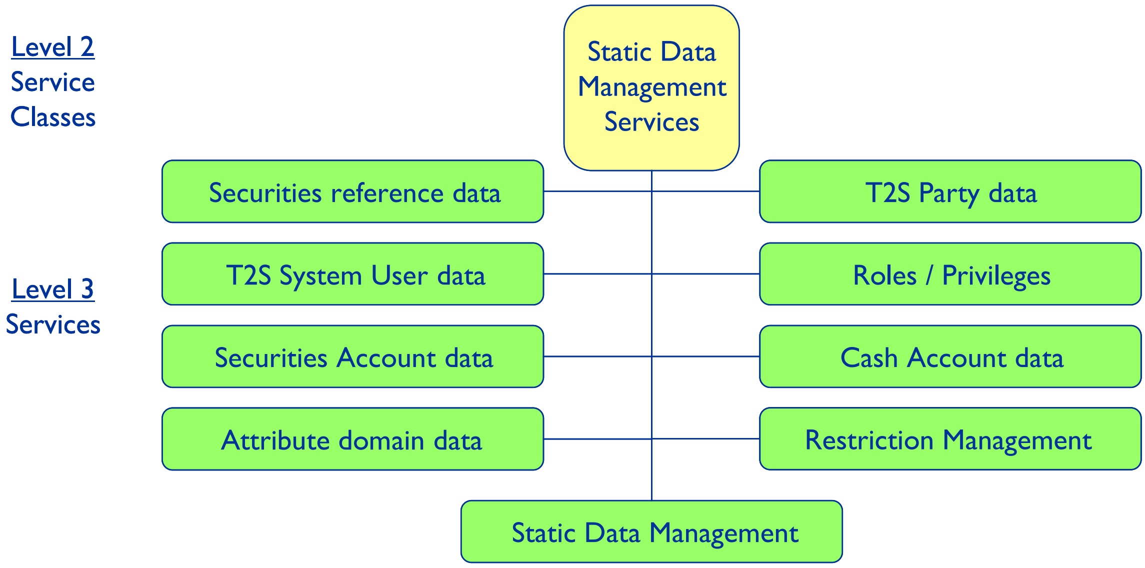
T2S DCA holders may receive liquidity from several RTGS accounts (i.e. from different liquidity providers) and use the proceeds in T2S. This cash can be transferred from the RTGS accounts prior to the start of Batch Settlement in T2S. Subsequently, a T2S DCA holder can use this cash for its own settlement purposes or to provide cash settlement services to its clients, during Batch Settlement in T2S.

At the end of the Batch Settlement, a T2S DCA holder may opt to establish liquidity transfers which will reimburse its different liquidity providers in the relevant RTGS systems with the remaining cash in the T2S DCA. This reimbursement facility is the “multiple liquidity provider” service.

The reimbursement of cash is executed via outbound liquidity transfers generated by T2S on the basis of the multiple “standing liquidity transfer order”. The priority of execution is defined by the T2S Actor in the “order link set” setup in the Common Static Data.

T2S validates whether a T2S DCA holder (liquidity receiver) has opted for a “multiple liquidity provider” service for reimbursement. In this is the case, T2S reimburses the liquidity providers in the sequential order of liquidity providers as set up in the order link setup (in the Common Static Data). T2S aims to reimburse each liquidity provider up to the maximum amount of the cash the liquidity provider transferred before starting to reimburse the next liquidity provider in the sequential order concerned. In the order link set, the main liquidity provider is setup as the last liquidity provider and therefore is the last liquidity provider to be reimbursed (assuming there is sufficient cash to reimburse all liquidity providers).

6 T2S SD-STD: Common Static Data Management Service Class



6.1 T2S SD.STD 010: Common Static Data management service

Common Static Data management is the service that T2S provides for setting up/inserting, changing/maintaining and inactivating/deleting Common Static Data in T2S regardless of the type of conceptual entity. T2S applies the same functional principles for inserting, maintaining and deleting all entities.

T2S processes all Common Static Data updates in real-time in both User-to-Application (U2A) and Application-to-Application (A2A) mode, except in the case of some preliminary functions which are only available in U2A mode[8]. All Common Static Data entities are stored in the T2S data base with a full audit trail and it is possible to query the actual occurrence of an entity as well as the historical data. Whenever a record in Common Static Data is changed, a new version of this record is stored including the timestamp and the identification of the T2S Actor performing the change, thereby maintaining a full audit trail.

T2S allows T2S Actors to parameterise the entities and the types of updates made by a T2S User or by a T2S process. T2S will process these in real-time except during the Maintenance Window.

T2S checks for every change in a Common Static Data entity and for the change approval configuration for this entity and processes the update in accordance with to the configured parameters. The privileges of the different T2S Users depend on the Common Static Data entity.

[8] The detailed list of available functions for the different modes are part of the UDFS and of the GUI description.

Static security data changes made by an automated interface do not require an independent change approval by a second user, but a manual update by a person is subject to such approval (4-eyes principle).

T2S provides duly authorised T2S User with the functionalities to:

- identify all Static and Dynamic Data changes awaiting approvals;
- search for specific Static and Dynamic Data changes;
- search and display historic change information, including both approved and rejected changes; and
- approve and reject Static and Dynamic Data changes.

6.1.1 T2S SD.STD 011: Insert service component

T2S allows the duly authorised T2S User to insert a new occurrence of an entity into Common Static Data. A T2S User is an individual or application that is allowed to communicate with T2S when duly authorised and authenticated.

6.1.2 T2S SD.STD 012: Update service component

T2S allows duly authorised T2S User to update an existing occurrence of a Common Static Data entity. T2S allow T2S Users to update occurrences of a Common Static Data entity if the previous update of the same occurrence remains in the change approval queue. T2S prohibits the concurrent update of occurrences of a Common Static Data entity. When a T2S User selects an occurrence for editing, T2S locks the occurrence so that a second T2S User or T2S process cannot access it for updating.

6.1.3 T2S SD.STD 013: Delete service component

When a duly authorised T2S User initiates the deletion of an occurrence in a Common Static Data entity, T2S checks that there are no unsettled instructions and only zero positions pertaining to that data. Only if that is the case will the deletion status of the occurrence be changed from “active” to “deleted”. The deletion of an occurrence of a Common Static Data entity occurs only logically.

The T2S archiving functionality is the only function which will physically delete an occurrence of a Common Static Data entity from the active T2S database. The physical deletion of a Common Static Data occurrence is only possible for logically deleted occurrences. To ensure the referential integrity of data, Common Static Data occurrences are physically deleted from the active database only after archiving processes have removed and archived the related Transactional Data and position data as of a cut-off date that is determined by the retention plan.

Data history and data revisions that took place before the archive date will be included in any physical deletion process even if the current record is still active - since the Transactional Data for which they are relevant would be removed by the archiving.

6.1.4 T2S SD.STD 014: Reactivate service component

In some instances, it is necessary to reactivate a logically deleted occurrence of Common Static Data. T2S allows duly authorised T2S Users to specify the Common Static Data entity and the identifier of an occurrence in that Common Static Data entity, and to reset the deletion status of an occurrence in that Common Static Data entity from “deleted” back to “active”.

6.1.5 T2S SD.STD 020: Securities Reference Data service

Securities Reference Data in T2S defines the set of entities and attributes that T2S requires for settlement and auto-collateralisation in CeBM.

The Securities Entity holds all attributes that exist only once for a security. Securities Reference Data require every security to have an ISIN code, compliant with ISO 3166. The creation of a new security will be effective immediately unless it requires dual entry approval. This also applies to updates of all attributes for the Securities Entity. Certain “non-standardised securities” that comply with all required criteria apart from not being fungible from a settlement perspective may still be entered in and processed by T2S.

The Securities Reference Data Service allows the CSD to create and maintain the Common Static Data of those securities for which it is the Issuer CSD or the Securities-Maintaining Entity. The service allows the Issuer CSD to block or unblock ISINs both for itself and its Investor CSDs. T2S allows an Investor CSD to block or unblock ISINs only for itself.

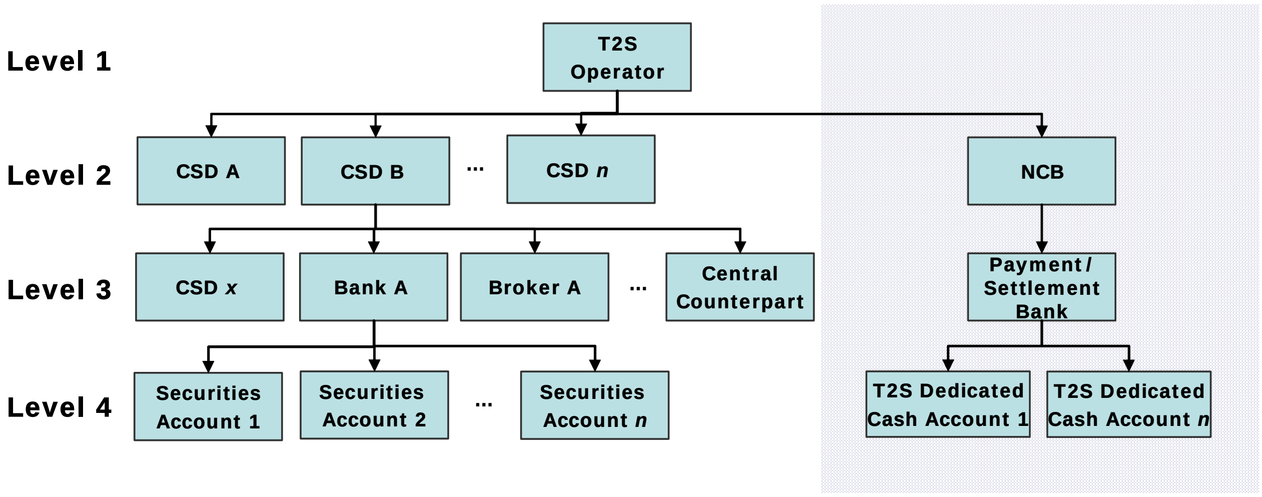
6.2 T2S SD.STD 030: T2S Party data service

T2S deploys a flexible hierarchical party model to allow CSDs and euro area or non-euro area NCBs to manage their accounts and parties in an efficient way. The T2S Operator maintains the first and second level of the hierarchy. All other levels must be managed by the CSDs and the euro area or non-euro area NCBs respectively.

A T2S Party denotes any legal or organisational entity required in T2S as single legal entity to guarantee data segregation. The same legal entity, or organisational unit of a legal entity, may be set-up under several CSDs or euro area or non-euro area NCBs as a result of this principle. This entity includes the parties from the first three levels of the hierarchy model, the T2S Operator, the CSDs, the participants of the CSD, the euro area or non-euro area NCBs and the Payment Banks. It also establishes the links between the different parties on the different hierarchical levels. A

CSD can also be a T2S Actor for its own purposes defined in level 3 of the hierarchy (see graph below).

T2S assigns each party a technical identifier, which the user can also use as the unique T2S Party code (participant code). T2S will use the BIC of a T2S Party to identify the T2S Party uniquely across in the euro area or non-euro area NCB - and CSD-specific reference data.



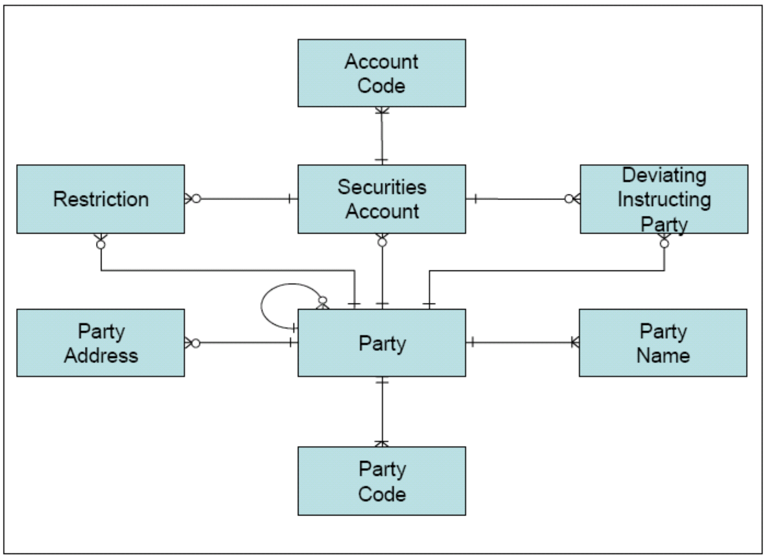
The CSD-part of this hierarchical structure contains all T2S Party data pertaining to securities settlement. The Security Account (on the lowest level of this part of the hierarchy) is assigned to the CSD participant and to the CSD. Each CSD is responsible for maintaining the hierarchy including the Security Accounts of the different parties which are linked to it. CSDs assign and manage the access rights of their participants, including those of all their DCPs.

Security Accounts linked to the CSD participant and T2S DCAs linked to a Payment Bank form the lowest level of the hierarchy. The Security Accounts can be either omnibus accounts or end-investor accounts for markets with direct holdings systems.

CSDs have access to euro area or non-euro area NCB party and account Common Static Data to link Security Accounts to T2S DCAs for the settlement of the cash leg of a settlement instruction. T2S will make available to the CSDs the relevant data for the linking of accounts without publishing all T2S DCAs. Access rights control which CSD is able to see the T2S DCAs needed for linking purpose. When a CSD sets up a Security Account, it can only see those T2S DCAs to which it can link a Security Account for settlement.

The euro area or non-euro area NCB part of the hierarchical structure includes all data relating to the euro area or non-euro area NCB and the T2S DCAs held with the euro area or non-euro area NCB by Payment Banks. In the third tier of this part of the hierarchy includes the Payment Banks which operate T2S DCAs to provide liquidity. The T2S DCAs are the lowest level of the hierarchy. The hierarchy links the T2S DCA to the relevant euro area or non-euro area NCB.

Euro area or non-euro area NCBs authorise the access to T2S DCAs by assigning the BIC of those parties, eligible for access to the cash account for settlement, to the T2S DCA. When entering a Security Account, the CSD only sees those T2S DCAs which have the same BIC assigned to them as the T2S Party that owns the Security Account.



6.3 T2S SD.STD 040: Security Account data service

Security Account reference data specify all information required for defining and processing a Security Account in T2S.

Security Accounts in T2S must be opened and closed by the CSD to ensure the consistency and integrity of Security Account reference data between the CSD and T2S. When the CSD opens an account, it must immediately trigger the opening of the relevant account in T2S. The same applies for the closing of an account.

T2S supports a T2S Actor - Security Account Relationship entity to specify a time-dependent relationship between a T2S Actor and a Security Account. The purpose of the entity is to allow a CSD in T2S to transfer a Security Account relationship from one account operator/sub-custodian to another account operator/sub-custodian within the CSD. The functionality enables a CSD to transfer an end-investor Security Account relationship from one account operator to another.

CSDs are also responsible for closing a T2S Security Account by setting the business status to “closed” and confirming the change. T2S only closes an account if:

- there is no un-settled instruction specifying the T2S Security Account for the settlement;
- the T2S Security Account is not part of an active T2S link set; and

  - there is no securities balance remaining on the T2S Security Account.

In case an unmatched instruction exists concerning an account that is closed, during the business revalidation the unmatched instruction is identified and will be cancelled.

6.4 T2S SD.STD 050: Cash account data service

The T2S DCA model specifies the requirements for assigning T2S DCA to Security Accounts for the settlement of the cash leg of settlement instructions. The T2S DCA entity specifies the T2S DCAs of Payment Banks in T2S. It also links the T2S DCA to the associated RTGS account concerned as well as establishing the reference link to the Payment Bank that owns the account and to the euro area or non-euro area NCB that operates the account.

The key responsibilities of each euro area or non-euro area NCB whose currency (euro and non-euro) is available for settlement in T2S are:

- set-up and maintain the DCAs of their RTGS participants for all securities-related payment transactions in their currency in T2S;
- set up and manage Common Static Data, access rights and configuration data pertaining to its members and its own participation in T2S;
- if required, provide for the interoperability of their own RTGS systems and collateral management systems with T2S;
- if the euro area or non-euro area NCB chooses to participate in auto-collateralisation:
  - to provide auto-collateralisation in its currency to its members in accordance with its self-defined eligibility criteria;
  - if required, to provide to T2S, for the specific purpose of auto-collateralisation, a list of eligible securities and prices as well as any other data necessary for T2S to judge the eligibility of a specific security for a specific participant;
- be responsible for the choice of its network provider(s) and to make every effort to maintain properly functioning connectivity to T2S functions properly.

Euro area or non-euro area NCBs are also responsible for closing a T2S DCA by setting the business status to “closed” and confirming the change. T2S only closes an account if:

- there is no unsettled instruction specifying the T2S DCA for the settlement of the cash leg;
- the T2S DCA is not part of an active T2S DCA link set; and

- there is no cash balance remaining on the T2S DCA.

The external RTGS Account Entity specifies all the external RTGS payment accounts to which an authorised T2S User can link a T2S DCA. This entity also provides the reference link to the Payment Bank that owns the account and the euro area or non-euro area NCB that operates the account.

The euro area or non-euro area NCBs have to add new external RTGS account for a Payment Bank or another euro area or non-euro area NCB in T2S. T2S assigns new external RTGS accounts an opened business status and the current Settlement Day as the opening date.

An external RTGS account can be closed by setting the business status to "closed" and confirming the change. T2S will not close an account if:

- there is an unsettled payment instruction specifying the external RTGS account;
- the external RTGS account has an active link to a T2S DCA; or
- the external RTGS account is defined in a current (not closed, not expired) standing liquidity transfer order.

T2S allows the blocking/unblocking of an RTGS account using T2S Actor and account settlement restrictions. The blocking of an RTGS account results in all T2S DCA linked to the RTGS account being blocking from settlement.

6.5 T2S SD.STD 060: T2S User data service

A T2S User is an individual or application that is allowed to communicate with T2S using a login name and certificate/smartcard and for U2A in addition an optional password and/or certificate for authentication. The assignment of the T2S User to a T2S Actor establishes the relationship between the T2S User and the system entity. T2S provides specific roles and privileges to restrict the access of this T2S User to business data of the CSDs and of the euro area or of the non-euro area NCBs.

T2S User maintenance defines the process of adding, changing and deleting users in T2S. Access to this functionality is restricted to system administrators only.

A system administrator is able to lock and unlock a T2S User without deleting the user by setting the attribute "lockout status" to "yes" or "no". If the system administrator assigns existing roles to or deactivates roles for a T2S User, T2S automatically assigns to the T2S User the privileges associated with that role.

6.6 T2S SD.STD 070: Roles and privileges data service

In order to comply with the principle concerning the separation of functions and roles, T2S implements roles and privileges as business concepts which refer to the right of T2S Actors to interact with T2S. Duly authorised system administrators configure roles and privileges to authorise other T2S Users to execute specific functions or view specific data.

A privilege is a right, either granted or denied, to execute certain functions within T2S, or to access and/or update certain data in T2S. It is through the privileges that access to functionality and data for specific roles, T2S Parties and T2S Users are granted and restricted. A privilege is uniquely identifiable, both internally in the application and to the T2S system administrator. Privileges are classified either as System privileges or Object privileges.

System privileges grant certain rights for a single or a homogeneous group of data objects (e.g. T2S Calendar). Object privileges grant rights in relation to a single or a group of Common Static Data objects.

The administrator grants a privilege by specifying whether (1) the associated functionality is allowed or explicitly denied; (2) the grantee of the privilege is allowed to grant the same privilege to another user or role; (3) the grantee of the privilege is allowed to use the function associated to the privilege in accordance with to two eyes or four eyes principles.

Account owners (i.e. a CSD or a euro area or a non-euro area NCB) may grant privileges to their clients, with different roles and privileges for each one. These roles and privileges can be differentiated by client and even among different accounts of the same client.

T2S privileges may for example grant:

- no access at all;
- read only access;
- the right to instruct with possible limitations concerning the type of instructions or the accounts to instruct on.

A role consists of one or more privileges. A CSD or a euro area or a non-euro area NCB may configure valid roles for its T2S parties as follows:

- If set up by the CSD, DCPs manage their T2S User administration.
- If set up by the euro area or by the non-euro area NCB, Payment Banks manage their T2S User administration.

Each CSD or a euro area or a non-euro area NCB needs to create and authorise a system administrator for each of its client T2S Actor of that CSD or of that euro area or of that non-euro area NCB. The system administrator is responsible for maintaining users and roles for this particular client. The CSD or euro area or non-euro area NCB administrator has to ensure, that the system administrator of the T2S Party has access only to those roles that the CSD or euro area or non-euro area NCB permits. Accordingly, T2S enables each CSD or the euro area or the non-euro area NCB to grant its clients access to a different set of roles, depending on the services provided by the CSD or the euro area or the non-euro area NCB to each T2S Party.

CSDs or euro area or non-euro area NCBs participating in T2S must continue to comply with Legal and Regulatory Requirements. T2S therefore allows the configuration of CSD- or euro area or non-euro area NCB - specific roles. The CSDs or euro area or non-euro area NCB may differentiate the access they grant to T2S services and functions on the basis of the Legal and Regulatory Requirements to which they are subject.

6.7 T2S SD.STD 080: Restriction management service

T2S must support the T2S Operator, CSDs and euro area or non-euro area NCB by enabling them to provide specific validations and processing of settlement instructions to fulfil the Legal and Regulatory Requirements and the supervisory requirements in the markets that they service. T2S therefore allows the T2S Operator, CSDs and euro area or non-euro area NCBs to define their own restriction types.

After approval through the T2S Change Management process, only the T2S Operator is allowed to setup the definition of and to maintain harmonised restrictions, which may be used by all CSDs and euro area or non-euro area NCBs.

Restriction types are attributes that define the specific processing characteristics for a securities position, cash balance, Security Account, T2S DCA, T2S Party or settlement instruction to ensure configurability of specific requirements, as prescribed by national Legal and Regulatory Requirements and practices, and to avoid hard-coding in the application software.

T2S provides the following restriction processing types:

- Blocking – blocks an instruction from settlement;
- Rejection – rejects an instruction at validation;

- CSD Validation Hold – accepts a settlement instruction at validation (not applicable to settlement restrictions) but holds it for a subsequent release by the CSD[9];
- Reservation – reserve a cash balance or securities position;
- Balance Type / Earmarking – define and manage position types for securities and balance types for cash balances.

Restrictions can also be defined as either a positive or negative parameter set and in time (from and to).

During the validation process, T2S automatically verifies whether one of the defined restrictions applies to the instruction submitted.

A T2S User may define specific rules for restriction types. These define the sequence in which T2S applies a logical set of parameters to determine whether a specific restriction applies to the instruction. The restriction matrix defines the specific parameter values within a rule. T2S stores matrix entries for a rule in a rule set. A matrix entry defines an occurrence of a valid set of values, specifying the actual criteria against which T2S must validate a settlement instruction to determine whether a restriction type applies.

T2S allows duly authorised users to

- add new rules for a restriction type;
- (re-) define the sequence of rules for a restriction type;
- delete rules for a restriction type if the user has deleted all occurrences under that rule; and
- add and delete matrices in a rule.

This functionality is also used by CSDs to define which settlement instructions will be put on CSD Validation Hold. It allows CSDs to execute certain tasks / validations locally prior to the settlement of the underlying instruction.

[9] Further details for the CSD validation hold are provided in the User Detailed Functional Specifications (UDFS) chapter 1.1.1 Settlement

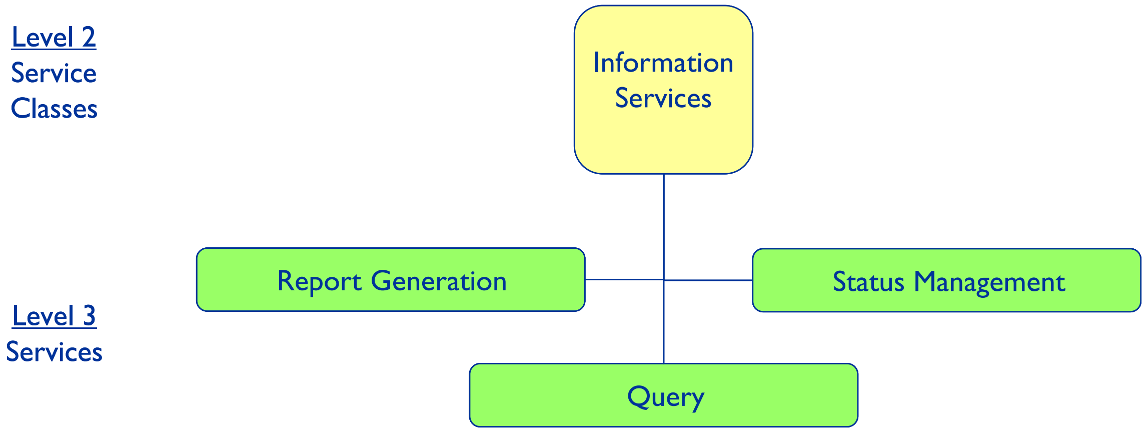
6.8 T2S SD.STD 090: Attribute domain data service (market-specific attributes)

Attribute domains in T2S provide the valid list of values allowed for an attribute (table column or a data field in physical terms). They include a list of all the valid values that a user can enter for an attribute of a static or Transactional Data entity. T2S uses attribute domains for field validations and for documenting the business definition of a value in an attribute.

T2S provides a general Common Static Data component that allows the duly authorised T2S User to logically create, modify and deactivate market-specific attribute domains, on the basis of the existing data definitions (attributes). These market-specific attribute domains allow the T2S Operator, CSDs and euro area or non-euro area NCBs to define their own restriction types as described above. T2S allows the definition of additional values, mapped to an attribute.

T2S limits the actions that a user can trigger in the database using attribute domain management. T2S allows the registration and deactivation of attribute domains using pre-defined database tables.

7 T2S SD. INF: Information Management Service Class



7.1 T2S SD.INF 010: Status management services

As part of its settlement services, T2S maintains the settlement statuses of any instruction it processes. T2S informs duly authorised T2S Actors of the result of all settlement services and of all changes to the statuses of instructions, depending on the message subscription chosen by the T2S Actor.

T2S provides multiple-statuses reporting that gives more flexibility and brings more efficiency than single-status reporting. In this context, T2S provides the values of the different statuses for each instruction in a status message.

If instructions are rejected, settlement attempts unsuccessful or instructions cancelled, T2S also informs the relevant T2S Actor why this has happened.

7.2 T2S SD.INF 020: Report generation service

T2S provides a defined set of reports. Reports are triggered automatically by T2S. All reports are available in both User-to-Application (U2A) and in Application-to-Application (A2A) mode as in the T2S Connectivity Services description. These reports are not, and should not, be considered as Regulatory Reports. T2S Actors may use the query services described hereafter to receive the necessary information from T2S to provide their regulators with the required information.

T2S reports are either event-triggered or sent at a fixed time. When a CSD, T2S Actor or euro area or non-euro area NCB require information at a time not so triggered, the information can also be retrieved using the query service.

Reports containing information either on individual accounts or on a set of accounts can be sent to the relevant CSDs and DCPs, or to the relevant euro area or non-euro area NCB. T2S reports are based on the latest available data and contain a date and time stamp. In addition, T2S sends successive versions of defined reports with the information that changed from the previous version to the next version of that report (delta reporting). The additional information includes the attributes of the reported items as provided in the previous version of the report.

A DCP may receive reports only on:

- its own securities and cash balances, those of its clients and those of any other T2S Actor for which the appropriate authorisation was granted;
- instructions that were submitted by the T2S Actor (or a Third Party with access rights - supported by power of attorney to do so on behalf of the T2S Actor) and instructions that refer to the securities or cash account of the T2S Actor (or any sub-account thereof); and
- its own Common Static Data, as well as some generic Common Static Data on instruments and the daily schedule.

A CSD may receive reports only on:

- instructions that were submitted by the CSD in T2S itself, its DCPs, or by its participants;
- securities transactions and balances of the CSDs own accounts in T2S, those of its DCPs and those of its participants; and
- Common Static Data of the CSD in T2S itself, its DCPs, and of its participants, where privileges permit. These Common Static Data include those ISINs for which the CSD acts as Security Maintaining Entity (SME)[10]. Additionally, a CSD may query all Common Static Data that relate to its admission rule, for securities as well as for parties.

A euro area or non-euro area NCB may receive reports only on:

- instructions that were submitted by the euro area or non-euro area NCB in T2S itself, or by its Payment Banks;
- cash balances of its own DCAs in T2S and those of its Payment Banks as well as cash movements on its own DCAs and those of its payment banks; and
- Common Static Data of the euro area or non-euro area NCB in T2S itself, and of its

[10] Further details can be found in the Manual of Operational Procedures (MOP)

Payment Banks. Additionally, a euro area or non-euro area NCB may query all Common Static Data that relate to its national currency.

A Payment Bank may receive reports only on:

- instructions that were submitted by itself;
- cash balances of its own DCAs in T2S; and
- its own Common Static Data, and that pertaining to its DCAs.

T2S provides the following report types:

- Statements of holdings;
- Transaction reports:
  - Statement of transactions;
  - Statement of pending instructions;
  - Statement of settlement allegements;
  - Statement of Security Accounts at EOD;
  - Statement of changes to Common Static Data; and
  - Billing data report.
- Cash forecast reports:
  - Current Settlement Day cash information; and
  - Following Settlement Day cash forecast.

7.3 T2S SD.INF 030: Query service

T2S allows information to be queried in T2S. Queries are triggered by the duly authorised T2S Actor. All queries are available in User-to-Application (U2A) and in Application-to-Application (A2A) mode. All securities instructions, and balances and Common Static Data queries are available for all CSDs in T2S, DCPs as well as euro area or non-euro area NCBs and Payment Banks, in accordance with to the access rights.

T2S accepts all queries at any point in time during T2S opening days. T2S processes all queries in real time, on the basis of the latest available data. During the night-time settlement cycles, T2S stores balance queries sent in Application-to-Application mode. T2S responds to the queries at the end of each sequence inside a cycle with the latest position.

T2S provides standard queries which can be taken as the basis (blueprint) for individual, non-standard queries. For individual, non-standard queries, T2S provides the option of specifying parameters in the query to fulfil the needs of the querying T2S Actor. When processing queries, T2S takes into account all access rights as defined in the Common Static Data. T2S will only return results where the T2S Actor that has submitted the query has the right to access the underlying data. CSD/ euro area or non-euro area NCB and T2S Parties may act as service providers for indirect Parties or e.g. remote brokers.

7.3.1 T2S SD.INF 031: Query service for T2S Actor service component

A T2S Actor may query the following – subject to access rights:

- its own securities positions;
- instructions submitted by the T2S Actor itself (in case of direct connectivity), or by a Third Party that has access rights in T2S supported by a power of attorney; and
- its own Common Static Data, as well as some generic Common Static Data relating to e.g. instruments and the daily schedule.

7.3.2 T2S SD.INF 032: Query service for CSDs service component

A CSD in T2S may query the following:

- instructions that were submitted by the CSD itself, or by its DCPs;
- securities and cash balances of DCA(s) of the CSD itself and of its T2S parties in T2S;
- Common Static Data of the CSD itself, and of its T2S Actors;
- Common Static Data pertaining to securities.

7.3.3 T2S SD.INF 033: Query service for euro area or for non-euro area NCBs service component

A euro area or non-euro area NCB in T2S (acting in its role as euro area or as non-euro area NCB) may query:

- cash balances of the DCAs kept at the euro area or the non-euro area NCB in question;
- movements on the DCAs kept at this euro area or this non-euro area NCB; and
- Common Static Data pertaining to the DCAs for which it is responsible.

Additionally, a euro area or a non-euro area NCB may act as a T2S Actor of a CSD. In this case, the euro area or the non-euro area NCBhas the same access rights as any other T2S Actor. Finally, if a euro area or a non-euro area NCB plays the role of a CSD, that euro area or non-euro area NCB, when doing so it has the same access rights of a CSD.

7.3.4 T2S SD.INF 034: Query service for Payment Banks (liquidity providers) service component

A Payment Bank in T2S (acting in its role as liquidity provider) may query:

- cash balances of its DCAs; and
- Common Static Data pertaining to the DCAs for which it is responsible.

7.3.5 T2S SD.INF 035: Settlement-related queries service component

During the night-time settlement cycles, T2S stores balance queries sent in Application-to-Application (A2A) mode, then replies with a message that T2S is currently running a cycle and that T2S will respond to the query at the end of the cycle with the latest position.

T2S provides different standard queries related to settlement:

- Securities balance query:
  - The Securities Balance Query returns an account view on the position at a particular point in time, the latest securities position or at the close of settlement if requested after close of settlement, all positions are summarised in the account structure that is compatible with the query parameters.
  - The Securities Balance History Query returns all positions that occurred during a particular time period, all positions are summarised in the account structure that is compatible with the query parameters.
- Settlement instruction query:
  - T2S allows T2S Actors to query settlement instructions in accordance with the Actor’s roles and privileges.
  - T2S provides a settlement instruction status audit trail query which allows a T2S Actor to query settlement instructions on the basis of the business processing status or a combination of business processing statuses on a specific date or in a specific period in the past

7.3.6 T2S SD.INF 036: Cash balance-related queries service component

In accordance with their access rights, euro area or non-euro area NCBs and settlement/ Payment Banks may query:

- the current balance of one or more T2S DCAs;
- the total current collateral value of securities earmarked and available (on stock) for auto-collateralisation for a T2S DCA. The collateral value of securities, calculated by the

query, does not include securities on flow, as the settlement process will use these automatically;

- for a specific T2S DCA, the current total collateral value of every security, earmarked and available (on stock) for auto-collateralisation, in all Security Accounts, linked to the T2S DCA for settlement of the cash leg. The collateral value of securities, calculated by the query, does not include securities on flow, as the settlement process will use these automatically;
- the amount of outstanding intraday credit stemming from auto-collateralisation, defined as the difference between the credit utilised and the credit reimbursed;
- for a specific T2S DCA, the collateral (amounts and securities) utilised for outstanding intraday credit stemming from auto-collateralisation;
- the total collateral (amounts and securities) utilised for outstanding intraday credit stemming from auto-collateralisation.
- In addition to the queries described above, T2S provides some screens in the T2S Interface (U2A mode) which give a consolidated view of the balances available on the different DCAs of each Payment Bank to facilitate the liquidity management of the treasurer(s) at the Payment Bank itself. These screens are available to directly connected Payment Banks and their euro area or non-euro area NCB (further detailed in the User Handbook and the documentation on the GUI interface).
- In order to manage the liquidity of their DCAs, euro area or non-euro area NCBs and their Settlement/Payment Banks may also query:
    - limits and their utilisation,
    - liquidity transfer orders, and
    - liquidity transfer orders for multiple liquidity providers.

A CSD in T2S may query the cash balances of its own DCA(s) and those of its T2S parties in T2S.

7.3.7 T2S SD.INF 037: Common Static Data-related queries service component

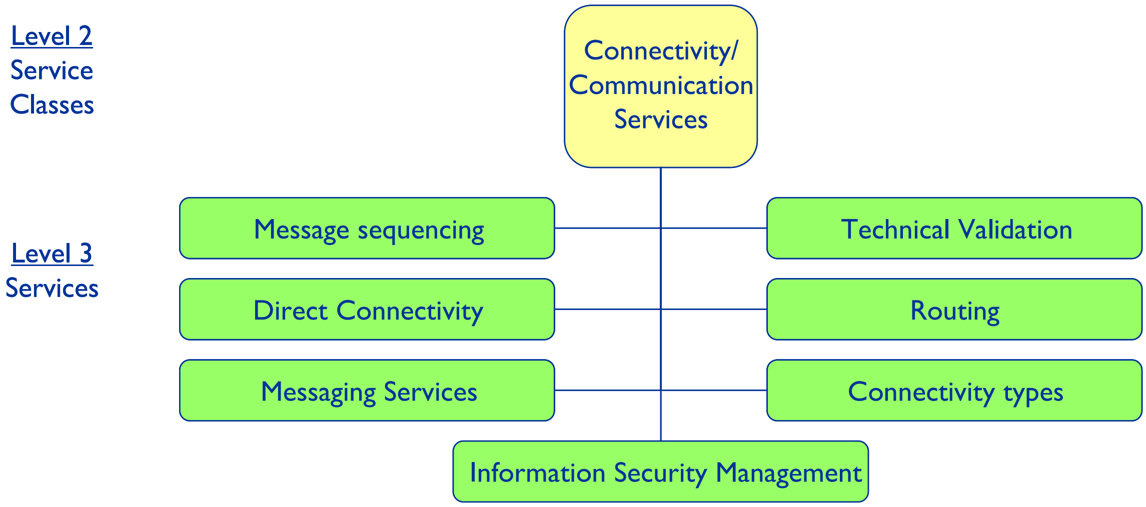
Common Static Data queries are related to all main entities in Common Static Data. CSDs and CSDs’ participants may query Common Static Data in accordance with their access rights.

T2S also provides a Common Static Data audit trail query which allows a T2S Actor (in accordance with its access rights) to query all revisions to an occurrence of Common Static Data.

Standard Common Static Data queries allow the T2S Actor to query, in accordance with its access rights:

- Security reference data
- T2S Actor reference data
- Security Account reference data
- T2S DCA reference data
- T2S calendar and diary/daily schedule
- T2S entities
- Attribute domains
- T2S Actors, roles and privileges
- Restrictions
- Currency reference data

8 T2S SD. CON: Connectivity / Communication Service Class



T2S does not provide technical connectivity/network services between the T2S Actors and T2S among its services. Network services have to be procured by the T2S Actors directly from one or more of the accredited Network Service Providers (NSP). T2S defines the technical and operational requirements for the NSPs[11].

NSPs offer a catalogue of services with appropriate solutions for high settlement volume and small settlement volume T2S Actors. The Connectivity Service catalogue contains the connectivity to T2S service NSPs provide and the additional services offered by these NSPs, including;

- detailed services;
- service levels, detailing performances, availability and support commitments;
- volume related services;
- dedicated connectivity solutions; and
- backup/ alternative network access solutions.

[11] The T2S Connectivity Guide provides further details on the different roles and responsibilities regarding the Connectivity Services

8.1 T2S SD.CON 010: Messaging services

T2S provides standard, time-event-driven and business-event driven messages based on and compliant to the largest extent possible with the ISO 20022 / UNIFI (Unified Financial Industry Message Scheme) standard. Communication between T2S Actors and T2S has to comply with the formats and specifications defined in T2S. T2S supports push and pull mode for files and single messages in Application-to Application mode (A2A), as well as a Graphical User Interface (GUI) in User-to-Application mode (U2A).

In T2S “business terms” a message is a single instruction (e.g. a settlement instruction, matched or unmatched, a Common Static Data maintenance instruction, etc) and in “technical terms” an XML string that refers to one or more “business messages”.

In T2S “business terms” a file is a set of instructions (more than one) and in “technical terms” a XML string that refers to one or more “business messages”, possibly of different types. Its size should be within a defined range (minimum and maximum considering performance aspects).

For each message or file received by T2S an acknowledgement is sent to the sending T2S Actor. An acknowledgement from the receiving T2S Actor is also expected for each message or file T2S sends out. Security-settlement-related and cash-management-related messages follow the same logic.

Inbound and outbound traffic is stored in T2S in original format messages (before any transformation) and the messages are kept with time-stamping information and signature.

8.1.1 T2S SD.CON 011: Push messaging service component

During the Real-time Settlement T2S sends real-time standard messages to the T2S Actors which are triggered by the relevant business events. These events for the generation and subsequent sending of the different messages are described in the corresponding chapters of this Service Description.

After each cycle of the Batch Settlement T2S sends settlement related messages to the T2S Actors. For a given instruction only the most recent valid statuses will be sent. T2S Actors may choose to receive single messages or one file containing the complete set of such messages.

Depending on their access rights and privileges, T2S Actors can receive any message or any copy of any message. A copy of a message is any message sent to a T2S Actor (who is neither the instructing T2S Actor, nor the counterparty to the instruction), communicating the exact same information as sent to the instructing T2S Actor/counterparty to the instruction.

T2S message subscription is a service that allows a CSD or another duly authorised T2S Actor with direct connectivity to T2S to subscribe to copies of messages sent between a Directly

Connected Party (DCP) and T2S in real-time using push mode messaging.

The T2S Actor must define in Common Static Data message subscriptions for all messages they want to receive. T2S only sends those messages the T2S Actor has subscribed to, there are no mandatory messages apart from the technical acknowledgements, which are always delivered to the sender of the message. All messages, which are used by T2S, are available for message subscription. T2S will not send any message not subscribed to beforehand, although T2S generates all messages in accordance with the business context.

Subscriptions are based on one or more of the following parameters:

- Message type
- Instruction type
- Instruction status
- Participant
- Account
- ISIN

For euro area or non-euro area NCBs, the messaging service includes i.a.:

- messages for each utilisation of intra-day credit stemming from auto-collateralisation; and
- messages for each repayment of intra-day credit stemming from auto-collateralisation.

The message subscription rules are defined and maintained in the Common Static Data by the T2S Actor.

8.1.2 T2S SD.CON 012: Pull messaging service component

T2S Actors may request to receive specific messages from T2S. T2S uses this mode mainly for query services and reports. Additionally, through the Graphical User Interface (GUI) the T2S Actor may pull queries and reports.

8.1.3 T2S SD.CON 020: Technical validation services

T2S verifies that all inbound communication (messages and files) is compliant with T2S required syntax, format and structure. The message and file integrity check is part of the validation and ensures that only messages and files from T2S Parties enter the T2S applications. T2S validates files using the same standard as for the messages and ensures that inbound files are not lost, that outbound files are neither lost nor duplicated and that the recommendations of the Giovannini file transfer rulebook are applied (generic rules for file construction and best practices for file transfer operations for any and all file transfers, on any network).

If there are structure problems in a received message, T2S rejects the message. If there are file transfer or structure problems inside the file, T2S rejects the file in its entirety. If there are validation problems at the level of individual instructions within the file, the file is normally processed and a rejection message is sent for each individual invalid instruction the file contains.

T2S verifies whether the communication was received from a secured and recognised technical address configured in the Common Static Data.

8.2 T2S SD.CON 030: Connectivity types services

8.2.1 T2S SD.CON 031: Application to Application (A2A) service component

Application to Application (A2A) mode in T2S is a connectivity mode to exchange information between the T2S software application and application at the T2S Actor. In T2S, A2A can be based on either XML messages or file transfer. The ISO 20022 standard is applied as far as possible, for both inbound and outbound communication.

8.2.2 T2S SD.CON 032: User to Application (U2A) service component

The duly authorised T2S User can communicate with T2S via a web based Graphical User Interface (GUI), a connectivity mode to exchange information between software application of T2S and a T2S Actor and which is the User-to-Application interface (U2A) for interaction with T2S. The roles and privileges assigned to a T2S User determine which functions this user may execute and which data this user is allowed to see and to maintain.

8.3 T2S SD.CON 040: Information security management services

Information Security management services are a crucial part of the total package of T2S services, in terms of confidentiality, integrity and availability as well as authentication, accountability, non-repudiation and reliability of the T2S information.

Confidentiality or non-disclosure agreements between T2S and the T2S Actors address the requirement to protect Confidential Information using legally enforceable terms. Any access to the service’s information by external parties must be controlled. Where there is a business need for working with external parties that may require access to the service’s information, or when a product or service is obtained from or supplied to an external party, a risk assessment is carried out to determine Information Security implications and control requirements.

Access by external parties to the service's information is not provided until the controls have been implemented and, where feasible, a contract has been signed defining the terms and conditions for the connection or access and the working arrangement.

8.3.1 T2S SD.CON 041: Authentication service component

Authentication is a security mechanism which verifies the identity of an individual T2S Actor (the T2S User) or application trying to connect to T2S. A T2S User is an individual or application that is allowed to communicate with T2S using a login name and certificate/smartcard and for U2A in addition an optional password and/or certificate for authentication.

T2S supports different types of authentication:

- Simple authentication requires to the T2S User to enter the T2S User ID and the respective password only. This is applicable only for U2A.
- Simple Certificate authentication requires the T2S User to use a certificate without entering a password in T2S. This is applicable only for A2A.
- Advanced Certificate authentication requires the T2S User to use a certificate in addition to entering the T2S User ID and respective password in T2S. This is applicable for U2A only.
- Smartcard authentication requires the T2S User to identify himself to the system using a smartcard in addition to entering the T2S User ID and respective password.

T2S stores and manages certificates as part of the Common Static Data. For every inbound communication T2S verifies:

- the identification of the sender;
- whether the digital signature of the inbound communication corresponds to the certificate of the sender;
- the T2S Actor technical address;
- the network service used for the communication; and
- if the sender information of the inbound communication is defined in the Common Static Data.

8.3.2 T2S SD.CON 042: Authorisation service component

Authorisation is a security mechanism which verifies that a T2S User or application (trying to connect to T2S) has the appropriate privilege to access certain functions or data within T2S. Authorisation is managed via the roles and privileges assigned by the T2S system administrators.

Initially the CSDs and the euro area or the non-euro area NCBs (with respect to the Payment Banks) grant and manage the authorisation. Within a DCP or a Payment Bank, a system administrator may grant additional authorisations which are limited by the authorisation granted to the T2S Actor by the CSD or euro area or non-euro area NCB.

T2S verifies the authorisation for every service and data access requested by a T2S User.

8.3.3 T2S SD.CON 043: 4-eyes principle service component

T2S ensures that any T2S operation to be executed in 4-eyes-mode is confirmed by a second authorised T2S User. The 4-eyes principle is only possible for U2A communication.

When a T2S User changes any occurrence of Static or Dynamic Data, which is subject to independent approval, T2S creates the changed version of the data as a new occurrence in the relevant revision entity and accords it a status "awaiting approval". The current version remains unchanged and is used until an independent source approves the update. If the independent approver accepts the change, T2S accepts the update and gives it the status "approved" in the Common Static Data entity. T2S retains the previous version of the data from the current entity as part of the audit trail in the revision history.

If the update is not approved, T2S updates the status of the change to "rejected" and it remains as an unapproved change in the revision history.

8.4 T2S SD.CON 050: Message sequencing services

T2S assigns each outgoing message a business sequence number which allows all T2S Actors to identify the sequence of messages T2S has sent. The receiving T2S Actors can thus identify whether messages are missing or misplaced in the sequence.

This service is used for all business related messages sent out by T2S.

8.5 T2S SD.CON 060: Direct connectivity services

Direct (technical) connectivity is a technical facility which allows T2S Actors to access T2S and use its services without using the relevant CSD/ euro area or non-euro area NCB as a relay or proxy. Direct connectivity affects neither the business or legal relationships between CSD and T2S Actor, nor the processing of the instructions of the CSD’s or euro area or non-euro area NCB’s T2S Actor.

Direct connectivity is a technical concept and means the existence of a (direct) network connection between a T2S Actor and T2S. It does not mean that the T2S Actors concerned has any particular roles or privileges.

DCPs have to be certified to participate directly in T2S. The relevant CSD or euro area or non-euro area NCB (i.e. the one the DCP is a participant or member of) has to ensure that the DCP fulfils all relevant conditions for participation of the DCP in T2S. T2S ensures that each DCP receives services as authorised by its CSD or by its euro area or non-euro area NCB, and the same Service Levels. Furthermore, T2S ensures that no connected system can harm T2S or any other connected system. Before being able to access the T2S production environment, both the CSD / euro area or non-euro area NCB and its DCP(s) therefore have to successfully pass a series of mandatory tests.

An individual T2S Actor may wish to participate as a DCP in more than one CSD or euro area or non-euro area NCB. In such case, the T2S Actor is deemed to be a separate DCP within each CSD or euro area or non-euro area NCB, and thus has a DCP account and related contractual arrangements with each of the CSDs or euro area or non-euro area NCB concerned.

8.6 T2S SD.CON 070: Routing services

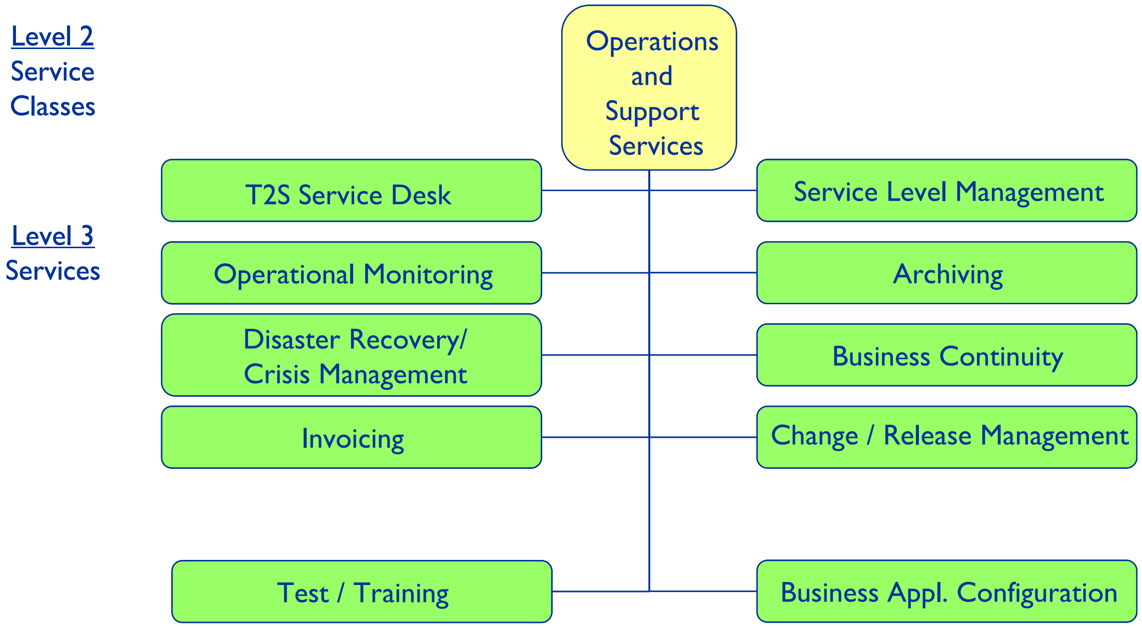
T2S allows duly authorised T2S Actors to configure routing information which T2S uses to deliver outgoing messages to them. Each T2S Actor can set up several routing conditions and each routing condition includes the network service and the technical address. T2S identifies the T2S Actor entitled to receive the message on the basis of on the configuration in the Common Static Data, namely:

- the message subscription preference of the recipient; and
- the technical address to which the message should be routed (when there are multiple technical addresses, the first technical address (according to priority) is chosen).

T2S ensures that outbound messages will be routed to the appropriate technical address of the receiving T2S Actors.

T2S sends a message as a direct response upon receipt of a message, It sends the message to the T2S Actor’s technical address, which was used to send the underlying message, rather than the address defined in the Common Static Data.

9 T2S SD. SUP: Operations and support service class



To ensure service support and delivery in accordance with agreed Service Levels, T2S uses predefined processes based on the proven Information Technology Infrastructure Library (ITIL) concept. ITIL provides a set of best practices for managing information technology (IT) infrastructure, development, and operations.

T2S Service delivery is coordinated through the operations and support services and the required activities and processes are delivered and managed in accordance with agreed Service Levels for T2S.

9.1 T2S SD.SUP 010: T2S Business Application configuration services

T2S ensures the continuous management of its configuration.

9.1.1 T2S SD.SUP 011: T2S Calendar service component

For settlement of transactions against payment/delivery and/or free-of-payment/delivery in euro or non-euro CeBM, a common calendar is defined in the Service Level Agreements, as followed by all euro area markets.

During weekends, after the end of the Friday Settlement Day, T2S moves to the Settlement Day of the following Monday and performs the related activities until the end of the Night-Time Settlement Period. On the Monday, T2S starts with the preparation of Day-Time Settlement as the continuation of the same Settlement Day[12].

9.1.2 T2S SD.SUP 012: T2S Settlement Day service component

T2S operates on a single harmonised timeframe for centralised settlement procedures in euro and non-euro CeBM. This timeframe represents a balance between the user requirements for a pan-European timetable and the constraints and business needs of existing local schedules, and is in accordance with the market's request for harmonised post-trading practices in the EU.

T2S settlement services are available continuously during the Night-Time and the Day-Time settlement periods except for a short period during the Maintenance Window. T2S does not perform any settlement services outside the Night-Time and Day-Time settlement periods.

The change of the T2S settlement date defines the start of a new Settlement Day. Following the change of the Settlement Date:

- T2S validates settlement instructions against Common Static Data valid as of the new settlement date and resulting from validated changes to the Common Static Data; and
- T2S settles instructions on the new settlement date.

The following is an overview of the T2S Settlement Day. A detailed description including time lines can be found in the T2S Manual of Operational Procedures (MOP):

- The T2S Settlement Day begins with a start-of-day ("SOD") period, starting after the change of the settlement date and ending prior to the start of night-time settlement. It includes processes that are critical for the smooth preparation of the night-time settlement procedures, such as the identification and revalidation of eligible instructions and changes to the Common Static Data valid as from or as for this settlement date. During this period liquidity transfers from RTGS systems will be accepted.
- The following Night-Time Settlement Period starts after the end of the "SOD" period and ends prior to the Maintenance Window. During the Night-Time Settlement Period mainly settlement instructions that were input on previous Settlement Days with an Intended Settlement Date that corresponds to the current settlement date are processed. The Night-Time Settlement Period consists of two settlement cycles.
- After the Night-Time Settlement Period the T2S Schedule includes a technical window for system maintenance.

[12] Additional detail and further rules regarding the T2S calendar can be found in the Manual of Operating Procedures (MOP)

- After the end of the Maintenance Window T2S starts the Day-Time Settlement Period, which is used mainly for T+0 (same-day or intraday) settlement. In addition, it is during this period that failures from night-time settlement can be resolved.
- Before the End-of-Day (EOD) period starts, T2S operates different cut-off times for DvP, FoP, euro area or non-euro area NCB operations[13].

The EOD period of T2S starts after the end of the Day-Time processing and finishes prior to the change of the settlement date, permitting CSDs and their participants to perform critical end-of-day activities, such as fulfilling reporting requirements. From the start of the end-of-day procedure, securities and cash positions are stationary (with the exception of EOD procedures related to the auto-collateralisation as described above) since no settlement can occur until the start of the next Settlement Day's Night-Time Settlement period.

9.2 T2S SD.SUP 020: Operational monitoring services

The T2S Operator monitors the T2S infrastructure and the T2S Business Application continuously:

- The T2S Operator observes the behaviour of the T2S production environment. If deviations from the normal Settlement Day are detected (the normal Settlement Day being defined as the behaviour of T2S over a defined time period):
  - within defined boundaries, the T2S Operator can trigger the appropriate corrective actions, when required; and
  - if necessary, the T2S Operator raises the alarms and indicates the appropriate level of priority as quickly as possible.
- In the event of operational issues the T2S Operator cannot resolve, the T2S Operator reports aggregated up-to-date monitoring information.
  - In Crisis and contingency situations, the T2S Operator provides up-to-date and comprehensive information to the crisis manager.

[13] See further details in the SLA and in the MOP

  - In the event of an incident or problem, the T2S Operator provides and tracks information about the status and logs its history, as well as documenting the analysis and solution.

- The T2S Operator reports his activities to assist in the Service Performance Indicators reporting required for Service Information and monthly Service Level Agreement reporting.

9.3 T2S SD.SUP 030: Business continuity management services

Business continuity in T2S is understood to mean managing single component failures as well as failures of a single site without loosing data. The Business Continuity Management service ensures that the required IT technical and services facilities (including computer systems, networks, applications, telecommunications, technical support and Service Desk) can be recovered within required, and agreed, business time-scales.

The technical environment for the T2S data centre and application follows the “two regions / four sites” architecture. Inside a region, the distance between the two sites is more than 10 kilometres. System and application software are kept updated in parallel at the four sites and each of the four T2S sites satisfies the agreed Service Levels.

Different mechanisms and procedures are implemented to guarantee business continuity:

- Single component failure
  - Hardware/Software and telecommunication components redundancy
  - Software quality control and test execution
  - Operational procedures (e.g. Change and Release Management)
- Site failure
  - Data in the two local sites are mirrored synchronous
  - Local recovery procedure to restart on alternate site

9.4 T2S SD.SUP 040: Disaster recovery and crisis management services

Disaster recovery services in T2S are understood to mean ensuring the resumption of T2S Services which were discontinued due to a high-impact disruption of normal business operations affecting a large metropolitan or geographic area and the adjacent communities that are economically integrated with it.

