EXTRACTS FROM LEVEL 2 – LEVEL 3 AGREEMENT

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I. INTRODUCTION

I.1 Scope of the agreement

This document disciplines the service levels under which the 4CB will provide specified services relating to the operation of TARGET2-Securities to the Eurosystem CBs as defined in the L2-L3 Agreement (hereinafter referred as Agreement).

The objective is to provide a basis and framework for the delivery by the Eurosystem of the T2S Services that meet the needs of the CSD, T2S Users and non-euro area CBs.

Such Service Level Agreement (SLA) does not constitute additional liability to third parties and is not intended to be used for service level indication to third parties.

This SLA refers, unless otherwise stated, to the system in the operational phase as defined in the Agreement, including the permanent test environments after the end of the migration period. The service levels for the testing environments applicable from the start of the User testing phase till the end of the migration, as well as the production environment during the phase for the build up of the static data, are specified in the Appendix 1. Change and release management is disciplined in a specific document.

I.2 Commencement date

This SLA will apply as from the day the first CSD migrates to T2S. The commitment to the Performance indicators shall commence after the bedding down period of the final configuration. During the bedding down period the 4CB shall aim to fulfil these indicators on a best effort basis. The bedding down period shall start on the first business 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 prolonged upon agreement by the parties in case the pattern of use would not be yet stable. The purpose of the bedding down period is to fine tune the Performance indicators and the way the services provided by the 4CBs will be delivered.

I.3 Review of the Service Level Agreement

The Parties agree that they shall review the present SLA on a date no later than the end of the bedding down period. All resulting changes to this SLA shall be approved by the T2S Programme Board and the 4CB. In case of persistent disagreement between the Parties, the dispute resolution procedure laid down in the Agreement shall be applicable.

During the T2S Operation phase regular reviews of the service performance levels by the Parties will be done to verify the balance between current user requirements (business needs) and existing service performance levels that were set, as well as to ensure the effectiveness of performance measuring criteria. The possible resulting changes to this SLA shall be approved by the parties, according to the Agreement.
I.4 Definitions

For the purpose of this SLA:

“Application-to-Application (A2A)” defines a mode of technical communication that permits the exchange of information between software applications of T2S and directly connected T2S users.

“Incident” means an event which is not part of the standard operation and which causes, or may cause, an interruption to, or a reduction in, the quality of the services provided by the 4CBs.

“Incident/Problem escalation” means the agreed procedure for alerting and notifying increasingly the decision-making bodies of the 4CB management of the non-resolution of incidents/problems.

“Problem” means an unknown underlying cause of one or more incidents.

“Service availability” means the times and periods that the services provided by the 4CBs will be made available to the Eurosystem CBs.

“Service review meetings” mean regular meetings that are held between representatives of the 4CB and the Eurosystem CBs specifically to discuss issues arising from the delivery of the services provided by the 4CBs including the performance of the service delivery.

“T2S Service Desk” means the specified support services provided by the 4CB to the Eurosystem and to the CSDs, and non-euro area CBs to assist their staff to understand, operate and execute the delivered Services.

“User-to-Application (U2A)” defines a mode of technical communication that permits the exchange of information between software applications of T2S and a T2S User through a graphical user interface (GUI).

II. SERVICES DESCRIPTION

The 4CB will operate T2S, ensuring that the following T2S services can be offered through T2S

II.1 Settlement and liquidity management services

T2S provides DvP, PFoD and FoP settlement in real time for all eligible securities (i.e. having an ISIN code, being held with a CSD in T2S, settling in book-entry form and fungible from a settlement process perspective) with auto-collateralisation and optimisation procedures as well as settlement-related liquidity
management. Securities legs settle on securities accounts and cash legs on dedicated cash account within T2S. The cash leg of T2S transactions, if any, is exclusively settled in central bank money (in euro or other currencies). T2S enables realignment in real time when securities issued in one CSD are settled in another CSD in T2S. Two main settlement phases exist: the Night-time Settlement period, which runs in the form of cycles and mainly processes settlement instructions that were input on previous days for settlement on the current settlement date, and the Daytime Settlement period mainly used for T+0 instructions and for settling instructions that failed to be settled during the Night-Time Settlement period. In addition, the End of Day period comprises the processing of the automated liquidity transfer from the T2S Dedicated Cash Accounts to RTGS System(s). T2S offers matching to settlement instructions arriving in T2S without being already matched. It also accepts already matched instructions from other infrastructures which apply the same matching rules. T2S provides allegiance facilities to inform counterparties if an instruction they have not yet submitted to T2S (for e.g. settlement, cancellation and on hold instructions) is required to complete the matching or the cancellation of other instructions.