In addition to impeding the normal operation of financial industry participants and other commercial organisations, major operational disruptions typically affect the physical infrastructure.

Disaster recovery services ensure that the T2S Services can be recovered in an alternate region within the times defined in the Service Level Agreement. The T2S Business Application is installed in two separate regions and the data in the two regions are mirrored in asynchronous mode. Regional disaster recovery procedures are defined to restart the solution and the applications in the alternate region. Additionally, T2S uses a "periodical rotation" procedure to ensure that all staff are properly trained and both regions are capable of hosting the T2S Services.

T2S has defined a crisis management process to coordinate all activities in Crisis Situations. The crisis management process guarantees effective coordination of activities within all the involved organisations and appropriate communication, i.e. early warning and clear instructions to all concerned, if a Crisis occurs.

9.5 T2S SD.SUP 050: Archiving services

T2S provides a central archive for its own purposes covering a 10-year period. The T2S central archive includes T2S static and Transactional Data.

T2S archives immediately all incoming and outgoing messages and files in their original format. After three months, T2S archives all instructions (settlement instruction, cash movements) as well as Common Static Data, billing and audit data.

In order to ensure the integrity of static and Transactional Data, Common Static Data revisions and Common Static Data history remain in the operational databases until the archiving procedures moves the Transactional Data that reference it into the archiving database.

CSDs, euro area or non-euro area NCBs and T2S Operators have direct access to archived data via A2A or U2A interfaces. Provided it is duly authorised by its NCB, a DCA holder has direct access to archived data of relevance to it. Other T2S parties have to request their CSDs to retrieve and provide archived data to them.

9.6 T2S SD.SUP 060: T2S service desk services

T2S service desk provides a single, central point of contact for the CSDs, euro area or non-euro area NCBs, DCPs (if so authorised by their CSD), or DCA holders (if so authorised by their euro area or non-euro area NCB) for handling all incidents, queries and requests related to business, functional or technical issues related to T2S. The T2S service desk is accessible 24 hours a day on T2S operating days. The Service Levels differ depending on the time of day.

On the basis of the complexity level of the service request/ enquiry, the T2S service desk guarantees different response times, in accordance with the response time matrix as published in the Service Level Agreement. Service Levels are measured against this matrix. All enquiries are recorded, and confirmations are provided to CSDs, euro area or non-euro area NCBs or DCPs (if duly authorised by their CSDs) when service requests are received.

T2S has ITIL-based problem and incident management processes in place:

- Incident Management - Incident Management captures the details of all incidents reported, implements temporary work-arounds and manages the resolution of incidents. Its goal is to restore normal service operation with minimum disruption to the business.
- Problem Management - The goal of Problem Management is to minimize the adverse impact of incidents and "known errors" on the business. The main focus of Problem Management is to identify the root cause(s) of incidents and to eliminate these if this is possible. While problems are being resolved Problem Management may produce temporary 'work-arounds.'

An incident is defined as an event which is not part of the standard operation of the T2S Service and which cause, or may cause, an interruption or a reduction of the quality of that service. Incidents must be resolved immediately and are not part of the Change and Release Management.

A problem is defined as an abnormal state or condition at the component, equipment, or sub-system level, which may lead to a failure in T2S that produces incorrect or unexpected results, showing a discrepancy between the relevant specifications and the actual results. Based on reported and acknowledged problems, and their criticality, T2S and the CSDs agree how to resolve them. A problem can result in a Change Request.

9.7 T2S SD.SUP 070: Service Level management services

T2S uses a Service Level Management process to maintain and improve service quality through a constant cycle of agreeing, monitoring and reporting of service achievements and instigating actions to correct non-adequate service delivery.

T2S provides reports on actual Service Levels achieved on a monthly basis. For each service indicator as defined in the Service Level Agreement, the performance achieved is compared with the target values. These reports are provided in accordance with the rules laid down in the Service Level Agreement.

9.8 T2S SD.SUP 080: Invoicing services

Invoicing services in T2S consist of:

- Automatically calculated invoices that are set up on a regular basis.
- On demand: Ad hoc invoicing in special cases (for CSDs / euro area or non-euro area NCBs and / or customers of CSDs / euro area or non-euro area NCBeuro area or non-euro area NCBs).

For both types of invoices, i.e. T2S invoice to CSDs and CSD invoicing support, the invoice cannot be amended or adapted. Only

- approval;
- cancellation; and
- (re-) generation

are defined actions.

If a T2S Actor needs to receive a prior invoice (again), it can do so via a query in both A2A and in U2A mode.

9.8.1 T2S SD.SUP 081: T2S invoicing to CSDs and euro area or non-euro area NCBs service component

T2S automatically calculates invoices based on fees in accordance with the current T2S Tariff Structure and Price List. T2S invoicing reflects changes in the T2S Tariff Structure and Price List, which may be implemented at any time, but become effective only at the beginning of a billing period.

The invoice is calculated at the beginning of each calendar month for the past calendar month. All prices are calculated in Euro and VAT regimes in the different countries are taken into account, in case VAT needs to be included. Invoices and the underlying information are archived.

CSDs and euro area or non-euro area NCBs receive a summary invoice, showing aggregate data for each billing item.

The prices for instructions are always charged to the CSDs of the two counterparties involved in a settlement instruction. Each Security Account and DCA needs to be assigned unambiguously to one CSD or euro area or non-euro area NCB for the billing of the fixed fees.

Invoices are sent out once via push mechanism to the technical address which is defined in the Common Static Data. The invoice can also be queried using the GUI. As an additional service, ad hoc billing is possible in special cases.

Changes in the Pricing scheme may be implemented at any time, but become effective only at the beginning of the next billing period.

9.8.2 T2S SD.SUP 082: CSDs / euro area or non-euro area NCBs invoicing support service component

T2S supports the CSDs/ euro area or non-euro area NCBs by enabling them to invoice their clients in accordance with their individual tariff structures. To that end, as part of the T2S information services, a CSD/ euro area or non-euro area NCB may query any of its assigned accounts, but no others.

T2S provides counters for all settlement process steps and instances as enumerated and described in the T2S data model. As part of the CSD/ euro area or non-euro area NCB invoicing support service, each CSD/ euro area or non-euro area NCB is able to query this level of data for each of its customer accounts.

T2S transmits details to the CSD/ euro area or non-euro area NCB via a report based on an event at the end of the invoicing period. The CSD/ euro area or non-euro area NCB invoicing support report provides additional information on billable items at the level of each customer account as an itemised list. This is either sent in push mode ore made available for pull mode.

Furthermore, on a monthly basis T2S provides a standard report containing all detailed Transactional Data and counters for each CSD/ euro area or non-euro area NCB which is available only to the respective CSD/ euro area or non-euro area NCB in pull mode. Each CSD / euro area or non-euro area NCB receives only the data related to its and its DCPs interactions with T2S, i.e. the invoicing support report is CSD-/ euro area or non-euro area NCB - specific and does not contain any data or information concerning any other CSD/ euro area or non-euro area NCB.

9.9 T2S SD.SUP 090: Change and Release Management services

T2S is an evolving application, increasing and improving services by following a defined Change and Release Management process. Any T2S Actor who identifies a need to change T2S, may request new or amended features and/or functionalities following the agreed Change and Release Management, specified in Schedule 9 to the Framework Agreement and the Currency Participation Agreement. If there are inconsistencies between the description in this section and the provisions of the Schedule, the latter shall prevail.

CSDs may change parameters/configuration (i.e. rules for CSD validation hold/reject and the CoSD functionality) or reference data (i.e. ISIN, Security Account) without launching the Change and Release Management, although these actions may be subject to operational procedures, in particular if there is an impact on any other T2S Actors.

T2S uses ITIL based processes for Change and Release Management: These services encompass all stages of the Change Lifecycle from initiation and recording, through filtering, assessment, categorization, authorization, scheduling, building, testing, implementation and ultimately their review and closure.

The Eurosystem has established a Change Review Group (CRG) to evaluate the information provided in the Change Request and in the preliminary assessment (especially checking its consistency and completeness across all Change Requests) and to prepare for the change authorisation or rejection decision. The CRG is responsible for building and maintaining the scoring mechanism as a tool for facilitating the definition of the content of each T2S release and making proposals for, reviewing and monitoring the content of T2S releases as well as any changes to any agreed release.

9.9.1 T2S SD.SUP 091: Change Management service component

Changes in T2S, which are subject to the Change and Release Management, are defined as changes on T2S functionality and/or to the Scope Defining Set of Documents. Changes may arise for a number of reasons:

- innovation and improvement – the introduction of new services/ technical capability;
- new functionality to meet business needs of T2S Parties;
- changes in law or in regulatory (including fiscal) requirements; or
- clarifications/corrections to functional and/or technical documentation/gaps in line with the user requirements.

T2S distinguishes between the following types of changes:

- according to beneficiary:

- Common Changes include new features, functionalities or services which are implemented for the benefit of – and available without restrictions to – all T2S Actors. They have an impact on all T2S Actors and the costs are shared by all T2S Actors.

- Specific Changes are any new feature, functionality or services which is not implemented as a Common Change, but which some CSDs/CBs wish to implement, and to which the other CSDs/CBs do not object. The costs of these changes are shared only by the entities using the feature, functionality or service, which is changed. The functionality is used only by the supporting parties but is made available to all T2S Actors.

- according to urgency:

- Normal changes are changes that can be planned and go through the whole Change and Release Management before being implemented into the live environment.
- Fast-track Changes are changes that are imposed by Legal and Regulatory Requirements, or by CSG resolutions related to risk management or changes that are critical for the stability of the T2S Platform or by euro area or non-euro area NCB decisions related to safeguarding the currency/-ies or related to crisis management measures to ensure financial stability and that, owing to the time constraints, have to be implemented in a shorter timeframe than normal, which will be decided on an ad-hoc basis. These changes will also go through the normal CRM process, however, the length of the different process steps will be shortened on an ad-hoc basis, in particular for preliminary and detailed assessment.

Each change will be categorised based on the following parameters:

- Legal/Business importance
- Market implementation efforts
- Operational/technical impact
- Financial impact for T2S

Every initiated Change Request is identified via a Change Request identifier. All Change Requests are published and made available to all duly authorised T2S Actors in accordance with the agreed Governance arrangements and the agreed Change and Release Management, specified in Schedule 9 to the Framework Agreement and the Currency Participation Agreement.

In certain cases an incident may result in an urgent intervention on T2S aiming to ensure a quick restoration of T2S Services. On account of its urgency, such an intervention cannot be processed via the normal Change and Release Management. These Fast-track Changes are therefore processed via faster operational procedures as defined and further detailed in the Manual of Operational Procedures (MOP).

9.9.2 T2S SD.SUP 092: Release Management service component

Once the changes have been duly authorised for implementation, they are bundled and assigned to future T2S releases. The term "Release" is used to describe a collection of authorised Change Requests which consist of enhancements to the T2S Service and/or a number of bug fixes which are implemented into the production environment. A scoring mechanism is applied to identify all authorised changes and bug fixes for a specific release. The Release Management services include the planning, design, build, configuration and testing of T2S software and hardware needed for the implementation of the changes to create a set of release components.

The Release Management services ensure that all aspects of a change, technical and non-technical, are considered together. The main objective is to deliver, distribute and track one or more changes intended for simultaneous release into T2S operations while protecting the integrity of the T2S production environment and its services. Release Management services ensure that authorised changes and bug fixes that have been agreed as part of a release are secure and traceable, and that only correct, tested and authorised versions are installed into the production environment. Furthermore, through Release Management any amended legal or contractual obligations T2S has to comply with will be implemented.

Before implementing any release, T2S performs T2S-internal acceptance tests to verify that the system operates as predicted and fulfils the requirement and the functional specification of the Change Request.

Once T2S-internal acceptance test is finalised, T2S provides the CSDs and euro area or non-euro area NCBs with the test results and confirms the readiness of the T2S testing environments for the T2S User Testing. The test calendar is agreed with the CSDs and euro area or non-euro area NCBs, and information is provided on the testing activities, and regarding the availability of the testing environments.

The release is verified in accordance with the Governance arrangements, with the involvement of the CSDs and euro area or non-euro area NCBs once the exit criteria of the verification process have been completed successfully.

The delivery of the application software release into the production environment is the final step in the Release Management.

T2S provides and updates T2S Documentation as part of the Release Management.

9.10 T2S SD.SUP 100: Test and training services

9.10.1 T2S SD.SUP 101: Testing service component

The objectives of the T2S User Testing are:

- to ensure that T2S fully meets user requirements as expressed in the Change Requests of the relevant release, as well as the functional and non-functional specifications agreed by T2S; and
- to guarantee the readiness of the CSDs, euro area or non-euro area NCBs and its DCPs to operate in accordance with the agreed release.

T2S provides diverse testing environments for T2S Actor testing activities:

- one for the CSD/ euro area or non-euro area NCB wanting to test changes in their own applications against the current T2S operating environment; and
- other(s) for the CSD/ euro area or non-euro area NCB to test future T2S releases.

The T2S testing environments are sized and prepared for interconnection with the testing environments of the T2S Actors via test networks. T2S reserves the right to block one environment for its own regression testing of new releases.

The security levels of the testing environments are the same as for the T2S production environment. The testing environments have a substantially lower technical capacity compared to the production environment. This capacity can be increased to cover specific testing needs (e.g. high-volume tests during the Community testing and the Business Day testing stages). During the T2S User Testing execution phase, the T2S operating procedures reflect as much as possible those that are agreed for live operations.

T2S testing environments use the same problem and incident processes as the operating environment.

9.10.2 T2S SD.SUP 102: Training service component

T2S delivers training services to the CSDs, euro area or non-euro area NCBs and DCPs based on the “train the trainer”-concept. The exhaustive and self-explanatory T2S training documentation shall facilitate in-house training at CSDs, euro area or non-euro area NCBs and at their participants. The scope of the T2S training sessions covers aspects of the day-to-day activities of technical, functional and operational nature as well as one-off activities for the testing of and migration to T2S.

T2S provide the CSDs and the euro area or the non-euro area NCBs with the T2S Training Framework, on the basis of which T2S defines and elaborates the T2S Training Packages.

Depending on the training delivery strategy and mode selected (inherent in the T2S Training Framework), T2S guides, delivers and provides support for the T2S training for the CSDs and for the euro area or for the non-euro area NCBs.

The T2S Training Framework is elaborated and rolled out so that a timely and efficient knowledge transfer to the end-users of T2S can be accomplished. The T2S Training Framework further clarifies and details all organisational and planning aspects related to the training.

EUROPEAN CENTRAL BANK
EUROSYSTEM

TARGET2-SECURITIES

FRAMEWORK AGREEMENT

SCHEDULE 6
T2S SERVICE LEVEL AGREEMENT

31 October 2011

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1 Introduction

This Service Level Agreement (SLA) documents the commitments of the parties named below to each other, in particular the Service Levels under which the Eurosystem will provide the T2S Services to the Participating CSDs that have entered into the Framework Agreement with the Eurosystem. The main objective of this document is to describe the Service Levels agreed between the parties and to define the Key Performance Indicators (KPIs) used to measure these Service Levels.

Annex 1 (Management of non-functional changes) to this document covers the process to manage non-functional changes needed to maintain the agreed Service Levels, or to increase them as a result of the SLA review process.

This SLA assigns responsibilities to and describes interactions between the parties. This SLA does not constitute liability other than specified in the provisions laid down in the Framework Agreement.

This SLA is part of the legal arrangements between the Eurosystem and CSDs, under the Framework Agreement. Unless explicitly mentioned this SLA is the same as the one concluded with all other CSDs. It is the intention of both parties to reach the highest possible level of harmonisation between all SLAs. The commitments of the Eurosystem and the CSDs set out below will not be altered without mutual agreement, subject to the agreed over-arching governance of T2S.

2 Parties, commencement date and scope

2.1 Identification of the Parties

The Parties to this Service Level Agreement are those indicated in the core Framework Agreement, i.e. the Eurosystem and the Contracting CSD.

As a matter of fact, the Directly Connected Parties (DCPs) do not have a direct legal relationship with the Eurosystem for the use of T2S Services. Nevertheless, they will obtain certain rights and be subject to certain obligations from this SLA through the mandatory inclusion of certain provisions in their legal arrangements with their CSD(s). These provisions are explicitly reflected in section 3.2 of this SLA.

2.2 Scope

This SLA relates to the production phase of T2S, as well as to the User Testing phase prior to a CSD’s migration to T2S. Consequently, this SLA refers to the T2S Production environment and its accompanying test environments both before and after migration. It covers the full range of services as described in Schedule 5 for each of the service classes, i.e. Settlement Services, Liquidity Management Services, Static Data Management Services, Information Services, Connectivity Services, and Operational and Support Services. In addition, this SLA covers the relevant service commitments from the Eurosystem with respect to the support of the User Testing activities as specified in Schedule 3 (User Testing).

2.3 Commencement date

This SLA shall enter into force as from the day the Contracting CSD starts its User Testing activities on the T2S Platform. More specifically, as from that day until the end of the Migration Period, the provisions with respect to the test environment in “future mode” will apply, as specified in section 5.2, and shall apply to any additional test environment that will be made available to support these User Testing activities in accordance with Schedule 3. After the end of the Migration Period, these provisions shall apply again from the day any new release is made available in this environment until the go-live date of this new release.

In addition, as from the start of the first T2S Settlement Day, the Eurosystem is committed to deliver the T2S Services according to the Key Performance Indicators (KPIs) as specified in sections 4.2 and 5.1 of this SLA. The values of some KPIs defined in section 4.1 of this Schedule will only be specified in section 4.2 after a bedding-down period[1], during which both parties shall aim to fulfil their obligations on a best effort basis, and in a constructive spirit. The purpose of the bedding-down period is to fine-tune the operational procedures and the Participating CSDs' usage of T2S in a way that ensures that the T2S Services will be delivered to the Contracting CSD according to the agreed Service Levels.

The bedding-down period shall start on the first Settlement Day of the Migration Period and shall last for a period of six months after the end of the Migration Period. Its duration may be shortened or prolonged upon agreement by the parties according to the usage patterns of the T2S Service.

[1] The values for these not yet specified KPIs have been stated as "xx".

3 Service responsibilities

3.1 Eurosystem's responsibilities

The Eurosystem must:

a) establish the T2S service desk as a single point of contact for the Contracting CSD (for technical and operational problems) and provide their contact details (e-mail, mobile phone, telephone, fax);

b) support the Contracting CSD in their operational management of direct links for the CSD and DCPs if needed;

c) ensure the permanent reachability of a T2S Crisis manager, T2S Operator's Crisis manager, Service manager and T2S co-ordinator and provide their contact details (e-mail, telephone, fax);

d) refrain from scheduling system downtimes without pre-advice and green light of the Contracting CSD outside the normal Maintenance Windows;

e) announce planned non-functional changes according to the provisions specified in Annex 1 to this Schedule;

f) provide on-line access to information to allow the Contracting CSD to track and follow up all incidents, problems and enquiries related to or impacting the Contracting CSD;

g) provide a monthly Service Level Report to the Contracting CSD according to the provisions in section 7 of this SLA;

h) manage the impact on the Contracting CSD and the T2S Service as a whole caused by any T2S Actor making unusual demands on capacity by:

   a. contacting the service user without delay if the latter misbehaves, misuses T2S or consumes system resources in any other way to an extent that exceeds the forecasted capacity and might prevent the Eurosystem from delivering the agreed service to other service users;

   b. denying (up to and including temporary disconnection) providing the service to a service user if he is threatening the stability of the platform impacting other service users and does not respond effectively to the Eurosystem's request to prevent further misbehaviour;

i) deny the service by disconnecting any service user that did not respond effectively to a request from the Eurosystem to prevent a recurrence of previous misbehaviour and that continues to threaten the stability of the platform with impact on other service users, until the service user has demonstrated that the threat no longer exists;

j) ensure an adequate long-term planning for capacities corresponding to the requirements laid down in section 6 of this SLA;

k) inform the Contracting CSD if technical problems with one of its Directly Connected Parties (DCPs) are detected.

l) Maintain documentation pertaining to Crisis management and provide it to the Contracting CSD on request or after any change;

m) Support the Contracting CSD in business continuity testing if required (subject to prior agreement).

During normal operation, the T2S co-ordinator (appointed by the Eurosystem), the T2S Service manager (appointed by the T2S Operator) and the CSD settlement manager, will apply the procedures specified in the Manual of Operational Procedures (see also section 3.3). In addition, the Eurosystem stands ready to provide through the T2S service desk

- information on technical and operational issues, in particular the running of T2S;
- information on T2S functionality;
- up-to-date information concerning the running of T2S, if need be.

If a Crisis Situation, as described in Article 23 of the Framework Agreement, arises within the domain of the Eurosystem, the latter will inform the Contracting CSD according to the agreed response times.

In addition, the following provisions will apply in such case:

- The Eurosystem will take all necessary actions to restore the T2S Service according to the agreed business continuity procedures. These procedures are based on the following key principles:
  - Any settlement in T2S before the incident will continue to have the legal effect specified in Article 21.4 of the core Framework Agreement.
  - If a data loss materialised, the recovery will be done together with the Contracting CSD by procedural means.
- As soon as the Eurosystem identifies the need switch to the other site in the same region, or to fail-over to the standby region, the T2S co-ordinator initiates a teleconference to inform the settlement manager of the Contracting CSD about the nature of the event triggering the failure, the nature of the failure and the envisaged plan to recover from the failure.

- The Eurosystem will keep the settlement manager of the Contracting CSD informed about the progress of the failover activities, and in particular when T2S is available again for normal operations.
- The Eurosystem may decide to gradually re-open T2S, in which case it will seek the approval of the Contracting CSD.
- In case T2S cannot be restarted without a potential data gap, the Eurosystem will first re-open T2S for the purpose of reconciliation only, and will co-ordinate these reconciliation activities.
- During this reconciliation phase, the Contracting CSD is responsible to verify the status of its T2S records, and to re-send instructions with the aim to bring the T2S records consistent with its internal records. This includes also changes to the T2S records that happened as a result of an interaction with a DCP belonging to the Contracting CSD. It is up to the Contracting CSD to agree with its DCPs how this is organised.
- The Eurosystem and the Contracting CSD will co-operate in good faith and will - if necessary - agree on additional measures with the aim to close the data gap.
- The Eurosystem will seek the agreement of the Crisis managers of the Contracting CSD and the Participating CSDs to re-open T2S for normal operations.
- The Eurosystem will provide any service described for normal operations, but balancing this with the need to restore the service.
- Throughout the whole Crisis management process, the Eurosystem will appropriately involve the DCPs, in accordance with the arrangements agreed with the Contracting CSD and Participating CSDs.

Detailed procedures for incident priority setting and incident handling will be specified in the Manual of Operational Procedures (MOP).

3.2 Contracting CSD’s responsibilities

The following responsibilities are accepted by the Contracting CSDs in order to allow the Eurosystem to meet the agreed Service Levels.

The Contracting CSD must:

a) appoint and ensure the permanent reachability of a CSD settlement manager and a CSD Crisis manager as contacts for the Eurosystem and provide their contact details (e-mail, telephone, mobile phone, fax);

b) provide contact details for technical staff that is capable of resolving technical issues with their Directly Connected Parties (DCPs);

c) have a local service desk acting as a single point of contact for all its users during normal business hours;

d) proactively report any problem or incident relating to T2S including connectivity problems, provide all information that might be helpful and cooperate where requested by taking all appropriate actions for solving the problem or incident;

e) report such problems or incidents to the T2S service desk within a reasonable time;

f) provide timely information on any changes that may affect the provision of the services;

g) ensure an appropriate use of T2S and that the personnel who works on its systems and equipments is accordingly qualified and suitably trained;

h) ensure availability of skilled staff within a pre-agreed time period in order for the Eurosystem to obtain support in handling incidents and/or reducing their impact on the service;

i) provide on a quarterly basis updated forecasts for average and expected peak business figures as specified in the URD, to allow the Eurosystem to make an adequate long-term capacity planning (see section 6 of this SLA);

j) be able to resend – at the request of the Eurosystem - all messages already sent after a specified recovery point during the same Settlement Day (approx. two minutes - in particular in case of disaster recovery scenarios with possible data loss);

k) keep all access rights it has registered for access in T2S consistent with the duties and responsibilities of its employees;

l) ensure with the support of the Eurosystem that all its Directly Connected Parties (DCPs) receive, accept and understand all information to facilitate their smooth functioning in T2S;

m) ensure the operational management of its own organisation as well as their customers including DCPs;

n) ensure the operational management of the technical links to T2S from the CSD and DCPs with the support of the Eurosystem if needed;

o) take part in the test process for new releases in the test environment;

p) co-operate with the Eurosystem by promptly reporting any difficulties however small following each release into the production environment;

q) support the Eurosystem in business continuity testing if required.

3.3 Operational Procedures

The Manual of Operational Procedures (MOP) will provide a reference guide for the operational procedures (in normal and abnormal situations) which the Directly Connected T2S Actors (including the Contracting CSD) and the Eurosystem should follow to ensure a smooth functioning of T2S. It will contain all the information required for the addressees to carry out all their tasks in normal and abnormal situations.

The day-to-day operational management of T2S will be handled at two levels. First, the T2S co-ordinator, the service manager and the CSD settlement managers (jointly called the settlement managers) will jointly perform the tasks and apply the procedures as specified in the MOP. Second, the T2S Crisis manager, the T2S Operator's Crisis manager and the CSD Crisis managers (jointly called "the Crisis managers") will make the decisions allocated to them in the MOP, and will take over the management of T2S in situations that are not covered in the MOP. The Crisis managers will be assisted and advised by the settlement managers in that case.

The latter include the Business Continuity and Disaster Recovery arrangements, i.e. the set of rules and procedures aimed at resuming the normal T2S Services after the occurrence of an incident, as well as at mitigating the impact of such incident.

The key principles for the incident management can be summarised as follows:

If the Contracting CSD detects an incident that is related to or might have an impact on the T2S Services, it will inform the Eurosystem without undue delay.

If the Eurosystem detects an incident, it will be communicated to the Contracting CSD, if a direct or indirect impact is possible.

If an incident is reported by a DCP of the Contracting CSD, the Eurosystem will inform the latter without undue delay, and keep the Contracting CSD informed about the resolution path of such incident. Any action to escalate such incident, will be undertaken in close co-operation with the Contracting CSD.

Both sides will co-operate to reduce the impact of an incident.

As far as the incident management procedures defined in the MOP allow to handle a particular incident, the T2S co-ordinator (appointed by the Eurosystem), the T2S service manager (appointed by the T2S Operator) and the involved CSD settlement managers (appointed by each CSD) will co-operate in good faith, and exchange all relevant information that is necessary to handle the incident as specified in the MOP.

When the incident cannot be handled within the procedures specified in the MOP, the T2S Crisis manager (appointed by the Eurosystem), the T2S Operator's Crisis manager, and the CSD Crisis managers (appointed by each CSD) will decide – in accordance with the applicable governance arrangements – which measures will be taken to mitigate the impact of the incident and to resume normal operations.

Both sides will co-operate in analysing the root-cause for an incident.

The Eurosystem will report on the results of the root-cause analysis. An initial report with the impact analysis will be provided within two Settlement Days. An interim report will be provided within one week and a final report within two weeks.

Whether or not a request to change a cut-off time, either from the Eurosystem or from the Contracting CSD, is related to an incident, the Eurosystem will involve the CSD Settlement managers and/or the CSD Crisis managers in making such decision, according to the procedures further specified in the MOP.

3.4 Technical neutrality

As a matter of principle, the Eurosystem shall make reasonable efforts to ensure that, in normal circumstances, no Directly Connected T2S Actor receives a different Service Level based on historic or forecasted volumes, its name, its country of legal incorporation or of the location of its data centres, or any other factor. Abnormal circumstances might require a temporary deviation from this principle.

The Eurosystem will agree with the Contracting CSD which is its expected peak volume, based on common criteria agreed with the Contracting CSD and all Participating CSDs.

If a group of Directly Connected T2S Actors using the same Network Service Provider, or if an individual Directly Connected T2S Actor using a Dedicated Link exceeds its expected peak volume, the Eurosystem will reduce the message throughput from such a group or from an individual Directly Connected T2S Actor, with the aim to meet the Service Level for other Directly Connected T2S Actors (on the condition that the overall volume and workload parameters specified in Chapter 6 of this SLA are not exceeded).

4 Service Levels in the production environment

This section describes the Key Performance Indicators (KPIs) agreed for the delivery of the service during **normal operations** (arrangements for Crisis Situations see under “IT Service Continuity”). As a general principle, the Eurosystem has to ensure that sufficient efforts are made to fulfil all KPIs, and must take remedial action as soon as it detects that a KPI may not be, or is not, fulfilled.

The Contracting CSD is committed to provide all reasonable support to the Eurosystem, in order to allow the latter to take such action.

T2S is a service shared between several service users. All specified Service Levels are therefore multilateral service levels, i.e. they define the service provided to the community of service users as a whole. Nevertheless, the service level reporting will contain the achieved bilateral service levels for the Contracting CSD in addition to the achieved multilateral service levels. For this bilateral reporting, the Service Levels reported for the Contracting CSD will include the Service Levels obtained by its DCPs.

4.1 Definitions of Service Level Indicators

This chapter provides a common definition of the service level indicators. Section 4.1.1 covers availability, and 4.1.1.4 and 4.1.2 list the areas identified as requiring Service Level indicators covering system performance. 4.1.3 and 4.1.4 cover support and recovery issues. The actual agreed levels are stated for each service individually in section 4.2 below.

4.1.1 Service availability

Objective:

These indicators define the times during which the T2S Services are available in relation to the T2S Settlement Days.

4.1.1.1 Availability period

The availability period is the time period during the T2S Settlement Day when the service is stated as expected to be available to the Contracting CSD. The start and end time of the availability period is based on business events on the T2S Platform. Any times stated are indicative and could be altered in certain circumstances according to the Procedures specified in the Manual of Operational Procedures (e.g. delay of the end-of-day).

4.1.1.2 Substantial delay

If an event defined in the T2S daily schedule is likely to be implemented later than the scheduled and has a potential impact on the Contracting CSD, the substantial delay will define for each event the maximum delay that will be tolerated by the Contracting CSD. Any delay or expected delay exceeding the substantial delay will be communicated to the Contracting CSD's service desk immediately.

Any delay not exceeding the substantial delay is not actively communicated to the Contracting CSD's service desk, but is available for querying on the T2S Platform.

4.1.1.3 Availability

Definition:

A service is considered to be available when it responds and operates according to its definition in the T2S Service Description and its functional description in the User Detailed Functional Specification (UDFS chapter 1).

Measurement:

The availability of the services is measured continuously and objectively at pre-defined components of T2S, throughout each Settlement Day with the exclusion of the Maintenance Window.

The measurement of downtime is based on auditable data collected either automatically or manually. Manual measurements will be used in situations where no automatic log entries are available (e.g. power failure).

Downtime is the time between the start of an incident that causes the unavailability of a service and the closing of the incident that caused the downtime, i.e. when the service has been restored. In case of multiple incidents at the same time the downtime begins with the start of the first incident and ends with the closing of the last incident.

Calculation:

$$a = \left(1 - \frac{d}{T_m}\right) \times 100$$

Where:

a = availability as percentage

d = cumulative downtime for the reporting period

T_m = total planned up-time for the reporting period

The total availability of a service is expressed as a percentage of the aggregated downtime in relation to the aggregated expected up-time during the reporting period. The calculation is based on minutes.

4.1.1.4 System performance

Objective:

These indicators define the system performance the Contracting CSD is expecting from the T2S Platform. T2S will be sized as a single shared environment on the basis of data supplied by service users (see section 6), with a margin for exceptional peaks as reported under section 6. If the volumes processed in production exceed the aggregated forecasts provided by all service users, service performance commitments are not binding for the Eurosystem who will operate T2S on a best effort basis in that case.

4.1.1.5 Business Validation Time

Definition:

The Business Validation Time is the time that elapses between the reception of an instruction by T2S and the end of the business validation process, i.e. the time when T2S triggers the generation of the acceptance or rejection message.

Measurement:

The Business Validation Time is measured based on timestamps created by the T2S network interface and the timestamps stored as part of the audit trail in the T2S database.

4.1.1.6 Matching time

Definition:

The Matching time is the time that elapses between the end of a successful business validation and the end of the first Matching attempt. The end of a Matching attempt is marked by the time T2S triggers the generation of the Matching status notification message or the detection that there is not yet a Matching instruction available.

Measurement:

The Matching time is measured based on timestamps stored as part of the audit trail in the T2S database.

4.1.1.7 Real-time Settlement time

Definition:

The Real-time Settlement time is the period between the end of the creation of the matching object (i.e. after successful matching) and the end of the first settlement attempt. The end of the settlement attempt is marked by the time T2S triggers the generation of the settlement status notification message.

This indicator is relevant only for settlement instructions sent on the Intended Settlement Date after the start of the Real-time Settlement phase of T2S.

Measurement:

The Real-time Settlement time is measured based on timestamps stored as part of the audit trail in the T2S database.

Additional remarks:

For the T2S settlement process several cut-off times have been defined. The T2S Platform will ensure that each settlement instruction that has been sent and acknowledged before the relevant cut-off time will get at least one settlement attempt.

4.1.1.8 Batch Settlement throughput

Definition:

The Batch Settlement throughput is the ratio of the number of settlement instructions processed and the time that elapsed for processing them (i.e. between the start and end of the processing cycles). All instructions that are ready for settlement are considered regardless of whether they have been settled or not.

Measurement:

The Batch Settlement throughput is measured based on timestamps stored as part of the audit trail in the T2S database.

Calculation:

$$R_n = \frac{I_n}{T_n}$$

Where:

R_n = Batch Settlement throughput

I_n = number of settlement instructions processed in Batch Settlement mode

T_n = cumulated Batch Settlement processing time

Additional remarks:

As T2S is a shared service, possible single instances exceeding the defined capacities will be managed on an ex ante basis through restricting the flow of further inputs from the relevant T2S Actor and on an ex post basis by excluding the relevant T2S Actor in order to avoid an overload of T2S. Nevertheless should repeated cases occur they will be jointly analysed by the Contracting CSD and Eurosystem.

4.1.1.9 Static data processing time

Definition:

The static data processing time is the time that elapses between the end of a successful business validation and the end of the processing of this request.

This indicator is relevant only for all types of static data maintenance instructions.

Measurement:

The static data processing time is measured based on timestamps stored as part of the audit trail in the T2S database.

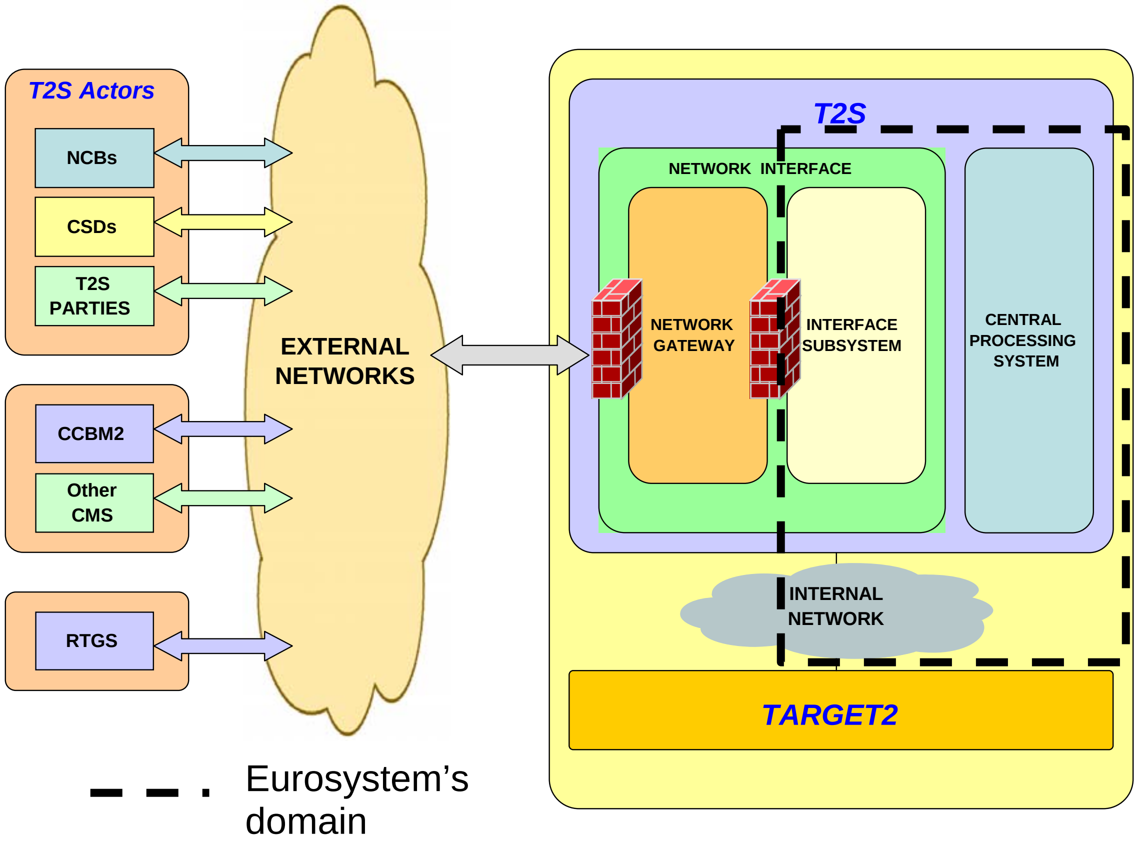
Additional remarks:

In Batch Settlement mode certain types of static data maintenance requests might be queued to ensure the consistency of the settlement processing. In these cases the processing is considered complete after the creation of a new revision for the relevant entities even though this revision is only activated at a later point in time.

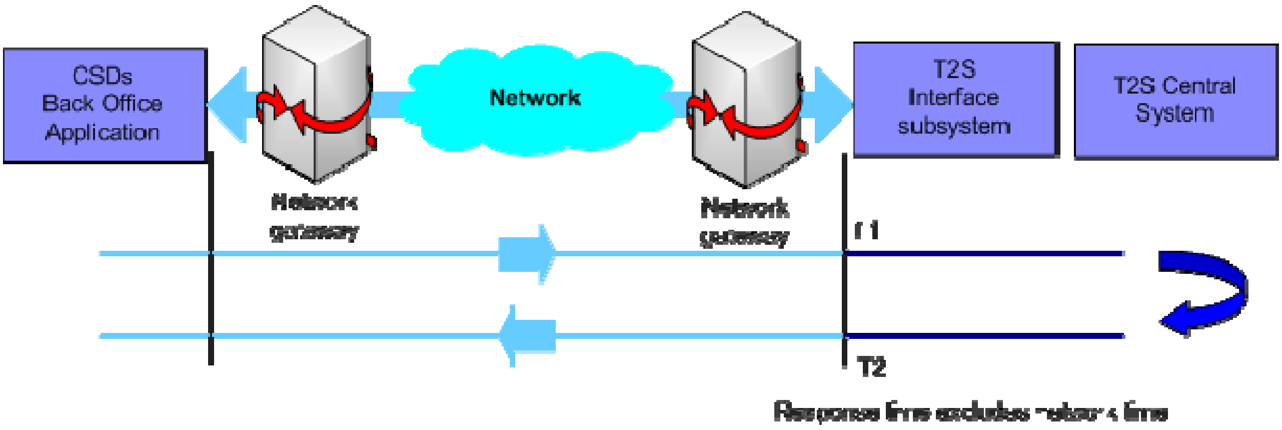
4.1.2 Response Times

Objective:

Time indicators provided in the following sections are always measured within the T2S perimeter under the responsibility of the Eurosystem as shown by the dashed line in the diagram below. The actual transmission time of the data via the network between T2S and the Contracting CSD is not included in the response time.



The response time indicators define the time period between the reception of a request and the corresponding response of the T2S Platform. All performance indicators are measured during each T2S Settlement Day during the time window when the information services are expected to be available.



Additional remarks:

All messages that have been queued during the Maintenance Window and queries that have been queued during Batch Settlement will not be included in the calculation of the response times.

Simple queries and complex queries are those referenced as such within the User Detailed Functional Specifications (UDFS).

4.1.2.1 A2A query response time

Definition:

For A2A query requests the response time is defined as the time elapsed between the reception of the query request message and the completion of the sending out of the corresponding result message (see diagram above).

Measurement:

The response times for A2A queries are measured using the timestamps generated by the T2S network interface.

4.1.2.2 A2A message response time

Definition:

For all A2A requests other than A2A queries the response time is defined as the time elapsed between the reception of the request message by T2S and the sending out of the corresponding acknowledgement message (see diagram above).

This KPI does not apply for request messages sent within files.

Measurement:

The response times for A2A requests are measured using the timestamps generated by the T2S network interface.

4.1.2.3 U2A response time

Definition:

For all U2A requests the response time is defined as the time between the reception of a user request (HTTP-request) and the completion of the response in form of a web (HTML) page.

Measurement:

For U2A requests the response time is measured by the T2S Platform within the Eurosystem's domain. These values will be analysed to create metrics for the reports to the Users.

4.1.2.4 File throughput

Definition:

The file throughput is defined as the minimum number of megabytes per hour that the interface subsystem has to be able to process in one hour independently for input and output.

Measurement:

The file throughput is measured by summing up the size of all files received during the reporting period and dividing this value by the actual processing time needed. The processing time is measured using the timestamps generated by the T2S network interface and as part of the T2S audit trail.

4.1.2.5 Online storage period

The online storage period defines the minimum time T2S keeps Transactional and Static Data available online. For Transactional Data entities this period starts when the entity reaches its final status (i.e. settled, cancelled, etc.). For Static Data entities this period starts when the entity is no longer active and no longer referenced from a Transactional Data entity.

4.1.2.6 Archiving period

The archiving period defines the minimum time T2S keeps Transactional and Static Data available in an archive for retrieval by the Contracting CSD. For Transactional Data entities this period starts when the entity reaches its final status (i.e. settled, cancelled, etc.). For Static Data entities this period starts when the entity is no longer active and no longer referenced from a Transactional Data entity.

4.1.2.7 Archive retrieval response time

Definition:

The archive retrieval response time is defined as the time elapsed between the reception of an archive retrieval request and the sending out of the corresponding notification that the data is available for download.

Measurement:

The archive retrieval response time is measured using the timestamps generated by the T2S network interface.

4.1.3 Support Hours and Incident Response Times

Objective:

These indicators define the response times of the T2S service desk in relation to the type of incident/request and the T2S Settlement Days. An incident is defined as any event which is not part of the standard operation of a service and which causes or may cause an interruption or a reduction in the quality of that service.

Incidents will be categorised in the following priority classes, irrespective of whether they are reported by the Contracting CSD, or by one of its DCPs:

Incident Priority	Severity	Impact
Priority 1	Critical	Complete unavailability of all T2S Services Complete unavailability of one or more services for which no workaround is available.
Priority 2	Urgent	Unavailability of a service, but a workaround is available
Priority 3	Medium priority	All services are available, but some are experiencing performance problems
Priority 4	Low priority	Query or service request

4.1.3.1 T2S Settlement Day

Definition:

A T2S Settlement Day is a day on which all T2S Services are planned to be running.

4.1.3.2 Support hours

Definition:

The T2S service desk can be contacted via telephone or e-mail by the Contracting CSD. During standard support hours the T2S service desk can be contacted to communicate technical or business problems on the Contracting CSD’s side, open tickets for failures of T2S and receive support by the T2S Operators. During non-standard support hours the T2S service desk should be initially contacted via telephone to communicate information that is urgently needed or useful to avoid or limit any negative impact on daily operations, as e-mails will not be monitored during this time. Any e-mail request that is sent during this time will be processed during the next support hours only unless it is pre announced by a telephone call and related to an ongoing priority classes:1 or priority 2 incident started outside standard support hours (see above).

4.1.3.3 Incident response time

Definition:

The incident response time is defined as the time between the incident being detected or information about the incident received by the Eurosystem and the start of the action to resolve the incident.

Measurement:

Upon acceptance of an incident or service request the T2S service desk will assign a reference number and a priority level (see section 4.1.3) to it. The reference number will allow the Contracting CSD to monitor the incident's status in the trouble management information tool.

Measurement is done based on the times recorded in the trouble management system.

4.1.3.4 Incident resolution time

Definition:

The incident resolution time of an incident is the time between the start of action to resolve the incident and the time it is actually solved or a workaround is available.

Measurement:

Upon acceptance of an incident or service request the T2S service desk will assign a reference number and a priority level to it. The reference number will allow the Contracting CSD to monitor the incident's status in the online trouble management information tool.

Unless the Contracting CSD formally objects promptly, both times above are the times recorded by the T2S service desk in the trouble management system.

4.1.4 Business Continuity and Disaster Recovery

Objective:

The Business Continuity and Disaster Recovery mechanisms for T2S are designed to manage failures that require on-site recovery, alternate site recovery and alternate region recovery to ensure a high availability of the T2S Platform.

Business Continuity and Disaster Recovery scenarios will be categorised in the following classes:

Class	Description
Minor failure	Minor failure is understood as a short service interruption (e.g. due to component failures, a system reboot, or a line failure). These problems may typically be solved at the primary site.
Major failure	Major failure or disaster is understood as a serious service interruption (e.g. disruptions caused by fire, flood, terrorist attack or major hardware/ telecommunications faults). These events require the activation of the service in an alternative site.
Regional disaster	Regional disaster is understood as a "wide-scale regional disruption" causing severe permanent interruption of transportation, telecommunication, power or other critical infrastructure components across a metropolitan or geographical area and its adjacent communities; or resulting in a wide-scale evacuation or inaccessibility of the population within the normal commuting range of the disruption's origin. These events require the activation of the service in an alternative region.

4.1.4.1 Recovery time

Definition:

The recovery time (RTO = recovery time objective) is defined as the maximum acceptable time to restart the T2S Platform after a failure.

Measurement:

The recovery time is measured as the time between detection of an incident that causes the unavailability of the T2S Platform as a whole (or significant parts of it) and the time the incident is resolved or a workaround is in place.

Where the agreed procedures foresee a consultation or decision of service users, the time between informing service users and the service users’ response is excluded from the recovery time, as is the time needed for reconciliation of lost data (see incident handling in chapter 3.1).

For the avoidance of doubt, activating the service in an alternative site (major failure) will preserve the status of instructions and transactions, both settled and non-settled. Within the constraints set by the recovery point objective (RPO) (see 4.1.5.2 below), this also applies to the re-activation of the service in an alternative region (regional disaster).

4.1.4.2 Recovery point objective

Definition:

The recovery point pbjective (RPO = recovery point objective) is defined as the maximum acceptable time interval for which data sent to and by T2S is lost when a restart takes place.

Measurement:

The recovery point is a point of consistency to which a user wants to recover or restart. The RPO is measured as the amount of time between the moment when the point of consistency was created or captured and that when the failure occurred.

4.2 Committed Service Levels for the Production Environment

4.2.1 Operational and Support Services

Response Times		
	Online Storage Period (4.1.2.5)	90 days
	Archiving Period (4.1.2.6)	10 years
	Archive Retrieval Response Time (4.1.2.7)	72 hours
Availability		
	T2S Settlement Day (4.1.3.1)	all calendar days except: Saturdays, Sundays, 1 January, 25 December and 26 December
Support Hours and Incident Response Times		
	Standard Support Hours (4.1.3.2)	from 6:30 am to 7:30 pm CET on all T2S Settlement Days except: Catholic/Protestant Easter Friday, Catholic/Protestant Easter Monday, and 1 May
	Non-Standard Support Hours (4.1.3.2)	All times on T2S Settlement Days which fall outside the Standard Support Hours

<table>
<tr><td rowspan="6"></td><td>Incident Response Time
(4.1.3.3)</td><td colspan="3">15 min. during standard support hours
60 min. during non-standard support hours</td></tr>
<tr><td rowspan="5">Incident Resolution Time
(4.1.3.4)</td><td><b>Incident Priority</b></td><td><b>During standard support hours</b></td><td><b>Outside standard support hours</b></td></tr>
<tr><td>1</td><td>2 hours</td><td>3 hours</td></tr>
<tr><td>2</td><td colspan="2">Before the start of the next Settlement Day (minimum 2 hours)</td></tr>
<tr><td>3</td><td colspan="2">2 Settlement Days or as agreed</td></tr>
<tr><td>4</td><td colspan="2">5 Settlement Days or as agreed</td></tr>
<tr><td colspan="5"><b>Business Continuity and Disaster Recovery</b></td></tr>
<tr><td rowspan="6"></td><td>Recovery Time: minor failure
(4.1.4.1)</td><td colspan="3">See Incident Response/Resolution Time</td></tr>
<tr><td>Recovery Point Objective: minor failure
(4.1.4.2)</td><td colspan="3">No data loss</td></tr>
<tr><td>Recovery Time: major failure
(4.1.4.1)</td><td colspan="3">< 60 minutes (from the decision to failover to the 2nd site in the same region)</td></tr>
<tr><td>Recovery Point Objective: major failure
(4.1.4.2)</td><td colspan="3">No data loss</td></tr>
<tr><td>Recovery Time: regional disaster
(4.1.4.1)</td><td colspan="3">< 120 minutes (from the decision to failover to the other region)</td></tr>
<tr><td>Recovery Point Objective: regional disaster
(4.1.4.2)</td><td colspan="3">< 2 minutes data loss</td></tr>
</table>

Maintenance Windows		
	Start of weekly Maintenance Window	Saturday (or the calendar day following the last T2S Settlement Day in a week) 3:00 CET or after sending out the last report after the Batch Settlement (whatever comes later).
	End of weekly Maintenance Window[2]	Monday (or the first T2S Settlement Day in a week) 5:00 CET at the latest
	Start of daily Maintenance Window	3:00 CET
	End of daily Maintenance Window	5:00 CET

603 4.2.2 Settlement Services and Liquidity Management Services

Availability		
	Availability (4.1.1.3)	99.7 % / calendar month
	Availability Period (4.1.1.1)	outside the Maintenance Windows on all T2S Settlement Days
	Substantial Delay for “DvP cut-off” and “FoP cut-off” (4.1.1.2)	xx minutes
	Substantial Delay for “End of End of Day Reporting” (4.1.1.2)	xx minutes
	Substantial Delay for “Start of Day” (4.1.1.2)	xx minutes
System Capacity		
	Maximum Matching Time (4.1.1.6)	xx seconds
	Maximum Real-time Settlement Time (4.1.1.7)	xx seconds
	Minimum Batch Settlement Throughput (4.1.1.8)	xx instructions per second

[2] The Eurosystem stands ready to occasionally shorten the weekly Maintenance Window based on specific needs of the Contracting CSD (e.g. migration, issuance in direct holding countries). The latter shall pre-announce such needs sufficiently in advance and shall agree the start and end time of the relevant Maintenance Window(s) with the Eurosystem.

604 4.2.3 Static Data Services

Availability		
	Availability (4.1.1.3)	99.7 % / calendar month
	Availability Period (4.1.1.1)	outside the Maintenance Windows on all T2S Settlement Days
	Static Data Processing Time (4.1.1.9)	5 seconds for 95% of the requests

605 4.2.4 Information Services

Availability		
	Availability (4.1.1.3)	99.7 % / calendar month
	Availability Period (4.1.1.1)	outside the Maintenance Windows on all T2S Settlement Days
Response Times		
	A2A Message Response Time (4.1.2.2)	xx seconds for xx% of the requests
	U2A Response Time (4.1.2.3)	xx seconds
	A2A Query Response Time for Simple Queries[3] (4.1.2.1)	3 seconds for 95% of the requests

[3] The GFS (Version 4.0, page 582) defines the following queries as simple queries: Settlement Instruction Audit Trail Query, Securities Account Position Query, Securities Account Position History Query, T2S Dedicated Cash Account Balance Query, Outstanding Auto-Collateralisation Credit Query, Limit Utilisation Journal Query, Collateral Value of a Security Query, Securities Deviating Nominal Query, Securities CSD Link Query, Party List Query, Restricted Party Query, Securities Account List Query, T2S Dedicated Cash Account List Query, T2S Calendar Query, T2S Diary Query, System Entity Query, Attribute Domain Query, Attribute Value Query, Privilege Query, Role Query, T2S System User Query, Market-specific Restriction Query, SWIFT BIC Code Query, Report Configuration List Query, Report Configuration Detail Query, Report Query, Cumulative Invoice Query.

4.2.5 Connectivity Services

Availability		
	Availability Period (4.1.1.1)	outside the Maintenance Windows on all T2S Settlement Days
System Capacity		
	Maximum Business Validation Time (4.1.1.5)	xx seconds
	Minimum File Throughput (4.1.2.4)	xx megabytes per hour

4.3 Targeted Service Levels for the Production Environment

The more demanding, but non binding target KPIs defined in this chapter reflect the Service Level, that is targeted by the Eurosystem. Even if these KPIs are not reached, but the Service Level is still within the range of the committed service levels (see chapter 4.2), this is no breach of the T2S Service Level Agreement. However, in such a case the Eurosystem stands ready to jointly investigate ways to improve the service.

4.3.1 Operational and Support Services

	Incident Response Time (4.1.3.3)	xx min. during standard support hours xx min. during non-standard support hours		
	Incident Resolution Time (4.1.3.4)	**Incident Priority**	**During standard support hours**	**Outside standard support hours**
		1	xx hours	xx hours
		2	Before the start of the next Settlement Day (minimum xx hours)	
		3	xx Settlement Days or as agreed	
		4	xx Settlement Days or as agreed	

4.3.2 Settlement Services and Liquidity Management Services

Availability		
	Availability (4.1.1.3)	xx % / calendar month

615 **4.3.3 Static Data Services**

Availability		
	Availability (4.1.1.3)	xx % / calendar month
	Static Data Processing Time (4.1.1.9)	xx seconds for xx% of the requests

616 **4.3.4 Information Services**

Response Times		
	A2A Message Response Time (4.1.2.2)	xx seconds for xx% of the requests
	U2A Response Time (4.1.2.3)	xx seconds for xx% of the requests
	A2A Query Response Time for Simple Queries[4] (4.1.2.1)	xx seconds for xx% of the requests

[4] The GFS (Version 4.0, page 582) defines the following queries as simple queries: Settlement Instruction Audit Trail Query, Securities Account Position Query, Securities Account Position History Query, T2S Dedicated Cash Account Balance Query, Outstanding Auto-Collateralisation Credit Query, Limit Utilisation Journal Query, Collateral Value of a Security Query, Securities Deviating Nominal Query, Securities CSD Link Query, Party List Query, Restricted Party Query, Securities Account List Query, T2S Dedicated Cash Account List Query, T2S Calendar Query, T2S Diary Query, System Entity Query, Attribute Domain Query, Attribute Value Query, Privilege Query, Role Query, T2S System User Query, Market-specific Restriction Query, SWIFT BIC Code Query, Report Configuration List Query, Report Configuration Detail Query, Report Query, Cumulative Invoice Query.

5 Service Levels for the Test Environments

5.1 Service Levels for the test environment in “current mode”[5]

5.1.1 Operational and Support Services

<table>
<tr><td colspan="5"><b>Availability</b></td></tr>
<tr><td></td><td>T2S Settlement Day
(4.1.3.1)</td><td colspan="3"></td></tr>
<tr><td colspan="5"><b>Support Hours and Incident Response Times</b></td></tr>
<tr><td rowspan="9"></td><td>Standard Support Hours
(4.1.3.2)</td><td colspan="3"></td></tr>
<tr><td>Non-Standard Support Hours
(4.1.3.2)</td><td colspan="3">All times on T2S Settlement Days which fall outside the Standard Support Hours</td></tr>
<tr><td>Incident Response Time
(4.1.3.3)</td><td colspan="3">xx min. during standard support hours
xx min. during non-standard support hours</td></tr>
<tr><td rowspan="5">Incident Resolution Time
(4.1.3.4)</td><td><b>Incident Priority</b></td><td><b>During standard support hours</b></td><td><b>Outside standard support hours</b></td></tr>
<tr><td>1</td><td>xx hours</td><td>xx hours</td></tr>
<tr><td>2</td><td colspan="2">xx</td></tr>
<tr><td>3</td><td colspan="2">xx</td></tr>
<tr><td>4</td><td colspan="2">xx</td></tr>
<tr><td colspan="5"><b>Business Continuity and Disaster Recovery</b></td></tr>
<tr><td rowspan="3"></td><td>Recovery Time: minor failure
(4.1.4.1)</td><td colspan="3">< xx minutes</td></tr>
<tr><td>Recovery Point Objective: minor failure
(4.1.4.2)</td><td colspan="3">No data loss</td></tr>
<tr><td>Recovery Time: major failure
(4.1.4.1)</td><td colspan="3">< xx minutes</td></tr>
</table>

[5] The test environment in “current mode” will be available as from the T2S Go-live Date and will at any time contain the same version of the T2S Business Application as the one installed in the production environment.

	Recovery Point Objective: major failure (4.1.4.2)	No data loss
	Recovery Time: regional disaster (4.1.4.1)	< xx minutes
	Recovery Point Objective: regional disaster (4.1.4.2)	< xx minutes data loss
Important Events		
	Start of weekly Maintenance Window	xx
	End of weekly Maintenance Window	xx
	Start of daily Maintenance Window	xx
	End of daily Maintenance Window	xx

620 5.1.2 Settlement Services and Liquidity Management Services

Availability		
	Availability (4.1.1.3)	xx % / calendar month xx % / calendar year
	Availability Period (4.1.1.1)	outside the Maintenance Window on all T2S Settlement Days
	Substantial Delay for “DvP cut-off” and “FoP cut-off” (4.1.1.2)	xx minutes
	Substantial Delay for “End of the End of Day Reporting” (4.1.1.2)	xx minutes
	Substantial Delay for “Start of Day” (4.1.1.2)	xx minutes

System Capacity		
	Maximum Matching Time (4.1.1.6)	xx seconds
	Maximum Real-time Settlement Time (4.1.1.7)	xx seconds
	Minimum Batch Settlement Throughput (4.1.1.8)	xx instructions per second

621 5.1.3 Static Data Services

Availability		
	Availability (4.1.1.3)	xx % / calendar month xx % / calendar year
	Availability Period (4.1.1.1)	outside the Maintenance Window on all T2S Settlement Days
	Static Data Processing Time (4.1.1.9)	xx seconds for 95% of the requests

622 5.1.4 Information Services

Availability		
	Availability (4.1.1.3)	xx % / calendar month xx % / calendar year
	Availability Period (4.1.1.1)	outside the Maintenance Window on all T2S Settlement Days
Response Times		
	A2A Message Response Time (4.1.2.2)	xx seconds for xx% of the requests
	U2A Response Time (4.1.2.3)	xx seconds
	A2A Query Response Time for Simple Queries (4.1.2.1)	xx seconds for xx% of the requests

5.1.5 Connectivity Services

Availability		
	Availability Period (4.1.1.1)	outside the Maintenance Window on all T2S Settlement Days
System Capacity		
	Maximum Business Validation Time (4.1.1.5)	xx seconds
	Minimum File Throughput (4.1.2.4)	xx megabytes per hour

5.2 Service Levels for the test environment in “future mode”

5.2.1 Operational and Support Services

<table>
<tr><td colspan="3"><b>Availability</b></td></tr>
<tr><td></td><td>T2S Settlement Day
(4.1.3.1)</td><td>From 7:00 to 19:00 CET on all calendar days except:
Saturdays,
Sundays,
1 January,
Catholic/Protestant Easter Friday,
Catholic/Protestant Easter Monday,
1 May,
25 December and
26 December</td></tr>
<tr><td colspan="3"><b>Support Hours and Incident Response Times</b></td></tr>
<tr><td></td><td>Standard Support Hours
(4.1.3.2)</td><td></td></tr>
<tr><td></td><td>Non-Standard Support Hours
(4.1.3.2)</td><td>All times on T2S Settlement Days which fall outside the Standard Support Hours</td></tr>
<tr><td></td><td>Incident Response Time
(4.1.3.3)</td><td><table>
<tr><th>Incident Priority</th><th>During standard support hours</th><th>Outside standard support hours</th></tr>
<tr><td>1</td><td>15 minutes</td><td>1 hour</td></tr>
<tr><td>2</td><td>15 minutes</td><td>Next business day</td></tr>
<tr><td>3</td><td>1day</td><td>Next business day</td></tr>
<tr><td>4</td><td>1 day</td><td>Next business day</td></tr>
</table></td></tr>
<tr><td></td><td>Incident Resolution Time
(4.1.3.4)</td><td><table>
<tr><th>Incident Priority</th><th>Incident Resolution Time</th><th>Status Call Update</th></tr>
<tr><td>1</td><td>1-2 business days</td><td>2 hours</td></tr>
</table></td></tr>
</table>

		2	2-5 business days	4 hours
		3	According to agreed plan	Upon closure
		4	According to agreed plan	Upon closure
Business Continuity and Disaster Recovery				
	Recovery Time: minor failure (4.1.4.1)	< xx minutes		
	Recovery Point Objective: minor failure (4.1.4.2)	No data loss		
	Recovery Time: major failure (4.1.4.1)	< xx minutes		
	Recovery Point Objective: major failure (4.1.4.2)	No data loss		
	Recovery Time: regional disaster (4.1.4.1)	< xx minutes		
	Recovery Point Objective: regional disaster (4.1.4.2)	< xx minutes data loss		
Important Events				
	Start of weekly Maintenance Window	Friday (or the last T2S Settlement Day in a week) 19:00 CET		
	End of weekly Maintenance Window	Monday (or the first T2S Settlement Day in a week) 7:00 CET at the latest		
	Start of daily Maintenance Window	19:00 CET		
	End of daily Maintenance Window	7:00 CET		

627 5.2.2 Settlement Services and Liquidity Management Services

Availability		
	Availability (4.1.1.3)	85 % / calendar month
	Availability Period (4.1.1.1)	outside the Maintenance Window on all T2S Settlement Days
	Substantial Delay for “DvP cut-off” and “FoP cut-off” (4.1.1.2)	xx minutes
	Substantial Delay for “End of the End of Day Reporting” (4.1.1.2)	xx minutes
	Substantial Delay for “Start of Day” (4.1.1.2)	xx minutes
System Capacity		
	Maximum Matching Time (4.1.1.6)	xx seconds
	Maximum Real-time Settlement Time (4.1.1.7)	xx seconds
	Minimum Batch Settlement Throughput (4.1.1.8)	xx instructions per second

628 5.2.3 Static Data Services

Availability		
	Availability (4.1.1.3)	85 % / calendar month
	Availability Period (4.1.1.1)	outside the Maintenance Window on all T2S Settlement Days
	Static Data Processing Time (4.1.1.9)	xx seconds for 95% of the requests

5.2.4 Information Services

Availability		
	Availability (4.1.1.3)	85 % / calendar month
	Availability Period (4.1.1.1)	outside the Maintenance Window on all T2S Settlement Days
Response Times		
	A2A Message Response Time (4.1.2.2)	xx seconds for xx% of the requests
	U2A Response Time (4.1.2.3)	xx seconds
	A2A Query Response Time for Simple Queries (4.1.2.1)	xx seconds for xx% of the requests

5.2.5 Connectivity Services

Availability		
	Availability Period (4.1.1.1)	outside the Maintenance Window on all T2S Settlement Days
System Capacity		
	Maximum Business Validation Time (4.1.1.5)	xx seconds
	Minimum File Throughput (4.1.2.4)	xx megabytes per hour

5.2.6 Additional provisions

The test environment can be opened with extended hours for a limited period upon request.

The Eurosystem will make all reasonable efforts to ensure that the operational hours of the test environments, including on-line availability for end-users and batch processing capabilities for the end of day procedures will be specified in the T2S User Testing Calendar and might be different for each of the testing environments.

In certain cases such as the deployment of a new release, the Eurosystem reserves the right to change the T2S User Testing Calendar, which includes changing the opening and closing times of the test environments. All changes to the T2S User Testing Calendar shall be proposed, discussed and agreed in the substructure in charge of User Testing, before informing the T2S Users in a timely manner in advance.

The Information Security levels of the test environments shall be broadly the same as for the T2S production environment.

The test environments will have a substantially lower capacity compared to the production environment (around 10% of production environment). The Eurosystem shall increase the capacity of the test environments to cover specific testing needs (e.g. high-volume tests during the community testing and the business day testing stages) upon a request from – and in agreement with – the Contracting CSD.

The T2S Service desk shall be the unique point of contact to report incidents and problems, and to ask for guidance on T2S during User Testing. The Contracting CSD can contact the T2S Service desk via phone, fax, and email.

The T2S Service desk coverage hours shall be aligned to the operation hours of the test environment referred to above.

6 System Capacity and Platform Sizing

To ensure the proper sizing of the T2S Platform that is required to meet the agreed Service Levels, the Contracting CSD is requested to provide on a quarterly basis updated forecasts for average and expected peak business figures as specified in the URD, to allow the Eurosystem to make an adequate long-term capacity planning. These figures should include the volumes for the Contracting CSD's DCPs as well. The following parameters are required for these calculations:

Parameter	Description
Average daily volume	the arithmetic average of the daily number of settlement instructions
Average night time volume	the arithmetic average of the daily number of settlement instructions to be processed in Batch Settlement mode
Average day time volume	the arithmetic average of the daily number of settlement instructions to be processed in Real-time Settlement mode
Peak day workload	the expected maximum number of settlement instructions on a single day
Peak night time work load	the expected maximum number of settlement instructions for Batch Settlement on a single day
Peak day time work load	the expected maximum number of settlement instructions for Real-time Settlement on a single day
Daily number of static data updates	the expected maximum number of insertions, modifications and deletions to be executed in T2S on one day
Number of concurrent U2A users	the maximum number of concurrent users (i.e. users using the T2S GUI simultaneously) that have to be supported for the Contracting CSD and its clients

In order to process exceptionally high peak volumes, the Eurosystem will ensure that additional processing capacity can be added on very short notice, provided no hardware components need to be replaced. However, there will be technical limitations to the extent of such a capacity increase.

If the expectations change, the Contracting CSD will inform the Eurosystem in due time (at least six months in advance or as soon as the Contracting CSD receives this information).

If exceptional capacity is needed for a one-time event or on shorter notice, the Eurosystem will try to cope with such requests, but on best effort basis only.

7 Service Level Reporting

End-to-end service reports including local service desk operations will be provided on a regular basis in electronic format, focusing on the above defined service metrics.

7.1 Content of the Reporting

In addition, these service reports will contain information on performance against the following indicators:

- resolution times of closed tickets
- escalation status of open tickets
- punctuality (see 7.2.1)

Performance against Service Level targets will be measured by the Eurosystem in compliance with the procedures agreed between the parties.

Reports on actual Service Levels achieved will be provided to the Contracting CSD on a monthly basis. This will cover for each service indicator the performance achieved compared with the target values. For informational purposes the Eurosystem will also report the bilateral service levels achieved for the Contracting CSD. These reports are to be provided to the Contracting CSD within ten Settlement Days after the end of each month.

On a daily basis and reflected in the monthly SLA report:

- Unresolved incidents
- Resolved incidents
- Actual service (including security) breaches
- Planned downtime
- Unplanned downtime

On a monthly basis:

- Service availability
- Frequency of incidents
- Cumulative service breaches
- Volumes and peaks
- Overall performance
- Use of T2S service desk (when relevant)
- Application and technology performance specified in this document

- Planned changes
- Previous month's unresolved incidents
- Previous month's resolved incidents
- Previous month's unresolved problems
- Previous month's resolved problems
- Comments and observations from the Eurosystem
- Medium term trends of incident and their root cause analysis
- Support figures (e.g. number of calls, response time, long abandon rate)

In addition to the technical indicators the monthly report will also contain other important information like the following:

- Updates to the T2S release calendar scheduling technical releases with an impact on the Contracting CSD;
- Information about upcoming changes without impact on the Contracting CSD;
- Information about the planned implementation process (including the test strategy) and timing for upcoming releases.
- Information about the operational risk situation in T2S, for those aspects that are not covered in the scope of Schedule 10 (Information Security).

7.2 Definition of Additional Indicators for Reporting

This section defines additional indicators that are used for the reporting, but have no KPI attached to it.

7.2.1 Punctuality

Definition:

The punctuality of T2S is measured by counting the number of occasions when a T2S business event is delayed for a time period exceeding the defined substantial delay for this event.

Measurement:

The delays will be checked using the planned and the actual timestamps for the relevant events as logged by T2S.

The following business events are relevant for this calculation:

- Start of Day
- Start of the Batch Settlement
- DvP cut-off
- FoP cut-off
- End of the end of day reporting

Calculation:

$$p = \left(1 - \frac{d}{a}\right) \times 100$$

Where:

p = punctuality as percentage

d = number of relevant business events with a substantial delay in the reporting period[6]

a = total number of relevant business events in the reporting period

7.2.2 Settlement Efficiency

Definition:

Settlement efficiency in T2S means the comparison of the number of settled transactions with the total number of transactions, with the aim to identify which portion of transactions failed to settle on the Intended Settlement Date.

Measurement:

At the end of each Settlement Day, the number of settled transactions intended for settlement on that Settlement Day will be divided by the total number of transactions intended for settlement on that Settlement Day.

[6] Events that have been delayed according to the procedures defined in the MOP due to a request from the Service User or another market participant are excluded from this count.

8 Service review meetings

The Eurosystem will invite the Contracting CSD and all Participating CSDs on a quarterly basis to a formal Service Review meeting on Steering Level. In addition the Eurosystem will convene on a monthly basis or upon request a meeting of the Operations Managers Group (OMG) to review the T2S service performance on a working level.

This meeting will evaluate the service performance since the last review. In particular the meeting will:

- Review the service achievement (service level target against actual performance)
- Review the Service Level Reports provided in recent periods. However, for the sake of intra-annual comparability, the Service Level Report format might be changed only on a yearly basis.
- Focus particularly on breaches of Service Levels
- Identify weak areas and potential ways to address problems and initiate service improvement
- Allow for a discussion on possible measures to improve settlement efficiency
- Preview issues (anticipated measures) for the coming period

9 SLA reviews

9.1 Initial review

The parties agree that they shall review the SLA Schedule for the first time on a date no later than the end of the bedding down period.

All resulting changes to this SLA shall be approved by the parties. In case of persistent disagreement between the parties, the dispute resolution procedure laid down in the Framework Agreement shall be activated.

9.2 Subsequent review

The parties agree that the SLA will be reviewed on a yearly basis in order to verify the balance between evolving user requirements and defined T2S Service Levels, as well as to ensure the effectiveness of performance measuring criteria.

If required by the circumstances, the SLA can be reviewed on an ad-hoc basis.

Agreement review meetings provide an opportunity to review the agreement and associated targets. In particular the meeting will:

- Review service achievements with the customer and identifying potential improvement on both sides
- Review the service requirements and identify if any changes have occurred
- Discuss any changes that operations would like to make to the agreement
- Agree on the next step for the SLA: extension, changes or decommissioning.

Changes to the SLA will be agreed in accordance with the applicable governance arrangements specified in Schedule 8 (Governance) of the Framework Agreement, in particular through the involvement of the Operations Managers Group.

Annex 1 - Management of non-functional changes

1. Emergency Changes

If an incident occurs, the Eurosystem may have to implement a change that cannot be delayed until the next planned Maintenance Window. The implementation of such a change will cause a system unavailability as described in section 4.2.1.

As a minimum, the Eurosystem will inform the Contracting CSD ex post about the reason for and the nature of the change. Nevertheless, the Eurosystem will make best efforts to inform the Contracting CSD ex ante, even at short notice.

2. Other changes

By default, changes aimed at ensuring that the Eurosystem is capable of delivering the T2S Services according to the KPIs specified in this SLA, or resulting from SLA reviews (see section 8), will be managed by the Eurosystem. If such changes have no impact on the Contracting CSD, the Eurosystem will inform the Contracting CSD ex ante about the nature and the date of such change.

If such changes have an impact on the Contracting CSD, or if the Contracting CSD expresses an interest in testing such changes, the Eurosystem and the Contracting CSD will co-operate in good faith to manage the changes, as much as possible and where relevant, following the provisions of Schedule 9 (Change and Release Management).

The dates reserved by the Eurosystem for implementing changes that have or might have an impact on the Contracting CSD, are documented in a calendar that is shared and agreed in advance with the Contracting CSD. Changes to this calendar will be reported in the monthly reporting as described in section 7. By default, changes are implemented during a Maintenance Window.

The Contracting CSD is responsible to involve its DCPs in the process if necessary and share the relevant information with them.

EUROPEAN CENTRAL BANK

EUROSYSTEM

TARGET2-SECURITIES

FRAMEWORK AGREEMENT

SCHEDULE 7

PRICING

Table of contents

1 Introduction

The Schedule on Pricing consists of four components: (i) the T2S Pricing policy, which describes the Governing Council decision on the Pricing of T2S Services (ii) the T2S price list, which gives the actual T2S prices in eurocent for each of the T2S Services (i.e. settlement, account management and information services); (iii) the T2S pricing structure, which provides a detailed description of the items in the T2S price list, as well as the related fee triggers; and (iv) the Inventory of T2S Service Charges, which provides a description of how T2S will finance changes to T2S, and a number of other services not covered in the T2S price list.

It is important to note that the T2S price list displays all T2S prices without VAT. The possible application of VAT is subject to national tax regulation and outside the scope of the T2S Pricing.

The procedures for the exercise, allocation and payment of claims under Articles 21, 28, 32, 33 and 40 of the Framework Agreement are detailed in Schedule 13 (Procedure for payment of claims).

The Eurosystem will continue to seek broad market advice when discussing possible changes to the Pricing Schedule.

2 T2S Pricing policy

The Governing Council of the European Central Bank (ECB) decided to set the Delivery versus Payment price for TARGET2-Securities (T2S) at 15 eurocent per instruction. This price will be fixed for the period from the T2S Go-Live Date until December 2018. In order to provide assurance to market participants about T2S prices after 2018, the Governing Council has made a commitment not to increase T2S fees by more than 10% per year between 2019 and the end of the cost recovery period.

This commitment to set the price at 15 eurocent is subject to the following conditions: (i) non-euro currencies add at least 20% to the euro settlement volume; (ii) the securities settlement volume in the EU is no more than 10% lower than the volumes projected by the T2S Programme Office, which are based on market advice; and (iii) tax authorities confirm that the Eurosystem will not be charged VAT for the T2S Services it provides.

3 T2S price list

Tariff items	*Price*	*Explanation*
Settlement services		
Delivery versus Payment	15 eurocent	per instruction[†]
Free of Payment	9 eurocent	per instruction[†]
Payment Free of Delivery	9 eurocent	per instruction[†]
Internal T2S liquidity transfer	9 eurocent	per transfer
Account allocation	3 eurocent	per instruction[†]
Matching	3 eurocent	per instruction[†]
Intra-position movement	6 eurocent	per transaction
Intra-balance movement	6 eurocent	per transaction
Auto-collateralisation service with Payment Bank	15 eurocent	for issue and return, charged to collateral provider
Intended Settlement Date failed transaction	15 eurocent	surcharge per Settlement Day failed per instruction[†]
Daytime settlement process	3 eurocent	surcharge per instruction[†]
Daytime congestion charge	0 eurocent[*]	additional surcharge per instruction[†]
Auto-collateralisation service with Central Bank	0 eurocent[*]	for issue and return, charged to the collateral provider
Instruction marked with ‘top or high priority’	0 eurocent[*]	surcharge per instruction[†]
Cancellation	0 eurocent[*]	per instruction[†]
Settlement modification	0 eurocent[*]	per instruction[†]
Information services		
A2A reports	0.4 eurocent	Per business item in any A2A report generated
A2A queries	0.7 eurocent	Per queried business item in any A2A query generated
U2A queries	10 eurocent	Per executed search function
Messages bundled into a file	0.4 eurocent	Per message in a file
Transmissions	1.2 eurocent	Per transmission
Account management services		
Securities Account	Free of charge[**]	Fee options: a) monthly fee per ISIN in the account or b) monthly fee per account
Fee per T2S Dedicated Cash Account	0 eurocent[***]	Monthly

[†] Two instructions per transaction will be charged.

[*] T2S will be sized in accordance with an expected consumption pattern, i.e. the anticipated distribution of settlement volumes during night-/day-time and peak hours. These items will initially be set at a zero price, presuming that actual usage of T2S will be within this expected consumption pattern. However, should there be a stronger than expected use of T2S resources and the volume distribution pattern be different than expected thus adversely affecting T2S performance, it will be reconsidered to charge for these items. The Eurosystem will regularly review the actual usage of T2S resources against expected consumption patterns.

[**] Account management services for Securities Accounts will be set at zero and will not be changed until the end of the cost recovery period, at least.

[***] Account management services for T2S Dedicated Cash Accounts (DCAs) will initially not be charged, presuming that the actual number and usage of DCAs will be within expected consumption patterns. However, should DCAs involve a stronger than expected use of T2S resources thus adversely affecting T2S performance, it will be reconsidered to charge for these items. The Eurosystem will regularly review the matter together with the Central Banks operating DCAs.

4 T2S Pricing structure

4.1 Summary

Tariff items	*DvP weight factor*	*Explanation*
Settlement services		
Delivery versus Payment	100%	per instruction[†]
Free of Payment	60%	per instruction[†]
Payment Free of Delivery	60%	per instruction[†]
Internal T2S liquidity transfer	60%	per transfer
Account allocation	20%	per instruction[†]
Matching	20%	per instruction[†]
Intra-position movement	40%	per transaction
Intra-balance movement	40%	per transaction
Auto-collateralisation service with Payment Bank	100%	for issue and return, charged to collateral provider
Intended Settlement Date failed transaction	100%	surcharge per Settlement Day failed per instruction[†]
Daytime settlement process	20%	surcharge per instruction[†]
Daytime congestion charge	0%[*]	additional surcharge per instruction[†]
Auto-collateralisation service with Central Bank	0%[*]	for issue and return, charged to the collateral provider
Instruction marked with ‘top or high priority’	0%[*]	surcharge per instruction[†]
Cancellation	0%[*]	per instruction[†]
Settlement modification	0%[*]	per instruction[†]
Information services		
A2A reports	25% of total T2S revenues	Per business item in any A2A report generated
A2A queries		Per queried business item in any A2A query generated
U2A queries		Per executed search function
Messages bundled into a file		Per message in a file
Transmissions		Per transmission
Account management services		
Securities Account	Free of charge[**]	Fee options: a) monthly fee per ISIN in the account <u>or</u> b) monthly fee per account
Fee per T2S Dedicated Cash Account	0%[***]	Monthly

[†] Two instructions per transaction will be charged.

[*] T2S will be sized in accordance with an expected consumption pattern, i.e. the anticipated distribution of settlement volumes during night-/day-time and peak hours. These items will initially be set at a zero price, presuming that actual usage of T2S will be within this expected consumption pattern. However, should there be a stronger than expected use of T2S resources and the volume distribution pattern be different than expected thus adversely affecting T2S performance, it will be reconsidered to charge for these items. The Eurosystem will regularly review the actual usage of T2S resources against expected consumption patterns.

[**] Account management services for Securities Accounts will be set at zero and will not be changed until the end of the Cost Recovery Period, at least.

[***] Account management services for T2S Dedicated Cash Accounts (DCAs) will initially not be charged, presuming that the actual number and usage of DCAs will be within expected consumption patterns. However, should DCAs involve a stronger than expected use of T2S resources thus adversely affecting T2S performance, it will be reconsidered to charge for these items. The Eurosystem will regularly review the matter together with the Central Banks operating DCAs.

4.2 Settlement services

The general principle is that each completed settlement service activity will be counted and reflected in the relevant monthly bill. Unless indicated otherwise, billable events will be charged based on the date that T2S successfully executes the related instructions/the events occur.

Regarding the difference between settlement transaction and settlement instruction, it is noted that the two counterparties to a settlement transaction initiate one instruction each and the two instructions will then be matched and form one transaction.

The T2S Pricing structure aims at charging for resource usage in most instances. The price for settlement services is set relative to a DvP settlement.

Each partial settlement[1] will be charged separately (e.g. a settlement instruction settled in three parts will be charged the DvP or FoP price three times, and any of the parts settled in the period 07:00 – 18:00 will attract the daytime surcharge).

Conditional securities delivery[2] transactions will get charged according to their individual components, e.g. DvP or FoP, Matching, blocking and unblocking, creation of a condition and release of a condition, i.e. hold and release.

Section 4.4 contains the list of items which will initially be set at a zero price, presuming that actual usage of T2S will be within the expected anticipated distribution of settlement volumes during night-/day-time and peak hours.

Section 4.5 contains the list of items which will be priced at zero and will not be charged until the end of the cost recovery period, at least.

[1] Partial settlement is defined in the URD as “a process that settles only a fraction of settlement instructions original volume and amount when full settlement is not possible due to lack of securities. The residual unsettled volume and amount may settle at a later stage during the Intended Settlement Date. Any residual amount at the end of the intended settlement date results in the reporting of a failed settlement”.

[2] Conditional securities delivery is defined in the URD as “a procedure in which the final securities and/or cash booking is dependent on the successful completion of an additional action or event (e.g. registration of shares, cash settlement outside T2S)”.

Delivery versus Payment

Price	**Eurocent 15 per instruction**
DvP weight factor	*100% (the numeraire)*
Background	*The DvP requests a simultaneous transfer of securities versus cash. Both instructing parties will get charged. The DvP price constitutes the numeraire for other instruction related charges (i.e. other instruction charges are indicated as a percentage of the DvP price).Realignment instructions resulting from a DvP will not be charged.*
Fee trigger	*Each successfully completed DvP settlement.*

Free of Payment

Price	**Eurocent 9 per instruction**
DvP weight factor	*60%*
Background	*The FoP requests a transfer of securities only. There is no cash processing required. Both parties to the FoP will get charged. Realignment instructions resulting from a FoP will not be charged.*
Fee trigger	*Each successfully completed FoP settlement.*

Payment Free of Delivery

Price	**Eurocent 9 per instruction**
DvP weight factor	*60%*
Background	*The PFOD requests a transfer of cash only. There is no securities processing required. Both parties to the PFOD will get charged. Realignment instructions resulting from a PFOD will not be charged.*
Fee trigger	*Each successfully completed PFOD settlement.*

28 **Internal T2S liquidity transfer**

Price	**Eurocent 9 per transfer**
DvP weight factor	*60%*
Background	*Internal liquidity transfers between two T2S Dedicated Cash Accounts will be charged with a DvP weight factor of 60%.* *Liquidity transfer charges will be invoiced to T2S Users via the T2S Users' Central Bank.* *Payments triggered as part of a DvP are of course included within the DvP instruction charge.*
Fee trigger	*All successfully executed liquidity transfers between two T2S Dedicated Cash Accounts.* *The fee will get charged to the instructing party, i.e. the party which will get debited.*

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30 **Account allocation**

Price	**Eurocent 3 per instruction**
DvP weight factor	*20%*
Background	*An account allocation in a "direct holding market" is an instruction involving at least one Securities Account which has been flagged as an "end-investor account". Two instructions per transaction will be charged. If the account allocation instructions are sent unmatched, the Matching fee will be charged. The definitions of a "direct holding market" and "end-investor account" in the context of the T2S Pricing Schedule are provided below.* ***For the purpose of T2S Pricing, a "direct holding market" is defined as a market****:* *1. in which, at a minimum, for holdings of domestic securities generally held by domestic residents, end-investors (retail investors in particular) would generally have an account directly in the Issuer CSD; and* *2. which brings all segregated end-investor accounts to T2S that contain securities that are available in T2S.*

For the purpose of T2S Pricing, the following markets are considered as direct holding markets according to paragraph 1: Cyprus, Denmark, Estonia, Finland, Greece, Iceland, Malta, Norway, Romania, Slovakia, Slovenia, Sweden. This list is subject to review by the T2S Governance bodies when needed, following the procedure for 'Decision-making on relevant matters other than Change Requests' in Schedule 8 (Governance).

Definition of "end-investor accounts" and instructions eligible for the reduced account allocation fee

For the purpose of T2S Pricing, there are two options which a CSD serving a direct holding market in T2S can choose with respect to the definition of "end investor accounts and the instructions which are eligible for the account allocation fee:

***Option A for a direct holding market in T2S**:*

a. All segregated accounts of customers of CSD participants are eligible to be flagged as 'end-investor account eligible for the account allocation fee'. It is noted that it is the responsibility of the respective CSD in a direct holding market in T2S in cooperation with its participants to ensure a proper flagging of accounts.

b. FoP instructions involving at least one account flagged as 'end-investor account eligible for the account allocation fee' are charged the account allocation fee which is applicable to both sides of the FoP transaction.

Or:

***Option B for a direct holding market in T2S**:*

a. All retail investor accounts are eligible to be flagged as 'end-investor account eligible for the account allocation fee'. A retail investor means a 'retail client' in the meaning of MiFID (OCJ, L 145 , 30/04/2004). It is noted that it is the responsibility of the respective CSD in a direct holding market in T2S in cooperation with its participants to ensure a proper flagging of accounts.

	b. DvP and FoP instructions involving at least one account flagged as 'end-investor account eligible for the account allocation fee' are charged the account allocation fee which is applicable to both sides of the transaction. ***The following principles apply to account allocations**:* *1. The objective of the fee for account allocations is to ensure a level playing field between direct and indirect holding markets in T2S.* *2. As a principle, the account allocation fee should not be used for transactions in direct holding markets in T2S that would have been charged the full price in an average indirect holding market or in an average direct holding market opting for a layered model in T2S.* *3. In line with the transparency principle of T2S, the T2S Board reports on an annual basis about the share of DvP transactions, FoP transactions and Account allocations in each of the respective direct holding markets in T2S. This report includes the share of DvP transactions and FoP transactions of the aggregated indirect holding markets in T2S for comparison.*
Fee trigger	*The fee trigger depends on which option A or B is chosen by the respective CSD serving a direct holding market in T2S:* • *Option A. Any FoP instruction involving at least one account flagged as 'end-investor account eligible for the account allocation fee' are charged the account allocation fee which is applicable to both sides of the FoP transaction.* *Or:* • *Option B. Any DvP or FoP instruction involving at least one account flagged as 'end-investor account eligible for the account allocation fee' are charged the account allocation fee which is applicable to both sides of the transaction.*

Matching

Price	**Eurocent 3 per instruction**
DvP weight factor	*20%*
Background	*An unmatched instruction will have to pass through the Matching process and will assume additional processing resources of T2S. Therefore, it will attract a standard Matching charge on top of the regular settlement instruction fee.* *The Matching charge will be 20% of a DvP instruction charge and will be applied to both parties.*
Fee trigger	*Each successfully completed Matching event.*

Intra-position movements

Price	**Eurocent 6 per transaction**
DvP weight factor	*40%*
Background	*All intra-position movements in the case of securities (i.e. blocking/ unblocking/ reservation/ unreservation/ earmarking / unearmarking) will attract an instruction-based fee. Internally generated intra-position movements will also be charged. For example, say a securities position is blocked for a specific DvP transaction. Once the DvP transaction which is using the blocked securities is ready to be settled, T2S will first have to unblock the securities position so the DvP can settle. This unblocking will be charged. For further details, see Example 109 in the UDFS v1.0.* *No fees are applied for the blocking of static data (i.e. of the Party, Securities Account). The intra-position movement fee will be charged to respective T2S Users via their CSD.*
Fee trigger	*Any successfully executed intra-position movement.*

38 **Intra-balance movements**

Price	**Eurocent 6 per transaction**
DvP weight factor	*40%*
Background	*All intra-balance movements in the case of cash (i.e. blocking/unblocking) will attract an instruction-based fee. Internally generated intra-balance movements will also be charged. The fees are also applied for the automatic release of cash blockings during end-of-day and the regenerated cash blockings at the next start-of-day in the case of a Conditional Securities Delivery (CoSD).* *No fees are applied for the blocking of static data (i.e. of the Party, Securities Account). The intra-balance (cash) movement fee will be charged to respective T2S Users via their Central Bank.*
Fee trigger	*Any successfully executed intra-balance movement.*

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40 **Auto collateralisation service with Payment Bank**

Price	**Eurocent 15 per transaction**
DvP weight factor	*100%*
Background	*The complete auto-collateralisation with a Payment Bank will attract an all-in-one fee of 100% DvP weight factor. Only the collateral provider will get charged.*
Fee trigger	*Each successfully executed auto-collateralisation transaction with a Payment Bank within the monthly billing period.*

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42 **Fail on Intended Settlement Date**

Price	**Eurocent 15 per instruction**
DvP weight factor	*100%*
Background	*Matched settlement instructions failing to settle on their Intended Settlement Date (ISD) will be re-introduced into all the future settlement cycles until they either settle or are cancelled by the two counterparties. The daily charge will address the resource cost of congestion and of the additional processes required to recycle a failed transaction, e.g. eligibility checking. It is not the task of T2S to apply disciplinary actions. These will need to be applied outside of T2S. Both*

	parties of the failing settlement transaction will attract the charge.
Fee trigger	*Each Matched DvP, FoP, or PFOD which does not settle on its Intended Settlement Date will attract a surcharge. Furthermore, the surcharge will continue to be applied for every Settlement Day that the instruction fails to settle after the ISD.* *The charge will be applied to both parties of the transaction.*

Daytime settlement process

Price	**Eurocent 3 surcharge per instruction settled during the period 07:00 - 18:00**
DvP weight factor	*20%*
Background	*Settlement instructions successfully executed during the period 07:00 – 18:00 will attract a 20% "daytime surcharge".*
Fee trigger	*Any DvP, FoP or PFOD instruction successfully settled during the period 07:00 – 18:00 will attract the daytime surcharge.*

4.3 Information services

On average, 25% of the annual T2S revenues will be recovered via information services.

Reports, queries and messages of Directly Connected Parties (which are entitled to do so by the respective CSD) will be charged to the CSD of the Directly Connected Party. Reports, queries and messages of a Payment Bank will be charged to the Central Bank of the Payment Bank. Reports, queries and messages that are received/generated during peak hours, i.e. the last two hours prior to the DvP cut-off time (i.e. indicatively between 2 p.m. – 4 p.m.), may be subject to the daytime congestion surcharge.

For the purposes of the pricing of information services, the following definitions are used:

- A ‘**business item**’ is one instance of a business entity defined in the T2S data model (e.g. settlement instruction, securities position, intra-balance movement, liquidity transfer, cash posting, Securities Account, Dedicated Cash Account etc) with all its attributes.
- A ‘**message**’ is an encrypted inbound/outbound communication used for Application-to-Application (A2A) interactions between T2S and its participants. A definitive list of all messages can be found in Chapter 3 of the User Detailed Functional Specifications (UDFS).
- A ‘**file**’ is a structured collection of ‘messages’.

A ‘**transmission**’ can be any of the following: a ‘message’, a ‘file’, an ‘A2A query request’, ‘A2A query response’ or an ‘A2A report’.

A2A reports

Price	**Eurocent 0.4 per business item in an A2A report**
Background	*A2A reports will be charged based on the reported number of business items. The list of A2A reports and associated business item are shown in Annex 1 to Schedule 7.*
Fee trigger	*Any A2A report generated, with the charge based on the reported number of business items.*

A2A queries

Price	**Eurocent 0.7 per queried business item in an A2A query**
Background	*A2A queries will be charged based on the number of queried business items. The list of A2A queries and associated business item are shown in Annex 1 to Schedule 7.*

Fee trigger	*Any A2A query generated, with the charge based on the number of queried business items.*

U2A queries

Price	**Eurocent 10 per executed U2A query**
Background	*U2A queries are submitted via the GUI and the U2A query response is received by the GUI. U2A queries viewed on the GUI are charged a fixed fee per executed query.* *If a U2A query were downloaded/exported, then it would be charged in the same manner as for A2A queries (i.e. per business item in the downloaded U2A query). The list of U2A queries and associated business item are shown in Annex 1 to Schedule 7.*
Fee trigger	*Any executed U2A search function viewed on the GUI would be charged a fixed fee.* *If a U2A query is downloaded, it would be additionally charged in the same manner as for A2A queries (i.e. per queried business item).*

Messages bundled into a file

Price	**Eurocent 0.4 per message in each file containing bundled messages**
Background	*T2S Actors will have the possibility to send messages to T2S and receive messages from T2S bundled together into a file.* *Messages received by T2S which are not accepted or not successful authenticated will not be charged for.*
Fee trigger	*Each file containing bundled messages, with the charge based on the number of messages in the file.*

Transmissions

Price	**Eurocent 1.2 per transmission**
Background	*All types of transmissions (with the exception of technical acknowledgement messages) will be counted and charged for.*
Fee trigger	*Each transmission per T2S Party (both inbound and outbound) will be counted and charged for (except for technical acknowledgement messages).*

79 Some worked examples for the pricing of information services:

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Item	Transmission fee (in eurocent)	Business item fee (in eurocent)	Fixed fee	Total charge
A2A report sent to a T2S Actor containing 100 business items	1.2 eurocent (for sending the report)	40 eurocent (100 x 0.4 eurocent for each business item contained in the report)	-	41.2 eurocent
A file containing 100 messages, sent by a T2S Actor to the T2S Platform	1.2 eurocent (for receiving the file)	40 eurocent (100 x 0.4 eurocent for each message bundled into the file)	-	41.2 eurocent
A2A query request and the subsequent response containing 100 business items	2.4 eurocent (1.2 eurocent for the A2A query request message and 1.2 eurocent for the A2A query response)	70 eurocent (100 x 0.7 eurocent for each queried business item)	-	72.4 eurocent
100 (individual) messages sent by T2S to a T2S Actor	120 eurocent (100 x 1.2 eurocent for each message)	-	-	120 eurocent
U2A query on the GUI	-	-	10 eurocent	10 eurocent
U2A query containing 100 business items, viewed on the GUI and then subsequently downloaded	-	70 eurocent (100 x 0.7 eurocent for each queried business item)	10 eurocent (for the initial viewing on the GUI)	80 eurocent

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4.4 Tariff items initially priced at zero

T2S will be sized in accordance with an expected consumption pattern, i.e. the anticipated distribution of settlement volumes during night-/day-time and peak hours. These items will initially be set at a zero price, presuming that actual usage of T2S will be within this expected consumption pattern. However, should there be a stronger than expected use of T2S resources and the volume distribution pattern be different from expected thus adversely affecting T2S performance, it will be reconsidered to charge for these items. The Eurosystem will regularly review the actual usage of T2S resources against expected consumption patterns.

Daytime congestion charge

Price	**Zero eurocent per instruction**
DvP weight factor	*0%*
Background	*An additional congestion surcharge may be applied to settlement instructions successfully executed during the last two hours prior to the DvP cut-off time (i.e. indicatively between 14:00 – 16:00). Initially this "congestion charge" will be set at 0 eurocent but if, once T2S goes live, it is found that too many instructions are executed during the period and hence causing congestion, a fee may be applied.*
Fee trigger	*Any DvP, FoP or PFOD instruction successfully settled during the last two hours prior to the DvP cut-off time (i.e. indicatively between 14:00 – 16:00) will attract the daytime congestion surcharge.*

Auto collateralisation service with a Central Bank

Price	**Zero eurocent per transaction**
DvP weight factor	*0%*
Background	*All transactions resulting from auto-collateralisation with a Central Bank will be charged an all-in-one fee. Only the collateral provider will get charged.*
Fee trigger	*All successfully processed auto-collateralisation transactions with a Central Bank within the monthly billing period.*

Daytime settlement of 'high' priority and 'top' priority instructions

Price	**Zero eurocent per instruction**
DvP weight factor	0%
Background	All 'Top Priority' and 'High Priority' instructions processed during the period 07:00 – 18:00 will be subject to a surcharge. ***TOP priority*** *= default assigned to instructions of trading platforms (multilateral trading facilities, Stock Exchanges, etc.) with and without a central clearing counterparty (CCP) as well as over the counter (OTC) instructions with a CCP (URD 7.2.2.2). Special instructions assigned by Central Banks or CSDs with a 'reserved priority' (e.g. Central Bank monetary policy operations) will attract the same charge.* ***HIGH priority*** *= can be assigned by T2S Users to OTC transactions (without CCP) in the relevant settlement instruction. High priority instructions follow in the processing hierarchy after top priority instructions (URD 7.2.2.3).*
Fee trigger	*Instructions flagged with 'Top Priority' or 'High Priority' which are settled in the period 07:00 – 18:00. If a CSD's priority traffic exceeds 20% of its total settlement volume within the monthly billing period, the Eurosystem will discuss the matter with the respective CSD to assess the reason for such high usage. Should usage not be brought into a range below 20%, the CSD will be billed for the priority fee and charges may apply after a notification period of 60 days.*

Cancellation

Price	**Zero eurocent per instruction**
DvP weight factor	*0%*
Background	*The cancellation of a settlement instruction which had been submitted previously will need to be validated and the original settlement instruction will be flagged as successfully cancelled. In cases where the instruction has already been Matched, each side of the cancellation will still get charged. Cancellation instructions which are not successfully executed or have been denied are not charged.*

Fee trigger	*All instructions that have been successfully cancelled. Successful automatic cancellation of settlement instructions by the Instruction Maintenance Module would also be charged. All previously attracted chargeable status (e.g. Matched, partial settlement, Intended Settlement Date fail) will remain and get charged as well.*

Settlement modification

Price	**Zero eurocent per instruction**
DvP weight factor	*0%*
Background	*Settlement instruction modifications include any change of the Hold status (CSD hold status/ CSD validation hold status/ party hold status/ CoSD hold status), all release instructions, change of priority, change of partial settlement indicator and linkage block.* *All relevant default settings will not attract a charge because they are driven by the relevant static data.*
Fee trigger	*Any successfully executed settlement modification instruction leading to a change in status.*

Fee per T2S Dedicated Cash Account

Price	**Zero euro monthly per T2S Dedicated Cash Account**
Background	*Monthly fixed fee to cover for the maintenance of the static data.* *This fee will be charged to respective T2S Users via their Central Bank.*
Fee trigger	*Any T2S Dedicated Cash Account with the account status 'open' at the end of the monthly billing period or if it was closed during the billing period.*

4.5 Tariff items priced at zero at least until end of cost-recover period

Securities Account fees

Securities Account fees will be set at zero at least until the end of the cost recovery period.

Price	**Option a) Zero eurocent monthly per ISIN in a Securities Account** **Option b) Zero euros monthly per Securities Account**
Background	*Increased numbers of ISINs in an account in general means more resource associated with maintaining static data for the account. T2S parties will have the choice between:* *Option a) each Securities Account open in the database of T2S and active during the billing period will attract a monthly fixed fee which will be applied for each ISIN held in the account; or* *Option b) each Securities Account open in the database of T2S will attract a monthly fixed fee to cover for the maintenance of a Securities Account static data.* *Should CSDs offer the option. T2S Users can decide which option to be applied but it should be stable in the long term.*
Fee trigger	*Option a) All ISIN positions at the end of the monthly billing period within a Securities Account which was active during the billing period and the account flagged to be charged by ISIN will attract a fix fee per ISIN position in the account* *Option b) Any Securities Account not flagged to be charged by ISIN with the account status 'open' at the end of the monthly billing period will attract a fix fee. This fixed fee will also be applied to accounts closed during the billing period.*

5 Inventory of T2S Service Charges

5.1 Introduction

The Inventory of T2S Service Charges (the Inventory) provides T2S Users with a description of how T2S will finance changes (which, depending on the type of change, could potentially result in increases of T2S prices included in the T2S price list), and a number of other services not covered in the T2S price list. The present content of the Inventory is not necessarily exhaustive, but could potentially be expanded to encompass other types of service charges. If the list were to be expanded at a later stage, the general principle of charging at cost shall remain.

5.2 Changes

The process for how changes will be implemented to the T2S Services is described in Schedule 9 on ‘Change and Release Management’. The following section describes how the costs for Common Changes and Specific Changes of the T2S Services will be recovered.

5.3 T2S Common Changes

Common Changes are defined as “any new feature, functionality or service – or any amendment of an existing feature, functionality or service – which is implemented for the benefit of all T2S Actors”. Prior to going ahead and implementing a Change Request, the Eurosystem will specify the development and running costs of the change. This will be a binding offer on behalf of the Eurosystem.

Those Common Changes that are classified as “corrective maintenance” (i.e. fixing of errors in coding, design or detailed specifications (bug fixes)” and “technical maintenance” (i.e. software adaptations and/or testing activities imposed by changes of the hardware or the operating system or other infrastructural software packages within certain resource limits) will not be charged separately. Some of these Common Changes might be financed through the T2S Contingency Reserve, within the general rules defined by the Governing Council.

All other Common Changes will first need to be financed by the Eurosystem and the Governing Council needs to decide to increase the financial envelope of T2S by the cost of such a change. Substantial increases in the financial envelope could result in the need to adjust the T2S price list at some stage and/or to lengthen the amortisation period and/or to establish separate amortisation cycles. The development costs, running costs and capital costs associated with these Common Changes will therefore have to be recovered through T2S fees (see T2S price list) over an amortisation period.

CSDs commit to bear any residual costs related to Common Changes requested by them that cannot be recovered through T2S fees.

5.4 T2S Specific Changes

Specific Changes are defined as “any new feature, functionality or service – or any amendment of an existing feature, functionality or service – which is not supported by all T2S Actors”. Based on the principle of non-exclusiveness and non-discrimination, the functionality would in principle be available to all initial and future T2S parties. However, those not wishing to use the new functionality would not be impacted and therefore would not bear any of the costs.

Prior to a Specific Change Request being approved, the Eurosystem will specify the full financial consequences associated with the change (e.g. the implementation costs, the running costs, capital costs and potentially lost revenues). The estimate of the implementation costs will be a binding offer on behalf of the Eurosystem.

Once the Specific Change Request has been approved and before the Eurosystem starts development activities, the entities requesting the change (“requesters”) will formally commit to bear the full financial consequences of the change and agree with the T2S Board on the financing of the Specific Change. The financing of Specific Changes may be in the form of either pre-financing, financing via transaction fees levied on the use of the specific functionality or any other recovery method to be agreed between the requesters and the T2S Board.

Entities which have not been part of the original agreement between the Eurosystem and the requesters to develop a specific functionality but decide to use such functionality at a later stage (“late-joiners”) will have to bear an appropriate share of the financial consequences. The requesters that initially requested the specific functionality shall seek an agreement with the late-joiner(s) for the revised allocation of financial consequences of such functionality. If original requesters and the late-joiner(s) cannot find an agreement on the revised allocation of the full financial consequences of that functionality, a panel of experts (nominated by CSDs in line with Arbitration rules) will decide on a revised allocation, using objective criteria in order to ensure non-discrimination, to avoid duplication of Specific Changes and to keep T2S open for new developments. Subject to the late-joiner having paid or committed to pay its share of the full financial consequences of the Specific Change in accordance with the revised allocation, it will be able to use the specific functionality.

5.5 Pricing of assessments of Change Requests

Preliminary assessments of a request for a functional change will attract a charge of €2,000. If, based on the results of the preliminary assessment, the party then decides to request a detailed assessment for the functional change, the detailed assessment will attract an additional charge of €10,000.

If the Change Request is subsequently approved and implemented, either as a Common Change or Specific Change, the costs of the preliminary and detailed assessments will be added to the total cost of the change (and recovered in the manner described in sections 5.2.1 and 5.2.2).

If the change is rejected, the costs of the preliminary and detailed assessment would be charged directly to the requester. In case there is more than one requester, the costs of the preliminary assessments and detailed assessments would be distributed equally.

5.6 RTGS fees for connecting to T2S

If an RTGS system charges T2S a fee for connecting to T2S, T2S will not charge this fee to its Contracting CSDs. T2S will annually charge such fee back to the Central Bank that operates the T2S Dedicated Cash Account in the currency in which the RTGS system operates. As a matter of service, T2S will annually provide each Central Bank operating a T2S Dedicated Cash Account with each Payment Bank's annual share in the total number of postings on that T2S Dedicated Cash Account and the Central Bank might take that into account when allocating the charges.

5.7 Training

The Eurosystem will provide training by qualified trainers to interested parties on the structural and operational aspects of T2S. Such general training which T2S offers to all T2S Stakeholders will be free of charge. Tailor-made training will be charged to the requesting party on a per diem basis. The Eurosystem will charge training services at cost. T2S training course offerings and associated charges will be published on a regular basis.

5.8 Consultancy

The Eurosystem may provide resources on request of a CSD, Central Bank or a Directly Connected Party to provide advice and support improving their technical infrastructure interaction with the T2S platform. Specific consultancy will be charged to the requesting party on a per diem basis. The Eurosystem will charge the consultancy services that it provides at cost.

5.9 Request for an additional test environment

The Eurosystem will be providing two test environments for User Testing during migration and post-migration without charging any additional service charge.

The Eurosystem will provide additional test environments subject to an approved Change Request. If CSDs/Central Bank would require additional test environments, the set-up costs of the test environment as well as daily maintenance fees will be charged at cost either as a Common or a Specific Change.

If the additional test environment(s) is charged as a Specific Change, the fee will be included in the respective CSD/Central Bank bill as soon as the relevant test environment is ready for testing.

5.10 Securities Reference Data

If the Eurosystem were to provide the securities maintaining services to CSDs, it will charge these services at cost.

5.11 Connectivity Services

[The Eurosystem allows all CSDs and NCBs, and their customers, i.e. Directly Connected Parties and Dedicated Cash Account holders respectively, to connect to T2S via two types of connectivity: (i) a Dedicated Link connection, and (ii) a Value Added Network. The Eurosystem will charge the set-up and operation of its Dedicated Link connection at cost to the Directly Connected Actors using such a connection. In addition, the Eurosytem will charge each Directly Connected Actor with a one-off fee of EUR […] for the issuance of each requested security certificate and an annual fee of EUR […] for the annual prolongation of each security certificate.]

5.12 One-off joining fee

A CSD joining T2S will pay a one-off joining fee in the amount of 25% of the annual fee that this CSD will pay to T2S, calculated on the basis of the fee paid in the first full year of T2S operation of the CSD in question. The fee will be calculated and charged one year after the CSD will have started its operations in T2S.

5.13 Exit Management

If a CSD terminates the T2S Framework Agreement for convenience, the Eurosystem will invoice the CSD at cost for all planning, co-ordination and execution of exit activities that go beyond normal operational support. This will also be the case if a CSD decides to exit because the relevant non-euro area NCB no longer outsources its currency.

If a CSD has terminated the Framework Agreement for cause, the Eurosystem will provide the support for exit activities free of charge.

5.14 External Examiner

In case of a regular or special examination, as provided in Article 26.4 and 26.6 of T2S Framework Agreement, 50% of the total cost charged by the External Examiner shall be borne by the Eurosystem and 50% by the CSD(s).

5.15 Reimbursements of costs for storing data

If a CSD requests the Eurosystem to maintain documentation and records for a period longer than specified in Article 26.9 of the T2S Framework Agreement, the Eurosystem is entitled to reimbursement of any reasonable costs incurred as a result of such further maintenance.

FRAMEWORK AGREEMENT

ANNEX 1 TO SCHEDULE 7

LIST OF REPORTS AND QUERIES AND ASSOCIATED BUSINESS ITEMS

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1 List of A2A reports and business items

Report Name	Business Item
Current Settlement Day Cash Information Report	T2S Dedicated Cash Account
Following Settlement Day Cash Forecast Report	T2S Dedicated Cash Account
Statement of Accounts	Cash Posting
Statement of Settlement Allegements	Allegement
Statement of executed amendment instructions for Intra-Balance Movements	Amendment Instruction
Statement of executed amendment instructions for Intra-Position Movements and Settlement Instructions	Amendment Instruction
Statement of executed cancellation instructions for Intra-Balance Movements	Cancellation Instruction
Statement of executed cancellation instructions for Intra-Position Movements and Settlement Instructions	Cancellation Instruction
Statement of Holdings	Securities Position
Statement of pending amendment instructions for Intra-Balance Movements	Amendment Instruction
Statement of pending amendment instructions for Intra-Position Movements and Settlement Instructions	Amendment Instruction
Statement of pending cancellation instructions for Intra-Balance Movements	Cancellation Instruction
Statement of pending cancellation instructions for Intra-Position Movements and Settlement Instructions	Cancellation Instruction
Statement of Pending Instructions	Settlement Instruction
Statement of pending intra-balance movements	Intra-Balance Movement
Statement of pending intra-position movements	Intra-Position Movement
Statement of settled intra-balance movements	Intra-Balance Movement
Statement of settled intra-position movements	Intra-Position Movement

Statement of Static Data for Party	Party
Statement of Static Data for Securities	Security
Statement of Static Data for Securities Accounts	Securities Account
Statement of Static Data for T2S Dedicated Cash Accounts	T2S Dedicated Cash Account
Statement of Transactions	Settlement Instruction

3 2 List of A2A queries and business items

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Query name	Business Item
Amendment Instruction List Query	Amendment Instruction
Amendment Instruction Query for Intra Balance Movements	Amendment Instruction
Amendment Instruction Query for Intra Position Movements and Settlement Instructions	Amendment Instruction
Cancellation Instructions for Intra Balance Movements Query	Cancellation Instruction
Cancellation Instructions for SI + Intra Position Movements Query	Cancellation Instruction
Cash Forecast Query	T2S Dedicated Cash Account
Collateral Value of a Security Query	T2S Dedicated Cash Account
Collateral Value per T2S Dedicated Cash Account Query	T2S Dedicated Cash Account
Cumulative Billing Data Query	Party
Current Status of the T2S settlement day	Business Day
Immediate Liquidity Transfer Order Detail Query	Immediate Liquidity Transfer Order
Immediate Liquidity Transfer Order List Query	Immediate Liquidity Transfer Order
Intra Balance Movements Query	Intra Balance Movement
Intra Position Movements Query	Intra Position Movement
ISIN List Query	Security
Itemised Billing Data Query	Billing Item
Limit Query	Limit
Limit Utilisation Journal Query	Limit
Limit Utilisation Query	Limit
Liquidity Transfer Order Detail Query	Standing or Predefined Liquidity Transfer Order

Liquidity Transfer Order Link Set Query	Liquidity Transfer Order Link Set
Liquidity Transfer Order List Query	Standing or Predefined Liquidity Transfer Order
Liquidity Transfer Order of a Liquidity Transfer Order Link Set Query	Standing or Predefined Liquidity Transfer Order
Outstanding Auto-Collateralisation Credit Query	T2S Dedicated Cash Account
Party List Query	Party
Party Reference Data Query	Party
Report Details Query	Report
Restricted Party Query	Party
Securities Account List Query	Securities Account
Securities Account Position Query	Securities Position
Securities Account Reference Data Query	Securities Account
Securities CSD Link Query	Security
Securities Deviating Nominal Query	Security
Securities Reference Data Query	Security
Settlement Instruction Audit Trail Query	Settlement Instruction
Settlement Instruction Current Status Query	Settlement Instruction
Settlement Instruction Query	Settlement Instruction
Settlement Instruction Status Audit Trail Query	Settlement Instruction
Static Data Audit Trail Security Query	Security
Static Data Audit Trail Party Query	Party
Static Data Audit Trail Securities Account Query	Securities Account
Static Data Audit Trail T2S DCA Query	T2S Dedicated Cash Account
T2S Calendar Query	Dates
T2S Dedicated Cash Account Balance Query	T2S Dedicated Cash Account

T2S Dedicated Cash Account List Query	T2S Dedicated Cash Account
T2S Dedicated Cash Account Posting Query	Cash Posting
T2S Dedicated Cash Account Reference Data Query	T2S Dedicated Cash Account
T2S Diary Query	Business Day
T2S Overall Liquidity Query	Party
Total amount of standing and predefined orders Query	Party
Total collateral value per T2S Dedicated Cash Account Query	T2S Dedicated Cash Account

3 List of U2A reports and business items

Note: When the Business Item of a U2A query is referred to as “fixed”, it means that only one business item per query will be counted and charged for.