II.2 Static data services

T2S maintains an integrated and consistent set of static data relevant for T2S in performing its services, such as parties, securities, securities accounts and T2S dedicated cash accounts among others. The CSDs/NCBs create, update and delete the static data on a real-time basis according to their access rights.

II.3 Information services

Information on T2S operations are provided to the users either via a message subscription service (push service) and/or through pre-defined/user-defined queries (pull service). Furthermore, T2S provides several reports to its users. T2S communications are supported by messages or files containing messages in Application-to-Application mode (A2A) that allows direct communication between software applications via ISO 20022 compliant XML messages, as well as through online-screen based activities in User-to-Application mode (U2A) for activities performed by T2S System users.

II.4 Statistical information and Legal Archiving services

T2S provides to T2S system users (i.e. the T2S operator and, on an optional basis, CSDs, NCBs, and authorised directly connected parties) historical data and statistics to support operational monitoring, regulatory reporting and wider scope statistical analysis. It stores information on accounts (including position changes and event information), on instructions and on queries and reports (including volumes generated). T2S provides to T2S Users via their CSDs or NCBs a central archive for audit and regulatory requirements. It stores processed inbound and outbound messages in their original format for a given period, retrieves these archived data and makes them available on request.
II.5 Connectivity services

T2S provides to CSDs a set of different connectivity modes, including direct connectivity for CSDs’ clients if duly authorised by the respective CSD. The latter are able to input settlement instructions directly into the T2S platform and receive information on the results where the relevant CSD allows such a connection under its general terms and conditions. For other services that go beyond the scope of T2S, the Directly Connected Clients of CSDs connect to the relevant CSDs.

T2S Users directly connected to the system use one or more “licensed network” to connect to the T2S central system. The management of the networks is under the responsibility of the network providers, therefore the T2S users need to liaise with them to agree network characteristics and expected SLAs.

For the connection of the T2S central system to the licensed networks the 4CB assures the provision of the following:

- hosting network gateway’s\(^1\) deployed in the two regions both having the same architecture and systems; each region will be self-contained and will consist of two sites (the primary site and the intra-regional disaster recovery site); each site will be sized and designed to handle the entire connectivity capacity;
- Periodic swaps between the two regions (no configuration changes in the systems of the T2S users are envisaged);
- Operation of the middleware and front-end systems;
- Maintenance of the required network access middleware and front-end systems;
- Monitoring of the throughput and volume growth;
- Monitoring of the compliance of the service levels communicated by the networks providers with the licence specifications;
- CUGs administration.

T2S supports, for the connectivity of the low volume users, the internet channel for the U2A traffic.

II.6 Service Desk

The Service Desk provides a single point of contact for the Eurosystem CBs, the CSDs and non-Euro area NCBs for any kind of operational and technical issues for both live and test environments. T2S Users directly connected to the system (DCPs), RTGS and Collateral Management Systems (CMS) operators can also contact the T2S Service Desk for any technical inquiry concerning daily T2S operations.

During **normal operation** the Service Desk:

- provides information on ongoing operational aspects;
- provides information on T2S functionality as described in the UDFS;

\(^1\) The gateways are owned and operated by the Licensed Network Providers.
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- provides up-to-date information concerning the running of the system, if need be;
- pro-actively monitors the connection to RTGS Systems and Collateral Management Systems
- provides support to the test activities of the CSDs, the Eurosystem CBs as well as non-euro CBS and the other T2S Users including the business continuity tests;

In an *incident/problem situation at CSD/NCB level* the SSP Service Desk stands ready to

- act on behalf of the CSDs/NCBs in some specific functions as described in the UDFS, if need be;
- support the business coordination body of the CSDs/NCBs (*Settlement /Crisis Managers Conferences*) with operational and technical information from the running system, if need be;
- support a CSD/NCB in case of a local incident/problem situation;

In an *incident/problem situation at T2S level* the Service Desk has to inform the CSDs, the Eurosystem CBs and the non-euro CBs immediately and ongoing. If such incidents/problems will have business impacts, a T2S Business Coordination Body will coordinate the business follow-up. The Service Desk will participate to these conferences as a representative of the 4CB.