Query name	Business Item
Allegment Instruction Query	Allegement
Amendment Instruction List Query	Amendment Instruction
Amendment Instruction Query for Intra Balance Movements	Amendment Instruction
Amendment Instruction Query for Intra Position Movements and Settlement Instructions	Amendment Instruction
Attribute Domain Details Query	fixed
Attribute Domain List Query	fixed
Attribute Reference Details Query	fixed
Attribute Reference List Query	fixed
Auto-Collateralisation Eligibility Links Query	fixed
Cancellation Instructions for Intra Balance Movements Query	Cancellation Instruction
Cancellation Instructions for SI + Intra Position Movements Query	Cancellation Instruction
Cash Forecast Query	T2S Dedicated Cash Account
Close Links Query	fixed
Closing Day Query	fixed
CMB Details Query	fixed
CMB List Query	fixed
CMB Securities Account Link Details Query	fixed
CMB Securities Account Links List Query	fixed
Collateral Value of a Security Query	T2S Dedicated Cash Account
Collateral Value per T2S Dedicated Cash Account Query	T2S Dedicated Cash Account

Conditional Security Delivery Rule Details Query	fixed
Conditional Security Delivery Rule Query	fixed
Conditional Security Delivery Rule Set Details Query	fixed
Conditional Security Delivery Rule Set Query	fixed
Country Query	fixed
CSD Account Links Query	fixed
Cumulative Billing Data List Query	Party
Cumulative Billing Data Query	Party
Currency Query	fixed
Current Status of the T2S settlement day	Business Day
Data Changes Details Query	fixed
Data Changes Query	fixed
Default Event Schedule Details Query	fixed
Dynamic Data Audit Trail Details Query	fixed
Dynamic Data Audit Trail List Query	fixed
Eligible Counterpart CSD List Query	fixed
Eligible Counterpart CSD Query	fixed
Event Type Details Query	fixed
Event Type List Query	fixed
External RTGS Account Details Query	fixed
External RTGS Account List Query	fixed
Grant/Revoke Privileges List Query	fixed
Grant/Revoke Roles List Query	fixed
Hold/Release Instruction Query	fixed
Immediate Liquidity Transfer Order Detail Query	Immediate Liquidity Transfer Order
Immediate Liquidity Transfer Order List Query	Immediate Liquidity Transfer Order

Inbound Files Details Query	fixed
Inbound Files List Query	fixed
Inbound Message Details Query	fixed
Inbound Message List Query	fixed
Intra Balance Movements Query	Intra Balance Movement
Intra Position Movements Query	Intra Position Movement
ISIN List Query	Security
Itemised Billing Data List Query	Billing Item
Itemised Billing Data Query	Billing Item
Limit List Query	Limit
Limit Query	Limit
Limit Utilisation Journal Query	Limit
Limit Utilisation Query	Limit
Liquidity Transfer Order Detail Query	Standing or Predefined Liquidity Transfer Order
Liquidity Transfer Order Link Set Query	Liquidity Transfer Order Link Set
Liquidity Transfer Order List Query	Standing or Predefined Liquidity Transfer Order
Liquidity Transfer Order of a Liquidity Transfer Order Link Set Query	Standing or Predefined Liquidity Transfer Order
Market-specific Attribute Details Query	fixed
Market-specific Attribute Query	fixed
Market-specific Restriction List Query	fixed
Market-specific Restriction Type Rule Detail Query	fixed
Market-specific Restriction Type Rule Set List Query	fixed
Market-specific Restriction Type Details Query	fixed
Market-specific Restriction Type Rule Sets -Display Rule Sets Matrix Query	fixed

Message Subscription Rule Details Query	fixed
Message Subscription Rule Query	fixed
Message Subscription Rule Set Details Query	fixed
Message Subscription Rule Set Query	fixed
Network Service List query	fixed
Operating Day Type Details Query	fixed
Operating Day Type List Query	fixed
Outbound Message Details Query	Message
Outbound Message List Query	Message
Outstanding Auto-Collateralisation Credit Query	T2S Dedicated Cash Account
Partial Settlement Threshold Group Query	fixed
Party List Query	Party
Party Reference Data Query	Party
Privilege Query	fixed
Report Configuration Detail Query	fixed
Report Configuration List Query	fixed
Report Details Query	Report
Report Query	Report
Restricted Party Query	Party
Role Details Query	fixed
Role Query	fixed
Routing Details Query	fixed
Routing Query	fixed
Secured Group Details Query	fixed
Secured Group List Query	fixed
Secured Object	fixed
Securities Account List Query	Securities Account

Securities Account Position Query	Securities Position
Securities Account Reference Data Query	Securities Account
Securities CSD Link Query	Security
Securities Deviating Nominal Query	Security
Securities Position Detailed Restriction Details Query	Security
Securities Posting Query	Securities Posting
Securities Reference Data Query	Security
Securities Valuations Query	Security
Service Item Details Query	fixed
Service Item Query	fixed
Settlement Instruction Audit Trail Query	Settlement Instruction
Settlement Instruction Current Status Query	Settlement Instruction
Settlement Instruction Query	Settlement Instruction
Settlement Instruction Status Audit Trail Query	Settlement Instruction
Static Data Audit Trail Security Query	Security
Static Data Audit Trail Party Query	Party
Static Data Audit Trail Securities Account Query	Securities Account
Static Data Audit Trail T2S DCA Query	T2S Dedicated Cash Account
SWIFT BIC Query	fixed
System Entity Query	fixed
T2S Calendar Query	Dates
T2S Dedicated Cash Account Balance Detailed Restrictions Query	T2S Dedicated Cash Account
T2S Dedicated Cash Account Balance Query	T2S Dedicated Cash Account
T2S Dedicated Cash Account List Query	T2S Dedicated Cash Account
T2S Dedicated Cash Account Posting Query	Cash Posting
T2S Dedicated Cash Account Reference Data Query	T2S Dedicated Cash Account

T2S Diary Query	Business Day
T2S Overall Liquidity Query	Party
T2S System User Query (T2S Actor Query)	fixed
Technical Addresses Network Services Link Details Query	fixed
Technical Addresses Network Services Links List Query	fixed
Tolerance Amount Query	fixed
Total amount of standing and predefined orders Query	Party
Total collateral value per T2S Dedicated Cash Account Query	T2S Dedicated Cash Account

EUROPEAN CENTRAL BANK
EUROSYSTEM

TARGET2-SECURITIES

FRAMEWORK AGREEMENT

SCHEDULE 8

GOVERNANCE

Framework Agreement

Schedule 8 – Governance

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Preamble

This Schedule sets out the Governance, i.e. the set of rules and procedures concerning the management of T2S Services, including the related procedures for decision-making and the roles of T2S Stakeholders therein. The Governance applies as of the Agreement Date and shall govern the Development Phase and the Operational Phase of TARGET2-Securities (T2S).

The parties agree that:

1 The aim of the Governance principles is to provide each T2S Stakeholder with the level of control necessary in further pursuing its commercial and policy objectives and to seek compliance with Legal and Regulatory Requirements. However, the parties agree that, since T2S is a multilateral environment, their level of control is necessarily lower than if each T2S signatory had its own environment.

2 Control is necessary to ensure that T2S operates safely and efficiently. Moreover, control shall allow change to be achieved and managed so as to ensure that changes that are proposed by one party/parties can be introduced without unduly affecting the other party/parties

3 In order to achieve the necessary balance of control, it is very important that transparency is ensured and that all T2S Stakeholders are closely involved in the Governance of T2S. It is essential to ensure that T2S meets the evolving needs of the market in a consensual way. Transparency shall assure the T2S Stakeholders that final decisions will not be taken before their positions are considered by the relevant Governance body and by the other T2S Stakeholders. For this reason, technical and policy documents, such as the User Requirements Document, the Economic Impact Analysis and the T2S Governance arrangement were extensively discussed with market participants and published on the T2S's website. The Eurosystem intends to continue doing so.

4 The procedure for the decision-making on Change Requests ensures, on the one hand, that CSDs keep the main responsibility for the evolution of the rules concerning the core of their settlement activity as they outsource to T2S a core part of their IT functions (the processing of Transfer Orders and the technical maintenance of their Securities Account database). In doing so, they need to comply with Legal and Regulatory Requirements and be able to exercise a sufficient degree of control over the functioning rules of Securities Accounts. The procedure also ensures, on the other

hand, that the Governing Council will not have to implement measures that are not compliant with the mandate of central banks in general, with the statute of the European System of Central Banks and of the ECB in particular, or that would conflict with the interest of the smooth functioning of T2S.

5 The use of a single multilateral infrastructure by the Contracting CSD and Participating CSDs inevitably affects the way in which the Contracting CSD and Participating CSDs exercise their management and control functions in respect of the operations outsourced to T2S. At the same time, the Eurosystem provides harmonised T2S Services, thereby fulfilling its statutory tasks. This constitutes an outsourcing relationship different from a conventional one since it requires that the outsourcing service be constructed not exclusively by reference to the specific needs of the outsourcer (i.e. the CSDs) but also according to the public tasks entrusted to the outsourcee (i.e. Eurosystem).

6 Users, i.e. the customers of CSDs, and ultimately issuers and investors are the eventual beneficiaries of T2S. Their demands have to be appropriately taken into account when further developing T2S functionalities in order to ensure that T2S continues to meet the needs of the market.

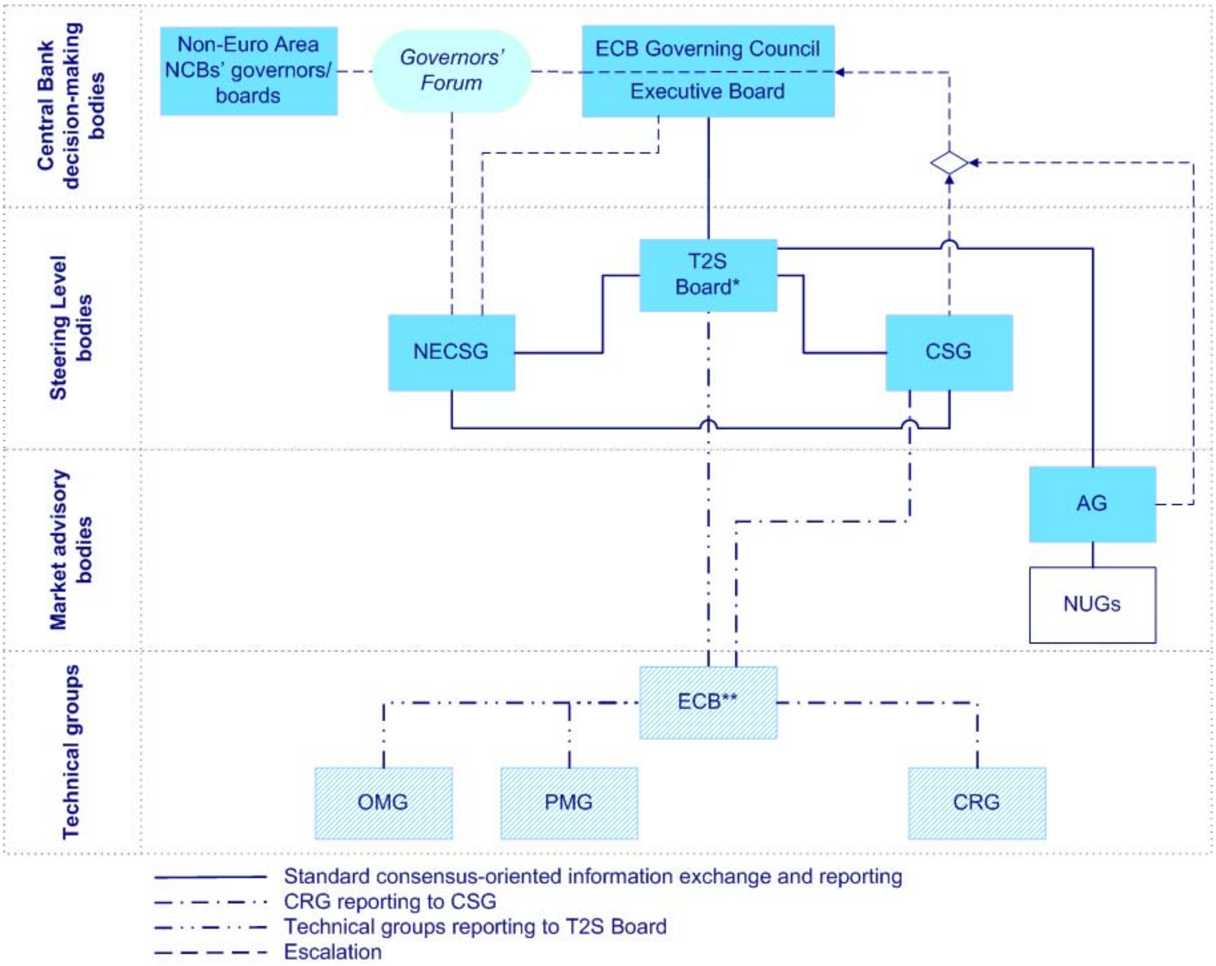
On the basis of the above considerations, Section 1 explains the relationship of the different Governance bodies in the decision-making process. Additional Governance arrangements are outlined in Section 2.

1 The decision-making process

1.1 Governance bodies

The following T2S Governance bodies are involved in the decision-making process in accordance with Article 27 of the Framework Agreement:

Figure 1: T2S Governance bodies



Note: * The T2S Board is the Eurosystem Governance body at the Steering Level for matters which have been delegated by the Governing Council. The T2S Board liaises with other Eurosystem internal governance structures for issues of common concern.

** The ECB routes the reporting and the information to the respective addressees.

1.2 Decision-making on Change Requests

1. Any individual Participating CSD, the Contracting CSD, User member in the AG, euro area NCB, non-euro area NCB, the ECB or the 4CB may initiate a Change Request.

2. The Change Request is prepared by the Change Review Group (CRG) according to the procedures described in Schedule 9 (Change and Release Management). The CRG submits its deliverables to the CSD Steering Group (CSG) via the ECB. The ECB also provides the CRG deliverables to the T2S Board, the Non-euro Currencies Steering Group (NECSG) and the T2S Advisory Group (AG) and publishes the deliverables on the T2S website. Should any of the before-mentioned Governance bodies fail to provide its view within a reasonable amount of time, taking into account the urgency of the Change Request, this Governance body is then assumed to have agreed with the Change Request and the decision-making procedure continues.

3. If the Change Request was related to safeguarding the integrity of the respective currency and/or financial stability as part of crisis management measures, transparency could be limited to the contracting T2S Actors (the Contracting CSD, Participating CSDs and Central Banks) upon request of a Central Bank. Such Change Requests shall be made transparent at the latest when the change is taken up in a release.

4. The AG gives its advice on the Change Request within a reasonable amount of time, taking into account the urgency of the Change Request. The advice of the AG is addressed to the T2S Board and it shall be published on the T2S's website.

5. The CSG takes a resolution on the Change Request within a reasonable amount of time, taking into account the urgency of the Change Request. The resolution of the CSG is addressed to the T2S Board and it shall be published on the T2S website.

6. The NECSG takes a resolution within a reasonable amount of time, taking into account the urgency of the Change Request. The resolution of the NECSG is addressed to the T2S Board and it shall be published on the T2S's website.

7. A final decision on the Change Request is taken by the Governing Council on the basis of a proposal by the T2S Board within a reasonable amount of time, taking into account the urgency of the Change Request. The T2S Board submits a proposal to the Governing Council after having reached a consensus with the CSG and the NECSG taking into account the advice of the AG in accordance with paragraph 8.

8. If consensus cannot be achieved based on the stakeholders' initial resolutions, the T2S Board aims at reconciling the different views before the Governing Council takes its final decision:

   a. The T2S Board coordinates discussions with relevant stakeholder groups in order to find a consensual solution. The T2S Board may ask for a re-assessment of the Change Request by the CRG taking into account the views of all relevant stakeholders. Based on the CRG re-assessment, the T2S Board discusses with all relevant stakeholder groups taking into account respective views and prepares a compromise proposal within a reasonable amount of time, taking into account the urgency of the Change Request. The T2S Board shares this proposal with the CSG, the NECSG and the AG. For issues of key concern, this consensus driven approach to establish a compromise proposal may be a repetitive process. Once consensus is reached within a reasonable amount of time, taking into account the urgency of the Change Request, the AG formally gives its new advice and the CSG and the NECSG take new resolutions on the Change Request.

   b. If such discussions do not lead to consensus, the T2S Board, the CSG or the NECSG may ask for a non-binding external advice except for matters related to safeguarding the integrity of currencies in T2S or to financial stability. The party providing such advice needs to be selected by common agreement of the T2S Board, the CSG and the NESCG and deliver its advice in parallel to the T2S Board, the CSG, the NECSG and the AG. All relevant stakeholder groups review their position on the basis of the non-binding external advice and the T2S Board coordinates discussions with the relevant stakeholder groups in order to find a consensual solution in accordance with paragraph 8a. Within a reasonable amount of time and taking into account the urgency of the Change Request, the AG formally gives its final advice and the CSG and the NECSG take final resolutions on the Change Request before the Governing Council takes the final decision on the basis of a proposal by the T2S Board.

9. The final decision of the Governing Council is published on the T2S's website.

10. The Contracting CSD and Participating CSDs have the right to challenge the final decision of the Governing Council before the Court of Justice of the European Union.

1.3 Decision-making on relevant matters other than Change Requests

1. Any individual Participating CSD, the Contracting CSD, euro area NCB, non-euro area NCB, the ECB, the 4CB or User member in the AG may, outside the scope of Change

Requests, propose a resolution or, in particular in the case of the AG, an advice concerning relevant matters of T2S[1] to the T2S Board or, in exceptional circumstances, to the Governing Council.

2. In all Governance bodies the chairperson may decide that the proposal for a resolution or an advice needs first to be analysed by a substructure, i.e. a technical group (permanent) or by a task force (ad-hoc). The T2S Board or, in exceptional circumstances, the Governing Council organises the procedure in such a way that all Governance bodies are properly consulted within a reasonable amount of time and without duplicating substructures on similar topics. In case of divergence of views between different Governance bodies, the T2S Board shall aim at reconciling the different views. The CSG or the NECSG can, upon agreement with the T2S Board, ask for a non-binding external advice for relevant matters of T2S[1] except for matters related to safeguarding the integrity of currencies in T2S or to financial stability. The party providing such advice needs to be selected by common agreement of the T2S Board, the CSG and the NESCG and shall deliver its advice in parallel to the T2S Board, the AG, the CSG and the NECSG.

3. A decision on the proposal is taken by the Governing Council or, for matters which have been delegated by the Governing Council, by the T2S Board after consultation of the AG, the CSG and the NECSG within a reasonable amount of time, taking into account the urgency of the matter. Differing views between the Eurosystem and non-euro area NCBs are dealt with according to the relevant procedure defined in the Currency Participation Agreement. The decision of the Governing Council or the T2S Board shall be published on the T2S website.

4. The Contracting CSD and Participating CSDs have the right to challenge the final decision of the Governing Council before the Court of Justice of the European Union.

[1] Such relevant matters include crisis management, risk issues, operational issues, monitoring the T2S Service (in accordance with the Service Level Agreement), pricing issues, acceptance for testing and go-live.

2 Additional Governance arrangements

In addition to the general Governance procedures outlined above, this section clarifies a number of specific situations.

2.1 Prioritisation

The Change Review Group:

- shall prepare a proposal for the definition of a release based on procedures described in Schedule 9 (Change and Release Management).

The AG:

- shall submit its advice regarding the prioritisation of Change Requests to the T2S Board;

The CSG:

- shall make a resolution addressed to the T2S Board regarding the prioritisation of Change Requests stemming from the Contracting CSD, Participating CSDs or in relation to the functioning rules of Securities Accounts;
- may prepare a proposal to the T2S Board on the prioritisation of all Change Requests.

The NECSG:

- shall make a resolution addressed to the T2S Board regarding the prioritisation of Change Requests stemming from the non-euro area NCBs or in relation to the functioning rules of Dedicated Cash Accounts;
- may prepare a proposal to the T2S Board on the prioritisation of all Change Requests

The T2S Board:

- shall prepare a proposal for the prioritisation of all T2S Stakeholder Change Requests to be submitted to the Governing Council taking into account the views of the AG, the CSG and the NECSG. If the proposals for prioritisation of Change Requests provided by the T2S Board, the AG, the CSG and the NECSG diverge, the

T2S Board shall aim at finding consensus and seeks the views of the AG, the CSG and the NECSG before submitting the final proposal on the prioritisation of Change Requests to the Governing Council.

The Governing Council shall:

- prioritise all T2S Stakeholder Change Requests, on the basis of a T2S Board proposal, to which the views obtained from the AG, the CSG and the NECSG are attached.

2.2 Changes driven by Legal and Regulatory Requirements

Changes motivated by Legal and Regulatory Requirements shall be dealt with according to the standard procedure set out in Schedule 9 (Change and Release Management) with high priority, in accordance with Principle [4] of the General Principles of T2S, and following the relevant decision-making process. Such Change Requests have to be initiated by the affected entities.

However, several cases have to be distinguished:

(a) Changes in European legislation are dealt with as quickly as possible or as required in the legislation. The analysis of the Change Request by the various Governance bodies mentioned in this note concerns only the modalities of the implementation.

(b) It is expected that the Contracting CSD and Participating CSDs and Central Banks inform the T2S Board on any proposed change in national legislation with an impact on T2S as early as reasonably practicable. The relevant Change Requests shall be dealt with according to the standard procedure. The final decision shall be taken by the Governing Council and a potential refusal shall include the reasons why the implementation of the Change Request is not feasible.

(c) Change Requests resulting from a Relevant Competent Authority request shall follow the standard procedure and the Eurosystem shall involve the AG, the CSG and the NECSG. Should these discussions lead to a disagreement with the Relevant Competent Authority, the Change Request shall be brought to the Governing Council and the Relevant Competent Authority will be invited to submit its written view directly to the Governing Council. The Governing Council would then take due account of the views of the Relevant Competent Authority before making a decision. Should the Governing Council reject the Change Request, it will provide a written explanation of the rationale to the Relevant Competent Authority. The Governing Council can reconsider its decision based on additional information provided by the Relevant Competent Authority. When a Change

Request resulting from a Relevant Competent Authority request relates to only one market, it shall not be in contradiction with the General Principles of T2S and relevant costs shall be borne by the CSDs, i.e. the Contracting CSD and/or Participating CSDs, subject to the regulatory decision.

(d) Changes under (b) and (c) above which involve legislation or regulatory requirements in a non-euro area country are discussed in the Governors' Forum, if the Governor of the relevant non-euro area NCB so requests.

The Eurosystem shall aim at finding solutions to the cases outlined above, including the possibility of optional features to the extent that they are technically viable and within the Lean Scope of T2S.

2.3 Transparency

In order to allow a wide range of market participants to remain closely involved in T2S developments, the extensive T2S transparency regime shall be continued and relevant documentation and information shall be made available on the T2S's website. In particular, the Eurosystem's offer of the future updates of the Framework Agreement to all interested CSDs and of the Currency Participation Agreement to all interested non-euro area NCBs shall be made transparent. Furthermore, relevant advice, resolutions and decisions related to changes shall be published. This transparency will allow all T2S Stakeholders to contribute to ongoing T2S discussions and make their views known to relevant Governance bodies.

2.4 Technical groups supporting the Governance bodies

Each Governance body has the possibility to establish technical groups, and to dissolve them, to deal with T2S issues that are within its remit. The T2S Board shall make proposals to avoid duplication of substructures on similar topics.

The technical groups shall in particular:

(a) ensure that T2S and subsequent releases go-live and that CSDs, as well as Central Banks, are duly and timely prepared, including with regard to the relevant aspects of User Testing and Migration;

(b) review, in line with Schedule 2 (T2S Programme Planning and Monitoring), the CSD-relevant planning and programme reporting, including risks and issues;

(c) assess Change Requests, as defined in Schedule 9 (Change and Release Management);

(d) develop and maintain the Manual of Operational Procedures; and

(e) meet the Eurosystem to review the T2S service performance against the SLA.

The technical groups shall report to the relevant Governance bodies. The technical groups have the possibility to exchange relevant information directly among themselves. They organise their work in an efficient manner to fulfil their mandates, including the possible creation of their own substructures.

At the time of the signature of the Framework Agreement, the following groups have been considered as technical groups:

(a) PMG: Project Managers Group, established by the Steering Level and consisting of project managers of the Contracting CSDs and Participating CSDs, euro area NCBs, non-euro area NCBs, the ECB and 4CB. The T2S Board shall appoint the chairperson of the PMG on the basis of her/his technical expertise after consultation of the CSG and the NECSG. The PMG reports to the T2S Board and keeps the CSG and the NECSG informed of its work. It needs to ensure that T2S and subsequent releases go live and that CSDs as well as Central Banks are duly and timely prepared. Its name, mandate and need for continuation will be reviewed when all CSDs and Central Banks will have migrated to T2S.

(b) CRG: Change Review Group, established by the Steering Level and consisting of product managers and functional experts of the Contracting CSD and Participating CSDs , euro area NCBs, non-euro area NCBs, the ECB and 4CB. User representatives participate in the CRG as observers. The T2S Board shall appoint the chairperson of the CRG on the basis of her/his technical expertise after consultation of the CSG and the NECSG. The CRG reports to the CSG via the ECB. The ECB disseminates the deliverables of the CRG also to the T2S Board, the AG and the NECSG. It assesses Change Requests as defined in Schedule 9 (Change and Release Management). The CRG and the PMG also need to exchange information regarding the impact of changes on the T2S timeline. The CRG continues the work of the AG Sub-Group on User Requirements Management.

(c) OMG: Operations Managers Group, established by the Steering Level and consisting of operations experts of the Contracting CSD and Participating CSDs, euro area NCBs, non-euro area NCBs, the ECB and 4CB. Representatives of Users which are Directly Connected Parties participate in the OMG as observers for specific agenda items. The T2S Board shall appoint the chairperson of the

OMG on the basis of her/his technical expertise after consultation of the CSG and the NECSG. The OMG reports to the T2S Board and informs the AG, the CSG and the NECSG. It develops and maintains the Manual of Operational Procedures, meets to review the T2S Service performance against the SLA and coordinates the management of operational incidents. The OMG continues the work of the AG Sub-Group on Operational Framework.

Annex - Mandate of the CSG

1 Preamble and Objectives

The TARGET2-Securities (T2S) Services that the Eurosystem offers to Central Securities Depositories (CSDs) in Europe allow for the core, neutral and borderless settlement of securities transactions on a Delivery versus Payment basis in Central Bank Money. This is performed in a single technical platform integrated with Central Banks' Real-Time Gross Settlement systems for all participating currencies.

The Governing Council and the CSDs signing the Framework Agreement (FA) and thus participating in T2S (hereinafter the 'Participating CSDs') agree to establish the CSD Steering Group (CSG). The CSG discusses all matters of relevance for Participating CSDs. The CSG supports the decision-making process in the multilateral T2S Service by providing the Eurosystem with the CSDs' common position on matters of relevance for Participating CSDs. The CSG works within the 'Governance' specified in Schedule 8 of the FA.

2 Responsibilities and Tasks

The CSG is responsible for articulating and coordinating the views of Participating CSDs within the T2S Governance. It is the T2S Governance body which, with respect to a set of matters stipulated in the FA, makes resolutions and gives advice on behalf of the Participating CSDs.

The CSG has the possibility to give its advice or agree on a resolution on any issue related to T2S. The CSG gives its advice and makes resolutions in particular on:

- any issue brought to the Governing Council that has implications for the FA;
- changes to the FA and its Schedules, in line with the applicable procedures;
- issues of major interest concerning T2S;
- changes to the T2S Scope Defining Set of Documents, in line with the applicable procedures specified in the FA Schedule 8 (Governance) and Schedule 9 (Change and Release Management);
- the prioritisation of Change Requests stemming from Participating CSDs;

- material subcontracting;
- disputes between the Eurosystem and non-euro area NCBs upon the invitation of the T2S Board, the Governing Council or the NECSG;
- any other consultation request of the T2S Board or the Governing Council;
- crisis management;
- risk issues;
- operational issues;
- monitoring the T2S Service (in accordance with the Service Level Agreement);
- pricing issues;
- acceptance for testing and go-live, and
- on any matters of relevance in relation to the FA.

On all other matters having an impact on the Participating CSDs, the CSG is informed about envisaged decisions of the Governing Council or the T2S Board and the CSG shall be provided with sufficient time to formulate any objections it may have.

A disagreement between one or more Participating CSD and the Eurosystem can be escalated from the working and sub-structure level to the CSG and shall follow the dispute resolution and escalation procedure specified in Article 42 of the FA. The dispute resolution and escalation procedure does not preclude a subsequent Arbitration procedure pursuant to Article 43 of the FA.

3 Composition and Term

The CSG is composed of:

- as full members, the CEOs/members of the managing board of Participating CSDs/groups of Participating CSDs that have signed the FA;
- up to six User representatives, as observers, proposed by the T2S Board and nominated by the Governing Council for a renewable term of two years, based on applications from the European Banking Federation (EBF), the European Savings Bank Group (ESBG), the European Association of Co-operative Banks (EACB), the Association for Financial

Markets in Europe (AFME), and the European Association of Clearing Houses (EACH); and

- the T2S Board Chairperson and other members of the T2S Board as observers.

The CSG Chairperson is elected by the full members of the CSG for a renewable term of two years. The CSG Chairperson may invite other observers on an ad-hoc basis (e.g. one representative of the 4CB) and may restrict the participation of observers representing Users on an ad hoc basis; the T2S Board Chairperson is informed of such decisions in advance.

The CSG Chairperson appoints a highly experienced member of staff of the ECB as CSG Secretary. The CSG Chairperson may designate an alternate to replace the CSG Secretary in exceptional circumstances.

The CSG's mandate becomes effective on the Agreement Date and expires with the replacement of the FA by a new agreement and/or with the termination of the FA by the signatories.

4 Reporting

The CSG gives its advice and makes resolutions to the T2S Board as the managing body of T2S, upon invitation or on its own initiative. The T2S Board establishes procedures to inform other T2S Governance bodies of relevant CSG resolutions and advice. The CSG may send its resolutions directly to the Governing Council if the CSG considers that the General Principles of T2S or other core elements of T2S are at risk. The CSG may seek the advice of the T2S Advisory Group.

5 Working Procedures

Detailed working procedures are to be specified in the 'Rules of Procedure' drafted by the CSG and endorsed by the Governing Council.

Any member of the CSG may propose a resolution or an advice. CSG resolutions and advice are subject to a double majority, defined as the simple majority of the Participating CSDs, provided that they represent at least 75% of securities settlement transactions in T2S.

As a rule, the CSG meets once every quarter. Additional meetings may be called by the CSG Chairperson, the dates of which are communicated sufficiently in advance to the CSG. In principle, meetings take place at the ECB's premises. The ECB provides operational and secretarial support to the CSG.

The CSG may establish technical groups to support its work if considered necessary. It coordinates with the T2S Board who organises the work in such a way that all relevant Governance bodies are properly involved without duplicating technical groups on similar topics.

As part of the transparency principle of T2S, CSG resolutions and advice are in general published on T2S's website.

EUROPEAN CENTRAL BANK
EUROSYSTEM

TARGET2-SECURITIES

FRAMEWORK AGREEMENT

SCHEDULE 9

CHANGE AND RELEASE MANAGEMENT

Table of contents

Introduction

There will be changes in T2S for a variety of reasons. Due to the fact that these changes need to be translated in a timely and consistent way into functional, legal, operational or technical specifications, with the involvement of (and impact on) all relevant T2S Stakeholders, a proper Change and Release Management process (CRM) must be defined and implemented. In addition, the implementation of any of these changes can risk damaging the service's availability or integrity, and may require changes (or specific monitoring efforts) on the part of entities connected to, or relying on, T2S. The CRM process is thus essential in order to efficiently track and manage changes to T2S and to mitigate the risks associated with these changes.

The definition of a release will follow a demand driven model, meaning that a priority rating is used to establish the order in which the authorised changes should be considered for a particular T2S release, and also taking into consideration the available capacity and the resources for implementing the change.

The CRM process is based on the ITIL (Information Technology Infrastructure Library) framework version 3.0 for IT service management.

The CRM process will apply before and after T2S Go-Live Date, for all Change Requests (falling within the scope of this document) that are initiated as from the entry into force of the Framework Agreement respectively the Currency Participation Agreement.

The Eurosystem, the CSDs that have signed the Framework Agreement (FA) ('Participating CSDs') and the non-euro area NCBs that have signed the Currency Participation Agreement (CPA) ('connected non-euro area NCBs') will be entitled to participate in the CRM process as full members of the Change Review Group (CRG) in accordance with the T2S Governance. User representatives participate in the CRG as observers.

Meanwhile, the CSDs and non-euro area NCBs which have not yet entered into an agreement with the Eurosystem by the agreed date will have no right of co-decision in the CRM process until they sign. They will be kept informed about the changes to the T2S Services via T2S communication channels.

1 Objective

The objectives of the CRM process are to:

- Respond to the relevant T2S Stakeholders' changing business requirements while maximising value and minimise the risk of change related incidents;
- Ensure that Change Requests falling within the scope of this document will be managed within the Lean Scope of T2S;
- Ensure that Change Requests are managed in an efficient and controlled manner from the initiation until implementation (recorded and then evaluated, authorized, and that the resulting changes are prioritized, planned, tested, implemented, documented and reviewed in a controlled manner);
- Ensure that Change Requests falling within the scope of this document are communicated to all relevant T2S Stakeholders in accordance with the rules laid down in this Schedule and in Schedule 8 (Governance);
- Agree on the exact T2S release content and plan the successful rollout of a release into the production environment; and
- Ensure that all changes are traceable, secure and that only correct, authorised and tested versions are installed on the T2S production environment.

2 Scope

The CRM process applies to all functional changes which trigger any addition to, deletion from or modification of any item in T2S as defined in the T2S Scope Defining Set of Documents[1], as well as to changes to these documents, even if they do not have an impact on the T2S functionality. In addition, the CRM process applies to the requirements to be fulfilled by NSPs, as laid down in – and taking into account the provisions of – the Licence Agreement, and to the specifications for the Value-added Connectivity Services necessary to implement the Dedicated Link Connections.

The General Principles of T2S in Section 1.2 of the User Requirements Document cannot be changed as a by-product of another Change Request, but only by a separate Change Request to the General Principles of T2S, which follows the decision-making process in this Schedule and respecting the Eurosystem rights as described in Schedule 8 (Governance). If any other Change Request falling within the scope of this Schedule is not in line with the General Principles of T2S as they read from time to time in the User Requirements Document, the CRG will immediately report such inconsistency to the Steering Level and wait for guidance before continuing the assessment of that Change Request.

Any change subject to the CRM process must be undertaken following the process outlined in this document.

Corrections/changes covered by maintenance activities for fixing errors, mistakes, failures or faults in the software system, which produce an incorrect or unexpected result, or cause it to behave in unintended ways (e.g. fixing errors in coding, design or detailed specification, performing changes to the system caused by an incident/problem) will be managed according to the procedures defined in the Manual of Operational Procedures. However, although these corrections/changes do not need assessment and authorisation in the context of Change Management process, they follow the Release Management process as described in chapter 5.2.

[1] The T2S Scope Defining Set of Documents as defined in the Schedule 1 (Definitions) to the FA and the CPA.

The following changes are not subject to the CRM process:

- Technical changes to hardware/infrastructure components (i.e. non-functional changes) under the control of the Eurosystem that are necessary to sustain the daily operation of T2S in accordance with the Service Levels specified in Schedule 6 (T2S Service Level Agreement). The respective arrangements/procedures for handling these changes are covered in Schedule 6 (T2S Service Level Agreement) and will be detailed in the Manual of Operational Procedures. The operational body/team responsible for managing and implementing the technical changes should liaise closely with the Change Review Group (as defined in section 3.1.3) to ensure a smooth implementation, in particular in case of technical changes that may have an impact on the service delivered (based on the risk assessment);
- Business configuration changes related to market parameters that can be done by the Participating CSDs[2]/ CBs or by the Eurosystem in accordance with the procedures defined in the Manual of Operational Procedures;
- Changes related to non-functional and non-technical documentation e.g. Manual of Operational Procedures, Registration and Connectivity Guides, training materials, etc;
- Updates of the baseline version of T2S Specification and T2S Operational Phase Documents[3], which follow a Deliverable Change Process. The process and the substructure involved are defined in Schedule 2 Annex 8 (T2S Deliverables list and management process) to the FA and CPA.; and
- Other changes related to the FA and its annexes, respectively to the CPA and its annexes that will be managed according to the relevant procedure as set out in the FA, respectively the CPA or the relevant annex following the applicable Governance regime.

[2] In accordance with the Preamble D of the Framework Agreement, the Participating CSDs shall retain full control of the parameter of its business operations. This applies e.g. for Participating CSDs for setting up the T2S Securities Accounts for their customers including all needed access rules, granting of access privileges, etc. Setting up of these parameters and rules should be done according to the best market practices and the relevant regulatory requirements.

[3] T2S Specification and T2S Operational Phase Documents as defined in the Schedule 1 (Definitions) to the FA and the CPA and in the Schedule 2 Annex 8 (T2S Deliverables list and management process).

3 Entities involved in the CRM process

There are two levels differentiated in the CRM process: a “technical” level and a “Steering” Level. The Participating CSDs and the Central Banks are expected to organise themselves according to these two levels.

3.1 Technical level

3.1.1 ECB

The T2S Team of the ECB supports the T2S Board in the CRM process. The roles and responsibilities of the ECB at the different stages of the CRM process are described in the chapters 4.2 and 5.2 of this Schedule. They include, inter alia:

- being the entry point for all Change Requests;
- keep a register of all Change Requests;
- manage their processing as described in this document;
- monitor Change Requests during their entire lifecycle, from the initiation until they have reached their end status (i.e. authorization or rejection);
- monitor the release definition and its implementation;
- track progress and issues that may influence decision-making and report them inter alia to the Change Review Group as defined in chapter 3.1.3; and
- ensure availability of the relevant information to the relevant T2S Stakeholders.

3.1.2 4CB

4CB means the Deutsche Bundesbank, the Banco de España, the Banque de France and the Banca d’Italia, collectively, in their capacity as NCBs responsible for building, maintaining and running the T2S Platform based on the respective contractual arrangements and on decisions of the Governing Council. In the context of CRM process, the 4CB is entrusted with different roles and responsibilities as described in the chapters 4.2 and 5.2 of this Schedule. They include, inter alia:

- assess the impact stemming from requests for new functionalities or technical enhancements from a technical, functional and operational point of view (feasibility, planning, budget);
- building, configuration and delivery of a release into production;
- propose the time-frame for implementing a change or a release; and
- examine the impact on the system security and provide a security impact assessment.

3.1.3 Participating CSDs and the Central Banks

The euro area NCBs, the Participating CSDs and the connected non-euro area NCBs are entitled to participate in the CRM process. Their roles and responsibilities at different stages of the CRM process are described in the chapters 4.2 and 5.2 of this Schedule. They include inter alia:

- act as full members of the Change Review Group (CRG);
- initiate Change Requests on their own or customers’ behalf;
- evaluate and monitor Change Requests;
- monitor release definition and implementation;
- test and verify releases; and
- involve their respective user communities in the process.

3.1.4 Change Review Group

At the technical level, a “Change Review Group” (CRG) will be created. It will be composed of representatives from each CSD that has signed the FA, each non-euro area NCB that has signed the CPA, each euro area NCBs, the ECB and the 4CB. User representatives participate in the CRG as observers. The members of the CRG shall have a product manager profile having the required functional and business expertise.

The CRG will be responsible, inter alia for/ in charge of:

- reviewing Change Requests on regular basis, evaluate the information provided in the Change Request and in the assessment (checking its consistency and completeness across all Change Requests) and making proposals for decision making at the Steering Level;
- building and maintaining the scoring mechanism according to which authorised changes will be prioritised in view of their implementation in (one of) the next release(s); and
- making proposals for, reviewing and monitoring the content of each release as well as any changes to the agreed release.

As regards the interactions with the Steering Level, the role of the CRG is limited to the managing the process (i) from reviewing and evaluating the Change Request to making proposal for its approval/ rejection and (ii) from ranking the authorised changes based on the scoring mechanism to preparing the proposal for the content of future T2S releases. The CRG will aim at reaching a common agreement in making a proposal to the Steering Level for their decision-making. In case of disagreement, both majority and minority views will be reported to the Steering Level. Once the decision to authorise[4] a change or to define the content of a T2S release has been taken, the decision is binding for the CRG’s further work.

The CRG reports to the CSG via the ECB. The ECB also provides the deliverables of the CRG to the T2S Board, the AG and the NECSG.

The CRG will be informed and – to the extent possible and relevant – consulted on technical changes and changes that need to be implemented urgently in order to restore and continue the provision of T2S Services, by the relevant operational groups responsible for handling these changes, in accordance with the procedures defined in the Manual of Operational Procedures.

The CRG will schedule regular meetings, typically every 2 months, but meetings can also be organised more frequently if deemed necessary. The CRG should have face-to-face meetings, however some of the assessment process can be handled in written procedure if this process is accepted by the CRG in advance.

[4] The authorisation of a Change Request is covered in the chapter 4.2.4.

3.2 Steering Level

Without prejudice to the role of the Governing Council, the governance bodies at the Steering Level are (i) the T2S Board, (ii) the CSD Steering Group (CSG) and (iii) the Non-euro Currencies Steering Group (NECSG) as defined in the FA and the CPA.

Their roles and responsibilities in the decision-making process of changes and in the prioritisation of Change Requests for defining the content of the next T2S releases, as well as the escalation and dispute resolution procedure in case of disagreement between the Participating CSDs and the Eurosystem, or between the non-euro area NCBs and the Eurosystem are described in the FA, the CPA and Schedule 8 (Governance).

Each governance body at the Steering Level will receive information from the CRG via the ECB with respect to the CRM process. In the spirit of transparency, this information will also be shared with the Advisory Group in accordance with Schedule 8 (Governance). The CRG will act as a single joint technical group supporting these three governance bodies for the purpose of the CRM process.

4 Change management

4.1 Categorisation of changes

4.1.1 Type of change according to urgency

According to its level of urgency, a change falls under one of the following categorises:

- **Normal changes:** changes that can be planned without time constraints and will go through the CRM process before being implemented into the production environment.

- **Fast-track Changes:** changes that are imposed by Legal and Regulatory Requirements, or by CSG resolutions related to risk management, or changes that are critical for the stability of the T2S Platform or imposed by Central Bank decisions related to safeguarding the currency/-ies or related to crisis management measures to ensure financial stability and that, owing to the time constraints, have to be implemented in a shorter timeframe than normal, which will be decided on an ad-hoc basis. These changes will also go through the CRM process, however, the length of the different process steps will be shortened on an ad-hoc basis, in particular for preliminary and detailed assessment.

4.1.2 Type of change according to beneficiary

Irrespective of the urgency, all changes subject to the CRM process fall into one the following categories:

- **Common Changes:** any new feature, functionality or service – or any amendment of an existing feature, functionality or service –which is implemented for the benefit of all T2S Actors.

- **Specific Changes:** any new feature, functionality or service – or any amendment of an existing feature, functionality or service – which is not implemented as a Common Change (within the applicable Governance arrangements), but which some Participating CSDs and/or CBs wish to implement, provided that it is compliant with the Lean Scope of T2S, and for which they jointly accept to bear the investment and running costs. In case of Specific Change i) the unauthorised use should be either prevented or monitored (as agreed in the request). ii) in order to avoid any impact on non-supporting Participating CSDs/CBs, the implementation mechanism will be based – if possible – on the approach that the functionality will be made available to all parties, but that those not wishing to use it, are not impacted by the change. iii) If this backward compatibility cannot be ensured, the change can only be authorised upon agreement of each non-supporting CSD/CB. These changes may be triggered by:

- market-specific regulatory, legal, fiscal or market-specific requirements or,
- innovation or improvement considered useful by one or more Participating CSDs or CBs.

4.1.3 Parameters of changes

Each change is categorised based on a number of parameters which are used to indicate how important or delicate a change is relative to others changes.

4.1.3.1 Parameter 1: Legal/business importance

The importance of a Change Request derives from the business need for a change and should be part of the business justification. From an importance viewpoint, the Change Requests will be classified into one of four categories as defined below:

Category	**Definition**
Critical	1) A change required by the Eurosystem or by a connected non-euro area NCB to implement its statutory tasks. 2) A change relating to an area which would - if the change is not implemented - prevent Participating CSDs or CBs or their customers from connecting to and/or using T2S or put the requester in non-compliance (after implementing any work-arounds) with legal, regulatory (including, among others, unacceptable operational risks), or fiscal requirements. 3) Changes to preserve security, systems availability and stability etc.
High	1) A change that would offer a significant enhancement and benefits to the T2S

	Service or the T2S Actors. 2) A change to embody agreed harmonisation in T2S where there is a high efficiency benefit. 3) A change to significantly improve safety or stability. 4) A change to remove major ambiguity or inconsistency in the T2S Scope Defining Set of Documents or the T2S Documentation.
Medium	1) A change with moderate efficiency benefits, but which does not have an important harmonisation dimension. 2) A change to improve the usability of the system. 3) A change to remove minor ambiguity or inconsistency in the technical and functional documentation.
Low	1) Changes that are "nice to have" and are useful to pad out a release. 2) A change to improve clarity of the technical and functional documentation.

4.1.3.2 Parameter 2: Market implementation efforts

Change Requests will be classified into three categories on the basis of the effort required by the market to properly implement and timely absorb the change (i.e. implement the necessary IT changes, adapt the operational procedures, integrate the change into the service offerings, adapt the legal arrangements, etc.)

Category	Definition
High	Changes that require high efforts (a long implementation time and significant resources) on the side of the majority of Participating CSDs, CBs and/or their communities in order for them to be able to implement the change and take full benefit of it.
Medium	Changes that require high efforts (a long implementation time or significant resources)

	on the side of a minority of Participating CSDs, CBs and/or their communities or medium efforts on the side of the majority of Participating CSDs, CBs and/or their communities in order for them to be able to implement the change and take full benefit of it.
Low	Changes that do not require a long implementation time and any significant resources on the side of Participating CSDs, CBs and their communities in order for them to be able to take full benefit of the change.

4.1.3.3 Parameter 3: Operational/technical impact

Change Requests will be classified into three categories on the basis of the operational/technical impact if the change is undertaken, i.e. the risk that a change might trigger (some) instability on the T2S Platform. The technical/operational risk of a change is its potential undesirable/unexpected adverse impact on the T2S Platform and on the CSD/CBs.

Category	Definition
High	Changes that have the potential to significantly threaten the Service Level for a significant part of T2S Services or have a significant operational impact on the Participating CSDs, CBs or 4CB, because insufficient mitigating measures can be taken.
Medium	Changes that have the potential to significantly threaten the Service Level for a minor part of T2S Services or have a limited operational impact on the Participating CSDs, CBs or 4CB, because insufficient mitigating measures can be taken.
Low	Changes that are expected not to threaten the Service Level for Participating CSDs or CBs or to have no or insignificant operational impact on the Participating CSDs, CBs or 4CB.

4.1.3.4 Parameter 4: Financial impact for T2S

An indication of the impact of the change on the required cost will be provided by the 4CB during the preliminary assessment phase. During the detailed assessment phase, the 4CB will provide the precise investment cost and the annual running cost, including a breakdown on costs for hardware, software and telecommunication.

Change Requests will be classified into three categories on the basis of the cost impact for the implementation of the Change Request.

Category	**Definition**
High	Changes with an investment cost of more than 500 000 EUR.
Medium	Changes with an investment cost of less than 500 000 EUR, but more than 100 000 EUR.
Low	Changes with an investment cost of less than 100 000 EUR.

4.2 Change Management process

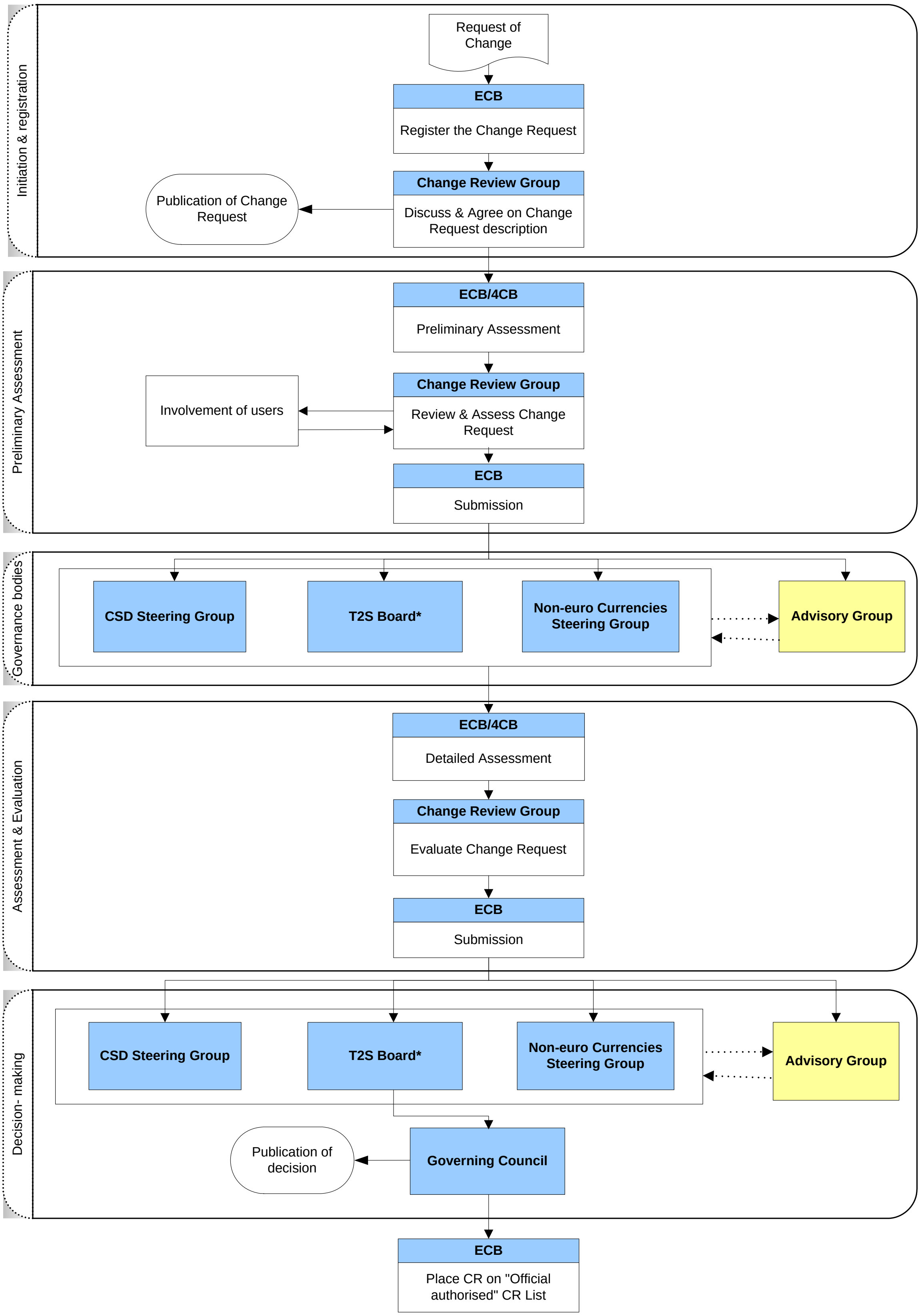
All changes defined in chapter 2 as falling within the scope of the CRM process are subject to the Change Management (CM) process described in this chapter.

Depending on the urgency of the change, the length of the process may be different. In case of Fast-track Changes, the length of the process steps will be decided on ad-hoc basis (in particular for the preliminary and detailed assessments) considering the time that is available to implement each individual change.

In order to ensure transparency and facilitate a degree of monitoring by all relevant T2S Stakeholders, the Change Requests will be published on the website and shared with the AG according to the provisions outlined in Schedule 8 (Governance) and in this chapter.

The overall information flow of the CM process is presented in the following diagram:

Change Management process



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Note: * The T2S Board is the Eurosystem Governance body at the Steering Level for matters which have been delegated by the Governing Council. The T2S Board liaises with other Eurosystem internal governance structures for issues of common concern.

4.2.1 Change Request Initiation and Registration

The requester, i.e. Participating CSDs, euro area NCBs, connected non-euro area NCBs, the ECB or the 4CB, can submit a Change Request to the ECB using the standard form attached in Annex 1 (Change Request Form) and supply key information such as the title of the requested change, its description (changes in the existing features and functionalities, new features and functionalities in T2S), its business motivation (including the legal/regulatory requirement[5]), the urgency of the change, the categorisation of change, the date of the request, etc.

Users will always initiate Change Requests indirectly via a Participating CSD or a Central Bank. If this is not successful, Users can propose the initiation of a Change Request as a resolution in the AG. Then upon agreement of the AG, the Change Request is submitted for registration to the ECB who will submit it to the CRG for consideration according to the process described in this chapter.

The requester should clearly state in the description of the change whether the change should be implemented as a Specific Change and whether the unauthorised use of the Specific Change should be prevented or monitored. In addition, the requester will allocate the relevant parameters as defined in Chapter 4.1.3 to each Change Request in order to indicate its importance relative to the other changes, except the parameter 4 which will be allocated by the 4CB.

Upon receipt of the Change Request, the ECB will check whether the proposed Change Request is formally complete and unambiguous.

The ECB will then register the Change Request in a log and confirm its registration back to the requester. Upon registration, the Change Request receives a unique identifier.

In order to ensure transparency of Change Requests, the change log will be available to the Participating CSDs and CBs showing all requested changes according to their status and – where relevant – their assigned release.

[5] Changes which are motivated by Legal and Regulatory Requirements will be implemented according to chapter 2.2 of Schedule 8 (Governance).

The ECB will submit the registered Change Request to the CRG. The CRG will consider whether the categorisation of the change is correct or may – in liaison with the requester of the change – modify any parameter of the request to ensure that the change is adequately classified according to the parameters described in chapter 4.1.2. The CRG will check whether the change concerns only Dedicated Cash Accounts, only Securities Accounts or both. The CRG will also check the clarity and completeness of the request, that no complementary changes will be required for its implementation, confirm if the change should be assessed as a Specific Change and/or as a Common Change considering the interest expressed by the other Participating CSDs/ CBs and agree carrying on with the preliminary assessment.

After the CRG's validation, the Eurosystem will publish the registered Change Request on the website. If the Change Request relates to safeguarding the integrity of the currency and/or financial stability as part of the crisis management measures, the Change Request will not be published on the website or shared with the user community of the Participating CSDs and CBs upon the request of a Central Bank until no later than the point in time the change has been formally taken up in a release.

4.2.2 Preliminary assessment

Upon the agreement of the CRG to carry out the preliminary assessment, the ECB will prepare – in co-operation with the requester and 4CB – the preliminary assessment of the Change Request. The preliminary assessment includes:

- compliance check: whether it falls within the Lean Scope of T2S and does not conflict with another Change Request already submitted;
- functional assessment: how does it affect the functionality as described in the T2S Scope Defining Set of Documents;
- technical assessment: evaluate the technical feasibility and complexity, analyse which domains, business sub-areas or other RTGS and /or CMS systems will be impacted. If necessary, the ECB will cooperate with the relevant non-euro area NCBs and consult the relevant ESCB committees or business areas that are responsible for these Eurosystem services;
- cost assessment: preliminary indication of the impact of the change from a cost perspective (see Parameter 4 in chapter 4.1.3.4 above); and

- risk assessment: whether it could trigger instability to the T2S Platform or create performance problems.

The ECB and the 4CB will provide the information necessary for the preliminary and detailed assessment (see chapter 4.2.3.) that is required for the CRG to evaluate the CR. In case of changes to the T2S Scope Defining Set of Documents, a confirmation will be given by the ECB and 4CB– as part of the preliminary assessment – whether these changes in the documents have also an impact on the T2S Platform or not. If no impact exists on the T2S functionality, these changes can go directly to the authorisation phase (chapter 4.2.4).

The result of the preliminary assessment will be provided by the ECB to the CRG for evaluation, in average 6 weeks and maximum 8 weeks from the agreement of the CRG to carry out the preliminary assessment.

While preliminary assessment is conducted by the ECB and 4CB, the Participating CSDs and CBs will consult their user communities in order to collect information on the change benefits and its impact on the process on the Users' side. This will allow the Users to provide their input and ensure that T2S provides functionality according to the needs of the market.

Upon the receipt of the preliminary assessment, the CRG will review and consider it from the potential impact of the change on their business or user community, with the aim of finding an agreement whether the Change Request should undertake the further steps of the process or not. Based on the categorisation of the change, the CRG will also analyse and assess the importance/impact of a change from/on all the T2S Actors' perspective, as well as any potential negative impact on another category of T2S Stakeholders.

The CRG will then finalise the preliminary assessment and will agree to propose one of the following actions:

1. Rejecting the Change Request. This requires the agreement of the requester, in which case the process stops at this stage. The governance bodies at the Steering Level will be informed accordingly. If there is a disagreement from the requester, the issue is escalated to the Steering Level for guidance; or

2. Launching the detailed assessment of the Change Request and submit the preliminary assessment to the ECB who disseminates it to the Steering Level i.e. the CSG, the NECSG, the AG and the T2S Board for consideration.

Those Change Requests related to safeguarding the integrity of the currency and/or financial stability as part of the crisis management measures, that are not made transparent upon request of a Central Bank are not yet submitted to the AG.

4.2.3 Detailed assessment and evaluation

4.2.3.1 Detailed assessment

All changes reaching this process step will be subject to a full impact analysis.

The ECB and 4CB will evaluate the impact of the Change Request based on the following dimensions:

Functional impact – to evaluate the functional consequences of a change, which function(s) it impacts.

Technical impact – to evaluate the technical consequences of a change, which module it impacts, the possible impacts on market participants, the complexity of the change, etc.

***Cost impact* -** the assessment of the costs in order to implement the feature. The financial impact will cover the precise investment cost and the annual running costs as well as a breakdown of costs for hardware, software and telecommunication.

***Legal impact* -** to evaluate possible impact of the Change Request on the legal construction of T2S and to assess any legal, regulatory or fiscal requirements – particularly on the Participating CSDs and CBs concerned, as well as Intellectual Property Rights-related issues.

***Service Level impact* –** to evaluate the impact on the Service Level, including the KPIs agreed with the Participating CSDs, CBs and the other T2S Users.

***Documentation impact* -** assessment of the documents that will need to be modified as a result of the Change Request. This can be the URD, GFS, UDFS, GS, GTD, Service Description, the GUI Business Functionality, User Handbooks, SLA, MOP etc.

Impact on the security of the system – to examine the impact on the system security and draw the attention to any risk that the Change Request would create.

Impact on operations – to highlight any constraint that the Change Request may impose directly or indirectly on IT operations and the possible resulting technical, operational or financial impacts.

As an outcome of the detailed evaluation step, the ECB will prepare a dossier for each Change Request which will be submitted to the CRG. This takes a maximum 10 weeks for the ECB and 4CB after the decision to conduct the detailed evaluation has been taken. Each Change Request shall be analysed without undue delay and assuring the quality.

4.2.3.2 Evaluation of the Change Request

Upon the receipt of the dossier with the detailed assessment, the CRG will review and evaluate it with the aim of finding a common agreement. The CRG members will also evaluate any potential impact on the economic, functional and technical viability and assess the cost and benefit of implementation for different stakeholders and the risks for their communities or the wider T2S. If needed, the CRG may modify any attribute of the Change Request as a result of the information provided in the detailed assessment.

For Change Requests which have been assessed as common and specific, the CRG will evaluate and agree whether the change should be implemented as common or specific based on the information provided in the detailed assessment.

During its evaluation, the CRG may request the ECB and 4CB to conduct further detailed analysis. If the CRG requires further detailed analysis also from the CSDs’ and CBs’ perspective, the CSDs and CBs will have the opportunity to consult their user communities in order to collect further information on the change’s benefits and its impact on the process on the Users’s side.

If a Change Request has been assessed as a Common Change but it is supported only by some CRG members which have expressed their interest in implementing the change as a Specific Change (i.e. the change is rejected by the CRG as a Common Change), the change is submitted for re-assessment. The same rule will apply in case of a Change Request which is assessed as specific but, after the evaluation, the CRG members support its implementation as a Common Change.

Upon the finalisation of its evaluation, the CRG will prepare and submit its proposal on the draft resolution to the CSG via the ECB. The ECB will disseminate the evaluation of the CRG also to the T2S Board, the AG and the NECSG. Where necessary, the CRG will indicate those Change

Requests that are uncontroversial and the issues that the Steering Level needs to be aware of, including diverging views of CRG members.

4.2.4 Authorisation

The authorisation process of a change is carried out by the Steering Level in accordance with Schedule 8 (Governance).

During the authorisation, the Steering Level may request further evaluation to be conducted by the CRG in order to complement the overall picture. In that case, the impacts of the Change Request will be re-assessed/evaluated as described in chapter 4.2.3.

The final decision on the Change Request may be:

1. To reject the Change Request. If all Participating CSDs and CBs agree on this decision then the process stops at this stage.

2. To authorise the change, as well as its cost recovery method, according to the principles specified in Schedule 7 (Pricing) to the FA and the CPA.

If a change is authorised after a failed dispute resolution in the Governors' Forum, which triggers the termination of the CPA by a non-euro area NCB, the latter has the right to exit T2S within a maximum period of 24 months. During this time and to the extent relevant for the operation of T2S, the non-euro area NCB shall not be affected by the change that triggered their termination. If such a change is imposed by a competent EU authority, the concerned CB will either make its best endeavours for a quicker exit, or will make the necessary changes in its system so that T2S can implement the change.

The final decision of the Governing Council shall be published on the T2S website. Once authorised, the Change Request will become part of the list of authorised changes, and hence become eligible for implementation in (one of) the next T2S release(s), as explained in chapter 5 on the Release Management process.

5 Release management

The Release Management (RM) process ensures that all aspects of a change, technical and non-technical, are considered together. The main objective is to deliver, distribute and track one or more changes intended for simultaneous release into the live environment while protecting the integrity of the production environment and its services.

The RM process covers the planning, design, build, configuration and testing of software and hardware to create a set of release components for the production environment. The term "Release" is used to describe a collection of authorised changes which typically consist of enhancements to the T2S Service (i.e. new and/or changed software required and any new or changed hardware needed for the implementation of the changes) and a number of defect resolutions which are implemented into the production environment.

The goal of the RM process is to ensure that authorised changes and the defect resolutions that have been agreed as part of a release are secure and traceable, and that only correct, tested and authorised versions are installed into the production environment.

All authorised changes initiated via a Change Management process and the defect resolutions shall follow the RM process.

5.1 Release types and frequency

As of the T2S Go-Live Date the releases can be classified as follows:

- Major release: a release where a large proportion of functionality provided by the T2S Service is affected or significant new functionality is added. This typically covers software changes containing substantially new functionality and defect resolutions.

- Minor release: a release that should contain, to the extent possible, changes that are less impacting for the T2S Users or for which backward compatibility is ensured. A minor release is only executed in case of need if the major release could not include the whole range of changes necessary to be implemented in the respective year or in cases where a business-critical change can not be bundled with the next major release.

- Fast-track release: if T2S is confronted with changes that are imposed by Legal and Regulatory Requirements, or by CSG resolutions related to risk management, or changes that are critical for the stability of the T2S Platform or imposed by Central Bank decisions related to safeguarding the currency/-ies or related to crisis management measures to ensure financial stability that cannot be bundled into the next major or minor release due to the time constrains, T2S will have to comply with these requirements, possibly with an additional release, typically containing only the relevant change(s).

- Hot-fix release: it covers software corrections that need to be performed before the next regular release, as otherwise the defect concerned could lead to substantial operational problems, require heavy workarounds and/or lead to any other clear increase in the operational risk level.

After the T2S Go-Live Date given the active involvement required from various relevant T2S Stakeholders over a certain period of time, the frequency of releases should be minimised in order to be able to manage risks adequately. The optimum frequency of releases should be balanced between the business requirements and the relative impact, risk and cost of the release. Consequently, depending on needs and resource allocation, and without prejudice to the need for any fast-track and hot-fix releases, the Eurosystem can support 2 releases every year: one major and - in case of need - one minor release[6].

An indicative timeline showing the interaction between the RM and its milestones, the CM and the meetings of the bodies are presented in Annex 3 (Indicative timeline for the T2S Release Management).

The Participating CSDs and CBs will have the possibility to monitor the release implementation and to carry out the testing according to the provisions currently described in Schedule 2 (T2S Programme Planning and Monitoring) and 3 (User Testing) to the FA and to the CPA[7].

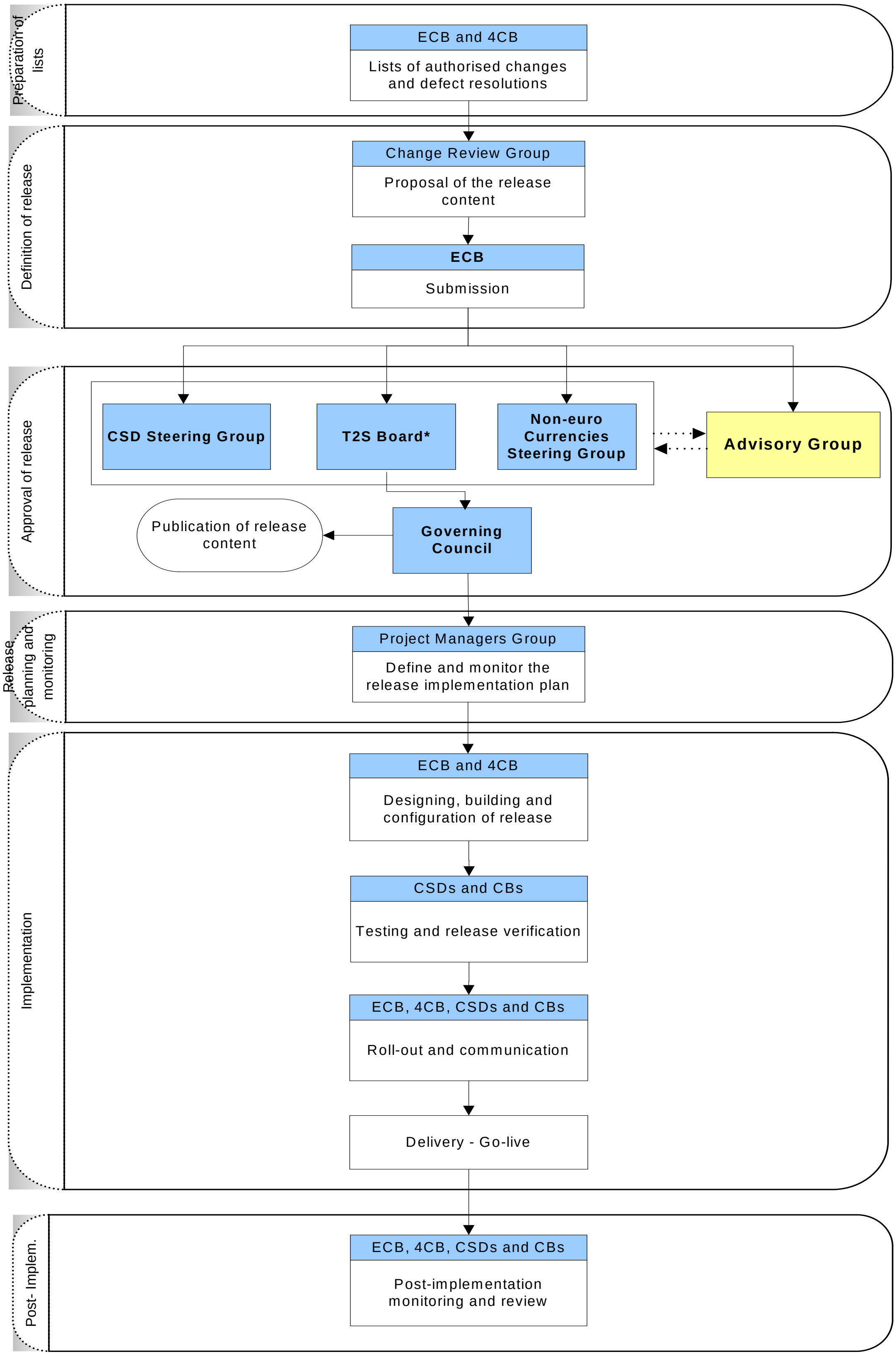
[6] The date of the yearly major release is still to be defined, however it will be agreed by the governance bodies at the steering level taking into account the interdependencies with the other interconnected Eurosystem systems or with the release of a new version of messaging standards. The minor releases are planned on the basis of their size and urgency.

[7] The Schedule 2 and 3 will be reviewed and amended after the T2S Go-Live Date release in order to adapt them to the upcoming releases.

5.2 Release Management process

The activities to be carried out during the RM process are depicted in the following diagram:

Release Management process


Preparation of lists
ECB and 4CB
Lists of authorised changes and defect resolutions
Definition of release
Change Review Group
Proposal of the release content
ECB
Submission
Approval of release
CSD Steering Group
T2S Board*
Non-euro Currencies Steering Group
Advisory Group
Publication of release content
Governing Council
Release planning and monitoring
Project Managers Group
Define and monitor the release implementation plan
Implementation
ECB and 4CB
Designing, building and configuration of release
CSDs and CBs
Testing and release verification
ECB, 4CB, CSDs and CBs
Roll-out and communication
Delivery - Go-live
Post- Implem.
ECB, 4CB, CSDs and CBs
Post-implementation monitoring and review

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Note: * The T2S Board is the Eurosystem Governance body at the Steering Level for matters which have been delegated by the Governing Council. The T2S Board liaises with other Eurosystem internal governance structures for issues of common concern.

5.2.1 Preparation of the list of authorised changes and defect resolutions

In view of defining the content of a release, the ECB and 4CB prepares a list of all authorised changes[8] and all pending defect resolutions to be implemented prior to the start of the release definition (i.e.“cut-off time”). Separate lists will be prepared according to the different categories of T2S Stakeholders (i.e. Participating CSDs, CBs) and their business requirements.

The lists of authorised changes together with all the relevant information on each individual change and the list of defect resolutions that need to be implemented will be submitted to the CRG by the ECB.

5.2.2 Definition of release

Based on the lists of authorised changes and defect resolutions prepared by the ECB and 4CB, the CRG will examine each Common and Specific Change in detail and will propose a ranking of these changes based on a scoring mechanism (Annex 4 Scoring Mechanism)[9]. Similarly, the CRG will consider all defect resolutions that are pending for implementation, prioritise them and make a proposal on those defect resolutions to be embedded in the next release.

It is under the CRG’s responsibility to develop, implement and carry out the scoring mechanism as a tool for facilitating the definition of the content of a release by balancing criticality and risk, as well as Common and Specific Changes. This priority rating is used to establish the order in which the authorised changes should be considered for a particular T2S release taking into consideration its business/legal importance and the associated risks and budgetary implications. The Common and Specific Changes must be subject to a separate prioritisation process.

[8] Excluding those changes that are frozen during the exit time of a non-euro area NCB (see chapter 4.2.4)

[9] Annex 4 (Scoring Mechanism) will be prepared by the CSG as soon as possible after signature of the Framework Agreement respectively the Currency Participation Agreement.

The results of the prioritisation exercise carried out by the CRG, as well as the available capacity and resources for implementing the changes will be used to find an appropriate balance for deciding which changes should be included in the next release. The Eurosystem will make best efforts to adapt its capacity to manage the demand for Change Requests as soon as possible. The Eurosystem will provide a justification when a Change Request is not implemented in a release due to lack of adapting its capacity. When conducting the prioritisation exercise and establishing the content of a release, the CRG should consider the following criteria for Common Changes:

- to ensure a level playing field for all T2S Stakeholders in order to create the highest possible level of satisfaction throughout all T2S Actors/for each type of stakeholders' point of view;
- to consider those changes that bring benefits to the wide majority of the Participating CSDs and CBs;
- to select those changes which in total serve the interest of all Participating CSDs and CBs; and
- to cluster the changes if they are interlinked or relate to the same service or there is a need to implement them together in order to reduce cost or complexity.

The CRG should also consider the following criteria for Specific Changes:

- to assess the changes with the aim of balancing the ratio of Common and Specific Changes;
- to select those Specific Changes requested by the Participating CSDs/CBs that do not benefit to a large extend from the Common Changes that are part of the same release; and
- to increase the priority of Specific Changes in proportion to the time they are waiting to be implemented.

Based on the outcome of the prioritisation exercise for defining the content of the next release, the CRG will prepare its recommendation on the content of the next T2S release containing the Common and Specific Changes, as well as the defect resolutions. The CRG submits its report on the definition of a new release to the CSG via the ECB[10]. The ECB disseminates the deliverables of the CRG also to the T2S Board, the AG and the NECSG. In case of agreement in the CRG, the

[10] The report shall contain a reference to the initiator of the change as well as a reference as to whether the functioning of cash accounts, of Securities Accounts or both are affected.

report will contain the common proposal on the content of the next T2S release. In case of disagreement in the CRG, the report will draw the attention of each group to the changes relevant for them, outline the reasons for disagreement and if possible suggest a few variants/options with respect to the release content.

Those changes which have not been selected for implementation due to insufficient priority will be parked and will be further considered in the prioritisation exercise for the next T2S release.

5.2.3 Release approval

All governance bodies at the Steering Level will review the CRG proposal/report on the content of the release including the related costs and will focus on the changes in their remit and prioritise them. At the end, the Governing Council of the ECB shall prioritise all Change Requests, on the basis of a T2S Board proposal, to which the views obtained from the CSG, the NECSG and the AG are attached. The information on changes selected for the next T2S release will be published on the website.

5.2.4 Release planning and monitoring

Upon approval of the content of the next release, the Project Managers Group (PMG) will prepare a detailed release implementation plan that will ensure synchronisation with the Participating CSDs /CBs planning, in particular if changes are required in their own internal systems. The release planning will ensure that a reasonable freeze period is respected around Christmas and the summer holidays. Once the release implementation plan is finalised and agreed, the PMG will manage and monitor this plan as much as possible – and as far as relevant – in accordance with the provisions of Schedule 2 (T2S Programme Planning and Monitoring) to the FA and the CPA.

Due to the involvement of a large number of parties, a successful implementation and delivery of the release into production requires agreement between the parties on their roles and responsibilities as well as the expectations and commitments during the release implementation.

In accordance with the roles and responsibilities defined in Schedule 2 (T2S Programme Planning and Monitoring) of the FA and CPA, the following key principles will be followed in the context of release planning, monitoring and reporting:

- A common release implementation plan will be defined and maintained based upon clearly identified deliverables and synchronisation points taking into account all the respective constraints and dependencies of the involved parties;

- A regular and close monitoring of the release plan, with decisions committing all parties will be undergone based on a comprehensive framework established to manage events that may affect the release deliverables and milestones;

- Relevant documentation and necessary information will be provided by the Eurosystem to all involved parties as background information for supporting release planning and reporting;

- Regular meetings will be organised between the Eurosystem and the Participating CSDs/ CBs to review and discuss the overall status assessment of the T2S release implementation, to discuss progress and any risks and issues that might jeopardize the release, and recommend mitigation measures/corrective actions;

- A reporting framework will be established by the Eurosystem to inform regularly all involved parties at the various levels of Governance about the status assessment of the release implementation, including the progress against the plan, to provide status assessment of each deliverable relevant for Participating CSDs and CBs and to ensure that the planning issues and risks are identified, discussed and addressed in a timely and appropriate manner;

- A T2S risk and issue management and reporting framework will be established by the Eurosystem to identify, manage and report of risks and issues, affecting the successful delivery of the release;

- A comprehensive framework will be established to allow the Eurosystem to monitor the readiness status of all involved parties to deliver the release into production; and

- The Participating CSDs and CBs will ensure their own readiness and coordinate the readiness of their clients to be ready to use the T2S release, i.e. ensuring planning feasibility and monitoring progress.

5.2.5 Implementation

The implementation phase starts with the designing, building and configuration through the final testing and verification stages and ends with the actual release into the production environment.

The full length of a major release cycle will be up to 12 months from the moment when the content has been defined and agreed until the deployment into the production environment (i.e. 1 year for the implementation period). The minor release cycle will depend on the size of the release, but typically will not exceed half of the length of the major release one.

5.2.5.1 Design, building and configuration

Once the approved content of the release is communicated to the 4CB, the latter will be responsible for designing, building and configuring the release. This process includes, inter alia, the following activities:

- Creating a new version of one or more software modules;
- Purchasing equipment or services externally;
- Preparing a hardware modification;
- Updating all relevant documentation or producing new one;
- Providing training to the Participating CSDs and the CBs, if required[11].

All relevant documents are updated by the ECB and 4CB and will be provided to the T2S Stakeholders as specified hereafter:

- URD, GFS, UDFS, Service Description and GUI Business Functionality – five months prior to the User Testing at the latest point in time; and
- GS, GTD, User handbooks, SLA, MOP – one month prior to the User Testing at the latest point in time.

[11] The Participating CSDs, respectively the CBs are responsible for the providing training to their users. On Participating CSDs'/ CBs’ request, the Eurosystem should agree on providing trainings for Participating CSDs' resp. CBs’ users for topics selected by Participating CSDs/CBs.

The ECB and 4CB will ensure consistency across all documentation, including legal agreements and operational procedures.

5.2.5.2 Testing of a new release by the Participating CSDs and the CBs

The Eurosystem will conduct a Eurosystem Acceptance Testing before the start of User Testing thereby ensuring that the T2S test environments and T2S Platform meet the functional and non-functional requirements (including performance testing - if there is a potential impact on the performance) by the change in order for the users to successfully carry out their User Testing. Once the Eurosystem internal tests are finalised, the Eurosystem confirms the readiness of the T2S testing environments for the T2S User Testing via a release note. The test calendar is communicated to the Participating CSDs and the CBs providing information on the testing activities, the availability of the testing environments and any other relevant information for performing the testing. This test calendar and the test activities will follow as much as possible – and where relevant – the approach defined in Schedule 3 (User Testing).

The Participating CSDs and CBs start testing the new release once all the entry criteria for the User Testing are met. A stability period is envisaged in the pre-production where the system should be tested while running according to the Service Level Agreement. The length of this period will be decided by the CRG on a case-by-case basis. The aim of the User Testing is to ensure that the new T2S release delivers the expected services as described in the User Requirements Document, as well as the functional and non-functional specifications and to guarantee the readiness of the Participating CSDs and CBs and their communities for the migration/operation to/of the new release.

The User Testing activities are performed according to the framework agreed between the Participating CSDs/ CBs and the Eurosystem, which may include a set of user certification tests to ensure that T2S Stakeholders are able to use the new or amended functionality correctly. As a matter of fact, the verification of the release is given by the Participating CSDs and CBs once the exit criteria of the verification process have been completed successfully.

The security impact of all proposed changes to the T2S Platform should be assessed prior to delivery into production in order to check that they do not compromise the security of the T2S Platform. In this respect it is noteworthy that security should be planned and integrated from the start of development. This ensures that risk factors are adequately considered in a timely manner and prevents unnecessary costly security measures to be implemented only once the new system is operational.

The testing and release verification process by the Participating CSDs and CBs will typically take up to 3 months (i.e. for a major release).

The following principles will be applied during User Testing phase of a release:

- The scope of release User Testing covers both functional and non-functional testing;
- The preparation of non-functional release user test activities is done jointly by the Eurosystem and the Participating CSDs/CBs;
- The Participating CSDs and CBs shall appoint a CSD respectively CB Test Manager who will be the primary contact point for the Eurosystem for all discussions about user release testing;
- The Eurosystem shall appoint a T2S Test Manager who will ensure proper co-ordination and exchange of information with the CSD's and CB's Test Manager;
- The execution of non-functional release user test activities is the primary responsibility of the Eurosystem;
- The Eurosystem will report to the Participating CSDs/CBs about the results of non-functional release testing;
- User Testing of a new release aims at ensuring compliance of T2S with the T2S Scope Defining Set of Documents;
- The Participating CSDs and CBs define their acceptance tests and agree these with the Eurosystem;
- The Eurosystem defines certification tests and agrees these with the Participating CSDs and CBs;
- User Testing of a new release is organised in different stages: interoperability testing (both bilateral and multilateral), acceptance testing, community testing and business day testing, based on the concept and the principles laid down in Schedule 3 (User Testing);
- The Participating CSDs and CBs are responsible for the co-ordination of user test activities of a new release with their communities;

- The Eurosystem is responsible for the co-ordination of user test activities of a new release between all T2S Actors, including the organisation of a central repository for test sets, test cases and test scenarios related to the certification tests for T2S User Testing;
- The Eurosystem will support the User Testing activities of a new release through the implementation of incident and problem management procedures as described in the Manual of Operational Procedures;
- The Participating CSDs and CBs shall inform the Eurosystem of any incident they experience during the execution of their user tests of a new release;
- In particular, the Eurosystem shall undertake all necessary corrective measures to resolve all defects discovered during the User Testing activities of a new release and caused by T2S;
- All decisions related to (un)successful completion of the test stages, as well as the implementation of the release in the production environment will be prepared under the responsibility of the Project Managers Group (PMG) and will be made in accordance with the Governance arrangements laid down in Schedule 8 (Governance).

5.2.5.3 Roll- out and communication

The release plan drawn up during the preceding phases will be complemented with information about the exact installation process and the agreed implementation activities and delivery of the release into production.

The ECB in collaboration with the 4CB, Participating CSDs and CBs will agree on the rollout planning which includes the following:

- Producing an exact, detailed timetable of events, as well as who will do what i.e. resource plan;
- Producing the release note and communication to the Users;
- Planning communication;
- Incident management.

All the impacted T2S Stakeholders will be informed on what is planned and how it might affect them. The responsibilities of the interested parties in the implementation of the release will be communicated by the ECB ensuring that everyone is aware of them. This will be accomplished via the release communication/notes.

5.2.5.4 Delivery – Go-live

Bringing the application software release into the production environment is the final step in the Release Management process.

To ensure a smooth roll-out of the release, the checklist and procedures agreed between the Eurosystem, 4CB, the Participating CSDs and CBs need to be followed by all the involved parties.

The Governing Council shall give the formal and final acceptance of the release for the go-live based on the successful completion of the user testing of the new release and after obtaining the views of the CSG, and the NECSG. The release is delivered into the production environment on the agreed date following the agreed procedures.

5.2.6 Post implementation review

A post implementation review will take place periodically in order to evaluate the change/release performance and to verify the effectiveness of the change/release package implementation.

These review meetings will provide an opportunity to assess and review the efficiency and effectiveness of the Change and Release Management Process, as well as to identify any potential improvement to the overall process flow.

718 Annex 1 - Change Request Form

General Information		
CR raised by:	**Institute:**	**Date raised:**
Change Request title:		**CR ref. no:** *(to be filled in by the ECB)*
Change Request type *(Common, Specific, if specific unauthorised use to be controlled or monitored?)***:** *(to be filled in by the requester*)	**Urgency** *(Normal, Fast- track)* *(to be filled in by the requester*)	
1. Legal/business importance parameter(C, H, M, L): *(to be filled in by the requester*)	**2. Market implementation efforts parameter (H, M, L):** *(to be filled in by the requester)*	
3. Operational/Technical risk parameter (H, M, L): *(to be filled in by the requester*)	**4. Financial impact parameter (H, M, L)** *(to be filled in by the 4CB*)	
Requester Category*(CSD, CB, ECB, 4CB)* *(to be filled in by the requester)*	**Status:** *(to be filled in by the CRG*)	
Description of requested change:		
Reason for change and expected benefits/business motivation:		

Submitted annexes / related documents:

Proposed wording for the Change Request:

Annex 2 - Change Request Form

At any time, a Change Requests will have one of the following statuses:

Registered – The Change Request was registered by the ECB.

Rejected by Change Review Group – When the Change Review Group has agreed with the requester that the change should be dropped.

Under preliminary Assessment – The ECB/4CB is conducting the preliminary assessment.

Pending with Change Review Group – The ECB has submitted the preliminary assessment to the Change Review Group to review it and consult their communities.

Under Detailed Assessment – The ECB/4CB is conducting the detailed assessment of the Change Request.

Being evaluated by the Change Review Group – The ECB has submitted the detailed assessment to the CRG and they are evaluating it.

Pending at Steering Level – The Change Request with the assessment is submitted to the Steering Level for a formal authorisation.

Authorised at Steering Level – The Steering Level has authorised the change and it was placed on the official list of changes.

Rejected at Steering Level – The Steering Level has rejected the change.

Allocated to a release – The change is allocated to a release.

Under implementation – The change is under implementation but not yet delivered to test

Delivered to test – The change is being tested by the CSDs and CBs

Verified – The change was successfully tested and verified by the CSDs and CBs

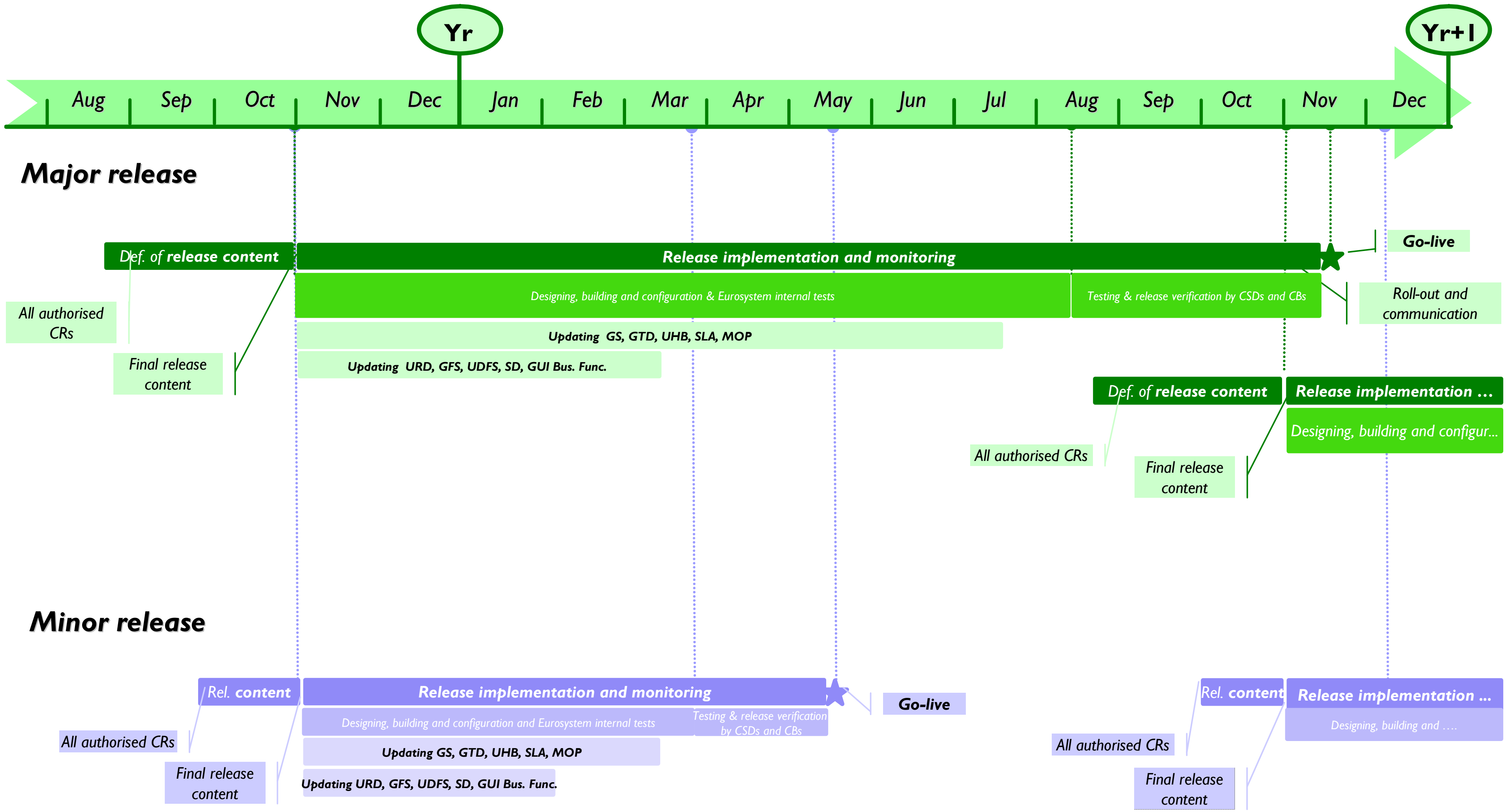
Parked – Change Request is parked for the next T2S release (s).

Frozen – The implementation of the change is frozen for max. 24 months due to the exit period of a non-euro area NCB

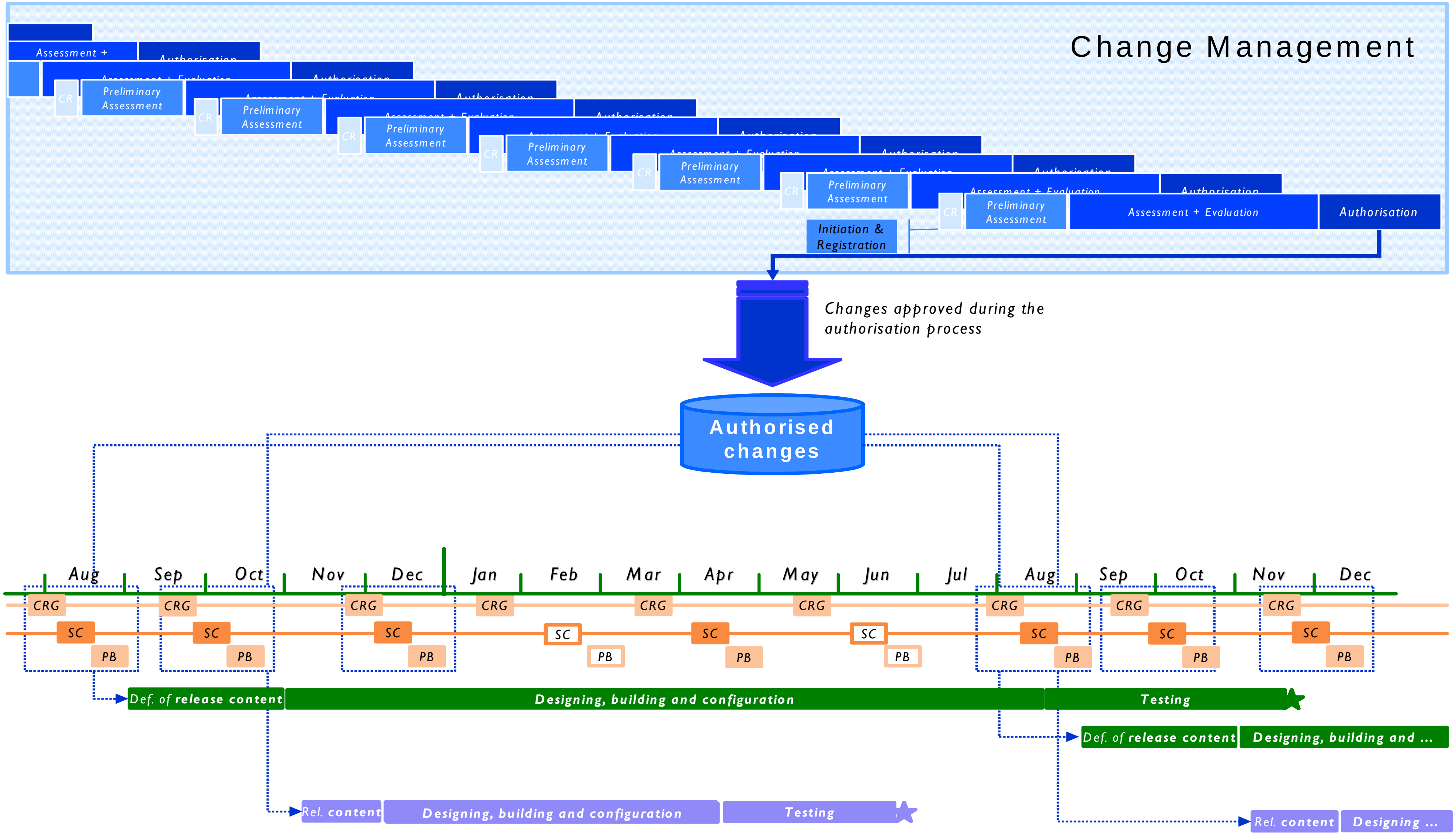
Closed – The Change Request has been implemented in T2S and all relevant documentation has been updated and all other impacted documents have been aligned.

Annex 3 – Indicative Timeline for the T2S Release Management

Indicative timeline for the T2S Release Management process


Yr
Yr+1
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Major release
Def. of release content
Release implementation and monitoring
Go-live
All authorised CRs
Designing, building and configuration & Eurosystem internal tests
Testing & release verification by CSDs and CBs
Roll-out and communication
Updating GS, GTD, UHB, SLA, MOP
Final release content
Updating URD, GFS, UDFS, SD, GUI Bus. Func.
Def. of release content
Release implementation …
Designing, building and configur…
All authorised CRs
Final release content
Minor release
Rel. content
Release implementation and monitoring
Go-live
All authorised CRs
Designing, building and configuration and Eurosystem internal tests
Testing & release verification by CSDs and CBs
Updating GS, GTD, UHB, SLA, MOP
Final release content
Updating URD, GFS, UDFS, SD, GUI Bus. Func.
Rel. content
Release implementation …
Designing, building and ….
All authorised CRs
Final release content

Schedule 9 - Annex 3 - Indicative Timeline for the T2S Release Management



Annex 4 – Scoring Mechanism

EUROPEAN CENTRAL BANK
EUROSYSTEM

TARGET2-SECURITIES

FRAMEWORK AGREEMENT

SCHEDULE 10

INFORMATION SECURITY

Table of contents

Introduction

This document aims at presenting the provisions related to the framework to ensure that the requirements concerning Information Security in T2S are met and kept up-to-date. In addition the document defines the involvement of the Contracting CSD in the Information Security management process, in accordance with the applicable governance arrangements, as well as the Eurosystem's reporting obligations towards the Contracting CSD.

The management of Information Security for T2S is largely based on the ISO/IEC standards 27001:2005 and 27002:2005. This Schedule and the related Annexes therefore use the terms and definitions of these standards, if applicable, and in such case prevail over the terms defined in Schedule 1. A definition of the relevant terms is included in chapter 2 of Annex 2 (T2S Security Requirements and Controls) to this Schedule.

The document is divided into four chapters, corresponding to the major aspects identified as relevant for T2S Information Security: i) objective and scope of T2S Information Security; ii) general responsibilities of the contracting parties; iii) the T2S Information Security management framework, and iv) the T2S Information Security risk management process.

1 Objective and scope of T2S Information Security

1.1 Objective

The objective of T2S Information Security is to protect T2S business processes and its information from a wide range of threats, whether internal or external, deliberate or accidental, and to minimise the impact on the T2S Platform of any threats, that, despite all measures taken, do materialise.

ISO 27001 defines Information Security as "preservation of confidentiality, integrity and availability of information; in addition, other properties such as authenticity, accountability, non-repudiation and reliability can also be involved"[1].

For the avoidance of doubt, it is acknowledged that "*the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events*" (i.e. operational risk as defined in the report entitled "*International Convergence of Capital Measurement and Capital Standards*", published by the Basel Committee on Banking Supervision, June 2006), is covered by the T2S Information Security Policy, to the extent such risk may have an impact on the confidentiality, integrity and availability of T2S information. Operational risks that are not covered by the T2S Information Security Policy are covered in the SLA reports as specified in Schedule 6 (T2S Service Level Agreement).

1.2 Scope

The scope of the T2S Information Security Schedule covers all arrangements aiming at fulfilling the T2S Information Security Requirements and Controls as specified in Annex 2 (T2S Security Requirements and Controls) to this Schedule, as well as to the relevant principles to conduct the initial risk analysis before go-live and all subsequent risk analyses during the production phase. These risk analyses focus on the proper implementation of the agreed security controls. Furthermore, all reporting obligations and the activities to keep the T2S Information Security management framework up-to-date are covered by this Schedule as well.

[1] ISO 27001:2005 (chapter 3.4)

The perimeter of the T2S Information Security management framework is limited to the T2S Platform and does not extend to the system(s) in place on the side of the Contracting CSD. Nevertheless, the Eurosystem commits to provide the Contracting CSD with all information necessary to allow the latter to perform its own risk management obligations. Network Service Providers are also out of scope for the T2S Information Security management framework managed by the Eurosystem, but the Eurosystem imposes certain requirements, comparable to those for Third Party service providers, via the agreements.

2 General responsibilities of the contracting parties

As an overarching principle, the Eurosystem and the Contracting CSD shall co-operate in good faith in order to allow both parties to fulfil their commitments with respect to Information Security.

2.1 General responsibilities of the Eurosystem

The Eurosystem shall:

a) implement the T2S Information Security management framework in accordance with this Schedule, in particular by designing, developing and operating the T2S Platform with the objective that each T2S Actor has access to T2S information according to the confidentiality, integrity and availability requirements described in this Schedule and its Annexes;

b) implement a process to manage Information Security in T2S according to the process described in section 4 of this Schedule:

   a. regularly reviewing the implementation;

   b. regularly updating the T2S Security Requirements and Controls to keep them in line with technical and other material developments;

   c. regularly assess the effectiveness of the process and update it if necessary;

c) share the asset classification scheme and likelihood and impact grading scales used in the risk management process for information;

d) report the results of Information Security reviews to the Contracting CSD (according to section 4.3 of this Schedule);

e) report Information Security incidents (according to the definition in Annex 2 [T2S Security Requirements and Controls] to this Schedule) and the related remediation to the Contracting CSD;

f) report to the Contracting CSD newly identified threats or detected gaps that might threaten T2S Information Security, as well as any related remediation that is envisaged to address them;

g) provide all other relevant information to the Contracting CSD to allow the latter to fulfil its own risk management obligations.

2.2 General responsibilities of the Contracting CSD

In view of ensuring Information Security for T2S, the Contracting CSD shall:

a) ensure its own compliance with Information Security requirements according to its internal standards, regulatory requirements and/or best practices;

b) report Information Security incidents (according to the definition in Annex 2 [T2S Security Requirements and Controls] to this Schedule) to the Eurosystem, if T2S or other T2S Parties might be impacted by such incidents; and

c) report to the Eurosystem newly identified threats or detected gaps that might threaten T2S Information Security.

3 The T2S Information Security management framework

This chapter describes the documents that specify the Eurosystem's commitments in the Information Security management process.

To ensure Information Security the related requirements and implemented measures need to evolve over time to accommodate for new threats and to adapt to technical and other material developments. All the annexes will therefore regularly be reviewed and if need be updated according to the arrangements specified in section 4.1.4.1 below.

3.1 The Information Security Policy for T2S

The Information Security Policy for T2S – attached as Annex 1 (Information Security Policy for T2S) to this Schedule – is a high-level document embracing, at a generic level, a definition of the scope of Information Security for T2S, the security policy principles, allocation of responsibilities and other relevant aspects related to Information Security in the T2S environment.

3.2 The T2S Information Security Requirements and Controls

The purpose of the T2S Security Requirements and Controls – attached as Annex 2 to this Schedule – is to specify which conditions are to be fulfilled (i.e. the requirements) for establishing Information Security for T2S, as well as to indicate how these conditions can be met (i.e. the controls). The requirements and controls are based directly on ISO standard 27002.

3.3 The T2S Information Security risk management process

The T2S Information Security risk management process – described in chapter 4 of this Schedule – specifies the approach for managing Information Security for T2S and the related reporting of the risk situation and planned risk treatment to the Contracting CSD.

4 The T2S Information Security risk management process

This chapter outlines the approach to ensure the continuous process of managing Information Security in T2S. This approach is established under the umbrella of the Information Security Policy for T2S (Annex 1 to Schedule 10) which embraces at a generic level a definition of the scope of T2S, the Information Security policy principles, the allocation of responsibilities and summarises the Information Security management domains.

The main goal of Information Security in T2S is to protect T2S information from a wide range of threats and to minimise the impact of any threats on T2S operations, which, despite all measures taken, do materialise. In particular, T2S Information Security aims at avoiding any propagation of Information Security incidents, whether caused endogenously in T2S or by a T2S Actor, to other T2S Actors. To accomplish this, the T2S risk management process defines two main processes. One process (i.e. the “review” process) ensures that the T2S Information Security management framework is kept up to date and effective, while the other process (the “core” process) focuses on the implementation of this framework and the assessment of any remaining risks.

A full risk assessment is performed before the initial go-live of T2S (pre-production security assessment). Moreover, the process interfaces with the Change Management and with the incident management processes to guarantee that the security requirements and controls are in place and that the risk is continuously monitored and maintained at an appropriate level. In addition to these event-driven assessments, a time-driven mechanism ensures a complete security compliance checking and risk assessment every three years also for parts that have not been subject to a change.

This chapter is structured as follows:

- Section 4.1 puts the T2S Information Security risk management process into the perspective of the complete T2S Information Security management framework;
- Section 4.2 places emphasis on the information flow exchanged between the Eurosystem and the Contracting CSD during the T2S risk assessment process cycle;
- Section 4.3 describes the co-ordination and escalation process for T2S Information Security issues and in particular how the Contracting CSD will be involved in the T2S Information Security management process;

- Section 4.4 provides examples on how the information shared with the Contracting CSD is going to be structured.

4.1 Risk management methodology

The Information Security risk management methodology applied by the Eurosystem for T2S is defined as the series of interlinked components, which provide the common methodological foundation for delivering, maintaining and governing T2S Information Security and related internal controls for the Eurosystem.

4.1.1 Business impact analysis

Risk management commonly starts with a criticality assessment of the information system as a whole determining the business impact for the Eurosystem in relation to the three security aspects: confidentiality, integrity and availability. Since T2S plays a vital role in the post-trade services chain, and has cross-system relationships to systems at many CSDs as well as RTGS and collateral management systems of the Central Banks, it is a systemically important system. Undoubtedly, the protection needs, in terms of confidentiality, integrity and availability would reach the highest score. However, even for a highly critical system not all components are of the same criticality level. Therefore, the Eurosystem categorises the individual assets using the following inventory classification principles.

The rules being that:

- an owner is identified/nominated for each asset;
- the criticality for each asset is identified taking confidentiality, integrity and availability aspects into account;
- all the security requirements and controls (see section 4.1.2) are considered as applicable to T2S;
- deviations from this general rule is under the owner[2] responsibility according to the asset classification's criticality and the applicability of the control;

[2] In accordance with ISO 27002, the term 'asset owner' identifies an individual or entity that has approved management responsibility for controlling the production, development, maintenance, use and security of the assets. The term 'owner'

- deviations must be justified and argued during the compliance checking phase performed by Information Security experts who have no direct or indirect conflict of interest in the performance or outcome of this compliance check.

The list of assets and their categorisation are subject to change. If changes are required to T2S due to changes in the list of assets (or their categorisation), then these updates will be performed as part of the Change and Release Management process. On top of that, the asset inventory will be subject to a complete review every three years.

4.1.2 The T2S Information Security Requirements and Controls

The list of controls taken into account for the individual assets is derived from the following different sources:

- ISO/IEC standard 27002:2005 as mentioned in the URD;
- URD chapter 18;
- Experience from Target2.

When compiling this list, all controls from all listed sources were taken into account. Only those controls that are obviously not applicable to T2S have been dropped from these inputs.

By coordinating this effort with the work done for Target2 and CCBM2, the Eurosystem ensures that a common approach for these three core systems is followed to ensure an appropriate high level of Information Security for all three interconnected systems.

4.1.3 The T2S Threat Catalogue

The T2S Threat Catalogue listing all threats that have been considered for T2S is compiled out of input taken from the Information Security forum.

The Eurosystem consolidated the input by differentiating between threats and root causes, which in itself are not a threat but can allow several threats to become imminent.

does not mean that the person actually has any property rights to the asset, but refers rather to “stewardship” or “custody” of assets, in particular for data.

The T2S Threat Catalogue provides information on relevant threats to the system (internal or external/accidental or deliberate) and serves as the basis for the identification of the impact, the appropriate security controls and (later) evaluation of potential residual risks.

The purpose of the T2S Threat Catalogue is twofold; it helps to identify all potential threats to T2S without overlooking any and to ensure that all threats are addressed properly by mapping the security requirements and controls to the threats they address.

4.1.4 The T2S Information Security risk management process

Information Security risk management for T2S is based on two main processes:

- The T2S Information Security management framework review process ensures that the T2S Information Security management framework continues to adequately address the risks, as they change over time by ensuring a timely update and approval of documents. The T2S Information Security management framework review process consists in identifying new and changed threats deriving from system changes and new business requirements, incidents and security developments, as well as Legal and Regulatory Requirements. In addition to this continuous, event driven process, the Eurosystem will review all documents of the T2S Information Security management framework on a yearly basis.
- The compliance and risk assessment process is used to assess the overall T2S Information Security risk situation. This includes the security compliance check to identify deviations from the T2S Information Security Requirements and Controls as well as their assessment and reporting to the CSDs and NCBs. The process applied to the whole T2S scope is triggered every three years, the first before the go-live of T2S (the pre-production security assessment). In between these full verifications, any changes to T2S or any security related incident will trigger a partial verification for the relevant parts.

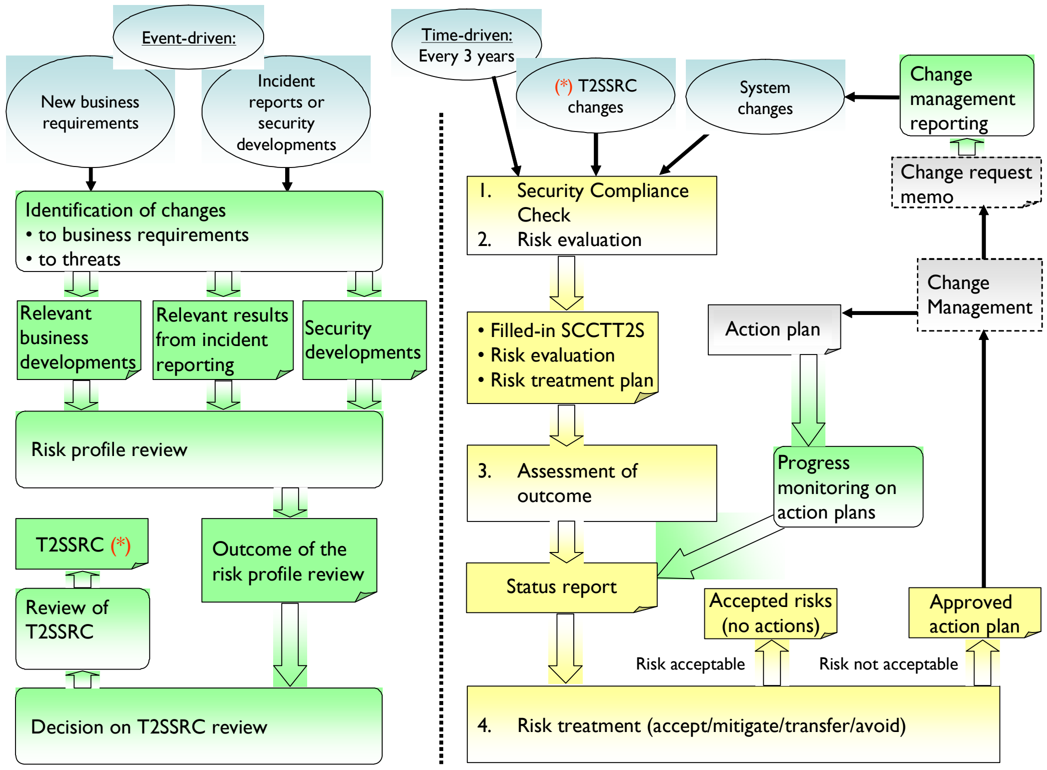

Event-driven:
New business requirements
Incident reports or security developments
Time-driven: Every 3 years
(*) T2SSRC changes
System changes
Change management reporting
Change request memo
Identification of changes
• to business requirements
• to threats
1. Security Compliance Check
2. Risk evaluation
Relevant business developments
Relevant results from incident reporting
Security developments
• Filled-in SCCTT2S
• Risk evaluation
• Risk treatment plan
Action plan
Change Management
Risk profile review
3. Assessment of outcome
Progress monitoring on action plans
T2SSRC (*)
Outcome of the risk profile review
Status report
Accepted risks (no actions)
Approved action plan
Review of T2SSRC
Risk acceptable
Risk not acceptable
Decision on T2SSRC review
4. Risk treatment (accept/mitigate/transfer/avoid)

Figure 1: The two risk management processes and their interaction

4.1.4.1 T2S Information Security management framework review process

The T2S Information Security management framework review process ensures that the T2S Information Security management framework continues to adequately address the risks that T2S is exposed to, as they change over time. The findings resulting from Change Requests, incidents and security developments provide the Eurosystem with information on which to base a sound decision on whether the relevant documents, i.e. the Information Security Policy for T2S, the T2S Threat Catalogue and the T2S Security Requirements and Controls, should be updated.

In addition to this continuous, event driven process, the Eurosystem will review all documents of the T2S Information Security management framework on a yearly basis.

If the need for an update to the Information Security Policy or to this Schedule is identified, an updated version of the document(s) is proposed to the relevant governance body (as defined in

Schedule 8 [Governance]) for approval. In addition, the CSG and the NECSG will be consulted on any proposed changes to the T2S Security Requirements and Controls. Changes to other documents defining the Information Security framework are made unilaterally by the Eurosystem.

4.1.4.2 Compliance and risk assessment process

The compliance and risk assessment is a multi-step process to assess the overall risk situation.

In a first step (security compliance check), it takes the defined security requirements and controls and performs a compliance check by validating the completeness and effectiveness of the actual implementation of these controls within the scope of T2S.

In a second step (risk assessment), all threats addressed by non-compliant controls are assessed (based on grading scales) concerning likelihood of the risk materialising and its associated impact.

In a third step, the risk situation of T2S concerning each threat is determined by aggregating the results of the individual assessments for those controls that are relevant for this threat into an overall likelihood and potential impact. The result is represented using a grading scale.

In a fourth step, the Eurosystem will make a proposal for the treatment of all identified risks based on their potential impact on the Eurosystem as provider of the T2S Services. Available options to treat risks are acceptance, avoidance, mitigation or transfer of risks.

In a final step, for all risks that cannot be or are not accepted, actions plans for avoiding, mitigating or transferring the risks will be defined and implemented (risk treatment plan – see section 4.2.2).

4.2 Deliverables to the Contracting CSD

The Eurosystem drives the process described in section 4.1. However, the assessment of the risk impacts can only be based on the impact on T2S and/or the Eurosystem. This section therefore focuses on the information the Eurosystem will share with the Contracting CSD and their options to use this as input to their own business risk assessment processes in order to meet their regulatory requirements and to get evidence that the security requirements are addressed properly by the Eurosystem.

4.2.1 T2S Information Security Risk Evaluation Table

The ‘T2S Information Security Risk Evaluation Table’ (ISRET) is generated as part of the risk assessment. It provides the likelihood for each threat for which not all the relevant controls are implemented and effective, as well as the impact of the threat, taking into account the non-compliant controls. The ISRET includes the following information:

1. ID: Threat identification number
2. Threat: Threat description (from the Threat Catalogue)
3. Current likelihood (based on a likelihood grading scale)
4. Likelihood explanation: explanation of the likelihood scoring
5. Current impact (based on an impact grading scale)
6. Impact explanation: explanation of the impact scoring
7. Risk treatment plan ID: reference to the appropriate treatment plan mitigating the risk, as described in the T2S Information Security risk treatment plan (see section 4.2.2)

Based on this ISRET, the Contracting CSD has the necessary information to evaluate its own business risk.

Section 4.4.1 shows the template and an example of this table.

The Eurosystem will share with the Contracting CSD the ISRET whenever it is updated, but at least on a yearly basis.

4.2.2 T2S Information Security risk treatment plan

Together with each ISRET, the Eurosystem will share the proposal for the ‘T2S Information Security Risk Treatment Plan’ (ISRTP).

This plan proposes a treatment (i.e. a mitigation measure or acceptance) for all the risks listed in the ISRET.

The ISRTP includes the following information:

1. Risk treatment plan ID: Risk treatment plan identification.
2. Proposed treatment: information on the planned safeguard measures or proposal to accept the risk together with an explanation why it is recommended to accept the risk.
3. Current likelihood of residual risk: likelihood of the residual risk before the implementation of the plan (as it appears in the ISRET).
4. Likelihood of residual risk after fix: likelihood of the residual risk after the implementation of the safeguard measures.
5. Current Impact of Residual Risk: impact of the residual risk before the implementation of the plan (as it appears in the ISRET).
6. Impact of Residual Risk after fix: impact of the residual risk after the implementation of the safeguard measures.
7. Planned Implementation Date: a deadline by when these measures will be implemented.
8. Status: Progress of the action plan implementation (not started, in progress, closed) including the date.