In above cases the Service Desk stands ready to

- activate the procedures to restart T2S operations at the secondary site or the 2nd region, if need be;
- operate the T2S service on the secondary site / 2nd region, if need be;
- co-operate with the CSDs, the Eurosystem CBs and the non-euro CBs in the reconciliation procedure for the 2nd region, if need be;
- support the T2S Business Coordination Body with information on the status of the incident/problem and the (operational / technical) way forward.

**II.7 Security related services**

The Services provided by the 4CB complies with the T2S Information Security Requirements.

In compliance with the Information Security Policy for T2S, the Services provided by the 4CB shall comply with the T2S Risk Management Framework. 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.

Any security related incident or problem will be reported to the Eurosystem CBs and discussed during regular Service Level review meetings. Likewise, any non-compliance with the security objectives defined in the Information Security Policy for T2S may have serious business, financial and/or reputational consequences for the whole T2S community. In this context, the 4CB shall provide Level 2 with all relevant information as described in the T2S Risk Management Manual.
II.8 Test and Training services

T2S offers two separate test and training systems for the T2S Users, namely the External Acceptance Test (EAT) and User Testing (UTEST) environments. The T2S Service Desk provides similar services as described for normal operations, but with different service levels. If pre-agreed also different scenarios (including contingency) can be run and supported.

If incidents/problems occur in the test and training systems the T2S Service Desk will promptly inform the CSDs, the Eurosystem CBs and the non-euro CBs.

If requested by a CSDs/NCBs staff from the 4CB will participate on a best effort basis to information session based on the technical and operational documentation of T2S (GFS, UDFS, UHB, and Manual of Procedure), as amended from time to time, and give support in the usage of the T2S interfaces.

In case of an inter-regional recovery the test environments will not be available as long as the live T2S Service has not been transferred back to the original region.
III. RESPONSIBILITIES

III.1 4CB responsibilities

The 4CB shall:

- provide the T2S service as defined to the Eurosystem CBs in accordance with the provisions of this SLA and the UDFS;
- establish the T2S Service Desk as a Single Point Of Contact (SPOC) for the Eurosystem CBs, the CSDs, non-Euro area NCBs and the DCPs (for technical and operational problems) and provide contact details (e-mail, mobile phone, telephone, fax etc.);
- appoint and ensure the permanent availability of Crisis Managers, and Service Managers and provide their contact details (e-mail, mobile phone, telephone, fax, etc.);
- refrain from scheduling system downtimes without pre-advice and green light of the CSDs/NCBs outside the normal maintenance windows;
- announce well in advance planned service changes or significant service reductions as defined in the Change and Release Management (annex xx to the L2/L3 Agreement);
- provide on-line access to information to allow the Eurosystem CBs, the CSDs, non-Euro area NCBs, and the DCPs to track and follow up all incidents, problems and enquiries related to or impacting the Service User;
- provide a monthly service level report to the Eurosystem CBs according to the provisions in section VII of this SLA;
- manage the impact on the T2S Users and the Services provided by the 4CBs as a whole caused by any party making unusual demands on capacity by:
  - contacting the CSDs, the Eurosystem CBs, and the non-euro CBs without delay if any of them or a directly connected T2S User consumes system resources, misbehaves or misuses the system in any other way to an extent that exceeds the forecasted capacity and might prevent the 4CB from delivering the agreed service to other users;
  - denying (up to and including temporary disconnection) providing the service to a user if it is threatening the stability of the platform impacting other users and does not respond effectively to the 4CB’s request to prevent further misbehaviour;
- deny the service by disconnecting any Service User that did not respond effectively to a request from the Service Provider to prevent a recurrence of previous misbehaviour and that continues to threaten the stability of the platform with impact on other service users;
- implement an adequate information security concept and enforce security guidelines and procedures, in particular in the case of security incidents, to reduce any actual or potential impact on the Services provided by the 4CBs;
ensure an adequate long-term planning for capacities corresponding to the requirements laid down in section IV.3 of this SLA;

test any new release of the software before making it available to the Service User.

The 4CB cannot be held responsible for non performance to the extent that their performance is made reasonably impossible due to the non-compliance by the Eurosystem CBs or third parties with any commitments they have agreed to take in the context of the relevant legal arrangements with the Eurosystem.

III.2 Eurosystem CBs responsibilities

The following responsibilities are accepted by the Eurosystem CBs in order to allow the Service Provider to meet the agreed service levels.