Mitigation measures that imply a functional change to T2S will be processed according to Schedule 9 (Change and Release Management), while mitigation measures that imply a non-functional change will be processed according to Schedule 6 (T2S Service Level Agreement – Annex 1 [Management of non-functional changes]). Should the Contracting CSD see the need for additional mitigation measures, they can as well raise Change Requests to implement these measures in T2S.

Those risks appearing in subsequent ISRTPs that require follow-up are consolidated in a single Action Plan in order to monitor whether the action plans are delivered on time. Progress monitoring on the action plans will be delivered to the Contracting CSD at least on an annual basis, and whenever there is an update to the plan or a change of status of a risk treatment (e.g. it is successfully implemented).

4.3 Co-operation and escalation procedures

The Eurosystem shall set up a multilateral co-ordination substructure, in accordance with the T2S governance, for the coordination and monitoring of the T2S Information Security risk management activities. This substructure shall meet on a regular basis and shall consist of a limited number of representatives from the Eurosystem, 4CB, CSDs and non-euro area NCBs.

The role of the substructure in charge of T2S Information Security Risk management shall be to:

- Monitor the implementation of the ISRTP;
- Review the ISRET;
- Discuss issues raised by the members of the substructure, including Information Security issues emerging outside the scope T2S Information Security;
- Prepare communications related to Information Security risks to the various T2S Stakeholders and the public at large.

If a new Information Security risk is identified, or if an existing Information Security risk obtains a higher likelihood or impact score, the Eurosystem will communicate such changes to the Contracting CSD in accordance with the incident response times specified in Schedule 6 (T2S Service Level Agreement).

Upon reception of such communication, or if another Information Security issue requires urgent attention:

- The Contracting CSD may request a conference call with the Eurosystem, at the latest during the next Settlement Day, or at its earliest convenience;
- The issue shall be discussed during the conference call;
- The Eurosystem shall summarize the outcome of the conference call and distribute it to the members of the substructure in charge of Information Security risk management.

In case no agreement can be reached in the substructure, each party shall be entitled to escalate the problem to the Project Managers Group (PMG), where the situation shall be discussed and rapidly assessed.

If a mutually agreeable solution cannot be found in the PMG, then the general T2S escalation process shall apply whereby the issue is escalated to the Steering Level in order to receive guidance to resolve the issue. The escalation process shall be in accordance with the general T2S governance arrangements, as specified in the Schedule 8 (Governance).

Ultimately there shall be recourse to the dispute resolution process as described in the provisions of the relevant Articles in the core Framework Agreement.

4.4 Examples for the Shared Documents

4.4.1 T2S Information Security Risk Evaluation Table

Example for the T2S Information Security Risk Evaluation Table that the Eurosystem will share with the Contracting CSD.

ID	Threat	Risk Likelihood Score	Risk Likelihood Explanation	Risk Impact Score	Risk Impact Explanation	Risk treatment plan ID
23	Loss of historical information	3		2		RTP #1
28	External staff dependency	1		3		RTP #2
88	Eavesdropping	2		1		RTP #3
93	Intentional security loopholes	2		2		No additional measure can be applied efficiently

4.4.2 T2S Information Security Risk Treatment Plan

Example for the T2S Information Security Risk Treatment Plan the Eurosystem will propose to the Contracting CSD.

Risk Treatment Plan ID	Description of Planned Actions / Proposal to accept the risk	Current Likelihood[3]	Likelihood after fix[4]	Current Impact[5]	Impact after fix[6]	Planned Implementation Date	Status
RTP #1	Description of Risk Treatment Plan #1	3	3	2	1	Planned date for RTP#1	Ongoing
RTP #2	Description of Risk Treatment Plan #2	1	1	3	2	Planned date for RTP#2	Not started due to XXX
RTP #3	Description of Risk Treatment Plan #3	2	1	1	1	Planned date for RTP#3	Not started

[3] This column provides for each threat, its likelihood for materializing before the action plan implementation.
[4] This column provides the likelihood of materialising for each threat influenced by the action plan (after the action plan implementation).
[5] This column provides the impact of each threat before the action plan implementation.
[6] This column provides the impact of each threat after the action plan implementation.

EUROPEAN CENTRAL BANK
EUROSYSTEM

TARGET2-SECURITIES

FRAMEWORK AGREEMENT

ANNEX 1 TO SCHEDULE 10

INFORMATION SECURITY POLICY FOR T2S

31 October 2011

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Information Security policy for T2S

T2S is a service to support central securities depositaries (CSDs) by providing core, borderless and neutral settlement of securities transactions. The objective is to achieve harmonised and commoditised Delivery-versus-Payment settlement in Central Bank Money in substantially all securities in Europe.

Through its direct cross-system relationship with RTGS systems and collateral management systems, a T2S security failure might have systemic implications at a global scale. T2S is a critical IT platform supporting systemically important systems and services and should consequently be designed and operated with a high degree of security and operational reliability. Hence Information Security is a vital and integral part of T2S.

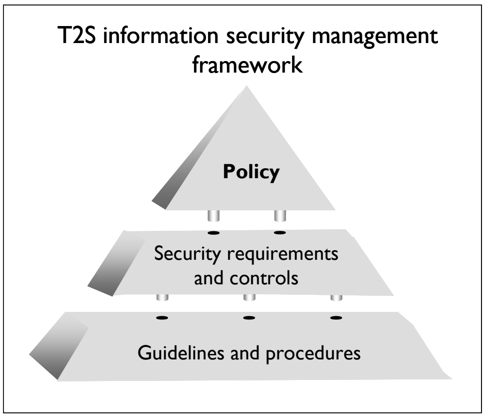
The main objective of Information Security is to protect T2S information from a wide range of threats and to minimise the impact of any threats on the continuity of T2S operations, which, despite all measures taken, do materialise. In particular, T2S Information Security aims at avoiding any propagation of Information Security incidents, whether caused endogenously in T2S or by a T2S Actor, to other T2S Actors.

Any non-compliance with the security objectives defined in the present policy note may have serious business, financial and/or reputational consequences for the Eurosystem.

1 Information Security management

Information Security management shall mean the continuous process of identifying potential threats, verifying whether security controls are comprehensive and effective and minimising or addressing security risks in line with a pre-defined risk tolerance.

Security controls selected to reduce the risk situation must be understandable, effective and – beyond those that are imposed by Legal and Regulatory Requirements – appropriate from a cost-benefit perspective. In this respect the task of Information Security management is to find an adequate balance between expenditure on controls and the business harm likely to result from security failures.


T2S information security management framework
Policy
Security requirements and controls
Guidelines and procedures

Information Security is achieved by implementing suitable security controls. In this context it is important to note that Information Security is not only based on technical solutions. The organisational framework is equally important.

In order to meet these basic principles a comprehensive T2S Information Security management framework has been developed. This framework has a hierarchical, three-layer structure ranging from a high-level policy to operational procedures. The first layer comprises an Information Security policy for T2S (i.e. the present document, in the following referred to as *'the policy')*, which embraces at a generic level the security principles and further relevant aspects related to Information Security management. In the second layer, the T2S Security Requirements and Controls are specified. In the third layer, the T2S Information Security Management Manual describes in detail the Information Security management processes.

2 Purpose of the T2S Information Security policy

The policy[1] represents the first layer of a comprehensive T2S Information Security management framework. It is a high-level document embracing, at a generic level, a definition of the scope of T2S, the security policy principles, allocation of responsibilities and other relevant aspects related to Information Security in the T2S environment.

By approving the policy, the Eurosystem, in its role as owner of T2S, sets a clear direction and demonstrates its support for and commitment to Information Security. Moreover, the importance and value of T2S and its processing resources, both human and technical, are being acknowledged.

3 Objective

The main objective of Information Security is to protect T2S business processes and its information from a wide range of threats, whether internal or external, deliberate or accidental, and to minimise the impact on the continuity of T2S business of any threats that, despite all measures taken, do materialise.

ISO 27001 defines Information Security as "preservation of confidentiality, integrity and availability of information; in addition, other properties such as authenticity, accountability, non-repudiation and reliability can also be involved".

[1] The policy for T2S takes into account the "Recommendations for securities settlement systems" (Recommendation XI) published by the Committee on Payment and Settlement Systems and the Technical Committee of the International Organization of Securities Commissions in November 2001, the ISO/IEC standard 27002:2005 and the ESCB information systems security policy .

The terms Confidentiality, Integrity and Availability are then further specified as follows:[2]

- Confidentiality: the property that the asset information is not made available or disclosed to unauthorized individuals, entities, or processes;
- Integrity: the property of safeguarding the accuracy and completeness of information assets;
- Availability: the property of the asset information being accessible and usable upon demand by an authorized individual, entity, or process.

Any non-compliance with these objectives might prevent the Eurosystem from meeting its statutory business goals and/or have serious financial and/or reputational consequences. Through its direct cross-system relationship with RTGS systems and collateral management systems, a T2S security failure might, in the worst case, even have systemic risk implications at a global scale.

In order to meet the key objectives an effective Information Security management framework shall be in place.

4 Scope of the T2S Information Security policy

The scope of this policy comprises all assets (including human resources) needed to develop, implement, maintain and operate T2S. T2S can in principle be subdivided into the following three main layers:

1. The *infrastructure* layer, consisting of all hardware components (including interfaces), required for the development, implementation, maintenance and operation of T2S, even if these components are used, in whole or in part, for the provision of IT services outside the T2S context.[3]
2. The *application* layer consisting of all software components necessary to develop, implement, maintain and operate T2S. The software component essentially consists of “the” T2S application, which is subdivided into six functional domains: Interface, Static Data Management, Settlement, Life Cycle Management and Matching, Liquidity Management and, SQRA[4].

[2] Definitions based on ISO/IEC standard 27001:2005.

[3] It is important to note that, in accordance with the ECB Governing Council’s decision of 8 March 2007, “*the T2S service will be developed internally within the Eurosystem and operated on the TARGET2 platform in order to exploit synergies with TARGET2 to the fullest extent*”. Because of this so-called “T2S on TARGET2” concept T2S infrastructure assets will exploit full benefits from the information security features already in place for TARGET2.

[4] Statistics, Queries, Reports and legal Archiving

3. The *data* layer consisting of all configuration data, as well as Static and Transactional Data necessary to run T2S.

4. The *operational* layer, consisting of all procedures to be applied by and between all relevant stakeholders in order to run and complete the T2S business day in a sound and safe manner.

The smooth operation of T2S as a whole relies to some extent on secure and resilient services provided by entities which are outside the T2S boundaries. These are:

- Central Securities Depositories (CSDs).
- Central Banks allowing their currency to be settled in T2S (through the connection with their RTGS and, where relevant, collateral management systems);
- Third Party service providers (such as Network Service Providers), although the agreements between the Eurosystem and Third Party service providers are subject to the requirements specified in section 5.2.3 of Annex 2 to Schedule 10 (Information Security);

The ultimate responsibility to apply this policy to all T2S assets rests with the Eurosystem (as defined in chapter 6.1). For the assets under the control of external stakeholders (as defined in chapter 6.2) specific arrangements apply, which are established, implemented and maintained under their full responsibility (without prejudice to any minimum requirements agreed between these external stakeholders and the Eurosystem.

5 Management domains of Information Security

In the following sections the management domains of Information Security are presented. These represent at a high level the security requirements that shall be implemented in T2S in order to preserve confidentiality, integrity and availability.[5] The specific control objectives and the security controls that shall be implemented to meet these objectives are specified in the "T2S Security Requirements and Controls" document (Annex 2 of Schedule 10).

5.1 Organization of Information Security

In order to ensure that Information Security is adequately managed an organisational framework shall be established to address Information Security related issues in a comprehensive and effective manner.

[5] They are aligned with the high-level security requirements defined in the T2S user requirements (Chapter 18) approved by the Governing Council in July 2008.

5.2 Asset management

All T2S information assets shall be identified, classified and prioritised in order to indicate the required level of protection. The responsibilities for maintaining these assets shall be clearly assigned to ensure that information assets receive an appropriate level of protection.

5.3 Human resources security

Personnel (including external party staff) shall be informed about their Information Security responsibilities, made aware about security rules and procedures and their obligation to adhere to them.

5.4 Physical and environmental security

Critical and sensitive information processing facilities shall be housed in secure areas physically protected to prevent unauthorised access to business premises, damage or compromise of information assets, interruption to business activities and theft.

5.5 Communications and operations management

Responsibilities shall be clearly allocated and procedures for the management and operation of T2S information processing facilities established in order to ensure the correct and secure operation.

5.6 Access control

Information shall be protected against unauthorised access. Access to information, information processing facilities and business processes shall be granted and controlled on the basis of business and security requirements according to the “business-need-to-know” principle.

5.7 Information systems acquisition, development and maintenance

Security requirements shall be identified and agreed prior to the development of or changes to T2S. Adequate security controls shall be in place to prevent loss, modification or misuse of information in applications systems.

5.8 Information Security incident management

Effective Information Security incident management procedures shall be in place to ensure that security events and weaknesses associated with T2S are communicated in a manner allowing timely corrective actions to be taken.

5.9 Business continuity management

A business continuity management programme shall be implemented to ensure that necessary steps are taken to identify the potential impact of security failures on the business, maintain viable recovery strategies and plans, and ensure continuity of services through training, exercising, maintenance and review.

5.10 Compliance

All relevant statutory, regulatory and contractual requirements applicable to the T2S shall be identified, documented and compliance with these arrangements shall be checked in order to avoid a breach of any criminal or civil law.

CSDs outsource a critical part of their business operations to T2S. Hence it shall be ensured that, without prejudice to any internationally recognised standards and regulations (e.g. CPSS/IOSCO), T2S is operated in compliance with the jurisdiction of the countries where the CSDs are located.

Tools and measures to ensure auditability shall be implemented.

6 Responsibilities for Information Security management in T2S

Information Security management is a key element of any sound governance structure. ,

The common governance structure of T2S comprises a number of different stakeholders whose roles and responsibilities with respect to Information Security are outlined in the following. In this regard, these stakeholders are either the Eurosystem or external entities (namely, the Central banks, the Central Securities Depositaries, and Third Party service providers).

6.1 The Eurosystem

6.1.1 Governing Council of the ECB

The TS2 platform is fully owned and operated by the Eurosystem [see T2S user requirements - Principle 1]. The Eurosystem is responsible for safeguarding the public function of T2S and has consequently the ultimate responsibility for deciding on the general security policy and framework for T2S Information Security management (in accordance with the User Requirements), and the definition of the risk tolerance.

In accordance with ISO 27002, the term ‘asset owner’ identifies an individual or entity that has approved management responsibility for controlling the production, development, maintenance, use and security of the assets.[6] Consequently, and without prejudice to the provisions of section 4.3 of Schedule 10 (Information Security), the Eurosystem is also responsible for defining and implementing an effective organisational framework to address Information Security issues, and for the acceptance of remaining risks. Furthermore it is responsible for verifying that all requirements specified in the Information Security policy for T2S are fulfilled in T2S.

6.2 External stakeholders

6.2.1 Central Banks

Central Banks operating national infrastructure used as interface to the T2S and providers of cash accounts are directly responsible for ensuring that Information Security is properly addressed, security controls are effective, and their personnel adhere to their internal security rules and procedures.

6.2.2 Central Securities Depositories (CSDs)

From an Information Security perspective the roles and responsibilities of CSDs are twofold.

First, an operational failure at a CSD could have a significant adverse effect on the smooth functioning of T2S. Consequently it shall be the responsibility of the CSD to ensure that their internal systems (incl. interfaces) are operated with a high degree of security and operational reliability. The relevant provisions must be addressed in the corresponding Service Level Agreement (SLA).

[6] The term ’owner’ does not mean that the person actually has any property rights to the asset, but refers rather to “stewardship” or “custody” of assets, in particular for data.

Second, CSDs are subject to a regulatory framework. In this respect CDSs shall seek assurance that T2S is providing settlement services in a secure and robust manner in compliance with applicable regulatory arrangements. To the extent that an evolution in regulatory arrangements has an impact on the T2S Platform, on the T2S Scope Defining Set of Documents, or on the T2S Specifications, these should be managed through the Change Management procedure laid down in Schedule 9.

6.2.3 Third Party service providers

Bound by contract Third Party service providers shall implement appropriate measures designed to protect against risks that could potentially result in substantial harm in terms of confidentiality, integrity and availability to any T2S Services. The relevant provisions must be addressed in the contract.

FRAMEWORK AGREEMENT

ANNEX 2 TO SCHEDULE 10

SECURITY REQUIREMENTS AND CONTROLS

Table of Contents

1 Introduction

The purpose of the T2S security requirements and controls (T2SSRC) is to specify the security requirements for TARGET2 Securities (T2S) as laid down in the information security policy for T2S.

The T2SSRC are derived from the Information security policy for T2S and represent the *second layer* of the comprehensive T2S risk management framework depicted in the following exhibit.

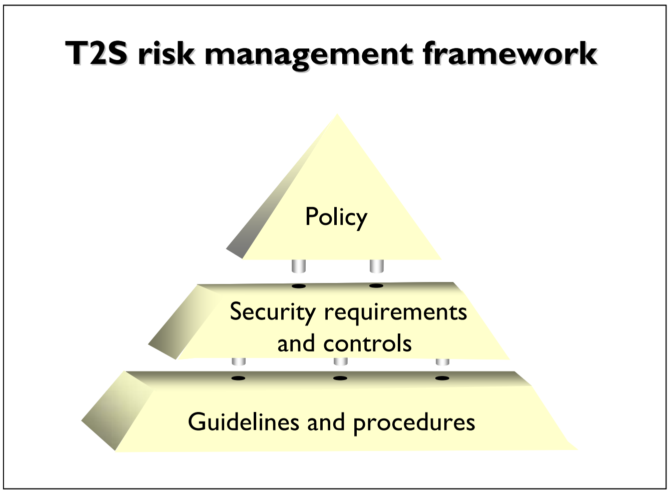

T2S risk management framework
Policy
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Exhibit 1: T2S risk management framework

As a general rule, the implementation of the security controls specified in this document is mandatory[1]. However, it might be that due to specific technical and/or environmental circumstances (e. g. contradicting national legislation) the application of a particular security control is not feasible. If this was the case, it will have to be justified in the context of the security assessment, more specifically when the compliance of T2S with the T2SSRC is checked, why it is not possible to implement this particular security control. The associated residual risk must then be accepted.

In addition to the requirements specified in the present document, good information systems security measures and routines corresponding to best practice (such as ISF, NIST, SANS, the German BSI) should be applied.

All security requirements and controls included in this document are specified from a business perspective and have to be implemented by the service provider (4CB) responsible for designing, building and operating T2S.

[1] In the following document the words 'must' and 'should' are used for better readability but have the same meaning in the sense as being mandatory.

2 Terms and definitions

2.1 Terms

For the purpose of this document, the terms listed in the following table have the meaning as specified in that table. If this document is part of a set of documents, the same terms have the meaning as specified in such other documents. Conversely, the definition of these terms in such other documents does – for the purpose of this document – not affect their meaning as specified in the following table.

Term	Definition
Asset	Anything that has a value to the organisation, like for instance **information** (e.g. databases, data files), **software** (e.g. system software, application software), **physical assets** (e.g. processors, tapes, power supply), **services** (e.g. computing services, heating, air-conditioning) and **people** (e.g. users, consultants).
Business transaction	All types settlement instructions, settlement restrictions and maintenance instructions as well as liquidity transfers processed by T2S.
Customer	Customer is defined as any entity that has a business relationship with the Eurosystem under the Framework Agreement or under the Currency Participation Agreement.

Term	Definition
Disaster [Major operational disruption]	A high-impact disruption of normal business operations affecting a large metropolitan or geographic area and the adjacent communities that are economically integrated with it. In addition to impeding the normal operation of financial industry participants and other commercial organisations, major operational disruptions typically affect the physical infrastructure. Disasters (Major operational disruptions) can result from a wide range of events, such as earthquakes, hurricanes and other weather-related events, biological incidents (e.g. epidemics), terrorist attacks, and other intentional or accidental acts that cause widespread damage to the physical infrastructure. The most significant in terms of their impact are referred to as extreme events, which typically cause the destruction of, or severe damage to, physical infrastructure and facilities, the loss or inaccessibility of personnel, and restricted access to the affected area. [Taken from the BIS “High level principles for business continuity” published in August 2006]
External Party	Any entity different from the Eurosystem (including the Central Banks it is composed of) and its Contractual Parties under the Framework Agreement or the Currency Participation Agreement
Impact	The result of an unwanted incident.
Impact analysis	The process of identifying the threats to the assets and the impact such threats could have, if the threat resulted in a genuine incident. Such analysis should quantify the value of the assets being protected to decide on the appropriate level of safeguards.
Information	The meaning that is currently assigned to data by means of the conventions applied to those data.
Information processing facilities	Any information processing system, service or infrastructure, or the physical locations housing them [ISO/IEC 27002:2005].

Term	Definition
Information security	Preservation of confidentiality, integrity and availability of information; in addition, other properties, such as authenticity, accountability, non-repudiation, and reliability can also be involved [ISO/IEC 27002:2005].
Information security event	An information security event is an identified occurrence of a system, service or network state indicating a possible breach of information security policy or failure of safeguards, or a previously unknown situation that may be security relevant [ISO/IEC TR 18044:2004].
Information security incident	An information security incident is indicated by a single or a series of unwanted or unexpected information security events that have a significant probability of compromising business operations and threatening information security [ISO/IEC TR 18044:2004].
Inherent risk	The risk before risk treatment.
Policy	Overall intention and direction as formally expressed by management.
Recovery	Recovery (or recover) refers to the restoration of the processing service and settlement activities after a disruption including the processing of pending payment transactions.
Residual risk	The risk remaining after risk treatment.
Risk	Combination of the probability of an event and its consequence [ISO Guide 73:2002]. In other words, the potential that a given threat will exploit vulnerabilities of an asset or group of assets to cause loss of or damage to the assets.
Risk analysis	Systematic use of information to identify sources and to estimate the risk [ISO Guide 73:2002].
Risk assessment	The overall process of risk analysis and risk evaluation [ISO Guide 73:2002].
Risk evaluation	The process of comparing the estimated risk against given risk criteria to determine the significance of the risk [ISO Guide 73:2002].

Term	Definition
Risk management	Coordinated activities to direct and control an organization with regard to risk. [ISO Guide 73:2002]. **Risk management** is the ongoing process of **risk assessment** (evaluation of the impact or system criticality, and the likelihood of loss/damage occurring) leading to the definition of security requirements and the **additional mitigation (**by safeguards**) and/or acceptance of remaining risks.**
Risk treatment	The process of selection and implementation of measures to modify risk [ISO Guide 73:2002].
Risk Profile	Having a different risk profile shall mean that the *alternate site* must be sufficiently remote from, and does not depend on the same *physical infrastructure* components as the primary business location. This minimises the risk that both could be affected by the same event. For example, the *alternate site* should be on a different power grid and central telecommunication circuit from the primary business location. [Derived from the BIS "High level principles for business continuity" published in August 2006]
Security assessment	A documented process reflecting the risk management procedure and presenting prevailing status of risks in relation to the security requirements, i.e. remaining risks for the security aspects such as: availability, integrity, confidentiality, authentication, authorisation, auditability and non-repudiation.
Security control	Means of managing risk, including policies, procedures, guidelines, practices or organizational structures, which can be of administrative, technical, management, or legal nature **NOTE**: Security control is also used as a synonym for control, safeguard (measure), or countermeasure.
Security requirements	The types and levels of protection necessary to meet the security of the assets. The security requirements result from the security risks and are addressed by implementing suitable security controls.

Term	Definition
Security risk	The potential that a given threat will exploit vulnerabilities of an asset or group of assets to cause loss of or damage to the assets.
Senior management	This is the highest decision making body of the service providing organisation (4CB).
Service	The term “Service” refers to all the T2S services as defined in the T2S Service Description document.
Service providing organisation	This term refers to all parts of the service provider’s (4CB) organisation that are involved in the T2S activities (design, build, test, operate, maintain, support T2S).
Service perimeter	This encompasses all infrastructural and technical components, business/ organisational procedures and rules, human resources that are used to provide the T2S service.
Third party	A company or individual recognized as being independent of the Contractual Parties, and that provides services generally covered by a Service Level Agreement.
Threat	A potential cause of an unwanted incident, which may result in harm to a system or organization [ISO/IEC 13335-1:2004]
User	A user is an individual that can log into the service with a login name and requests or uses the services provided. As this document only applies to internal stakeholders (see T2S Information Security Policy), this term only refers to those users designing, building, testing (internal), operating (business and technical), maintaining and supporting (business and technical) T2S.
Vulnerability	A weakness of an asset or group of assets that can be exploited by a threat [ISO/IEC 13335-1:2004]

28 2.2 Definitions

29 Specific values defined for T2S are listed in the following table:

Value Name	Description	Value	Referencing Control
Policy Review Interval	The planned interval for reviewing the Information Security Policy.	Three years	4.1.2
Confidentiality Agreement Review Interval	The planned interval for reviewing confidentiality agreements.	Three years	5.1.4
Independent Security Review Interval	The planned interval for an independent review of the approach to managing information security and its implementation.	Three years	5.1.7
Physical Entry Controls Review Interval	The planned interval for reviewing physical entry controls.	Three months	8.1.2
Support Utilities Review Interval	The planned interval for reviewing support utilities.	Six months	8.2.2
Restoration Check Interval	The planned interval for checking the system restoration from backup.	One year	9.5.1
Distribution List Review Interval	The planned interval for the review of distribution list recipients.	Six months	9.7.3
Audit Logging Period	The period for keeping technical audit logs of the service.	Two years	9.10.1
Privileged Activities Review Interval	The planned interval for reviewing privileged activities on the service.	One business day	9.10.2
Administrator Log Review Interval	The planned interval for reviewing system administrator and operator logs.	One week	9.10.4
User Access Control Policy Review Interval	The planned interval for reviewing the User Access Control Policy.	Three years	10.1.1

User Access Rights Review Interval	The planned interval for reviewing the user access rights.	Six months	10.2.4
Privileged User Access Rights Review Interval	The planned interval for reviewing the privileged user access rights.	Three months	10.2.4
Privileged Account Changes Logging Period	The period for keeping audit logs of changes to privileged accounts.	One year	10.2.4
Minimum Password Length	The minimum length for user passwords.	Eight characters	10.3.1
Password Expiry Period	The expiry period for passwords after which a change is required.	Sixty days	10.3.1
Maximum Logon Attempts	The maximum number of failed logon attempts for a user before the account is disabled.	Three attempts	10.3.1
Remote Connections Idle Interval	The idle time after which a re-authentication of a remotely connected user is required.	10 minutes	10.4.2
Period for Keeping Previous Passwords	The period to keep previously used passwords to prevent reuse.	One year	10.5.3
Session Time-out	The period of inactivity before a user session is closed.	15 minutes	10.5.5
Information Access Restriction Review Interval	The planned interval for the review of the service’s output to remove redundant information.	Three years	10.6.1
Business Continuity Test Interval	The planned interval for testing business continuity.	Six months	13.1.5
Business Continuity Review Interval	The planned interval for reviewing the business continuity plan.	Six months	13.1.5
Compliance Review Interval	The planned interval for a full compliance review of the service with security policies and requirements.	Three years	14.2.1

Technical Compliance Check Interval	The planned interval for checking the technical compliance of the platform.	One year	14.2.2

3 Structure of the security requirements and controls

The document consists of 11 *Information Security Management Domains* which mainly serve the purpose of structuring the broad field of information security. On a second layer the *Security Requirements* specifying the objectives that should be achieved are defined. Finally on a third layer the (benchmark) *Security Controls* are specified.

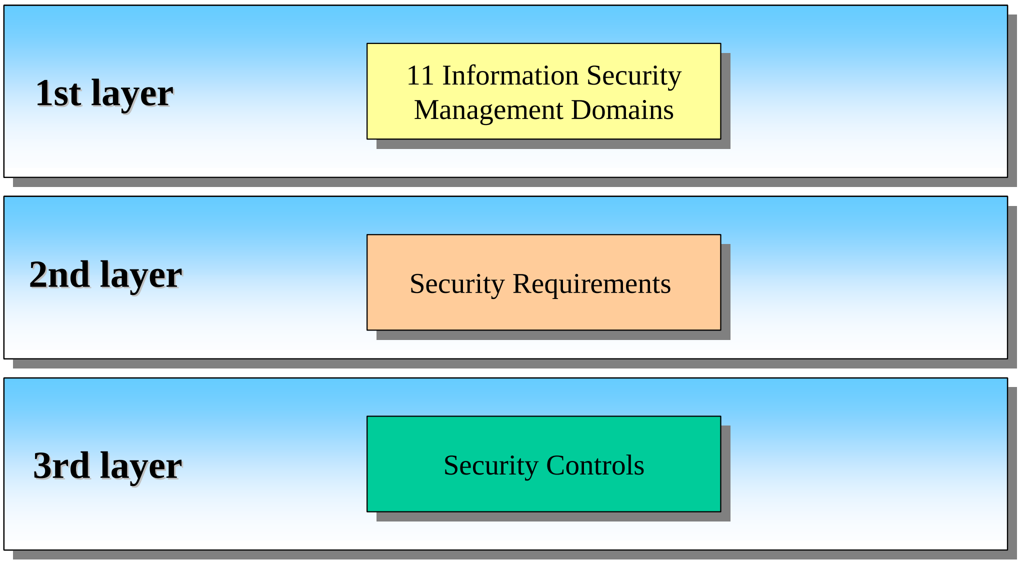

Exhibit 2: Structure of the security requirements and controls

The eleven information security management domains are listed in the following (the number in brackets indicates the number of main security requirements included within each clause):

a) Security Policy (1) – see chapter 4;

b) Organising Information Security (2) – see chapter 5;

c) Asset Management (2) – see chapter 6;

d) Human Resources Security (3) – see chapter 7;

e) Physical and Environmental Security (2) – see chapter 8;

f) Communications and Operations Management (10) – see chapter 9;

g) Access Control (7) – see chapter 10;

h) Information Systems Acquisition, Development and Maintenance (6) – see chapter 11;

i) Information Security Incident Management (2) – see chapter 12;

j) Business Continuity Management (1) – see chapter 13;

k) Compliance (3) – see chapter 14.

Note: The order of the clauses does not imply their importance.

Under each information security management domain the security requirements are specified. Each requirement section contains:

a) a control objective stating what is to be achieved, i.e. the actual security requirement; and

b) one or more security controls that should be implemented to meet the security requirements.

The security controls are the processes and measures that should be implemented within the service perimeter to meet the security requirements.

4 Security policy

4.1 Information security policy

Objective: To provide management direction and support for information security in accordance with business requirements and relevant laws and regulations.

4.1.1 Information security policy document

Control: An information security policy document[2] must be approved, by senior management published and communicated to all relevant parties (including users and external parties).

The senior management must be named in the information security policy document. The policy document must state the commitment to information security and set out the approach to managing information security. It must contain statements concerning:

[2] This refers to a specific information security policy defined by the Service providing organisation

a) a definition of information security, its overall objectives and scope and the importance of information security;

b) a statement of management intent, supporting the goals and principles of information security in line with the business strategy and objectives;

c) a framework for setting control objectives and controls, including the structure of risk assessment and risk management;

d) a brief explanation of the security policies, principles, and compliance requirements including:

1) compliance with legislative, regulatory, and contractual requirements;

2) security education, training, and awareness requirements;

3) business continuity management;

4) consequences of information security policy violations;

e) a definition of responsibilities for information security management, including reporting information security incidents;

f) references to documentation which may support the policy, e.g. more detailed security policies and procedures for specific information systems or security rules that users should comply with.

This information security policy must be communicated to all users in a form that is accessible and understandable to the intended reader.

4.1.2 Review of the information security policy

Control: The information security policy must be reviewed at planned intervals and/or when significant changes occur to ensure its continuing suitability, adequacy, and effectiveness.

The information security policy must have an owner who has approved management responsibility for the development, review, and evaluation of the information security policy.

The review of the information security policy must take account of the results of other management processes, like for instance change and incident management. The information security policy must be reviewed at planned intervals (*Policy Review Interval*) and/or when significant changes occur.

The input to the review of the information security policy should include information on:

a) feedback from interested parties;

b) results of independent reviews;

c) status of preventive and corrective actions;

d) results of previous management reviews;

e) process performance and information security policy compliance;

f) changes that could affect the approach to managing information security, including changes to the organisational environment, business circumstances, resource availability, contractual, regulatory, and legal conditions, or to the technical environment;

g) trends related to threats and vulnerabilities;

h) reported information security incidents;

i) recommendations provided by relevant authorities.

The output from the review must include any decisions and actions related to:

a) improvement of the approach to managing information security and its processes;

b) improvement of control objectives and controls;

c) improvement in the allocation of resources and/or responsibilities.

A record of the review must be maintained.

The approval for the revised policy must be obtained from the senior management.

5 Organising information security

5.1 Internal organisation

Objective: To manage information security effectively.

A management framework must be established to initiate and control the implementation of information security.

The senior management must approve the information security policy, assign security roles and co-ordinate and review the implementation of security.

5.1.1 Management commitment to information security

Control: The senior management must actively and visibly support security through clear direction, demonstrated commitment, explicit assignment of roles and responsibilities, and acknowledgment of information security responsibilities.

The senior management must:

a) ensure that information security goals are identified, meet the organisational requirements, and are integrated in relevant processes;

b) formulate, review, and approve an information security policy;

c) review the effectiveness of the implementation of the information security policy;

d) provide clear direction and visible management support for security initiatives;

e) provide the resources needed for information security;

f) approve assignment of specific roles and responsibilities for information security;

g) initiate plans and programs to maintain information security awareness;

h) ensure that the implementation of information security controls is co-ordinated.

The needs for internal or external specialist information security advice must be identified, and results of the advice must be reviewed and coordinated throughout the service perimeter.

5.1.2 Information security co-ordination

Control: Information security activities must be co-ordinated by representatives from different parts within the service perimeter with relevant roles and job functions.

Typically, information security co-ordination should involve the co-operation and collaboration of managers, users, administrators, application designers, auditors and security personnel, and specialist skills in areas such as insurance, legal issues, human resources, IT or risk management. This activity must:

a) ensure that security activities are executed in compliance with the information security policy;

b) identify how to handle non-compliances;

c) approve methodologies and processes for information security, e.g. risk assessment, information classification;

d) identify significant threat changes and exposure of information and information processing facilities to threats;

e) assess the adequacy and co-ordinate the implementation of information security controls;

f) effectively promote information security education, training and awareness;

g) evaluate information received from the monitoring and reviewing of information security incidents, and recommend actions in response to identified information security incidents.

5.1.3 Allocation of information security responsibilities

Control: All information security responsibilities must be clearly defined.

Allocation of information security responsibilities must be done in accordance with the information security policy (see clause 4). Responsibilities for the protection of individual assets and for carrying out specific security processes must be clearly identified. This responsibility must be supplemented, where necessary, with more detailed guidance for specific sites and information processing facilities.

The senior management may delegate security tasks to others. Nevertheless senior management remains responsible and must determine that any delegated tasks have been correctly performed.

Areas for which individuals are responsible must be clearly stated; in particular the following must take place:

a) the assets and security processes associated with each particular system must be identified and clearly defined;

b) the entity responsible for each asset or security process must be assigned and the details of this responsibility must be documented;

c) authorisation levels must be clearly defined and documented.

The allocation of roles and responsibilities in the risk management process are described in the risk management manual.

5.1.4 Confidentiality agreements

Control: Requirements for confidentiality or non-disclosure agreements for the protection of information must be identified and regularly reviewed at planned intervals.

Confidentiality or non-disclosure agreements must address the requirement to protect confidential information using legally enforceable terms. To identify requirements for confidentiality or non-disclosure agreements, the following elements must be implemented:

a) a definition of the information to be protected (e.g. confidential information);

b) expected duration of an agreement, including cases where confidentiality might need to be maintained indefinitely;

c) required actions when an agreement is terminated;

d) responsibilities and actions of signatories to avoid unauthorised information disclosure (such as ‘need to know’);

e) ownership of information and intellectual property, and how this relates to the protection of confidential information;

f) the permitted use of confidential information, and rights of the signatory to use information;

g) the right to audit and monitor activities that involve confidential information;

h) process for notification and reporting of unauthorised disclosure or confidential information breaches;

i) terms for information to be returned or destroyed at agreement cessation; and

j) expected actions to be taken in case of a breach of this agreement.

Confidentiality and non-disclosure agreements must comply with all applicable laws and regulations for the jurisdiction to which it applies.

Requirements for confidentiality and non-disclosure agreements must be regularly reviewed at planned intervals (*Confidentiality Agreement Review Interval*) and/or when changes occur that influence these requirements.

5.1.5 Contact with authorities

Control: Contacts with relevant authorities must be maintained.

Procedures must be in place that specify who (e.g. law enforcement, fire department, supervisory authorities) and when and by whom authorities should be contacted. Procedures must also be in place depicting how identified information security incidents should be reported in a timely manner if it is suspected that laws may have been broken.

5.1.6 Contact with special interest groups

Control: Contacts with special interest groups or other specialist security forums and professional associations must be maintained in order to ensure that:

a) knowledge about best practices is improved and to stay up to date with relevant security information;

b) the understanding of the information security environment is current and complete;

c) early warnings of alerts, advisories, and patches pertaining to attacks and vulnerabilities are received;

d) access to specialist information security advice is gained;

e) information about new technologies, products, threats, or vulnerabilities is shared and exchanged;

f) suitable liaison points when dealing with information security incidents are provided.

5.1.7 Independent review of information security

Control: The approach to managing information security and its implementation (i.e. control objectives, controls, policies, processes, and procedures for information security) must be reviewed independently by recognised experts at planned intervals, and/or when significant changes to the security implementation occur.

Such an independent review[3] is necessary to ensure the continuing suitability, adequacy, and effectiveness to managing information security.

Information security review activities are carried out at planned intervals (*Independent Security Review Interval*) and/or when significant changes to the security implementation occur by individuals independent of the area under review, e.g. the T2S Board, internal audit function, an independent manager or a third party organisation specialising in such reviews. Individuals carrying out these reviews must have the appropriate skills and experience.

The results of the independent review are recorded and reported to the T2S Board. These records must be maintained.

If the independent review identifies that the approach and implementation to managing information security is inadequate or not compliant with the direction for information security stated in the information security policy document, the senior management will be informed and should consider corrective actions.

5.1.8 Authorisation process for information processing facilities

Control: A management authorisation process shall be defined and implemented.

This control is not applicable for the time being, as all changes are covered by the change management process.

[3] This independent review is usually triggered by the Level 2 Governance.

5.2 External parties

Objective: To maintain the security of the service's information and information processing facilities that are accessed, processed, communicated to, or managed by external parties.

The security of the service's information and information processing facilities must not be reduced by the introduction of external party products or services.

Any access to the service's information processing facilities and processing and communication of information by external parties must be controlled. Where there is a business need for working with external parties that may require access to the service's information and information processing facilities, or in obtaining or providing a product and service from or to an external party, a risk assessment must be carried out to determine security implications and control requirements. Controls must be agreed and defined in an agreement with the external party.

5.2.1 Identification of risks related to external parties

Control: The risks to the service's information and information processing facilities from business processes involving external parties must be identified and controls implemented before granting access.

Where there is a need to allow an external party access to the information processing facilities or information, a risk assessment must be carried out to identify any requirements for specific controls. The identification of risks related to external party access must take into account the following issues:

a) the information processing facilities an external party is required to access;

b) the type of access the external party will have to the information and information processing facilities, e.g.:

   1) physical access, e.g. to offices, computer rooms, filing cabinets;

   2) logical access, e.g. to databases, information systems;

   3) network connectivity between the service and the external party's network(s), e.g. permanent connection, remote access;

   4) whether the access is taking place on-site or off-site;

c) the value and the classification level of the information involved, and its criticality for business operations;

d) the controls necessary to protect information that is not intended to be accessible by external parties;

e) the external party personnel involved in handling the service's information;

f) how the personnel authorised to have access can be identified, the authorisation verified, and how often this needs to be reconfirmed;

g) the different means and controls employed by the external party when storing, processing, communicating, sharing and exchanging information;

h) the impact of access not being available to the external party when required, and the impact of the external party entering or receiving inaccurate or misleading information;

i) practices and procedures dealing with information security incidents and potential damages, and the terms and conditions for the continuation of external party access in the case of an information security incident;

j) legal and regulatory requirements and other contractual obligations relevant to the external party that should be taken into account.

Access by external parties to the service's information must not be provided until the controls have been implemented and, where feasible, a contract has been signed defining the terms and conditions for the connection or access and the working arrangement. Generally, all security requirements resulting from work with external parties or internal controls should be reflected by the agreement with the external party.

It must be ensured that the external party is aware of their obligations, and accepts the responsibilities and liabilities involved in accessing, processing, communicating, or managing the service's information and information processing facilities.

The controls 5.2.2 and 5.2.3 cover different external party arrangements, e.g. including:

a) service providers, such as ISPs, network providers, telephone services, maintenance and support services;

b) managed security services;

c) customers;

d) outsourcing of facilities and/or operations, e.g. IT systems, data collection services, call centre operations;

e) management and business consultants, and auditors;

f) developers and suppliers, e.g. of software products and IT systems;

g) cleaning, catering, and other outsourced support services;

h) temporary personnel, student placement, and other casual short-term appointments.

5.2.2 Addressing security when dealing with the customer

Control: All identified security requirements must be addressed using a defined process with documented results, before giving customers access to the service's information or assets.

The following terms must be implemented to address security prior to giving customers access to any of the assets (depending on the type and extent of access given, not all of them might apply):

a) the product or service to be provided;

b) a description of each service to be made available;

c) the target level of service and unacceptable levels of service;

d) the respective liabilities of the service providing organisation and the customer;

e) responsibilities with respect to legal matters and how it is ensured that the legal requirements are met, e.g. data protection legislation, especially taking into account different national legal systems if the agreement involves co-operation with customers in other countries.

5.2.3 Addressing security in third party agreements

Control: Agreements with third parties involving accessing, processing, communicating or managing the service's information or information processing facilities, or adding products or services to information processing facilities must cover all relevant security requirements.

The following terms should be included in the agreement in order to satisfy the identified security requirements:

a) The information security policy;

b) controls to ensure asset protection, including:

1. procedures to protect assets, including information, software and hardware;
2. any required physical protection controls and mechanisms;
3. controls to ensure protection against malicious software;
4. procedures to determine whether any compromise of the assets, e.g. loss or modification of information, software and hardware, has occurred;
5. controls to ensure the return or destruction of information and assets at the end of, or at an agreed point in time during, the agreement;
6. confidentiality, integrity, availability, and any other property of the assets;

7. restrictions on copying and disclosing information, and using confidentiality agreements;

c) user training in methods, procedures, and security;

d) ensuring user awareness for information security responsibilities and issues;

e) provision for the transfer of personnel, where appropriate;

f) responsibilities regarding hardware and software installation and maintenance;

g) a clear reporting structure and agreed reporting formats;

h) a clear and specified process of change management;

i) access control policy, covering:

1. the different reasons, requirements, and benefits that make the access by the third party necessary;
2. permitted access methods, and the control and use of identifiers such as user IDs and passwords;
3. an authorisation process for user access and privileges;
4. a requirement to maintain a list of individuals authorised to use the services being made available, and what their rights and privileges are with respect to such use;
5. a statement that all access that is not explicitly authorised is forbidden;
6. a process for revoking access rights or interrupting the connection between systems;

j) arrangements for reporting, notification, and investigation of information security incidents and security breaches, as well as violations of the requirements stated in the agreement;

k) a description of the product or service to be provided, and a description of the information to be made available along with its security classification;

l) the target level of service and unacceptable levels of service;

m) the definition of verifiable performance criteria, their monitoring and reporting;

n) the right to monitor, and revoke, any activity related to the assets;

o) the right to audit responsibilities defined in the agreement, to have those audits carried out by a third party, and to enumerate the statutory rights of auditors;

p) the establishment of an escalation process for problem resolution;

q) service continuity requirements, including measures for availability and reliability, in accordance with business priorities;

r) the respective liabilities of the parties to the agreement;

s) responsibilities with respect to legal matters and how it is ensured that the legal requirements are met, e.g. data protection legislation, especially taking into account different national legal systems if the agreement involves co-operation with organisations in other countries;

t) intellectual property rights (IPRs) and copyright assignment and protection of any collaborative work;

u) involvement of the third party with subcontractors, and the security controls these subcontractors need to implement;

v) conditions for renegotiation/termination of agreements:

    1. a contingency plan must be in place in case either party wishes to terminate the relation before the end of the agreements;
    2. renegotiation of agreements if the security requirements change;
    3. change of current documentation of asset lists, licences, agreements or rights relating to them.

6 Asset management

6.1 Responsibility for assets

Objective: To achieve and maintain protection of assets.

All assets must be accounted for and have a nominated owner.

Owners must be identified for all assets and the responsibility for the maintenance of controls must be assigned. The implementation of specific controls may be delegated by the asset owner as appropriate but the owner remains responsible for the proper protection of the assets.

6.1.1 Inventory of assets

Control: All assets must be clearly identified and an inventory of all important (its business value and its security classification) assets drawn up and maintained. Regular audits of the asset inventory must be performed.

All assets must be identified and the importance of these assets must be documented. The asset inventory must include all information necessary in order to recover from a disaster, including type of asset, format, location, backup information, license information, and a business value. The inventory should not duplicate other inventories unnecessarily, but it should be ensured that the content is aligned.

However, in order to reduce the work associated with drawing up the inventory grouping of assets is allowed. Criteria for grouping are:

a) *similar assets;*

b) *similar security requirements;*

c) *assets are used in the same process and protection requirements are valid throughout;*

d) *assets can be considered as a unit.*

Based on the importance of the asset, its business value and its security classification, levels of protection commensurate with the importance of the assets must be identified and documented.

There are many types of assets, including:

a) information: databases and data files, contracts and agreements, system documentation, research information, user manuals, training material, operational or support procedures, business continuity plans, fallback arrangements, audit trails, and archived information;

b) software assets: application software, system software, development tools, and utilities;

c) physical assets: computer equipment, communications equipment, removable media, and other equipment;

d) services: computing and communications services, general utilities, e.g. heating, lighting, power, and air-conditioning;

e) people, and their qualifications, skills, and experience.

6.1.2 Ownership of assets

Control: All information and assets associated with information processing facilities must have for security purposes a designated asset owner[4].

The asset owner is responsible for:

a) ensuring that information and assets associated with information processing facilities are classified;

b) defining and periodically reviewing access restrictions and classifications, taking into account applicable access control policies.

6.1.3 Acceptable use of assets

Control: Rules for the acceptable use of information and assets associated with information processing facilities must be identified, documented, and implemented.

All employees, contractors and third party users must follow rules for the acceptable use of information and assets associated with information processing facilities, including:

a) rules for electronic mail and Internet usages;

b) guidelines for the use of mobile devices, especially for the use outside the premises;

Specific rules or guidance must be provided by the senior management. Employees, contractors and third party users using or having access to assets must be aware of the limits existing for their use of the information and assets associated with information processing facilities, and resources. They must be responsible for their use of any information processing resources and of any use carried out under their responsibility.

[4] The term ‘asset owner’ identifies an individual or entity that has approved management responsibility for controlling the production, development, maintenance, use and security of the assets. The term ’owner’ does not mean that the person actually has any property rights to the asset.

6.2 Information classification

Objective: To ensure that information receives an appropriate level of protection.

Information must be classified to indicate the need, priorities, and expected degree of protection when handling the information.

6.2.1 Classification guidelines

Control: Information must be classified in terms of criticality, value and sensitivity (level of confidentiality) taking legal requirements into account as well.

Classifications and associated protective controls for information must take account of business needs for sharing or restricting information and the business impacts associated with such needs.

Classification guidelines must include conventions for initial classification and reclassification over time; in accordance with some predetermined access control policy.

6.2.2 Information labelling and handling

Control: A set of procedures for information labelling and handling must be developed and implemented in accordance with the classification scheme[5] adopted by the service.

Procedures for information labelling need to cover information assets in physical and electronic formats.

Output from systems containing information that is classified as being sensitive or critical must carry a classification label (in the output). The labelling must reflect the classification according to the rules established in 6.2.1.

For each classification level, handling procedures including the secure processing, storage, transmission, declassification, and destruction must be defined. This should also include the procedures for chain of custody and logging of any security event.

Agreements with other organisations that include information sharing must include procedures to identify the classification of that information and to interpret the classification labels from other organisations.

[5] The ECB classification scheme should be used as reference document as long as a common ESCB scheme is not deployed.

7 Human resources security

7.1 Prior to employment[6]

Objective: To ensure that employees, contractors and third party users understand their responsibilities, and are suitable for the roles for which they are considered, and to reduce the risk of theft, fraud or misuse of facilities.

7.1.1 Roles and responsibilities

Control: Security roles and responsibilities of employees, contractors and third party users must be defined and documented in accordance with the information security policy.

Security roles and responsibilities must include the requirement to:

a) implement and act in accordance with the information security policies;

b) protect assets from unauthorised access, disclosure, modification, destruction or interference;

c) execute particular security processes or activities;

d) ensure responsibility is assigned to the individual for actions taken;

e) report security events, potential events or security risks.

Security roles and responsibilities must be defined and clearly communicated to job candidates during the pre-employment process.

7.1.2 Screening

Control: Background verification checks on all candidates for employment, contractors, and third party users must be carried out in accordance with relevant laws, regulations and ethics, and proportional to the business requirements, the classification of the information to be accessed, and the perceived risks.

Verification checks must take into account all relevant privacy, protection of personal data and/or employment based legislation, and should, where permitted, include the following:

a) availability of satisfactory character references, e.g. one business and one personal;

[6] Explanation: The word ’employment’ is meant here to cover all of the following different situations: employment of people, appointment of job roles, changing of job roles, assignment of contracts, and the termination of any of these arrangements.

b) a check (for completeness and accuracy) of the applicant’s curriculum vitae;

c) confirmation of claimed academic and professional qualifications;

d) independent identity check (passport or similar document);

e) more detailed checks, such as credit checks or checks of criminal records.

Procedures must define criteria and limitations for verification checks, e.g. who is eligible to screen people, and how, when and why verification checks are carried out.

A screening process must also be carried out for contractors, and third party users. Where contractors are provided through an agency the contract with the agency must clearly specify the agency’s responsibilities for screening and the notification procedures they need to follow if screening has not been completed or if the results give cause for doubt or concern. In the same way, the agreement with the third party must clearly specify all responsibilities and notification procedures for screening.

Information on all candidates being considered for positions within the organisation must be collected and handled in accordance with any applicable legislation existing in the relevant jurisdiction. Depending on applicable legislation, the candidates should be informed beforehand about the screening activities.

7.1.3 Terms and conditions of employment

Control: As part of their contractual obligation, employees, contractors and third party users must agree and sign the terms and conditions of their employment contract, which must state the responsibilities of both sides concerning information security. Terms and conditions must be in accordance with any applicable legislation existing in the relevant jurisdiction.

The terms and conditions of employment must reflect the security policy in addition to clarifying and stating:

a) that all employees, contractors and third party users who are given access to sensitive information must sign a confidentiality or non-disclosure agreement prior to being given access to information processing facilities;

b) the employee’s, contractor’s and third party user’s legal responsibilities and rights, e.g. regarding copyright laws, data protection legislation;

c) responsibilities for the classification of information and management of assets associated with information systems and services handled by the employee, contractor or third party user;

d) responsibilities of the employee, contractor or third party user for the handling of information received from other companies or external parties;

e) responsibilities for the handling of personal information, including personal information created as a result of, or in the course of, employment with the respective central bank;

f) responsibilities that are extended outside the hosting premises and outside normal working hours, e.g. in the case of home-working;

g) actions to be taken if the employee, contractor or third party user disregards the security requirements.

It must be ensured that employees, contractors and third party users agree to terms and conditions concerning information security appropriate to the nature and extent of access they will have to the assets associated with information systems and services.

Where appropriate, responsibilities contained within the terms and conditions of employment should continue for a defined period after the end of the employment.

7.2 During employment

Objective: To ensure that all employees, contractors and third party users are aware of information security threats and concerns, their responsibilities and liabilities, and are equipped to support the information security policy in the course of their normal work, and to reduce the risk of human error.

7.2.1 Management responsibilities

Control: Management must require employees, contractors and third party users to apply security in accordance with established policies and procedures of the service providing organisation.

Management responsibilities must include ensuring that employees, contractors and third party users:

a) are properly briefed on their information security roles and responsibilities prior to being granted access to sensitive information;

b) are provided with guidelines to state security expectations of their role;

c) are motivated to fulfil the security policies set-up by the senior management;

d) achieve a level of awareness on security relevant to their roles and responsibilities;

e) conform to the terms and conditions of employment, which includes the information security policy and appropriate methods of working;

f) continue to have the appropriate skills and qualifications.

7.2.2 Information security awareness, education, and training

Control: All employees, contractors and third party users must receive appropriate awareness training and regular updates on the policies and procedures, as relevant for their job function.

Awareness training must commence with a formal induction process designed to introduce the information security policy, procedures and expectations before access to information or services is granted.

Ongoing training must include security requirements, legal responsibilities and business controls, as well as training in the correct use of information processing facilities e.g. log-on procedure, use of software packages and information on the disciplinary process.

7.2.3 Disciplinary process

Control: There must be a formal disciplinary process in accordance with any applicable legislation existing in the relevant jurisdiction for employees[7] who have committed a security breach.

The disciplinary process must not commence without prior verification that a security breach has occurred.

7.3 Termination or change of employment

Objective: To ensure that employees, contractors and third party users exit or change employment in an orderly manner (as defined in the following control sections).

7.3.1 Termination responsibilities

Control: Responsibilities for performing employment termination or change of employment must be clearly defined and assigned.

The communication of termination responsibilities must include ongoing security requirements and legal responsibilities and, where appropriate, responsibilities contained within any confidentiality agreement, and the terms and conditions of employment continuing for a defined period after the end of the employee’s, contractor’s or third party user’s employment.

[7] Appropriate contractual remedies against contractors and third-party users who have committed a security breach are covered as part of the third party agreements as described in chapter 5.2.3.

Responsibilities and duties still valid after termination of employment must be contained in employee’s, contractor’s or third party user’s contracts.

Changes of responsibility or employment must be managed as the termination of the respective responsibility or employment, and the new responsibility or employment must be controlled as described in clause 7.1.

7.3.2 Return of assets

Control: All employees, contractors and third party users must return all assets in their possession upon termination of their employment, contract or agreement.

The termination process must be formalised to include the return of all previously issued software, corporate documents, and equipment. Other assets such as mobile computing devices, access cards, software, manuals, and information stored on electronic media also need to be returned.

In cases where an employee, contractor or third party user purchases equipment or uses their own personal equipment, procedures must be followed to ensure that all relevant information is returned and securely erased from the equipment.

In cases where an employee, contractor or third party user has knowledge that is important to ongoing operations, that information must be documented and transferred to the appointed people.

7.3.3 Removal of access rights

Control: The access rights of all employees, contractors and third party users to information and information processing facilities must be removed upon termination of their employment, contract or agreement or adjusted upon change.

Changes of an employment must be reflected in removal of all access rights that were not approved for the new employment. The access rights that must be removed or adapted include physical and logical access, keys, identification cards, information processing facilities, subscriptions, and removal from any documentation that identifies them as a current member of the respective central bank. If a departing employee, contractor or third party user has known passwords for accounts remaining active, these must be changed upon termination or change of employment, contract or agreement.

Access rights for information assets and information processing facilities must be reduced or removed at the time the employment terminates or changes.

8 Physical and environmental security

8.1 Secure areas

Objective: To prevent unauthorised physical access, damage, and interference to the hosting premises and information.

Critical or sensitive information processing facilities must be housed in secure areas, protected by defined security perimeters, with security barriers and entry controls. They must be physically protected from unauthorised access, damage, and interference.

The protection provided must be commensurate with the identified risks.

8.1.1 Physical security perimeter

Control: Security perimeters (barriers such as walls, card controlled entry gates or manned reception desks) must be used to protect areas that contain the service's information and information processing facilities.

The following must be implemented for physical security perimeters:

a) security perimeters must be clearly defined, and the siting and strength of each of the perimeters should depend on the security requirements of the assets within the perimeter and the results of a risk assessment;

b) perimeters of a building or site containing information processing facilities must be physically sound (i.e. there must be no gaps in the perimeter or areas where a break-in could easily occur); the external walls of the site should be of solid construction and all external doors must be suitably protected against unauthorised access with control mechanisms, e.g. bars, alarms, locks etc; doors and windows should be locked when unattended and external protection should be implemented for windows;

c) a manned reception area or other means to control physical access to the site or building must be in place;

d) access to sites and buildings must be restricted to authorised personnel only;

e) physical barriers should, where applicable, be built to prevent unauthorised physical access and environmental contamination;

f) all fire doors on a security perimeter should be alarmed, monitored, and tested in conjunction with the walls to establish the required level of resistance in accordance to suitable regional, national, and international standards; they must operate in accordance with local fire code in a failsafe manner;

g) intruder detection systems must be installed to national, regional or international standards and tested (at least once a year) to cover all external doors and accessible windows; unoccupied areas should be alarmed at all times; cover should also be provided for other areas, e.g. computer room or communications rooms;

h) information processing facilities managed by the service providing organisation should be physically separated[8] from those managed by third parties.

8.1.2 Physical entry controls

Control: Secure areas must be protected by entry controls to ensure that only authorised personnel are allowed access.

The following must be implemented:

a) the date and time of entry and departure of visitors must be recorded;

b) visitors must be supervised unless their access has been previously approved; they must only be granted access for specific, authorised purposes and must be provided with instructions on the security requirements of the area and on emergency procedures;

c) access to the areas (e.g. computer rooms and office rooms) must be controlled and restricted to authorised persons only; authentication controls, e.g. access control card plus PIN, must be used to authorise and validate all access;

d) an audit trail of all access must be maintained (see 14.1.3);

e) all employees, contractors, third party users and visitors must be required to wear some form of visible identification and must immediately notify security personnel if they encounter unescorted visitors not wearing visible identification;

f) third party support service personnel must be granted restricted access to secure areas only when required; this access must be authorised and monitored;

g) access rights to secure areas must be reviewed at planned intervals (*Physical Entry Controls Review Interval*) and updated, and revoked when necessary.

[8] Physical separation in this context is not required if third party support personnel is always supervised by internal staff.

8.1.3 Securing offices, rooms, and facilities

Control: Physical security for offices, rooms, and facilities must be designed and applied.

The following must be implemented to secure offices, rooms, and facilities:

a) account must be taken of relevant health and safety regulations and standards;

b) key facilities must be sited to avoid access by the public;

c) where applicable, buildings should be unobtrusive and give minimum indication of their purpose, with no obvious signs, outside or inside the building identifying the presence of information processing activities;

d) directories and internal telephone books identifying locations of sensitive information processing facilities must not be readily accessible by the public.

8.1.4 Protecting against external and environmental threats

Control: Physical protection against damage from fire, flood, earthquake, explosion, civil unrest, and other forms of natural or man-made disaster must be designed and applied.

Consideration must be given to any security threats presented by neighbouring premises, e.g. a fire in a neighbouring building, water leaking from the roof or in floors below ground level or an explosion in the street.

The following guidelines must be implemented to avoid damage from fire, flood, earthquake, explosion, civil unrest, and other forms of natural or man-made disaster:

a) hazardous or combustible materials must not be stored within a secure area;

b) bulk supplies such as stationery must not be stored within a secure area;

c) fallback equipment and back-up media must be sited at a secondary site with a different risk profile to avoid damage from a disaster affecting the main site;

d) fire fighting equipment must be provided and suitably placed.

8.1.5 Working in secure areas

Control: Physical protection and guidelines for working in secure areas must be designed and applied.

The following must be implemented:

a) personnel must only be aware of the existence of, or activities within, a secure area on a need to know basis;

b) unsupervised working in secure areas should be avoided both for safety reasons and to prevent opportunities for malicious activities;

c) vacant secure areas (i.e. rooms containing critical components but not permanently staffed) must be physically locked and periodically checked;

d) photographic, video, audio or other recording equipment, such as cameras in mobile devices, should not be allowed, unless authorised.

8.1.6 Public access, delivery, and loading areas

Control: Access points such as delivery and loading areas and other points where unauthorised persons may enter the premises must be controlled and, if possible, isolated from information processing facilities to avoid unauthorised access.

The following must be implemented:

a) access to a delivery and loading area from outside of the building should be restricted to identified and authorised personnel;

b) the delivery and loading area must be designed so that supplies can be unloaded without delivery personnel gaining access to other parts of the building;

c) the external doors of a delivery and loading area must be secured when the internal doors are opened;

d) incoming material should be inspected for potential threats before this material is moved from the delivery and loading area to the point of use;

e) incoming material should be registered in accordance with asset management procedures on entry to the site.

8.2 Equipment security

Objective: To prevent loss, damage, theft or compromise of assets and interruption to the service providing organisation's activities.

Equipment must be protected from physical and environmental threats.

8.2.1 Equipment sitting and protection

Control: Equipment must be sited or protected to reduce the risks from environmental threats and hazards, and opportunities for unauthorised access.

The following must be implemented to protect equipment:

a) equipment must be sited to minimise unnecessary access into work areas;

b) information processing facilities handling sensitive data must be positioned and the viewing angle restricted to reduce the risk of information being viewed by unauthorised persons during their use, and storage facilities secured to avoid unauthorised access;

c) items requiring special protection must be isolated to reduce the general level of protection required;

d) controls must be adopted to minimise the risk of potential physical threats, e.g. theft, fire, explosives, smoke, water (or water supply failure), dust, vibration, chemical effects, electrical supply interference, communications interference, electromagnetic radiation, and vandalism;

e) environmental conditions, such as temperature and humidity, must be monitored for conditions, which could adversely affect the operation of information processing facilities;

f) lightning protection must be applied to all buildings and lightning protection filters must be fitted to all incoming power and communications lines.

8.2.2 Supporting utilities

Control: Equipment must be protected from power failures and other disruptions caused by failures in supporting utilities.

All supporting utilities, such as electricity, water supply, sewage, heating/ventilation, and air conditioning must be adequate for the systems they are supporting. At regular intervals (*Support Utilities Review Interval*) the support utilities must be inspected and tested to ensure their proper functioning and to reduce any risk from their malfunction or failure. An electrical supply must be provided that conforms to the equipment manufacturer's specifications.

An uninterruptible power supply (UPS) to support orderly close down or continuous running must be in place for equipment supporting critical business operations. Power contingency plans must cover the action to be taken on failure of the UPS. A back-up generator must be in place if processing is required to continue in case of a prolonged power failure. An adequate supply of fuel must be available to ensure that the generator can perform for a prolonged period. UPS equipment and generators must be checked at least twice a year to ensure it has adequate capacity and tested in accordance with the manufacturer's recommendations. In addition, consideration should be given to using multiple power sources or, if the site is large a separate power substation.

Emergency power off switches must be located near emergency exits in equipment rooms to facilitate rapid power down in case of an emergency. Emergency lighting must be provided in case of main power failure.

The water supply must be stable and adequate to supply air conditioning, humidification equipment and fire suppression systems (where used).

Malfunctions in the water supply system may damage equipment or prevent fire suppression from acting effectively. Therefore an alarm system to detect malfunctions in the supporting utilities must be installed.

Telecommunications equipment must be connected to the utility provider by at least two diverse routes to prevent failure in one connection path removing voice services. Voice services must be adequate to meet local legal requirements for emergency communications.

8.2.3 Cabling security

Control: Power and telecommunications cabling carrying data or supporting information services must be protected from interception or damage.

The following must be implemented:

a) power and telecommunications lines into information processing facilities must be underground, where possible, or subject to adequate alternative protection;

b) network cabling must be protected from unauthorised interception or damage, for example by using a conduit or by avoiding routes through public areas;

c) power cables should be segregated from communications cables to prevent interference;

d) clearly identifiable cable and equipment markings should be used to minimise handling errors, such as accidentally patching of wrong network cables;

e) a documented patch list should be used to reduce the possibility of errors;

f) installation of armoured conduit and locked rooms or boxes at inspection and termination points;

g) use of alternative routings and/or transmission media providing security;

h) controlled access to patch panels and cable rooms.

8.2.4 Equipment maintenance

Control: Equipment must be correctly maintained to ensure its continued availability and integrity.

The following must be implemented:

a) equipment must be maintained in accordance with the supplier's recommended service intervals and specifications;

b) only authorised maintenance personnel must carry out repairs and service equipment;

c) records must be kept of all suspected or actual faults, and all preventive and corrective maintenance;

d) all requirements imposed by insurance policies must be complied with.

8.2.5 Security of equipment off-premises

Control: Security must be applied to off-site equipment taking into account the risks of it being outside of the hosting premises.

Regardless of ownership, the use of any information processing equipment outside the hosting premises must be authorised by responsible management.

The following guidelines must be implemented for the protection of off-site equipment:

a) equipment and media[9] taken off the hosting premises must not be left unattended in public places;

b) portable computers should be carried as hand luggage;

c) manufacturers' instructions for protecting equipment must be observed at all times, e.g. protection against exposure to strong electromagnetic fields;

d) home-working controls must be determined by a risk assessment and suitable controls applied as appropriate, e.g. lockable filing cabinets, clear desk policy, access controls for computers and secure communication with the office;

e) adequate insurance cover must be in place to protect equipment off-site.

[9] Information storing and processing equipment includes all forms of personal computers, organisers, mobile phones, smart cards, paper or other form, which is held for home working or being transported away from the normal work location

8.2.6 Secure disposal or re-use of equipment

Control: All items of equipment containing storage media must be checked to ensure that any sensitive data and licensed software has been removed or securely overwritten prior to disposal.

Devices containing sensitive information must be physically destroyed or the information must be destroyed, deleted or securely overwritten using techniques to make the original information non-retrievable rather than using the standard delete or format function.

Damaged devices containing sensitive data may require a risk assessment to determine whether the items should be physically destroyed rather than sent for repair or discarded.

8.2.7 Removal of property

Control: Equipment, information or software must not be taken off-site without prior authorisation.

The following guidelines must be implemented:

a) equipment, information or software must not be taken off-site without prior authorisation;

b) employees, contractors and third party users who have authority to permit off-site removal of assets must be clearly identified;

c) time limits for equipment removal should be set and returns checked for compliance;

d) equipment must be recorded as being removed off-site and recorded when returned to the issuing department.

9 Communications and operations management

9.1 Operational procedures and responsibilities

Objective: To ensure the correct and secure operation of information processing facilities.

Responsibilities and procedures for the management and operation of all information processing facilities must be established. This includes the development of operating procedures.

Segregation of duties must be implemented, where appropriate, to reduce the risk of negligent or deliberate system misuse.

9.1.1 Documented operating procedures

Control: Operating procedures must be documented, maintained, and made available to all users who need them.

Documented procedures must be prepared for system activities associated with information processing and communication facilities, such as computer start-up and close-down procedures, back-up, equipment maintenance, media handling, computer room and mail handling management, and safety.

The operating procedures must specify the instructions for the detailed execution of each job including:

a) processing and handling of information;

b) backup (see 9.5);

c) scheduling requirements, including interdependencies with other systems, earliest job start and latest job completion times;

d) instructions for handling errors or other exceptional conditions, which might arise during job execution, including restrictions on the use of system utilities;

e) support contacts in the event of unexpected operational or technical difficulties;

f) special output and media handling instructions, such as the use of special stationery or the management of confidential output including procedures for secure disposal of output from failed jobs;

g) system restart and recovery procedures for use in the event of system failure;

h) the management of audit-trail and system log information (see 9.10).

Operating procedures, and the documented procedures for system activities, must be treated as formal documents and changes authorised by management as part of the change management process.

9.1.2 Change management

To avoid redundancies this control has been merged with control 11.5.1.

9.1.3 Segregation of duties

Control: Duties and areas of responsibility must be segregated to reduce opportunities for unauthorised or unintentional modification or misuse of assets.

Segregation of duties is a method for reducing the risk of accidental or deliberate system misuse. Care must be taken that no single person can access, modify or use assets without authorisation or detection. The initiation of an event should be separated from its authorisation for example by implementing the four-eye principle. The possibility of collusion must be implemented in designing the controls.

The initiation of an event must be separated from its authorisation meaning segregation of activities which require collusion in order to defraud (critical business functions), i.e. features must be in place in order to ensure that no person is in a position to alter sensitive business data single-handed, e.g. dispatching of a payment.

9.1.4 Separation of development, test, and operational facilities

Control: Development, test, and operational facilities must be separated to reduce the risks of unauthorised access or changes to the operational system.

The following must be implemented:

a) rules for the transfer of software from development to operational status must be defined and documented;

b) development and operational software must run on different systems or computer processors and in different domains or directories;

c) compilers, editors, and other development tools or system utilities should not be accessible from operational systems when not required;

d) the test system environment should emulate the operational system environment as closely as possible;

e) users should use different user profiles for operational and test systems;

f) menus should display identification messages to reduce the risk of error;

g) sensitive data should not be copied into the test system environment (see 11.4.2).

9.2 Third Party service delivery management

Objective: To implement and maintain the appropriate level of information security and service delivery in line with third party service delivery agreements.

The senior management must check the implementation of agreements, monitor compliance with the agreements and manage changes to ensure that the services delivered meet all requirements agreed with the third party.

9.2.1 Service delivery

Control: It must be ensured that the security controls, service definitions and delivery levels included in the third party service delivery agreement are implemented, operated, and maintained by the third party.

Service delivery by a third party must include the agreed security arrangements, service definitions, and aspects of service management. In case of outsourcing arrangements, the senior management must plan the necessary transitions (of information, information processing facilities, and anything else that needs to be moved), and must ensure that security is maintained throughout the transition period.

The senior management must ensure that the third party maintains sufficient service capability together with workable plans designed to ensure that agreed service continuity levels are maintained following major service failures or disaster.

9.2.2 Monitoring and review of third party services

Control: The services, reports and records provided by the third party must be regularly monitored and reviewed, and audits (where applicable) must be carried out regularly.

Monitoring and review of third party services must involve a service management relationship and process between the service providing organisation and the third party to:

a) monitor service performance levels to check adherence to the agreements;

b) review service reports produced by the third party and arrange regular progress meetings as required by the agreements;

c) receive information about information security incidents and review of this information conducted jointly;

d) review third party audit trails and records of security events, operational problems, failures, tracing of faults and disruptions related to the service delivered;

e) resolve and manage any identified problems.

The responsibility for managing the relationship with a third party should be assigned to a designated individual or service management team. In addition, it should be ensured that the third party assigns responsibilities for checking for compliance and enforcing the requirements of the agreements. Sufficient technical skills and resources must be made available to monitor the requirements of the agreement, in particular the information security requirements, are being met. Appropriate action must be taken when deficiencies in the service delivery are observed.

9.2.3 Managing changes to third party services

Control: Changes to the provision of services, including maintaining and improving existing information security policies, procedures and controls, must be managed, taking into account the criticality of business systems and processes involved after a thorough re-assessment of risks.

The process of managing changes to a third party service must include rules for:

a) changes requested by the service providing organisation impacting the third party:
   1. enhancements to the current service offered;
   2. development of any new applications and systems;
   3. modifications or updates of policies and procedures;
   4. new controls to resolve information security incidents and to improve security.

b) changes in the third party services that impact the service providing organisation:
   1. changes and enhancement to networks;
   2. use of new technologies;
   3. adoption of new products or newer versions/releases;
   4. new development tools and environments;
   5. changes to physical location of service facilities;
   6. change of vendors.

9.3 System planning and acceptance

Objective: To minimise the risk of systems failures.

Advance planning and preparation are required to ensure the availability of adequate capacity and resources to deliver the required system performance. Projections of future capacity requirements must be made, to reduce the risk of system overload. The operational requirements of new systems must be established, documented, and tested prior to their acceptance and use.

9.3.1 Capacity management

Control: The use of resources must be monitored, tuned, and projections made of future capacity requirements to ensure the required system performance.

For each new and ongoing activity, capacity requirements must be identified. System tuning and monitoring must be applied to ensure and, where necessary, improve the availability and efficiency of systems. Detective controls must be put in place to indicate problems in due time. Projections of future capacity requirements must take account of new business and system requirements and current and projected trends in the information processing capabilities.

Particular attention needs to be paid to any key resources in order to avoid potential bottlenecks and dependence on key personnel that might present a threat to system security or services, and plan appropriate action.

9.3.2 System acceptance

Control: Acceptance criteria for new information systems, upgrades, and new versions must be established, and suitable tests of the system(s) carried out during development and prior to acceptance.

It must be ensured that the requirements and criteria for acceptance of new systems are clearly defined, agreed, documented, and tested. New information systems, upgrades, and new versions must only be migrated into production after obtaining formal acceptance. The following must be established prior to formal acceptance being provided:

a) performance and computer capacity requirements;

b) error recovery and restart procedures, and contingency plans;

c) preparation and testing of routine operating procedures;

d) agreed set of security controls in place;

e) effective manual procedures;

f) business continuity arrangements;

g) evidence that installation of the new system will not adversely affect existing systems, particularly at peak processing times, such as month end;

h) evidence that consideration has been given to the effect the new system has on the overall security of the service;

i) training in the operation or use of new systems;

j) ease of use, as this affects user performance and avoids human error.

Tests involving the operations function and users must be carried out to confirm that all acceptance criteria have been fully satisfied. Testing activities and results must be properly documented.

9.4 Protection against malicious and mobile code

Objective: To protect the integrity of software and information.

Precautions are required to prevent and detect the introduction of malicious code and unauthorised mobile code.

Software and information processing facilities are vulnerable to the introduction of malicious code, such as computer viruses, network worms, Trojan horses, and logic bombs. Users must be made aware of the dangers of malicious code.

9.4.1 Controls against malicious code

Control: Detection, prevention, and recovery controls to protect against malicious code and user awareness procedures must be implemented.

Protection against malicious code must be based on malicious code detection and repair software, security awareness, system access and change management controls. The following must be implemented:

a) establishing a formal policy prohibiting the use of unauthorised software;

b) establishing a formal policy to protect against risks associated with obtaining files and software either from or via external networks, or on any other medium, indicating what protective measures should be taken;

c) conducting regular reviews of the software and data content of systems supporting critical business processes; the presence of any unapproved files or unauthorised amendments should be formally investigated (optional);

d) installation and maintenance of up-to-date malicious code detection and repair software to scan computers and media as a precautionary control, or on a routine basis; the checks carried out must include:

   1. checking any files on electronic or optical media, and files received over networks, for malicious code before use;
   2. checking electronic mail attachments and downloads for malicious code before use; this check must be carried out at different places, e.g. at electronic mail servers, desk top computers and when entering the internal network;
   3. checking web pages for malicious code;

e) defining management procedures and responsibilities to deal with malicious code protection on systems, training in their use and reporting;

f) preparing plans for recovering from malicious code attacks, including all necessary data and software back-up and recovery arrangements;

g) implementing procedures to regularly collect information, such as subscribing to mailing lists and/or checking web sites giving information about new malicious code;

h) implementing procedures to verify information relating to malicious code, and ensure that warning bulletins are accurate and informative; managers should ensure that qualified sources, e.g. reputable journals, reliable Internet sites or suppliers producing software protecting against malicious code, are used to differentiate between hoaxes and real malicious code; all users must be made aware of the problem of hoaxes and what to do on receipt of them.

9.4.2 Controls against mobile code

Control: Where the use of mobile code[10] is authorised, the configuration must ensure that the authorised mobile code operates according to a clearly defined security policy, and unauthorised mobile code must be prevented from executing.

The following should be implemented to protect against mobile code performing unauthorised actions:

a) executing mobile code in a logically isolated environment;

b) blocking any use of mobile code;

c) blocking receipt of mobile code;

d) activating technical measures as available on a specific system to ensure mobile code is managed;

e) control the resources available to mobile code access;

f) cryptographic controls to uniquely authenticate mobile code.

[10] Mobile code is software code which transfers from one computer to another computer and then executes automatically and performs a specific function with little or no user interaction (e.g. ActiveX, Java applets, JavaScript). Mobile code is associated with a number of middleware services.

9.5 Back-up

Objective: To maintain the integrity and availability of information and information processing facilities.

Routine procedures must be established to implement the agreed back-up policy and strategy for taking back-up copies of data and rehearsing their timely restoration.

9.5.1 Information backup

Control: Backup copies of information and software must be taken and tested regularly in accordance with the agreed backup policy.

Adequate backup facilities must be provided to ensure that all essential information and software can be recovered following a disaster or media failure.

The following items for information backup must be implemented:

a) the necessary level of backup information must be defined in a backup policy;

b) accurate and complete records of the back-up copies and documented restoration procedures must be produced;

c) the extent (e.g. full or differential backup) and frequency of backups should reflect the business requirements, the security requirements of the information involved, and the criticality of the information to the continued operation of the service;

d) the backups must be stored in a remote location with a different risk profile to escape any damage from a disaster at the main site;

e) backup information must be given an appropriate level of physical and environmental protection consistent with the standards applied at the main site; the controls applied to media at the main site should be extended to cover the backup site;

f) backup media must be tested to ensure that they can be relied upon for emergency use when necessary;

g) restoration procedures must be regularly checked and tested (*Restoration Check Interval*) to ensure that they are effective and that they can be completed within the time allotted in the operational procedures for recovery;

h) in situations where confidentiality is of importance, backups should be protected by means of encryption;

i) the retention period for essential business information, and also any requirement for archive copies to be permanently retained must be determined.

9.6 Network security management

Objective: To ensure the protection of information in networks and the protection of the supporting infrastructure.

The secure management of networks, which may span the boundaries of the service providing organisation, requires careful consideration to dataflow, legal implications, monitoring, and protection.

Additional controls may also be required to protect sensitive information passing over public networks.

9.6.1 Network controls

Control: Networks must be adequately managed and controlled in order to be protected from threats, and to maintain security for the systems and applications using the network, including information in transit.

Network managers must implement controls to ensure the security of information in networks, and the protection of connected services from unauthorised access. The following items must be implemented:

a) operational responsibility for networks should be separated from computer operations where appropriate;

b) responsibilities and procedures for the management of remote equipment, including equipment in user areas, must be established;

c) logging and monitoring should be applied to enable recording of security relevant actions;

d) management activities should be closely co-ordinated both to optimise the service and to ensure that controls are consistently applied across the information processing infrastructure.

9.6.2 Security of network services

Control: Security features, service levels, and management requirements of all network services[11] must be identified and included in any network services agreement, whether these services are provided in-house or outsourced.

[11] Network services include the provision of connections, private network services, and value added networks and managed network security solutions such as firewalls and intrusion detection systems. Network services are for example SWIFT, Internet access, mail service provider, etc.

The ability of the network service provider to manage agreed services in a secure way must be determined and monitored, and the right to audit must be agreed.

The security arrangements necessary for particular services, such as security features, service levels, and management requirements, must be identified and included in the contract.

9.7 Media handling

Objective: To prevent unauthorised disclosure, modification, removal or destruction of assets, and interruption to business activities.

Media must be controlled and physically protected.

Operating procedures must be established to protect documents, computer media (e.g. tapes, disks, memory sticks, CDs, DVDs), input/output data and system documentation from unauthorised disclosure, modification, removal, and destruction.

9.7.1 Management of removable media

Control: There must be procedures in place for the management of removable media[12].

The following measures for the management of removable media must be implemented:

a) if no longer required, the contents of any re-usable media that are to be removed from the hosting premises must be made unrecoverable;

b) where necessary and practical, authorisation should be required for media removed from the hosting premises and a record of such removals must be kept in order to maintain an audit trail;

c) all media must be stored in a safe, secure environment, in accordance with manufacturers' specifications;

d) information stored on media that needs to be available longer than the media lifetime (in accordance with manufacturers' specifications) must be also stored elsewhere to avoid information loss due to media degradation;

e) registration of removable media must be implemented to limit the opportunity for data loss.

f) all procedures and authorisation levels must be clearly documented.

[12] Removable media include e.g. tapes, disks, flash disks, removable hard drives, CDs, DVDs, and printed media.

9.7.2 Disposal of media

Control: Media must be disposed of securely and safely when no longer required, using formal procedures.

Formal procedures for the secure disposal of media should minimise the risk of sensitive information leakage to unauthorised persons. The procedures for secure disposal of media containing sensitive information must be commensurate with the sensitivity of that information. The following items must be implemented:

a) media containing sensitive information must be stored and disposed of securely and safely, e.g. by incineration or shredding, or erased of data for use by another application;

b) procedures must be in place to identify the items that might require secure disposal;

c) care must be taken in selecting a contractor that provide disposal services for papers, equipment and media;

d) disposal of sensitive items must be logged in order to maintain an audit trail.

9.7.3 Information handling procedures

Control: Procedures for the handling and storage of information[13] must be established to protect this information from unauthorised disclosure or misuse.

Procedures must be drawn up for handling, processing, storing, and communicating information consistent with its classification. The following items must be implemented:

a) handling and labelling of all media to its indicated classification level;

b) access restrictions to prevent access from unauthorised personnel;

c) maintenance of a formal record of the authorised recipients of data;

d) protection of spooled data awaiting output to a level consistent with its sensitivity;

e) storage of media in accordance with manufacturers' specifications;

f) keeping the distribution of data to a minimum (need-to-know principle);

g) clear marking of all copies of media for the attention of the authorised recipient;

h) review of distribution lists and lists of authorised recipients at planned intervals (*Distribution List Review Interval*).

[13] These procedures apply to information in documents, computing systems, networks, mobile computing, mobile communications, mail, voice mail, voice communications in general, multimedia, postal services/facilities, use of facsimile machines.

9.7.4 Security of system documentation

Control: System documentation[14] must be protected against unauthorised access.

To secure system documentation, the following items must be implemented:

a) system documentation must be stored securely;

b) access to system documentation must be limited to authorised persons;

c) system documentation held on a public network, or supplied via a public network, must be protected.

9.8 Exchange of information and software

Objective: To maintain the security of information and software exchanged within the service providing organisation and with any external entity.

Exchange of information and software between the service providing organisation and an external entity must be based on a formal exchange policy, carried out in line with exchange agreements, and must be compliant with any relevant legislation.

Procedures must be established to protect information and physical media containing information in transit.

9.8.1 Information exchange policies and procedures

Control: Formal exchange policies, procedures, and controls must be in place to protect the exchange of information through the use of all types of communication facilities.

The procedures and controls to be followed when using electronic communication facilities for information exchange should consider the following items:

a) procedures designed to protect exchanged information from interception, copying, modification, mis-routing, and destruction;

b) procedures for the detection of and protection against malicious code that may be transmitted through the use of electronic communications;

c) procedures for protecting communicated sensitive electronic information that is in the form of an attachment;

d) policy or guidelines outlining acceptable use of electronic communication facilities;

[14] System documentation may contain a range of sensitive information, e.g. descriptions of applications processes, procedures, data structures, authorisation processes.

e) procedures for the use of wireless communications, taking into account the particular risks involved;

f) employee, contractor and any other user’s responsibilities not to compromise the service providing organisation, e.g. through defamation, harassment, impersonation, forwarding of chain letters, unauthorised purchasing, etc.;

g) use of cryptographic techniques e.g. to protect the confidentiality, integrity and authenticity of information;

h) retention and disposal guidelines for all business correspondence, including messages, in accordance with relevant national and local legislation and regulations;

i) not leaving sensitive or critical information on printing facilities, e.g. copiers, printers, and facsimile machines, as these may be accessed by unauthorised personnel;

j) controls and restrictions associated with the forwarding of communication facilities, e.g. automatic forwarding of electronic mail to external mail addresses;

k) reminding personnel that they should take precautions, e.g. not to reveal sensitive information to avoid being overheard or intercepted when making a phone call by:

1. people in their immediate vicinity particularly when using mobile phones;
2. wiretapping, and other forms of eavesdropping through physical access to the phone handset or the phone line, or using scanning receivers;
3. people at the recipient’s end;

l) not leaving messages containing sensitive information on answering machines since these may be replayed by unauthorised persons, stored on communal systems or stored incorrectly as a result of misdialling;

m) reminding personnel about the problems of using facsimile machines, namely:

1. unauthorised access to built-in message stores to retrieve messages;
2. deliberate or accidental programming of machines to send messages to specific numbers;
3. sending documents and messages to the wrong number either by misdialling or using the wrong stored number;

n) reminding personnel not to register demographic data, such as the e-mail address or other personal information, in any software to avoid collection for unauthorised use;

o) reminding personnel that modern facsimile machines and photocopiers have page caches and store pages in case of a paper or transmission fault, which will be printed once the fault is cleared.

In addition, personnel should be reminded that they should not have confidential conversations in public places or open offices and meeting places with non-sound proofed-walls.

Information exchange facilities must comply with any relevant legal requirements.

9.8.2 Exchange agreements

Control: Agreements must be established for the exchange of information and software between the service providing organisation and external parties (see also control 5.2.1).

Exchange agreements should, if applicable, consider the following security conditions:

a) management responsibilities for controlling and notifying transmission, dispatch, and receipt;

b) procedures for notifying sender of transmission, dispatch, and receipt;

c) procedures to ensure traceability and non-repudiation;

d) minimum technical standards for packaging and transmission;

e) escrow agreements[15];

f) courier identification standards;

g) responsibilities and liabilities in the event of information security incidents, such as loss of data;

h) use of an agreed labelling system for sensitive or critical information, ensuring that the meaning of the labels is immediately understood and that the information is protected;

i) ownership and responsibilities for data protection, copyright, software license compliance and similar considerations;

j) technical standards for recording and reading information and software;

k) any special controls that may be required to protect sensitive items, such as cryptographic keys.

[15] A legal provision whereby, in the event of a developer/supplier failing or otherwise ceasing to trade, the source code for their packaged software is made available to licensed / registered users, thereby enabling its ongoing maintenance.

9.8.3 Physical media in transit

Control: Media containing information must be protected against unauthorised access, misuse or corruption during transportation outside the hosting premises.

The following measures must be implemented to protect information media being transported between sites:

a) reliable transport or couriers must be used;

b) a list of authorised couriers must be established;

c) procedures to check the identification of couriers must be developed;

d) packaging should be sufficient to protect the contents from any physical damage likely to arise during transit and in accordance with any manufacturers' specifications, for example protecting software against any environmental factors that may reduce the media's restoration effectiveness such as exposure to heat, moisture or electromagnetic fields;

e) controls should be adopted, where necessary, to protect sensitive information from unauthorised disclosure or modification; examples include:

   1. use of locked containers;
   2. delivery by hand;
   3. tamper-evident packaging (which reveals any attempt to gain access);
   4. in exceptional cases, splitting of the consignment into more than one delivery and dispatch by different routes.

9.8.4 Electronic messaging

Control: Information involved in electronic messaging must be protected.

Security considerations for electronic messaging must include the following:

a) protecting messages from unauthorised access, modification or denial of service;

b) ensuring correct addressing and transportation of the message;

c) general reliability and availability of the service;

d) legal considerations, for example requirements for electronic signatures;

e) obtaining approval prior to using external public services such as instant messaging or file sharing;

f) stronger levels of authentication controlling access from publicly accessible networks.

9.8.5 Business Information Systems

Control: Policies and procedures must be developed and implemented to protect the service's information associated with the interconnection of business/office information systems.

Office information systems are opportunities for faster dissemination and sharing of service related information using a combination of: documents, computers, mobile computing, mobile communications, mail, voice mail, voice communications in general, multimedia, postal services/facilities and facsimile machines. Consideration given to the security and business implications of interconnecting such facilities must include:

a) vulnerabilities in systems where information extracted from the service (e.g. statistical data) is shared between different parts of the service providing organization;

b) vulnerabilities of information in business communication systems, e.g. recording phone calls or conference calls, confidentiality of calls, storage of facsimiles, opening mail, distribution of mail;

c) policy and appropriate controls to manage information sharing within the service providing organisation;

d) restricting access to diary information relating to selected individuals, e.g. personnel working on sensitive projects;

e) restricting selected facilities (e.g. functional mail boxes, document management systems) to specific categories of user;

f) identifying the status of office information system users, e.g. employees of the organization or contractors in directories for the benefit of other users;

9.9 Electronic commerce services

Objective: To ensure that the integrity and availability of information electronically published through publicly available systems is considered.

9.9.1 Publicly available information

Control: The integrity of information being made available on a publicly available system must be protected to prevent unauthorised modification.

Software, data, and other information requiring a high level of integrity, being made available on a publicly available system (e.g. information on a Web server accessible via the Internet), must be protected by appropriate mechanisms, e.g. digital signatures. The publicly accessible system must be tested against weaknesses and failures prior to information being made available.

There must be a formal approval process before information is made publicly available. In addition, all input provided from the outside to the system must be verified and approved.

Electronic publishing systems, especially those that permit feedback and direct entering of information, must be carefully controlled so that:

a) information is obtained in compliance with any data protection legislation;

b) information input to, and processed by, the publishing system will be processed completely and accurately in a timely manner;

c) sensitive information will be protected during collection, processing, and storage;

d) access to the publishing system does not allow unintended access to networks to which the system is connected.

9.10 Monitoring

Objective: To detect unauthorised information processing activities.

Systems must be monitored and information security events must be recorded. Operator logs and fault logging must be used to ensure information system problems are identified.

The service providing organisation must comply with all relevant legal requirements applicable to its monitoring and logging activities.

9.10.1 Audit logging

Control: Audit logs recording user activities, exceptions, and information security events must be produced and kept for an agreed period (*Audit Logging Period*) to assist in future investigations and access control monitoring.

Audit logs must include:

a) user IDs;

b) dates, times, and details of key events, e.g. log-on, failed log-on attempts and log-off;

c) terminal identity or location if possible;

d) records of rejected data and other resource access attempts;

e) changes to system configuration;

f) use of privileges;

g) use of system utilities and applications (if such features are provided);

h) files accessed and the kind of access according to the classification;

i) network addresses and protocols according to the classification;

j) alarms raised by the access control system;

k) activation and de-activation of protection systems, such as anti-virus systems and intrusion detection systems.

9.10.2 Monitoring system use

Control: Procedures for monitoring use of information processing facilities must be established by senior management and the results of the monitoring activities reviewed regularly.

The level of monitoring required and the intervals for individual facilities must be determined by a risk assessment. The service providing organisation must comply with all relevant legal requirements applicable to its monitoring activities. Events that must be monitored are:

a) authorised access to critical data such as:

   1) the user ID;

   2) the date and time of key events;

   3) the types of events;

   4) the files accessed;

   5) the program/utilities used;

b) all privileged operations such as:

   1) use of privileged accounts, e.g. supervisor, root, administrator;

   2) system start-up and stop;

   3) I/O device attachment/detachment;

c) unauthorised access attempts such as:

   1) failed or rejected user actions;

   2) failed or rejected actions involving data and other resources;

   3) access policy violations and notifications for network gateways and firewalls;

4) alerts from proprietary intrusion detection systems;

d) system alerts or failures such as:

1) console alerts or messages;

2) system log exceptions;

3) network management alarms;

4) alarms raised by the access control system;

e) changes to, or attempts to change, system security settings and controls.

The above events must be reviewed at planned intervals (*Privileged Activities Review Interval*).

9.10.3 Protection of log information

Control: Logging facilities and log information must be protected against tampering and unauthorised access.

Controls should aim to protect against unauthorised changes and operational problems with the logging facility including:

a) alterations to the message types that are recorded;

b) log files being edited or deleted;

c) storage capacity of the log file media being exceeded, resulting in either the failure to record events or over-writing of past recorded events.

Some audit logs may be required to be archived as part of the record retention policy or because of requirements to collect and retain evidence.

9.10.4 Administrator and operator logs

Control: System administrator and system operator activities must be logged.

Logs should include:

a) the time at which an event (success or failure) occurred;

b) information about the event (e.g. files handled) or failure (e.g. error occurred and corrective action taken);

c) which account and which administrator or operator was involved;

d) which processes were involved.

System administrator and operator logs must be reviewed at planned intervals (*Administrator Log Review Interval*).

9.10.5 Fault logging

Control: Faults must be logged, analysed, and appropriate action taken.

Faults reported by users or by system programs related to problems with information processing or communications systems must be logged. There must be clear rules for handling reported faults including:

a) review of fault logs to ensure that faults have been satisfactorily resolved;

b) review of corrective measures to ensure that controls have not been compromised, and that the action taken is fully authorised.

It must be ensured that error logging is enabled, if this system function is available.

The level of logging required for individual systems must be determined by a risk assessment, taking performance degradation into account.

9.10.6 Clock synchronisation

Control: The clocks of all information processing systems (belonging to the service) must be synchronised with an agreed accurate time source.

For computers or communication devices which have the capability to operate a real-time clock, this clock must be set to an agreed standard, e.g. Coordinated Universal Time (UTC) or local standard time. As some clocks are known to drift with time, there must be a procedure that checks for and corrects any significant variation.

10 Access control

10.1 Business requirement for access control

Objective: To control access to information.

Access to information, information processing facilities, and business processes must be controlled on the basis of business and security requirements. Access control rules must take account of policies for information dissemination and authorisation.

10.1.1 Access control policy

Control: An access control policy must be established, documented, and reviewed based on business and security requirements for access.

Access control rules and rights for each user or group of users must be clearly stated in an access control policy. Access controls are both logical and physical and these should be implemented together since they complement each other. Users and service providers must be given a clear statement of the business requirements to be met by access controls.

The policy must take account of the following:

a) security requirements of individual business applications;

b) identification of all information related to the business applications and the risks the information is facing;

c) policies for information dissemination and authorisation, e.g. the need to know principle and security levels and classification of information;

d) consistency between the access control and information classification policies of different systems and networks;

e) relevant legislation and any contractual obligations regarding protection of access to data or services;

f) standard user access profiles for common job roles;

g) management of access rights in a distributed and networked environment which recognises all types of connections available;

h) segregation of access control roles, e.g. access request, access authorisation, access administration;

i) requirements for formal authorisation of access requests;

j) requirements for periodic review of access controls;

k) removal of access rights.

The policy should be reviewed at planned intervals (*User Access Control Policy Review Interval*).

10.2 User access management

Objective: To ensure authorised user access and prevent unauthorised access to information systems.

Formal procedures must be in place to control the allocation of access rights to information systems and services.

The procedures must cover all stages in the life-cycle of user access, from the initial registration of new users to the final de-registration of users who no longer require access to information systems and services. Special attention should be given to the need to control the allocation of privileged access rights, which allow users to override system controls.

10.2.1 User registration

Control: There must be a formal user registration and de-registration procedure in place for granting and revoking access to all information systems (belonging to the service) and services.

The access control procedure for user registration and de-registration must include:

a) using unique user IDs to enable users to be linked to and held responsible for their actions; the use of group IDs should only be permitted where they are necessary for business or operational reasons, and must be approved and documented;

b) checking that the user has authorisation from relevant management for the use of the information system or service;

c) checking that the level of access granted is appropriate to the business purpose and is consistent with organisational security policy, e.g. it does not compromise segregation of duties;

d) giving users a written statement of their access rights;

e) requiring users to sign statements indicating that they understand the conditions of access;

f) ensuring service providers do not provide access until authorisation procedures have been completed;

g) maintaining a formal record of all persons registered to use the service;

h) immediately removing or blocking access rights of users who have changed roles or jobs or have left;

i) checking for, and removing or blocking, redundant user IDs and accounts;

j) ensuring that redundant user IDs are not issued to other users.

10.2.2 Privilege management

Control: The allocation and use of privileges must be restricted and controlled.

The allocation of privileges must be controlled through a formal authorisation process. The following steps must be implemented:

a) the access privileges associated with each system product, e.g. operating system, database management system and each application, and the users to which they need to be allocated must be identified and documented;

b) Privileges must be allocated to individuals on a need-to-use basis for the normal operating and on an event-by-event basis for exceptional situations;

c) an authorisation process and a record of all privileges allocated must be maintained. Privileges must not be granted until the authorisation process is complete;

d) privileges should be assigned to a different user ID from those used for normal business use.

10.2.3 User password management

Control: The allocation of passwords must be controlled through a formal management process.

The process must include the following requirements:

a) users must be required to sign a statement to keep personal passwords confidential and to keep group passwords solely within the members of the group;

b) when users are required to maintain their own passwords they must be provided initially with a secure temporary password, which they are forced to change immediately;

c) establish procedures to verify the identity of a user prior to providing a new, replacement or temporary password;

d) temporary passwords must be given to users in a secure manner;

e) temporary passwords must be unique to an individual and should not be guessable;

f) users must acknowledge receipt of passwords;

g) passwords must never be stored on computer systems in an unprotected form;

h) default vendor passwords must be altered following installation of systems or software.

10.2.4 Review of user access rights

Control: Management must review users' access rights at regular intervals using a formal process.

The review of access rights according to the following points must be in place:

a) users' access rights must be periodically reviewed (*User Access Rights Review Interval*);

b) user access rights must be reviewed and re-allocated when moving from one employment to another within the same central bank;

c) authorisations for special privileged access rights must be periodically reviewed (*Privileged User Access Rights Review Interval*);

d) changes to privileged accounts must be logged for periodic review (*Privileged Account Changes Logging Period*).

10.3 User responsibilities

Objective: To prevent unauthorised user access, and compromise or theft of information and information processing facilities.

As the co-operation of authorised users is essential for effective security they must be made aware of their responsibilities for maintaining effective access controls.

A clear desk and clear screen policy must be implemented to reduce the risk of unauthorised access or damage to papers, media, and information processing facilities.

10.3.1 Password use

Control: Users must be required to follow the password policy and good security practices in the selection and use of passwords. The software providing the authentication facilities should support parameters[16] to ensure strong passwords.

All users must at least:

a) keep passwords confidential;

[16] Authentication parameters define settings required for login security. Examples are: Password Expiry (defining the maximum number of calendar days a password is valid), Minimum Account Name / Password Length (minimum number of characters allowed for a account name/password), Password Complexity (defining the minimum complexity of the password – e.g. at least one uppercase character, one symbol and one number), Password Reuse (defines the number of password changes before an old password can be reused), Maximum Login Attempts (maximum number of failed login attempts before a user account is locked by the system)

b) avoid keeping a record (e.g. paper, software file or hand-held device) of passwords, unless this can be stored securely and the method of storing has been approved;

c) change passwords whenever there is any indication of possible system or password compromise;

d) not include passwords in any automated log-on process, e.g. stored in a macro or function key;

e) not share individual user passwords.

In accordance with the password policy the service must ensure that:

a) user account names have at least the minimum length;

b) quality passwords with sufficient complexity and minimum length (*Minimum Password Length*) are selected;

c) password change is enforced after expiry (*Password Expiry Period*) and at the first log-on for temporary passwords;

d) reuse or recycle a certain number of old passwords is prevented;

e) user accounts are locked after a certain number of failed login attempts (*Maximum Logon Attempts*).

10.3.2 Unattended user equipment

Control: Users must ensure that unattended equipment has appropriate protection.

All users must be made aware of the security requirements and procedures for protecting unattended equipment, as well as their responsibilities for implementing such protection. Users must be advised to:

a) terminate active sessions when finished, unless they can be secured by a locking mechanism, e.g. a password protected screen saver;

b) log-off from mainframe computers, servers, and office PCs when the session is finished (i.e. not just switch off the PC screen or terminal);

c) secure PCs or terminals from unauthorised use by a key lock or an equivalent control, e.g. password access, when not in use.

10.3.3 Clear desk and clear screen policy

Control: A clear desk policy for papers and removable storage media and a clear screen policy for information processing facilities must be adopted.

The clear desk and clear screen policy must take into account the information classifications, legal and contractual requirements, and the corresponding risks and cultural aspects. The following measures must be implemented:

a) sensitive or critical business information, e.g. on paper or on electronic storage media, must be locked away (ideally in a safe or cabinet or other forms of security furniture) when not required, especially when the office is vacated;

b) computers and terminals must be left logged off or protected with a screen and keyboard locking mechanism controlled by a password, token or similar user authentication mechanism when unattended and must be protected by key locks, passwords or other controls when not in use;

c) incoming and outgoing mail points and unattended facsimile machines must be protected;

d) unauthorised use of photocopiers and other reproduction technology (e.g. scanners, digital cameras) should be prevented;

e) documents containing sensitive or classified information must be removed from printers immediately.

10.4 Network access control

Objective: To prevent unauthorised access to networked services.

Access to both internal and external networked services must be controlled.

User access to networks and network services must not compromise the security of the network services by ensuring:

a) appropriate interfaces are in place between the network supporting the service and networks operated by other organisations, and public networks;

b) appropriate authentication mechanisms are applied for users and equipment;

c) control of user access to information services is enforced.

10.4.1 Policy on use of network services

Control: Users must only be provided with access to those services that they have been specifically authorised to use.

A policy must be formulated concerning the use of networks and network services. This policy must cover:

a) the networks and network services which are allowed to be accessed;

b) authorisation procedures for determining who is allowed to access which networks and networked services;

c) management controls and procedures to protect access to network connections and network services;

d) the means used to access networks and network services (e.g. the conditions for allowing dial-up access to an Internet service provider or remote system).

The policy on the use of network services must be consistent with the business access control policy.

10.4.2 User authentication for external connections

Control: Strong authentication methods (e.g. hardware token, certificates) must be used to control access by remote users[17].

A formal procedure for managing and controlling remote connections must be established. Following controls must be in place:

a) Remote connections must only be activated when absolutely necessary and ask for re-authentication after a defined period of inactivity (*Remote Connections Idle Interval*);

b) authentication by the use of cryptographic techniques and two-factor authentication;

c) If used, call-back facilities, must follow strict controls and procedures; call forwarding processes should only be used if absolutely necessary;

d) A logging of all remote connections must be in place.

If remote connections are used for Third Party/vendor support

a) the decision to allow remote access by TP/vendors is made case by case by the senior management and substantiated by a risk analysis;

b) remote access must be allowed only for a limited period of time and only in case support can not be provided on site in time;

c) contractual provisions for remote access must exist and must also be laid down as regards the commitment of vendors' personnel to the secrecy of data;

[17] a user trying to establish a connection from a location outside of the information processing facilities

d) access should be limited to read-only for diagnostic purposes. However, if more privileged access is required (e.g. in emergency cases) then the remote connection activity related to critical functions must be monitored;

e) if used, call-back facilities, must follow strict controls and procedures; call forwarding processes should only be used if absolutely necessary;

f) a logging of all remote connections must be in place.

10.4.3 Equipment identification in networks

Control: Automatic equipment identification must be implemented as a means to authenticate connections from specific locations and equipment.

10.4.4 Remote diagnostic and configuration port protection

Control: Physical and logical access to diagnostic and configuration ports must be controlled.

Potential controls for the access to diagnostic and configuration ports include the use of a key lock and supporting procedures to control physical access to the port.

Ports, services, and similar facilities installed on a computer or network facility, which is not specifically required for business functionality, must be disabled or removed.

10.4.5 Segregation in networks

Control: Groups of information services, users, and information systems must be segregated from a logical point of view.

The security of the network must be controlled by dividing it into separate (physical or logical) network domains. The domains should be defined based on a risk assessment and the different security requirements within each of the domains.

The criteria for segregation of networks into domains must be based on the access control policy and access requirements, and also take account of the relative cost and performance impact of incorporating suitable network routing or gateway technology.

In addition, segregation of networks must be based on the value and classification of information stored or processed in the network, levels of trust, or lines of business, in order to reduce the total impact of a service disruption.

10.4.6 Network connection control

Control: The capability of users to connect to the network must be restricted, in line with the access control policy and requirements of the business applications.

The network access rights of users must be maintained and updated as required by the access control policy.

Linking network access rights to certain times of day or dates should be implemented.

10.4.7 Network routing control

Control: Routing controls must be implemented for networks to ensure that computer connections and information flows do not breach the access control policy of the business applications.

Routing controls must be based on positive checks of source and destination address.

10.5 Operating system access control

Objective: To prevent unauthorised access to operating systems.

Security facilities must be used to restrict access to operating systems to authorised users. Access must be granted based on the “need-to-have” principle.

10.5.1 Secure log-on procedures

Control: Access to operating systems must be controlled by a secure log-on procedure.

The procedure for logging into an operating system must be designed to minimise the opportunity for unauthorised access. The log-on procedure must therefore disclose the minimum of information about the system, in order to avoid providing an unauthorised user with any unnecessary assistance. A good log-on procedure must:

a) not display system or application identifiers until the log-on process has been successfully completed;

b) display a general notice warning that the computer should only be accessed by authorised users;

c) not provide help messages during the log-on procedure that would aid an unauthorised user;

d) validate the log-on information only on completion of all input data. If an error condition arises, the system should not indicate which part of the data is correct or incorrect;

e) limit the number of unsuccessful log-on attempts allowed, to four bad log-on attempts, and consider:

   1. recording unsuccessful and successful attempts;
   2. disconnecting connections;

3. sending an alarm message to the system console if the maximum number of log-on attempts is reached.

f) limit the maximum and minimum time allowed for the log-on procedure. If exceeded, the system should terminate the log-on;

g) display the following information on completion of a successful log-on:

1. date and time of the previous successful log-on;

2. details of any unsuccessful log-on attempts since the last successful log-on;

h) not display the password being entered or consider hiding the password characters by symbols;

i) not transmit passwords in clear text over a network.

j) forcing a time delay before further log-on attempts are allowed or rejecting any further attempts without specific authorisation.

10.5.2 User identification and authentication

Control: All users must have a unique identifier (user ID) for their personal use only, and a suitable authentication technique must be chosen to substantiate the claimed identity of a user.

This control must be applied for all types of users (including technical support personnel, operators, network administrators, system programmers, and database administrators).

In exceptional circumstances, where there is a clear business benefit, the use of a shared user ID for a group of users or a specific job can be used. Approval by management must be documented for such cases. Additional controls are required to maintain accountability.

Generic IDs for use by an individual should only be allowed either where the functions accessible or actions carried out by the ID do not need to be traced (e.g. read only access), or where there are other controls in place (e.g. password for a generic ID only issued to one staff at a time and logging such instance).

Strong authentication and identity verification is required for staff having access to processing facilities via a remote connection (i.e. via unsecured networks), authentication methods alternative to passwords, such as cryptographic means, smart cards, tokens or biometric means, must be used.

10.5.3 Password management system

Control: Systems for managing passwords must be interactive and must ensure quality passwords in line with the security control 10.3.1.

A password management system must:

a) enforce the use of individual user IDs to maintain accountability;

b) allow users to select and change their own passwords and include a confirmation procedure to allow for input errors;

c) enforce a choice of quality passwords;

d) enforce password changes;

e) force users to change temporary passwords at the first log-on;

f) maintain a record of previous user passwords for a defined minimum period of time and prevent re-use (*Period for Keeping Previous Passwords*);

g) not display passwords on the screen when being entered;

h) store password files separately from application system data;

i) store and transmit passwords in protected (e.g. encrypted or hashed) form.

10.5.4 Use of system utilities

Control: The use of utility programs (e. g. security tools, SQL, QMF, APF) that might be capable of overriding system and application controls must be restricted and tightly controlled.

The following measures for the use of system utilities must be implemented:

a) use of identification, authentication, and authorisation procedures for system utilities;

b) segregation of system utilities from applications software;

c) limitation of the use of system utilities to the minimum practical number of trusted, authorised users;

d) authorisation for ad hoc use of systems utilities;

e) logging of all use of system utilities;

f) defining and documenting of authorisation levels for system utilities;

g) removal or disabling of all unnecessary software based utilities and system software;

h) not making system utilities available to users who have access to applications on systems where segregation of duties is required.

10.5.5 Session time-out

Control: Inactive sessions must shut down after a defined period of inactivity to prevent unauthorised access.

A time-out facility must clear the session screen and also, possibly later, close both application and network sessions after a defined period of inactivity (*Session Time-out*).

10.5.6 Limitation of connection time

Control: Restrictions on connection times must be considered to provide additional security for high-risk applications.

Connection time controls should be considered, especially from high risk locations, e.g. external areas that are outside the organization's security management. Examples of such restrictions include:

a) using predetermined time slots;

b) restricting connection times to normal office hours if there is no requirement for overtime or extended-hours operation;

c) considering re-authentication at timed intervals.

10.6 Application and information access control

Objective: To prevent unauthorised access to information held in application systems.

Security facilities must be used to restrict access to and within application systems.

Logical access to application software and information must be restricted to authorised users.

10.6.1 Information access restriction

Control: Access to information and application system functions must be restricted in accordance with the defined access control policy.

Restrictions to access must be based on individual business application requirements. The access control policy must also be consistent with the organisational access policy.

The following measures must be implemented in order to support access restriction requirements:

a) providing menus to control access to application system functions;

b) controlling the access rights of users, e.g. read, write, delete, and execute;

c) controlling access rights of other applications;

d) ensuring that outputs from application systems handling sensitive information contain only the information relevant to the use of the output and are sent only to authorised terminals and locations; this must include periodic reviews of such outputs to ensure that redundant information is removed (*Information Access Restriction Review Interval*).

10.6.2 Sensitive system isolation

Control: The service must be operated in a dedicated (isolated) computing environment.

A dedicated environment could be achieved using physical or logical methods.

10.7 Mobile computing and teleworking

Objective: To ensure information security when using mobile computing and teleworking facilities.

The protection required must be commensurate with the risks these specific ways of working cause. When using mobile computing the risks of working in an unprotected environment should be considered and appropriate protection applied. In the case of teleworking the respective site must be appropriately protected and it must be ensured that suitable arrangements are in place for this way of working.

10.7.1 Mobile computing and communications

Control: A formal policy must be in place, and security measures must be adopted to protect against the risks of using mobile computing and communication facilities.

The mobile computing policy must include the requirements for physical protection, access controls, cryptographic techniques, backups, and virus protection. This policy must also include rules and advice on connecting mobile facilities to networks and guidance on the use of these facilities in public places.

Procedures against malicious software must be in place and be kept up to date.

Backups of critical business information must be taken regularly. Equipment must be available to enable the quick and easy backup of information. These backups must be given adequate protection against, e.g., theft or loss of information.

Suitable protection must be given to the use of mobile facilities connected to networks. Remote access to business information across public network using mobile computing facilities must only take place after successful identification and two-factor authentication.

Mobile computing facilities must also be physically protected against theft especially when left outside the hosting premises, for example, in cars and other forms of transport, hotel rooms, conference centres, and meeting places. A specific procedure taking into account legal, insurance and other security requirements of the service providing organisation must be established for cases of theft or loss of the mobile computing facilities. Equipment carrying important, sensitive, and/or critical business information must not be left unattended and, where possible, should be physically locked away, or have special locks (e. g. putting it in a safe) that secure the equipment.

Training must be arranged for personnel using mobile computing to raise their awareness on the additional risks resulting from this way of working and the controls that should be implemented.

10.7.2 Teleworking

Control: A policy, operational plans and procedures must be developed and implemented for teleworking activities.

Teleworking activities must both be authorised and controlled by management, and it must be ensured that suitable arrangements are in place for this way of working.

The following matters should be considered:

a) the existing physical security of the teleworking site, taking into account the physical security of the building and the local environment;

b) the proposed physical teleworking environment;

c) the communications security requirements, taking into account the need for remote access, the sensitivity of the information that will be accessed and pass over the communication link and the sensitivity of the internal system;

d) the threat of unauthorised access to information or resources from other persons using the accommodation, e.g. family and friends;

e) the use of home networks and requirements or restrictions on the configuration of wireless network services;

f) policies and procedures to prevent disputes concerning rights to intellectual property developed on privately owned equipment;

g) access to privately owned equipment (to check the security of the machine or during an investigation), which may be prevented by legislation;

h) software licensing agreements that are such that the service providing organisation may become liable for licensing for client software on workstations owned privately by employees, contractors or third party users;

i) anti-virus protection and firewall requirements.

The guidelines and arrangements to be implemented should include:

a) the provision of suitable equipment and storage furniture for the teleworking activities, where the use of privately owned equipment that is not under the control of the service providing organisation is not allowed;

b) a definition of the work permitted, the hours of work, the classification of information that may be held and the internal systems and services that the teleworker is authorised to access;

c) the provision of suitable communication equipment, including methods for securing remote access;

d) physical security;

e) rules and guidance on family and visitor access to equipment and information;

f) the provision of hardware and software support and maintenance;

g) the provision of insurance;

h) the procedures for backup and business continuity;

i) audit and security monitoring;

j) revocation of authority and access rights, and the return of equipment when the teleworking activities are terminated.