The Eurosystem CBs shall:

• appoint and ensure the permanent reachability of a T2S Coordinator and a Crisis Manager as contacts for the 4CB and provide their contact details (e-mail, telephone, mobile phone, fax);

• make all reasonable efforts to ensure the permanent reachability of the Settlement Managers and the Crisis Manager of the CSDs/NCBs and provide their contact details (e-mail, telephone, mobile phone, fax);

• make all reasonable efforts to ensure that CSDs/NCBs provide operational contact details for their DCPs

• make all reasonable efforts to ensure that the CSDs/NCBs 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;

• report such problems/incidents to the T2S Service Desk within a reasonable time;

• route timely to the 4CB any information on changes at T2S Users, non-Euro area NCBs, CSDs or DCPs Level that may affect the provision of the services;

• make all reasonable efforts to ensure that the CSDs and the T2S Users make an appropriate use of the system and that the personnel who works on its systems and equipments is accordingly qualified and suitably trained;

• make all reasonable efforts to ensure at CSD/CB level the availability of skilled staff within a pre-agreed time period in order to give support to the 4CB in handling incidents and/or reducing their impact on the service;

• make all reasonable efforts to ensure that CSDs/CBs provide on a quarterly basis updated forecasts for average and peak business figures (transactions, enquiries…) capacities, to allow the 4CB to make an adequate long-term capacity planning;

• make all reasonable efforts to ensure that all users are able to resend – at the request of the Service Provider - all messages already sent after a specified recovery point during the same business day (in particular in case of disaster recovery scenarios with possible data loss);
• accept all releases provided by the 4CB;
• ensure that in the CSDs and other directly connected T2S users a reconciliation of all access rights provided for U2A access in T2S showing all relevant user information is maintained and report any discrepancy to the 4CB without delay;
• ensure that the CSDs and other directly connected T2S users support the 4CB in business continuity testing if required.
IV. SERVICE LEVEL TARGETS

This section describes the service level targets agreed for the support of the service during normal operations (arrangements for crisis situations see under “Service Continuity”). These targets are expressed in two ways: as commitments and as expectations. Service Commitments are defined in a result-oriented way, while Service Expectations are effort-based. As a general principle, the 4CB must take remedial action as soon they detect that a service expectation may not be, or is not, fulfilled, or if they detect that insufficient efforts may be made, or have been made, to fulfil a service expectation.

IV.1 Service hours

The Services provided by the 4CB described under “Service Description” are available on a regular basis from Monday at 05:00 until the end of the last night time settlement cycle on Friday (time of the ECB seat, i.e. currently Central European Time CET and Central European Summer Time CEST during daylight saving period) with exception of the T2S non-working days. The latter are all Saturdays, Sundays, 1st of January, 25th and 26th of December. Outside the service hours some static data and information services may be made available to the user on best effort basis as listed in the UDFS.

In case the 4CB considers a change not possible to be delayed until the next weekend, this change will be implemented within the time span during a maintenance window between the end of the last night-time cycle (in any case not later than 03.00) and 05:00. Furthermore this maintenance window will be used on a frequent basis during the week to perform housekeeping activities within the system in a concurrent way. The start of the release activities before 03:00. and the consequent system unavailability will be subject to a green light by the Service User to be given to the T2S Service Desk following a procedure to be agreed in the T2S Manual of Procedures. The Service User will be notified about the end of release activities and consequent system availability.

The test environments are available with the same calendar of the production environment, but with reduced service hours, normally between 08:00 to 17:00, including the overnight phase. Moreover each Friday the systems are closed at 15:00. The test systems can be opened with extended hours or the live timing for a limited period on request of the Eurosystem CBs.

Under exceptional circumstances the test environments could be unavailable due to the installation of patches, fixes and enhancements; in such cases the T2S Service Desk will communicate these exceptions to all users in advance.

Tests could be organised by the Eurosystem CBs sending in one hour up to 10% of the messages submitted in the peak hour in the production environment ² Higher volumes must be agreed in advance with the T2S Service Desk.

² Using the T2S volumetric assumptions for the night-time peak hour workload, as specified in section IV.3.1.
IV.2 Service availability

A service is considered to be available when it responds and operates according to its definition in the User Detailed Functional Specification. The short time needed for an automatic recovery of a component failure or a line failure is not taken into account for the availability calculation.

The availability figures are measured on the settlement days during the day and the night settlement phases 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).

The availability calculation is performed separately for each of the following services:

- Settlement and Liquidity Management
- Information
- Static data

The target availability for each of these three services is above the 99.7% each calculated on an annual basis.

- Statistical Information and Legal Archiving

<table>
<thead>
<tr>
<th>KEY FACTOR</th>
<th>CRITERIA</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enquiries and other processing queries opening, closing times</td>
<td>Reference value</td>
<td>6:30 am opening time 8:00 pm closing time</td>
</tr>
<tr>
<td></td>
<td>Measurement Method</td>
<td>Statistics from incident/problem reports</td>
</tr>
<tr>
<td></td>
<td>Measurement Scope</td>
<td>T2S calendar dates</td>
</tr>
<tr>
<td>Enquiries and other processing queries availability</td>
<td>Reference value</td>
<td>Minimum 97%</td>
</tr>
<tr>
<td></td>
<td>Measurement Method</td>
<td>Statistics from incident/problem reports</td>
</tr>
<tr>
<td></td>
<td>Measurement Scope</td>
<td>During open hours</td>
</tr>
</tbody>
</table>

The time of closing an incident is either the earlier point-in-time when:

- the repair is available for the users in production environment or;
- an effective\(^4\) workaround is implemented;

\(^3\) URD 5.0 T2S.20.320

\(^4\) A workaround is considered to be effective if the additional effort on the Service User's side can be used without excessive additional resources (in time or money) compared to the normal use of the impacted service. For instance if for one out of ten settlement instruction an additional instruction has to be sent, the workaround is considered effective. However, if such an additional instruction is needed for each settlement instruction this would be considered as not effective.
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\(^5\). The calculation is based on minutes. The availability is calculated as follow:

\[
a = \left(1 - \frac{d}{T_m}\right) \times 100
\]

Where:

- \(a\) = availability as percentage
- \(d\) = cumulative downtime for the reporting period
- \(T_m\) = total up time for the reporting period

The availability measurement excludes timeframes where the actual peak volumes exceed the peak volume assumptions and does not include systems or networks not directly managed by the 4CB. Circumstances beyond the reasonable control of the 4CB are considered as voiding events and are not taken into account. To this extent they will be excluded from both the numerator and denominator of the above formula.

Availability figures are collected also for the test systems.

**IV.3 Service performance**

**IV.3.1 Service usage assumptions**

For the performance of his obligations under this SLA, the following workload characteristics shall be used as the basis for the provision of the T2S service to the Service User:

<table>
<thead>
<tr>
<th>Definition,</th>
<th>Volume</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual volume of transactions</td>
<td>268,966,007</td>
<td></td>
</tr>
</tbody>
</table>

\(^5\) The period between 3 to 5 am is excluded from the expected up time since potentially devoted to release management activities.
Peak day workload | 4,326,391 | Peak day workload is calculated as the average daily volume multiplied by a peak load factor which is provided in most markets by the CSDs.

Peak night time work load | 3,893,752 | 90% pre-matched
75% received via file

Peak day time work load | 1,297,917 | 90% pre-matched
75% received via file

Night time peak hour work load | 389,375 | 90% of the transactions are in the system at the beginning of the night time period

Day time peak hour work load | 108,160 | An uniform distribution during the hour is assumed

Number of concurrent U2A users | 400 Region 1&2
100 Region 3

Maximum number of users of Region 3 | 670

Maximum U2A browsing requests per hour | 25,000

Maximum A2A requests queries per hour | 10,000

The figures above show the estimated volumes to be managed by T2S in the first year of production. An increase of 5% of the number of instructions is assumed starting from the calendar year after the end of the bedding down period.6

If the volumes/number of users processed in production exceed the above figures, service performance commitments under chapter IV.3. are not binding for the Service Provider who will then operate the system on a best effort basis.

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6 In case the actual volume development differ from these assumptions, the Parties shall review them in accordance with the provision of Annex V to the L2/L3 Agreement.
IV.3.2 System Performance