11 Information systems acquisition, development and maintenance

11.1 Security requirements of information systems

Objective: To ensure that security is an integral part of information systems.

Information systems include operating systems, infrastructure, business applications, off-the-shelf products, services, and user-developed applications. The design and implementation of the information system supporting the business process can be crucial for security. Security requirements must be identified, agreed prior to the development and/or implementation of information systems and documented as part of the overall business case for an information system.

11.1.1 Security requirements analysis and specification

Control: Statements of business requirements for new information systems, or enhancements to existing information systems must specify the requirements for security controls.

Security requirements and controls must reflect the business value of the information assets involved, and the potential business damage, which might result from a failure or absence of security.

System requirements for information security and processes for implementing security must be integrated in the early stages of information system projects. Controls introduced at the design stage are significantly cheaper to implement and maintain than those included during or after implementation.

If products are purchased, a formal testing and acquisition process must be followed. Contracts with the supplier must address the identified security requirements. Where the security functionality in a proposed product does not satisfy the specified requirement then the risk introduced and associated controls must be reconsidered prior to purchasing the product. Where additional functionality is supplied and causes a security risk, this must be disabled or the proposed control structure must be reviewed to determine if advantage can be taken of the enhanced functionality available.

11.2 Correct processing in applications

Objective: To prevent errors, loss, unauthorised modification or misuse of information in applications.

Controls must be designed into applications, including user developed applications to ensure correct processing. These controls must include the validation of input data, internal processing and output data.

Additional controls may be required for components of the service that process, or have an impact on, sensitive, valuable or critical information. Such controls must be determined on the basis of a risk assessment.

11.2.1 Input data validation

Control: Data input to applications must be validated to ensure that this data is correct and appropriate.

Checks must be applied to the input of business transactions, standing data (e.g. names and addresses, credit limits, customer reference numbers), and parameter tables (e.g. opening hours). The following checks should be implemented:

a) dual input or other input checks, such as boundary checking or limiting fields to specific ranges of input data, to detect the following errors:

   1. out-of-range values;
   2. invalid characters in data fields;
   3. missing or incomplete data;
   4. exceeding upper and lower data volume limits;
   5. unauthorised or inconsistent control data;

b) periodic review of the content of key fields or data files to confirm their validity and integrity;

c) procedures for responding to validation errors;

d) procedures for testing the plausibility of the input data;

e) creating a log of the activities involved in the data input process.

11.2.2 Control of internal processing

Control: Validation checks must be incorporated into applications to detect any corruption of information through processing errors or deliberate acts.

The design and implementation of applications should ensure that the risks of processing failures leading to a loss of integrity are minimised. Specific areas to consider include:

a) the use of add, modify, and delete functions to implement changes to data;

b) the procedures to prevent programs running in the wrong order or running after failure of prior processing;

c) the use of appropriate programs to recover from failures to ensure the correct processing of data;

d) protection against attacks using buffer overruns/overflows.

A checklist must be prepared, activities documented, and the results must be kept secure. Examples of checks that can be incorporated include the following:

a) session or batch controls, to reconcile data file balances after transaction updates;

b) balancing controls, to check opening balances against previous closing balances, namely:

   1. run-to-run controls;

   2. file update totals;

   3. program-to-program controls;

c) validation of system-generated input data;

d) checks on the integrity, authenticity or any other security feature of data or software downloaded, or uploaded, between central and remote computers;

e) hash totals of records and files;

f) checks to ensure that application programs are run at the correct time;

g) checks to ensure that programs are run in the correct order and terminate in case of a failure, and that further processing is halted until the problem is resolved;

h) creating a log of the activities involved in the processing.

11.2.3 Message integrity

Control: Requirements for ensuring authenticity and protecting message integrity in applications must be identified, and controls identified and implemented.

An assessment of security risks must be carried out to determine if message integrity is required and to identify the most appropriate method of implementation.

11.2.4 Output data validation

Control: Data output from an application must be validated to ensure that the processing of stored information is correct and appropriate to the circumstances.

Output validation may include:

a) plausibility checks to test whether the output data is reasonable;

b) reconciliation control counts to ensure processing of all data;

c) procedures for responding to output validation tests;

d) creating a log of activities in the data output validation process.

11.3 Cryptographic controls

Objective: To protect the confidentiality, authenticity or integrity of information by cryptographic means.

A policy must be developed on the use of cryptographic controls[18]. Key management must be in place to support the use of cryptographic techniques.

11.3.1 Policy on the use of cryptographic controls

Control: A policy on the use of cryptographic controls for protection of information must be developed and implemented.

When developing a cryptographic policy the following measures must be implemented:

a) the management approach towards the use of cryptographic controls across the service, including the general principles under which business information must be protected;

b) based on a risk assessment, the required level of protection should be identified taking into account the type, strength, and quality of the encryption algorithm required;

c) the use of encryption for protection of sensitive information transported by mobile or removable media, devices or across communication lines;

d) the approach to key management, including methods to deal with the protection of cryptographic keys and the recovery of encrypted information in the case of lost, compromised or damaged keys;

e) roles and responsibilities, e.g. who is responsible for:

   1. the implementation of the policy;
   2. the key management, including key generation;

f) the standards to be adopted for the effective implementation throughout the service (which solution is used for which business processes);

g) the impact of using encrypted information on controls that rely upon content inspection (e.g. virus detection).

[18] Cryptographic controls can be used to achieve different security objectives, e.g.: a) confidentiality: using encryption of information to protect sensitive or critical information, either stored or transmitted; b) integrity/authenticity: using digital signatures or message authentication codes to protect the authenticity and integrity of stored or transmitted sensitive or critical information; c) non-repudiation: using cryptographic techniques to obtain proof of the occurrence or non occurrence of an event or action.

When implementing the cryptographic policy for the service, consideration should be given to the regulations and national restrictions that might apply to the use of cryptographic techniques in different parts of Europe and to the issues of trans-border flow of encrypted information.

11.3.2 Key management

Control: Key management must be in place to support the use of cryptographic techniques.

All cryptographic keys must be protected against modification, loss, and destruction. In addition, secret and private keys need protection against unauthorised disclosure. Equipment used to generate, store and archive keys must be physically protected.

A key management system must be based on an agreed set of standards, procedures, and secure methods for:

a) generating keys for different cryptographic systems and different applications;

b) generating and obtaining public key certificates;

c) distributing keys to intended users, including how keys should be activated when received;

d) storing keys, including how authorised users obtain access to keys;

e) changing or updating keys including rules on when keys should be changed and how this will be done;

f) dealing with compromised keys;

g) revoking keys including how keys should be withdrawn or deactivated, e.g. when keys have been compromised or when a user leaves (in which case keys should also be archived);

h) recovering keys that are lost or corrupted as part of business continuity management, e.g. for recovery of encrypted information;

i) archiving keys, e.g. for information archived or backed up;

j) destroying keys;

k) logging and auditing of key management related activities.

In order to reduce the likelihood of compromise, activation, and deactivation dates for keys must be defined so that the keys can only be used for a limited period of time. This period of time should be dependent on the circumstances under which the cryptographic control is being used, and the perceived risk.

In addition to securely managing secret and private keys, the authenticity of public keys must also be implemented.

11.4 Security of system files

Objective: To ensure the security of system files.

Access to system files and program source code must be controlled. Ensure that IT projects and support activities conducted in a secure manner. Care must be taken to avoid exposure of sensitive data in test environments.

11.4.1 Control of operational software

Control: There must be procedures in place to control the installation of software components on operational systems.

To minimise the risk of corruption to operational systems, the following measures must be implemented to control changes:

a) the updating of the operational software, applications, and program libraries must only be performed by trained administrators upon management authorisation;

b) operational systems should only hold approved executable code, and not development code or compilers;

c) applications and operating system software must only be implemented after extensive and successful testing; the tests must include tests on usability, security, effects on other systems and user-friendliness, and should be carried out on separate systems; it must be ensured that all corresponding program source libraries have been updated;

d) a configuration control system must be used to keep control of all implemented software as well as the system documentation;

e) a rollback strategy must be in place before changes are implemented;

f) an audit log must be maintained of all updates to operational program libraries;

g) the previous version of application software must be retained as a contingency measure;

h) old versions of software (including system management software, scripts) must be archived, together with all required information and parameters, procedures, configuration details, and supporting software for as long as the data is retained in archive.

Vendor supplied software used in operational systems must be maintained at a level supported by the supplier. Over time, software vendors will cease to support older versions of software. The senior management must consider the risks of relying on unsupported software.

Any decision to upgrade to a new release must take into account the business requirements for the change, and the security of the release, i.e. the introduction of new security functionality or the number and severity of security problems affecting this version. Software patches must be applied when they can help to remove or reduce security weaknesses.

Physical or logical access must only be given to suppliers for support purposes when necessary, and with management approval. The supplier's activities must be monitored.

11.4.2 Protection of system test data

Control: Test data must be selected carefully. If sensitive information is used for testing purposes, it must be protected and controlled.

The use of operational databases containing personal information or any other sensitive information for testing purposes should be avoided. If personal or otherwise sensitive information is used for testing purposes, all sensitive details and content must be removed or modified beyond recognition before use. The following guidelines must be applied to protect operational data, when used for testing purposes:

a) the access control procedures, which apply to operational application systems, should also apply to test application systems;

b) there must be separate authorisation each time operational information is copied to a test application system;

c) operational information must be erased from a test application system immediately after the testing is complete;

d) the copying and use of operational information must be logged to provide an audit trail.

11.4.3 Access control to program source code

Control: Access to program source code must be restricted according to the senior management's decision.

Access to program source code and associated items (such as designs, specifications, verification plans and validation plans) must be strictly controlled, in order to prevent the introduction of unauthorised functionality and to avoid unintentional changes. The following measures must then be implemented to control access to such program source libraries/directories in order to reduce the potential for corruption of computer programs:

a) where possible, program source libraries/directories should not be held in operational systems;

b) the program source code and the program source libraries/directories must be managed according to established procedures;

c) support personnel must not have unrestricted access to program source libraries/directories;

d) the updating of program source libraries/directories and associated items, and the issuing of program sources to programmers must only be performed after authorisation has been received;

e) program listings must be held in a secure environment;

f) an audit log must be maintained of all access to program source libraries/directories;

g) maintenance and copying of program source libraries/directories must be subject to strict change control procedures.

11.5 Security in development and support processes

Objective: To maintain the security of application system software and information. Project and support environments must be strictly controlled.

11.5.1 Change control procedures

Control: The implementation of changes[19] must be controlled by the use of formal change control procedures.

Formal change control procedures must be documented and enforced in order to minimise the corruption of information systems. Introduction of new systems and major changes to existing systems must follow a formal process of documentation, specification, testing, quality control, and managed implementation.

This process must include a risk assessment, analysis of the impacts of changes, and specification of security controls needed. This process must also ensure that existing security and control procedures are not compromised, that support programmers are given access only to those parts

[19] These changes include not only software, but hardware and procedures as well.

of the system necessary for their work, and that formal agreement and approval for any change is obtained.

The change procedures must include:

a) identification and recording of changes;

b) planning and testing of changes;

c) assessment of the potential impacts, including security impacts, of such changes;

d) maintaining a record of agreed authorisation levels;

e) ensuring change requests are submitted by authorised users;

f) reviewing controls and integrity procedures to ensure that they will not be compromised by the changes;

g) identifying all software, information, database entities, and hardware that require amendment;

h) obtaining formal approval for detailed proposals before work commences;

i) ensuring authorised users accept changes prior to implementation;

j) ensuring that the system documentation set is updated on the completion of each change and that old documentation is archived or disposed of;

k) ensuring that operating documentation and user procedures are changed as necessary to remain appropriate;

l) maintaining an audit trail of all change requests;

m) maintaining a version control for all software updates;

n) ensuring that the implementation of changes takes place at the right time and does not disturb the business processes involved;

o) planning for recovery and fallback;

p) ensuring that documentation describing how to proceed in the event an emergency change/patch has to be implemented is in place;

q) ensuring that all people that might be affected by or involved in implementing a change are informed about the implementation date.

11.5.2 Technical review of applications after operating system changes

Control: Before operating system software is changed, all business-critical applications must be reviewed and tested to ensure that there is no adverse impact on business operations or security.

This process must cover:

a) review of application control and integrity procedures to ensure that they have not been compromised by the operating system changes;

b) ensuring that the annual support plan and budget will cover reviews and system testing resulting from operating system changes;

c) ensuring that notification of operating system changes is provided in time to allow tests and reviews to take place before implementation;

d) ensuring that appropriate changes are made to the business continuity plans.

11.5.3 Restrictions on changes to software packages

Control: Modifications to software packages must be discouraged, limited to necessary changes, and all changes must be strictly controlled.

As far as possible, and practicable, vendor-supplied software packages should be used without modification. Where a software package needs to be modified the following points must be considered:

a) the risk of built-in controls and integrity processes being compromised;

b) whether the consent of the vendor should be obtained;

c) the possibility of obtaining the required changes from the vendor as standard program updates;

d) the impact if the service providing organisation becomes responsible for the future maintenance of the software as a result of changes.

If changes are necessary the original software must be retained and the changes applied to a clearly identified copy. A software update management process must be implemented to ensure the most up-to-date approved patches and application updates are installed for all authorised software. All changes must be fully tested and documented, so that they can be reapplied if necessary to future software upgrades.

11.5.4 Outsourced software development

Control: Outsourced software development must be supervised and monitored

Where software development is outsourced, the following points must be considered:

a) licensing arrangements, code ownership, and intellectual property rights;

b) certification of the quality and accuracy of the work carried out;

c) escrow arrangements in the event of failure of the third party;

d) rights of access for audit of the quality and accuracy of work done;

e) If open source software is used the following controls must be applied:

   1. downloaded from a trusted source
   2. integrity check, e. g. MD5 verification
   3. verifying the general licensing arrangements (e.g. GNU license)

f) contractual requirements for quality and security functionality of code;

g) testing before installation to detect malicious and Trojan code.

11.5.5 Information leakage

Control: Opportunities for information leakage must be prevented.

As far as possible, and practicable, is has to be ensured that covert channels[20] and Trojan codes[21] are not introduced into a new or upgraded system.

This control is redundant with 11.5.1 Change control procedures, 9.4.1 Controls against malicious code and 9.4.2 Controls against mobile code.

11.6 Technical Vulnerability Management

Objective: To reduce risks resulting from exploitation of published technical vulnerabilities.

Technical vulnerability management must be implemented in an effective, systematic, and repeatable way with measurements taken to confirm its effectiveness. These considerations must include operating systems, and any other applications in use.

[20] A covert channel can expose information by some indirect and obscure means.

[21] Trojan code is designed to affect a system in a way that is not authorised.

11.6.1 Control of technical vulnerabilities

Control: Timely information about technical vulnerabilities of information systems being used must be obtained, the exposure of the service to such vulnerabilities evaluated, and appropriate measures taken to address the associated risk.

A current and complete inventory of assets is a prerequisite for effective technical vulnerability management. Specific information needed to support technical vulnerability management includes the software vendor, version numbers, current state of deployment (e.g. what software is installed on what systems), and the person(s) within the organisation responsible for the software.

Timely action must be taken in response to the identification of potential technical vulnerabilities. The following measures must be implemented to establish an effective management process for technical vulnerabilities:

a) roles and responsibilities associated with technical vulnerability management, including vulnerability monitoring, vulnerability risk assessment, patching, asset tracking, and any other coordination activities must be clearly defined and established;

b) information resources that will be used to identify technical vulnerabilities and to maintain awareness about them must be identified for software and other technology (based on the asset inventory list); these information resources must be updated based on changes in the inventory, or when other new or useful resources are found;

c) a timeline must be defined to react to notifications of potential technical vulnerabilities;

d) once a potential technical vulnerability has been identified, the senior management must identify the associated risks and the actions to be taken; such action could involve patching of vulnerable systems and/or applying other controls;

e) depending on how urgently a technical vulnerability needs to be addressed, the action taken must be carried out according to the controls related to change management or by following information security incident response procedures;

f) if a patch is available, the risks associated with installing the patch must be assessed (the risks posed by the vulnerability should be compared with the risk of installing the patch);

g) patches must be tested and evaluated before they are installed to ensure they are effective and do not result in side effects that cannot be tolerated; if no patch is available, other controls should be implemented, such as:

    1. turning off services or capabilities related to the vulnerability;

    2. adapting or adding access controls, e.g. firewalls, at network borders;

3. increased monitoring to detect or prevent actual attacks;
4. raising awareness of the vulnerability;

h) an audit log must be kept for all procedures undertaken;

i) the technical vulnerability management process must be monitored and evaluated in order to ensure its effectiveness and efficiency;

j) system components at high risk must be addressed first.

12 Information security incident management

12.1 Reporting information security events and weaknesses

Objective: To ensure information security events and weaknesses associated with information systems are communicated in a manner allowing timely corrective action to be taken.

Formal event reporting and escalation procedures must be in place. All employees, contractors and third party users must be made aware of the procedures for reporting the different types of events and weaknesses that might have an impact on the security of assets. They are required to report any information security events and weaknesses as quickly as possible to the designated point of contact.

12.1.1 Reporting information security events

Control: Information security events must be reported through appropriate management channels as quickly as possible.

A formal information security event reporting procedure must be established, together with an incident response and escalation procedure, setting out the action to be taken on receipt of a report of an information security event. A point of contact must be established for the reporting of information security events. It must be ensured that this point of contact is well known, is always available and is able to provide adequate and timely response.

All employees, contractors and third party users must be made aware of their responsibility to report any information security events as quickly as possible. They must also be aware of the procedure for reporting information security events and the point of contact. The reporting procedures must include:

a) suitable feedback processes to ensure that those reporting information security events are notified of results after the issue has been dealt with and closed;

b) information security event reporting forms to support the reporting action, and to help the person reporting to remember all necessary actions in case of an information security event;

c) the correct behaviour to be undertaken in case of an information security event, i.e.:

1. noting all important details (e.g. type of non-compliance or breach, occurring malfunction, messages on the screen, strange behaviour) immediately;
2. not carrying out any own action, but immediately reporting to the point of contact;

d) reference to an established formal disciplinary process for dealing with employees, contractors or third party users who commit security breaches.

12.1.2 Reporting security weaknesses

Control: All employees, contractors and third party users must be required to note and report any observed or suspected security weaknesses in systems or services.

All employees, contractors and third party users must report these matters either to the appropriate point of contact as quickly as possible in order to prevent information security incidents. The reporting mechanism should be easy, accessible, and available. They must be informed that they should not, in any circumstances, attempt to prove a suspected weakness.

12.2 Management of information security incidents and improvements

Objective: To ensure a consistent and effective approach is applied to the management of information security incidents.

Responsibilities must be clearly allocated and procedures must be in place to handle information security events and weaknesses effectively once they have been reported. A process of continual improvement must be applied to the response to, monitoring, evaluating, and overall management of information security incidents.

Where evidence is required, it must be collected to ensure compliance with legal requirements.

12.2.1 Responsibilities and procedures

Control: Management responsibilities and procedures must be established to ensure a quick, effective, and orderly response to information security incidents.

In addition to reporting of information security events and weaknesses, the monitoring of systems, alerts, and vulnerabilities must be used to detect information security incidents. The following measures for information security incident management procedures must be implemented:

a) procedures must be established to handle different types of information security incident, including:

   1. information system failures and loss of service;
   2. malicious code;
   3. denial of service;
   4. errors resulting from incomplete or inaccurate business data;
   5. breaches of confidentiality and integrity;
   6. misuse of information systems.

b) in addition to normal contingency plans, the procedures must also cover:

   1. analysis and identification of the cause of the incident;
   2. containment;
   3. planning and implementation of corrective action to prevent recurrence, if necessary;
   4. communication with those affected by or involved with recovery from the incident;
   5. reporting the action to the appropriate authority;

c) audit trails and similar evidence must be collected and secured, as appropriate, for:

   1. internal problem analysis;
   2. use as forensic evidence in relation to a potential breach of contract breach or regulatory requirement or in the event of civil or criminal proceedings, e.g. under computer misuse or data protection legislation;
   3. negotiating for compensation from software and service suppliers;

d) action to recover from security breaches and correct system failures must be carefully and formally controlled.

12.2.2 Learning from information security incidents

Control: There must be mechanisms in place to enable the types, volumes, and impacts of information security incidents to be quantified and monitored.

The information gained from the evaluation of information security incidents must be used to identify recurring or high impact incidents.

12.2.3 Collection of evidence

Control: Where a follow-up action against a person or organisation after an information security incident could lead to legal action (either civil or criminal), evidence must be collected, retained, and presented to conform to the rules for evidence laid down in the relevant jurisdiction(s).

Internal procedures must be developed and followed when collecting and presenting admissible evidence for the purposes of disciplinary action.

Any forensics work must only be performed on copies of the evidential material. The integrity of all evidential material must be protected. Copying of evidential material must be supervised by trustworthy personnel and information on when and where the copying process was executed, who performed the copying activities and which tools and programs have been utilised must be logged.

13 Business continuity management

13.1 Information security aspects of business continuity management

Objective: To counteract interruptions to the service and to protect critical business processes from the effects of major failures of information systems or disasters, and to ensure their timely resumption.

A business continuity management process must be implemented to minimise the impact on the service and recover from loss of information assets (which may be the result of, for example, natural disasters, accidents, equipment failures, and deliberate actions) to an acceptable level through a combination of preventive and recovery controls. This process must identify the critical business processes and integrate the information security management requirements of business continuity with other continuity requirements relating to such aspects as operations, staffing, materials, transport and facilities.

The consequences of disasters, security failures, loss of service, and service availability must be subject to a business impact analysis. Business continuity plans must be developed and implemented to ensure timely resumption of essential operations. Information security must be an integral part of the overall business continuity process, and other management processes of the service providing organisation.

Business continuity management must include controls to identify and reduce risks, in addition to the general risks assessment process, limit the consequences of damaging incidents, and ensure that information required for business processes is readily available.

13.1.1 Including information security in the business continuity management process

Control: A managed process must be developed and maintained for business continuity that addresses the information security requirements needed to ensure business continuity of the service.

The process must bring together the following key elements of business continuity management:

a) understanding the risks the service is facing in terms of likelihood and impact in time, including an identification and prioritisation of critical business processes;

b) identifying all the assets involved in critical business processes;

c) understanding the impact which interruptions caused by information security incidents are likely to have on the business (it is important that solutions are found that will handle incidents causing smaller impact, as well as serious incidents that could threaten the viability of the service), and establishing the business objectives of information processing facilities;

d) identifying sufficient financial, organisational, technical, environmental and human resources to address the identified information security requirements;

e) ensuring the safety of personnel and the protection of information processing facilities and property;

f) formulating and documenting business continuity plans addressing information security requirements in line with the agreed business continuity strategy;

g) regular testing and updating of the plans and processes put in place;

h) ensuring that the management of business continuity is incorporated in the overall processes and structure of the respective central bank; responsibility for the business continuity management process must be assigned at an appropriate level;

i) ensuring that business continuity arrangements are able to cope with a major loss or inaccessibility of critical staff.

13.1.2 Business continuity and risk assessment

Control: Events that can cause interruptions to business processes must be identified, along with the probability and impact of such interruptions and their consequences for information security.

Information security aspects of business continuity must be based on identifying events (or sequence of events) that can cause interruptions to the service, e.g. equipment failure, human errors, theft, fire, natural disasters and acts of terrorism. This must be followed by a risk assessment to determine the probability and impact of such interruptions, in terms of time, damage scale and recovery period.

Business continuity risk assessments must be carried out with full involvement from owners of business resources and processes. This assessment must consider all business processes and must not be limited to the information processing facilities, but must include the results specific to information security. It is important to link the different risk aspects together, to obtain a complete picture of the business continuity requirements of the service providing organisation. The assessment must identify, quantify, and prioritise risks against criteria and objectives relevant to the service providing organisation, including critical resources, impacts of disruptions, allowable outage times, and recovery priorities.

Depending on the results of the risk assessment, a business continuity strategy must be developed to determine the overall approach to business continuity. Once this strategy has been created, endorsement must be provided by senior management, and a plan created and endorsed to implement this strategy.

13.1.3 Developing and implementing continuity plans including information security

Control: Plans must be developed and implemented to maintain or restore operations and ensure availability of information at the required level and in the required time-scales following interruption to, or failure of, critical business processes.

The business continuity planning process must consider the following:

a) identification and agreement of all responsibilities and business continuity procedures;

b) identification of the acceptable loss of information and services;

c) implementation of the procedures to allow recovery and restoration of business operations and availability of information in required time-scales; particular attention needs to be given to the assessment of internal and external business dependencies and the contracts in place;

d) definition of procedures for both internal and external communication described in a crisis communication plan;

e) operational procedures to follow pending completion of recovery and restoration;

f) documentation of agreed procedures and processes;

g) education of staff in the agreed procedures and processes, including crisis management;

h) testing and updating of the plans.

The planning process must focus on the following business objectives:

a) Business continuity measures must ensure that all business transactions can be processed with the ‘same day value’ and the business day can be finalised with a defined maximum delay;

b) In a ‘disaster situation’[22] it must be possible to recover operations from a remote secondary site in line with the recovery times stated in the Service Level Agreement.

The services and resources facilitating this must be identified, including staffing, non-information processing resources, as well as fallback arrangements for information processing facilities. Such fallback arrangements may include arrangements with third parties in the form of reciprocal agreements, or commercial subscription services.

Business continuity plans must address vulnerabilities and therefore may contain sensitive information that needs to be protected. Copies of business continuity plans must be stored in a remote location with a different risk profile to escape any damage from a disaster at the main site. Management must ensure copies of the business continuity plans are up-to-date and protected with the same level of security as applied at the main site. Other material necessary to execute the business continuity plans must also be stored at the remote location.

If alternative temporary locations are used, the level of implemented security controls at these locations must be equivalent to the main site.

[22] Major failure or disaster is understood to mean a serious service interruption which is solved by relocation of the service operations to a second site, physically separate from the primary site. Causes for a major failure can be technical faults, such as lengthy hardware, software or communication failures. Disaster events are fire, flood, explosions, sabotage, evacuation, blockade, terrorist attacks etc.

13.1.4 Business continuity planning framework

Control: A single framework of business continuity plans must be maintained to ensure that all plans are consistent, to consistently address information security requirements, and to identify priorities for testing and maintenance.

The business continuity plan must describe the approach for continuity, for example the approach to ensure information or information system availability and security. The plan must also specify the escalation plan and the conditions for its activation, as well as the individuals responsible for executing each component of the plan. When new requirements are identified, any existing emergency procedures, e.g. evacuation plans or fallback arrangements, must be amended as appropriate. Procedures must be included within the change management programme to ensure that business continuity matters are always addressed appropriately.

The business continuity plan must have a specific owner. Emergency procedures, manual fallback plans, and recovery plans must be within the responsibility of the owners of the appropriate business resources or processes involved.

A business continuity planning framework must address the identified information security requirements and consider the following:

a) the conditions for activating the plans which describe the process to be followed (e.g. how to assess the situation, who is to be involved) before each plan is activated;

b) emergency procedures, which describe the actions to be taken following an incident, which jeopardises business operations;

c) fallback procedures which describe the actions to be taken to move essential business activities or support services to alternative temporary locations, and to bring business processes back into operation in the required time-scales;

d) temporary operational procedures to follow pending completion of recovery and restoration;

e) recovery procedures which describe the actions to be taken to return to normal business operations;

f) a maintenance schedule which specifies how and when the plan will be tested;

g) a process for maintaining the plan;

h) awareness, education, and training activities which are designed to create understanding of the business continuity processes and ensure that the processes continue to be effective;

i) the responsibilities of the individuals, describing who is responsible for executing which component of the plan. Alternatives must be nominated as required;

j) the critical assets and resources needed to be able to perform the emergency, fallback and recovery procedures.

13.1.5 Testing, maintaining and re-assessing business continuity plans

Control: The business continuity plans must be tested and updated regularly to ensure that they are up to date and effective.

Business continuity plan tests should ensure that all members of the recovery team and other relevant staff are aware of the plans and their responsibility for business continuity and information security and know their role when a plan is invoked.

The test schedule for business continuity plan(s) must indicate how and when each element of the plan should be tested. Each element of the plan(s) should be tested at planned intervals (*Business Continuity Test Interval*).

A variety of techniques should be used in order to provide assurance that the plan(s) will operate in real life. These should include:

a) table-top testing of various scenarios (discussing the business recovery arrangements using example interruptions);

b) simulations (particularly for training people in their post-incident/crisis management roles);

c) technical recovery testing (ensuring information systems can be restored effectively);

d) testing recovery at an alternate site (running business processes in parallel with recovery operations away from the main site);

e) tests of supplier facilities and services (ensuring externally provided services and products will meet the contracted commitment);

f) complete rehearsals (testing that personnel, equipment, facilities, and processes can cope with interruptions).

The results of tests must be recorded and actions taken to improve the plans, where necessary.

Responsibility must be assigned for reviews of each business continuity plan. The identification of changes in business arrangements not yet reflected in the business continuity plans must be followed by an appropriate update of the plan. This formal change control process should ensure that the updated plans are distributed and reinforced by regular reviews of the complete plan (*Business Continuity Review Interval*).

14 Compliance

14.1 Compliance with legal requirements

Objective: To avoid breaches of any law, statutory, regulatory or contractual obligations, and of any security requirements.

The design, operation, use, and management of information systems may be subject to statutory, regulatory, and contractual security requirements.

Advice on specific legal requirements should be sought from legal advisers, or suitably qualified legal practitioners. Legislative requirements vary from country to country and may vary for information created in one country that is transmitted to another country (i.e. trans-border data flow).

14.1.1 Identification of applicable legislation

Control: All relevant and applicable statutory, regulatory, and contractual requirements and the approach to meet these requirements must be explicitly defined, documented, and kept up to date for the service and the service providing organisation.

The specific controls and individual responsibilities to meet these requirements must be similarly defined and documented.

14.1.2 Intellectual property rights (IPR)

Control: Procedures must be implemented to ensure compliance with legislative, regulatory, and contractual requirements on the use of material in respect of which there may be intellectual property rights and on the use of proprietary software products.

The following guidelines should be considered:

a) publishing an intellectual property rights compliance policy which defines the legal use of software and information products;

b) acquiring software only through known and reputable sources, to ensure that copyright is not violated;

c) maintaining awareness of policies to protect intellectual property rights, and giving notice of the intent to take disciplinary action against personnel breaching them;

d) maintaining asset registers, and identifying all assets with requirements to protect intellectual property rights;

e) maintaining proof and evidence of ownership of licenses, master disks, manuals, etc;

f) implementing controls to ensure that any maximum number of users permitted is not exceeded;

g) carrying out checks that only authorised software and licensed products are installed;

h) providing a policy for maintaining licence conditions;

i) providing a policy for disposing or transferring software to others;

j) using appropriate audit tools;

k) complying with terms and conditions for software and information obtained from public networks;

l) not duplicating, converting to another format or extracting from commercial recordings (film, audio) other than permitted by copyright law;

m) not copying in full or in part, books, articles, reports or other documents, other than permitted by copyright law.

14.1.3 Protection of records

Control: Important records must be protected from loss, destruction, and falsification, in accordance with statutory, regulatory, contractual, and business requirements.

Records must be categorised into record types, e.g. accounting records, database records, transaction logs, audit logs, and operational procedures, each with details of retention periods and type of storage media, e.g. paper, microfiche, magnetic, optical. Any related cryptographic keying material and programs associated with encrypted archives or digital signatures, must also be stored to enable decryption of the records for the length of time the records are retained.

To meet the record safeguarding objectives, the following steps must be taken:

a) guidelines must be issued on the retention, storage, handling, and disposal of records and information;

b) a retention schedule must be drawn up identifying records and the period of time for which they should be retained;

c) an inventory of sources of key information must be maintained;

d) controls must be implemented to protect records and information from loss, destruction, and falsification.

14.1.4 Data protection and privacy of personal information

Control: Data protection and privacy must be ensured as required in relevant legislation, regulations, and, if applicable, contractual clauses.

A data protection and privacy policy must be developed and implemented. This policy must be communicated to all persons involved in the processing of personal information.

14.1.5 Prevention of misuse of information processing facilities

Control: Users must be deterred from using information processing facilities for unauthorised purposes.

The senior management must approve the use of information processing facilities. Any use of these facilities for non-business purposes without management approval, or for any unauthorised purposes, should be regarded as improper use of the facilities. If any unauthorised activity is identified by monitoring or other means, this activity should be brought to the attention of the individual manager concerned for consideration of appropriate disciplinary and/or legal action.

Legal advice must be taken before implementing monitoring procedures.

All users should be aware of the precise scope of their permitted access and of the monitoring in place to detect unauthorised use.

At log-on, a warning message should be presented to indicate that the information processing facility being entered is under the responsibility of the respective part of the service providing organisation and that unauthorised access is not permitted. The user has to acknowledge and react appropriately to the message on the screen to continue with the log-on process.

14.1.6 Regulation of cryptographic controls

Control: Cryptographic controls must be used in compliance with all applicable agreements, laws, and regulations.

Legal advice must be sought to ensure compliance with national laws and regulations. Before encrypted information or cryptographic controls are moved to another country, legal advice should also be taken.

14.2 Compliance with security policies and technical compliance

Objective: To ensure compliance of the service with security policies and standards.

The compliance of information systems with security policies must be reviewed at least every three years and/ or when significant changes occur. Such reviews must be performed against the existing security policies and the technical platforms. The service must be checked for compliance with applicable security implementation standards and documented security controls.

14.2.1 Compliance with security policies and security requirements

Control: Managers must ensure that all security procedures are carried out correctly to achieve compliance with security policies and standard based security requirements.

At planned intervals (*Compliance Review Interval*) and/or when significant changes occur, the compliance of information processing with the existing security policies and any other security requirements must be reviewed.

If any non-compliance is found as a result of the review:

a) determine the causes of the non-compliance;

b) evaluate the need for actions to ensure that non-compliance do not recur;

c) determine and implement appropriate corrective action;

d) review the corrective action taken.

Results of reviews and corrective actions carried out must be recorded and these records must be maintained. The results must be reported to the persons carrying out the independent reviews, when the independent review takes place.

14.2.2 Technical compliance checking

Control: Information systems must be regularly checked for compliance with the security policy and standard based security requirements.

Technical compliance checking[23] must be performed either manually (supported by appropriate software tools, if necessary) by an experienced system engineer, and/or with the assistance of automated tools, which generate a technical report for subsequent interpretation by a technical specialist. It must be performed on a regular basis (*Technical Compliance Check Interval*) and/or when significant technical changes occur. Such tests must be planned and documented.

[23] e.g. penetration tests and/or vulnerability assessments

Any technical compliance check must only be carried out by competent, authorised persons, or under the supervision of such persons.

14.3 Information systems audit considerations

Objective: To maximise the effectiveness of, and to minimise interference to/from the information systems audit process.

There must be controls to safeguard operational systems and audit tools during information systems audits.

Protection is also required to safeguard the integrity and prevent misuse of audit tools.

14.3.1 Information systems audit controls

Control: Audit requirements and activities involving checks on operational systems must be carefully planned and agreed to minimise the risk of disruptions to business processes.

The following points must be observed:

a) audit requirements must be agreed with appropriate management;

b) the scope of the checks must be agreed and controlled;

c) the checks should be limited to read-only access to software and data;

d) access other than read-only are only allowed for isolated copies of system files, which must be erased when the audit is completed, or given appropriate protection if there is an obligation to keep such files under audit documentation requirements;

e) resources for performing the checks must be explicitly identified and made available;

f) requirements for special or additional processing should be identified and agreed;

g) all access must be monitored and logged to produce a reference trail;

h) all procedures, requirements, and responsibilities must be documented;

i) the person(s) carrying out the audit must be independent of the activities audited.

14.3.2 Protection of information systems audit tools

Control: Access to information systems audit tools must be protected to prevent any possible misuse or compromise.

Information systems audit tools, e.g. software or data files, must be separated from development and operational systems and not held in tape libraries or user areas, unless given an appropriate level of additional protection.

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FRAMEWORK AGREEMENT

SCHEDULE 11
EXIT MANAGEMENT

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1 Introduction

This Schedule sets out the provisions related to preparing and supporting the exit of a Contracting CSD and its community from T2S, as well as the roles and responsibilities of the parties during the exit process.

This Schedule does not cover the possible causes of termination and their consequences, nor the decision-making process, including arbitration and escalation, which will take place in case one contracting party does not accept the other contracting party's termination of the Framework Agreement for cause.

The Schedule is divided into two chapters i) scope and general approach of the Exit Management; ii) exit of a Contracting CSD to T2S addressing the responsibilities of the parties.

2 Scope and General Approach of Exit Management

2.1 Scope

This Schedule describes the operational and mutual support principles that will apply from the moment the Contracting CSD has formally notified the Eurosystem of its decision to exit T2S, either for convenience or for cause, or from the moment the Eurosystem has formally notified the Contracting CSD that it wishes to terminate the Framework Agreement. Notifications are given by way of an official termination notice, either from the Contracting CSD to the Eurosystem, or from the Eurosystem to the CSDs.

2.2 General approach of Exit Management

Unless otherwise agreed between the parties, in writing the exit of a CSD from T2S will consist of a full de-migration of the Contracting CSD’s business on a given date (i.e. “big-bang” approach) from the T2S Platform. Such exit shall take place over a weekend, targeting to avoid sensitive weekends (e.g. end-of-month, end-of quarter).

If a CSD decides to terminate the Framework Agreement for convenience, it shall maintain its internal systems sufficiently compatible with the T2S functionality and with agreed Service Levels, so as to allow T2S to provide the agreed services to other T2S Actors. This may imply that the Contracting CSD has to implement authorised changes, in particular in case of fast-track changes, as specified in Schedule 9 (Change and Release Management).

2.3 Relation with the non-euro area NCBs

Should a non-euro area NCB terminate the Currency Participation Agreement at least six months before their planned migration date, which means that such non-euro area NCB will not migrate to T2S, the Eurosystem shall review the testing and migration plans in accordance with the provisions laid down in Schedules 2 (T2S Programme Planning and Monitoring), 3 (User Testing) and 4 (Migration).

3 Exit of the Contracting CSD

3.1 General responsibilities of the parties

a) It is the responsibility of the Eurosystem to co-ordinate, steer and monitor the exit process. In agreement with the Contracting CSD, it establishes the exit plan, the tasks and the milestones for the exit process and monitors compliance with the agreed procedures, tasks and milestones.

b) To the extent possible, the parties shall use all reasonable endeavour to minimize the effects of the exit on T2S and other T2S Actors.

c) It is the responsibility of the Contracting CSD to co-ordinate all exit activities with its T2S Users. Both parties shall appoint an "Exit Manager", whose main responsibility consists in co-ordinating the exit activities and acting as liaison for the other contracting party.

d) The exit process ends when the adaptations are completed so that there are no more securities on the Securities Accounts managed by the CSD on the T2S Platform. Unless otherwise agreed between the parties, the exit of a CSD from T2S will take the form of a simultaneous inactivation of all Securities Accounts operated by that CSD on the T2S Platform, so as to prevent any further securities settlement on those accounts. These activities will take place during a week-end agreed upon by both parties and called the exit week-end.

After the completion of the exit process, and until the end of the legal archiving period, the Eurosystem shall continue to provide information – including but not limited to Transactional Data – to the Contracting CSD, upon the latter's request, with respect to the services provided by the Eurosystem to the Contracting CSD in the context of the Framework Agreement.

3.2 Responsibilities of the Contracting CSD

In view of ensuring a successful exit from T2S, the Contracting CSD shall:

e) deliver to the Eurosystem, at the latest one month after the official termination notice, a high-level exit plan clearly defining all activities that – within the following conditions – the CSD itself, its DCP, the Eurosystem and, where relevant, any non-euro area NCB are to perform;

f) all its DCPs will have stopped their direct connection to T2S at least one month before the exit weekend;

g) agree with its Investor and Issuer CSD(s) how to re-arrange their inter-CSD links;

h) specify its plan to conduct tests with its Investor and Issuer CSD(s), as far as the latter remain in T2S;

i) agree with the Central Banks whose currency it needs for DvP settlement, how the usage of cash accounts will change as a result of the exit;

j) deliver to the Eurosystem, at the latest two months after the delivery of the high-level exit plan, the detailed support request for the execution of all exit activities, which the CSD expects from the Eurosystem;

k) monitor and take all necessary measures to facilitate the readiness of its community for the exit from T2S;

l) co-operate with the Eurosystem in preparation of the exit plan and the detailed exit weekend script;

m) coordinate all exit activities with its community, including with other CSDs acting as Investor CSDs, and confirm the successful completion of the activities to the Eurosystem;

n) inform the Eurosystem of any unexpected event or delay of a planned activity, which may affect the execution of the Eurosystem's support activities or the exit plan.

3.3 Responsibilities of the Eurosystem

In view of ensuring a successful exit from T2S, the Eurosystem shall:

a) continue to provide all services and support as specified in the Framework Agreement, until the exit weekend;

b) provide reasonable support to the Contracting CSD in preparing its high-level exit plan;

c) indicate to the Contracting CSD within one month after the receipt of the high-level exit plan, any constraints and conditions applicable to the support it can provide;

d) assist the Contracting CSD in preparing its detailed support request to the Eurosystem, in particular by indicating specific areas where the Eurosystem can offer such support;

e) agree with the Contracting CSD within one month after the receipt of the detailed support request on the precise activities that the Eurosystem will conduct, and their timing;

f) support the Contracting CSDs in establishing the exit plan, including aspects related to its Securities Accounts, accounts structures, Dedicated Cash Accounts, major project milestones, as well as checkpoints to be met before the start of the exit weekend;

g) inform the Contracting CSD within one month after reaching an agreement on the exit plan of the amount of any costs for planning, co-ordination and execution of exit activities – beyond the normal operational support – which it expects the CSD to reimburse, unless the Contracting CSD has terminated the Framework Agreement for cause, in which case the Eurosystem will provide such support free of charge;

h) make all reasonable efforts to conduct the agreed activities, including communication and coordination with other T2S Actors, and where relevant confirm their successful completion to the Contracting CSD;

i) establish the detailed exit weekend script which provides the Contracting CSD with the required information to execute the tasks and/or to carry out the actions required during the exit weekend;

j) provide all reasonable support to the Contracting CSD to address any unexpected events during the exit process;

k) establish the fall-back arrangements and roll-back procedures specific for the exit, in order to manage the necessary processes if the exit needs to be deferred to a later stage due to predictable or unforeseen circumstances, and/or if the activities already performed during the exit weekend need to be unwound if the exit has to be stopped.

FRAMEWORK AGREEMENT

SCHEDULE 12
FORM FOR SUBCONTRACTING

Framework Agreement

Schedule 12 – Form for subcontracting

Name of the entity providing the services/products:

____

Name, company number and registered office address of the entity to which the provision of services/products is subcontracted ("Subcontractor"):

____

Detailed description of the services/products subject to Subcontracting:

____

____

Address from which the services/products will be provided/supplied:

____

Contractual basis of Subcontracting (express confirmation of compliance with confidentiality and data protection obligation, right of access to the Contracting CSD premises and systems and disaster recovery):____

Date of initial notification of Subcontracting: _____________________________________

Form of the notification of Subcontracting: _____________________________________

<u>Action required</u>:

The CSG shall respond within 14 calendar days from receipt of the request of consent and decide in alternative to:

(i) provide its consent
(ii) refuse its consent

In case of (ii) reasons for refusal: ____

(iii) indicate a new deadline for providing the answer (not later than 1 month from receipt of the Eurosystem's request):

____

____
Authorised signatories
Eurosystem

For consent, ______________________ ________________
Contracting CSD/CSG
Authorised signatories

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SCHEDULE 13
PROCEDURE FOR PAYMENT OF CLAIMS

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For the purposes of this Schedule, either Party asserting a claim against the other Party is referred to as “Claimant”, while the other Party is referred to as “Respondent”.

1 Procedure in respect of claims pursuant to Articles 32 and 33(1)(b)

The following procedure applies to the handling of any claim pursuant to Articles 32 or 33(1)(b):

(a) The Claimant shall notify the Respondent without undue delay of the occurrence of any event which the Claimant reasonably believes may give rise to a claim for liability or indemnification, as the case may be, and in any case no later than within 30 calendar days from the occurrence of such an event or, if the Claimant did not know that an event would give rise to a claim, as from the moment it has the relevant knowledge.

(b) The Claimant shall submit its claim against the Respondent without undue delay, and in any case no later than within 12 months from the occurrence of the event which gave rise to the claim or, if the Claimant did not know that an event gave rise to a claim for liability or indemnification, within 12 months from the moment it knew or should reasonably have known of such a claim. After the expiry of this period, the Respondent shall be entitled to reject the claim.

(c) The Claimant shall submit its claim to the Respondent in writing, hereby specifying the amount and justification of the claim, to allow the Respondent to assess the merits of the submitted claim.

(d) The Respondent may request any additional information from the Claimant as may be reasonably required for assessing the merits of the claim. The Claimant shall cooperate in good faith and in a timely manner with the Respondent.

(e) The Respondent shall, without undue delay, notify the Claimant in writing if it accepts the claim or rejects it in whole or in part, in the latter case giving reasons for the rejection.

(f) In case of dispute as to the merits of the claim, the Parties shall make any effort to find an amicable arrangement. As the case may be, the Parties shall take recourse to Article 43 (Arbitration).

(g) If the Respondent has accepted the claim as merited, in whole or in part, or if it was settled either by an amicable arrangement between the Parties or through an Arbitration pursuant to Article 43, the Respondent shall, subject to paragraphs (b), (h) and (i), pay out the claim as soon as reasonably practicable and at the latest within 90 calendar days after the end of the calendar year in which the event occurred that caused the claim. Any payment pursuant to Article 32 is subject to the limitations of Article 32(5)(a) and shall be made on a provisional basis subject to the reservations of paragraphs (h) and (i). The Claimant shall not be entitled to claim interest or damages for late payment in relation to the time elapsed prior to the expiry of the period of 90 calendar days.

(h) If the liability of the Eurosystem vis-à-vis the Contracting CSD is limited in accordance with Article 32(5)(a) and the amounts payable to the Contracting CSD and, as the case may be, to other Participating CSDs are reduced accordingly, the Eurosystem shall notify all Claimants as soon as practicably possible after the end of the calendar year referred to in paragraph (g); the notification shall give sufficient evidence of the reasons for, and the calculation of, the reduced amounts paid in relation to the amounts that had been claimed.

(i) If a claim is accepted as merited by the Eurosystem after the end of the calendar year in which the event occurred that caused the claim or settled either by an amicable arrangement between the Parties or through an Arbitration pursuant to Article 43 after the end of this calendar year, the Eurosystem shall pay such a claim as soon as reasonably practicable. If such a claim should be subject to a reduction pursuant to Article 32(5)(a), the Claimant shall be notified in accordance with paragraph (h) prior to the payment. To the extent that a claim paid after the end of the calendar year referred to in paragraph (g) is subject to a reduction pursuant to Article 32(5)(a), all payments previously made to the Contracting CSD or Participating CSDs with regard to this calendar year shall be recalculated in accordance with Article 32(5)(a) and the paid amounts shall be adjusted. With regard to this adjustment, the Eurosystem is entitled to claim back any payment made in excess of the adjusted pro rata entitlement according to Article 32(5)(a).

2 Procedure in respect of claims pursuant to Article 40

The following procedure applies to the handling of claims pursuant to Article 40:

(a) The Claimant shall without undue delay, and in any case within a maximum period of 12 months after the date at which the termination of the Agreement became effective, submit the claim to the Respondent in writing, hereby specifying the amount and justification of the claim, to allow the Respondent to assess the merits of the claim. After the expiry of this maximum period, the Respondent shall be entitled to reject the claim.

(b) The Respondent may request any additional information from the Claimant as may be reasonably required for assessing the merits of the submitted claim. The Claimant shall cooperate in good faith and in a timely manner with any such requests by the Respondent.

(c) The Respondent shall, without undue delay, notify the Claimant in writing if it accepts the claim or rejects it in whole or in part, in the latter case giving reasons for the rejection.

(d) In case of dispute as to the merits of the claim, the Parties shall take recourse to Article 42 and, as the case may be, Article 43.

(e) The Respondent, shall compensate any claim that it has accepted as merited, in whole or in part, or that was settled in accordance with Articles 42 or 43, as soon as reasonably practicable and at the latest within 90 calendar days after the end of the calendar year in which the claim was accepted or settled. The Claimant shall not be entitled to claim interest or damages for late payment in relation to the time elapsed prior to the expiry of the period of 90 calendar days.

(f) The following shall apply in respect of the calculation of the loss payable by the Contracting CSD to the Eurosystem, in accordance with Article 40(1):

- The loss shall be calculated as from the date when the termination of the Agreement became effective.
- It shall be calculated as follows: “daily average number of securities instructions that the Contracting CSD settled, as the case may be, either in T2S or in its legacy settlement infrastructure during the 12 month preceding the date of notification of termination multiplied by the relevant T2S prices indicated in the T2S Price List multiplied by the number of days from the date when the termination became effective until the end of the cost recovery period”.

(g) The following shall apply in respect of the calculation of any Direct Loss payable by the Eurosystem to the Contracting CSD, in accordance with Article 40(2) of this Agreement:

- The Contracting CSD shall be entitled to claim compensation for the Direct Loss it suffered as a result of the Eurosystem's termination.
- Such Direct Loss shall be calculated as from the date when the termination of the Agreement became effective and shall cover (1) a maximum period of 24 months, or, (2) the time until the end of the T2S cost recovery period, whichever of (1) or (2) is the shorter period.
- To the extent the Contracting CSD's Direct Loss relates to interest on its T2S related investments made, the amount of such interest shall be determined as follows: "amount of T2S related investment multiplied by the number of days multiplied by the ECB Main Refinancing Rate (as applicable during the period for which the Eurosystem has to pay compensation)".
- The Direct Loss that the Eurosystem has to pay shall be limited to the equivalent of the T2S fees that the Contracting CSD could be reasonably expected to pay during the period of 24 months after the date when the termination of the Agreement became effective. The Contracting CSD's expected T2S fees shall be determined as follows: "daily average number of securities instructions that the Contracting CSD settled, as the case may be, either in T2S or in its legacy settlement infrastructure during the 12 month preceding the date of notification of termination multiplied by the relevant T2S prices indicated in the T2S Price List multiplied by the number of days the Eurosystem has to pay compensation (max. 24 months from the date when the termination became effective, but no longer than until the end of the cost recovery period)".

3 Procedure in respect of claims pursuant to Articles 21(7) and 33(1)(a)

The following procedure applies in addition to Articles 21(7) and 33(1)(a) if legal action is commenced or threatened against the Eurosystem:

(a) If the Eurosystem allows the Contracting CSD to control the defense against the Third Party claimant, the Contracting CSD shall keep the Eurosystem informed of all material matters at all times. Notwithstanding such agreement regarding the control over the defense, the Eurosystem, being the formal party to the legal proceedings, and the Contracting CSD shall agree on the way in which the proceedings are conducted. For this purpose, and in due consideration of the agreement to give the Contracting CSD control over the defense, the Eurosystem shall be entitled to object to legal submissions proposed by the Contracting CSD that it considers harmful to the outcome of such proceedings and to make its own counter proposals towards the Contracting CSD. Expenses of the Eurosystem in the context of such involvement shall be borne by the Eurosystem.

(b) At the request of the Contracting CSD the Eurosystem shall give all reasonable assistance and provide all relevant documents and data which are under its control, to the extent permissible under the applicable statutory and contractual law. The Contracting CSD shall indemnify the Eurosystem for all reasonable cost the latter incurred in that context.

The following procedure applies in addition to Articles 21(7) and 33(1)(a) if the Eurosystem is held legally liable to the Third Party:

(c) The Eurosystem shall notify the Contracting CSD of the fact that it is held liable to the Third Party pursuant to an Enforceable Judgment. The notification shall be sent as soon as reasonably practicable but in no case later than 30 days after the full text of the Enforceable Judgment was available to the Eurosystem.

(d) The notification shall contain a statement to the effect that the Eurosystem intends to claim reimbursement from the Contracting CSD, the text of the Enforceable Judgment (to the extent available) and a preliminary indication of the amount and composition of the claim.

(e) The Eurosystem shall submit its claim to the Contracting CSD in writing and without undue delay and in any case no later than 90 calendar days after the full text of the Enforceable Judgment was made available to the Eurosystem. A delay shall not relieve the Contracting CSD of its obligation to reimburse the Eurosystem, except to the extent that the Contracting CSD can demonstrate that the delay caused damages.

(f) The Eurosystem shall precisely set out the amount and the various components of the payment it owes to the Third Party and for which it claims reimbursement from the

Contracting CSD. The Contracting CSD may request any additional information from the Eurosystem as may be reasonably required for assessing the merits of the submitted claim. The Eurosystem shall cooperate in good faith with any such request by the Contracting CSD.

(g) The Contracting CSD shall notify the Eurosystem in writing within 90 calendar days from the day of the receipt of the claim if it accepts the claim or rejects it in whole or in part, in the latter case giving reasons for the rejection.

(h) In case of dispute as to the merits of the claim, the Parties shall take recourse to Article 43 (Arbitration).

(i) The Eurosystem shall subrogate the Contracting CSD to any rights it may have against Third Parties in relation to the reimbursed claim.

4 Procedure in respect of claims pursuant to Article 28(4)

The following procedure applies in addition to Article 28(4) if legal action is commenced or threatened against the Contracting CSD:

(a) If the Contracting CSD allows the Eurosystem to control the defense against the Third Party claimant, the Eurosystem shall keep the Contracting CSD informed in all material matters at all times. Notwithstanding such agreement regarding the control over the defense, the Contracting CSD, being the formal party to the legal proceedings, and the Eurosystem shall agree on the way in which the proceedings are conducted. For this purpose, and in due consideration of the agreement to give the Eurosystem control over the defense, the Contracting CSD shall be entitled to object to legal submissions proposed by the Eurosystem that it considers harmful to the outcome of such proceedings and to make its own counter proposals towards the Eurosystem. Expenses of the Contracting CSD in the context of such involvement shall be borne by the Contracting CSD.

(b) At the request of the Eurosystem the Contracting CSD shall give all reasonable assistance and provide all relevant documents and data which are under its control, to the extent permissible under the applicable statutory and contractual law. The Eurosystem shall indemnify the Contracting CSD for all reasonable cost the latter incurred in that context.

The following procedure applies in addition to Article 28.4(b) if the Contracting CSD is held legally liable to the Third Party:

(c) The Contracting CSD shall notify the Eurosystem of the fact that it is held liable to the Third Party pursuant to an Enforceable Judgment. The notification shall be sent as soon as reasonably practicable but in no case later than 30 days after the full text of the Enforceable Judgment was available to the Contracting CSD.

(d) The notification shall contain a statement to the effect that the Contracting CSD intends to claim reimbursement from the Eurosystem, the text of the Enforceable Judgment (to the extent available) and a preliminary indication of the amount and composition of the claim.

(e) The Contracting CSD shall submit its claim to the Eurosystem in writing and without undue delay and in any case no later than 90 calendar days after the full text of the Enforceable Judgment was made available to the Contracting CSD. A delay shall not relieve the Eurosystem of its obligation to reimburse the Contracting CSD, except to the extent that the Eurosystem can demonstrate that the delay caused damages.

(f) The Contracting CSD shall precisely set out the amount and the various components of the payment it owes to the Third Party and for which it claims reimbursement from the

Eurosystem. The Eurosystem may request any additional information from the Contracting CSD as may be reasonably required for assessing the merits of the submitted claim. The Contracting CSD shall cooperate in good faith with any such request by the Eurosystem.

(g) The Eurosystem shall notify the Contracting CSD in writing within 90 calendar days from the day of the receipt of the claim if it accepts the claim or rejects it in whole or in part, in the latter case giving reasons for the rejection.

(h) In case of dispute as to the merits of the claim, the Parties shall take recourse to Article 43 (Arbitration).

(i) The Contracting CSD shall subrogate the Eurosystem to any rights it may have against Third Parties in relation to the reimbursed claim.