The indicators reported in the following table define the system performance the Eurosystem CBs are expecting from the platform. These figures only apply for single messages.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Definition</th>
<th>Measurement</th>
<th>Target values (expectation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Validation Time</td>
<td>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. creation of the related business objects in the T2S database or creation of the rejection message).</td>
<td>The Business Validation Time is measured based on timestamps created by the T2S system after successfully receiving the message (confirmed by a technical ACK message) and the timestamps stored as part of the audit trail in the T2S database. Timestamps related to incoming instructions meeting one of the following conditions are NOT included in the calculation of the indicators: • Number of linked instructions above 50. • Instructions meeting more than 10 market specific restrictions. • Instructions received during the peak hour for the day time which are not uniformly distributed during the period, (maximum number of instruction in the peak hour /60). For the previous distribution, revalidation instructions are considered.</td>
<td>95% within 2 minutes, 100% within 6 minutes</td>
</tr>
<tr>
<td>Matching Time</td>
<td>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</td>
<td>In case of a successful matching, the Business Validation Time is measured based on the timestamp stored after the successful business validation and the timestamps</td>
<td>95% within 1 minute, 100% within 3 minutes</td>
</tr>
</tbody>
</table>
by the successful creation of the matching object in the T2S database or the detection that there is not yet a matching instruction available.

stored as part of the audit trail in the T2S. In case of an unsuccessful matching, the Business Validation Time is measured based on the timestamp stored after the successful business validation and the timestamp stored in the creation of the unmatched object in the T2S database. Timestamps related to incoming instructions meeting one of the following conditions are NOT included in the calculation of the indicators:

- At the end of the matching process, there is a pool of more than 100 instructions meeting the same mandatory matching criteria than the instruction to be matched
- Instructions received during the peak hour for the day time which are not uniformly distributed during the period, (maximum number of instruction in the peak hour /60)

| Real-time Settlement Time | The Real-time Settlement Time is the time that elapses 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 actual settlement or the detection of a business reason (e.g. lack of cash) that prevents settlement. 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. This indicator does not cover | The Real-time Settlement Time is measured based on timestamps stored as part of the audit trail in T2S. | 95% within 5 minutes, 100% within 15 minutes |
### Night-time Settlement Throughput

The Night-time 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 sequences). All instructions that are ready for settlement are considered regardless of whether they have been settled or not.

\[ R_n = \frac{I_n}{T_n} \]

Where:
- \( R_n \) = Night-time Settlement Throughput
- \( I_n \) = number of settlement instructions processed during night-time settlement
- \( T_n \) = cumulated processing time for the night-time settlement cycles

<table>
<thead>
<tr>
<th></th>
<th>Settlement Instructions using realignment, CoSD and resorting to auto-collateralisation.</th>
<th>( R_n = \frac{I_n}{T_n} )</th>
<th>Min.100 instructions per second</th>
</tr>
</thead>
</table>

### IV.3.3 System response time

Time indicators provided in the following sections are always measured within the T2S perimeter under the responsibilities of the 4CB as shown by the dashed line in the diagram below.
All the performance indicators are measured on the settlement days during the day and the night settlement phases during the time window when the Information Services are expected to be available.

For the test environments no performance indicators are collected.
IV.3.3.1 Response time A2A

The response time for the A2A messages is divided in transaction response time and single query response time with different service levels.

The transaction response time is defined as the time elapsed between the reception of an instruction/control message in the T2S 4CB domain (T1) and the sending of the relevant status notification message or result messages in case of queries (T2).

The 4CB acknowledges the following service commitment with respect to response time:

<table>
<thead>
<tr>
<th>Service</th>
<th>Performance indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static data update</td>
<td>95% in 5 seconds(^7), 100% in 2 minutes</td>
</tr>
<tr>
<td>Simple Queries</td>
<td>95% in 3 seconds(^8), 100% in 60 seconds</td>
</tr>
<tr>
<td>Complex Queries</td>
<td>95% in 60 seconds, 100% in 5 minutes</td>
</tr>
<tr>
<td>Other A2A messages (e.g. Settlement Instructions, Settlement Restrictions)</td>
<td>95% in 3 seconds, 100% in 60 seconds</td>
</tr>
</tbody>
</table>

The query response time is defined as the time elapsed between the reception of a query in the T2S system (T1) and the sending of the requested information (T2).

The response time for the other A2A messages is defined as the time elapsed between the reception of such messages in the T2S system (T1) and the sending of the technical acknowledgement (T2).

\(^7\) T2S17.160
\(^8\) T2S.17.140
Both queries and other A2A messages that contain more than one request are excluded from the calculation.

Note: The exhaustive list of simple and complex queries is reported in the UDFS.

IV.3.3.2 Response time U2A

For the U2A interactions the following service expectations are envisaged:

<table>
<thead>
<tr>
<th>Service</th>
<th>Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple queries</td>
<td>95% in 3 seconds, 100% in 60 seconds</td>
</tr>
<tr>
<td>Complex queries</td>
<td>95% in 60 seconds, 100% in 5 minutes</td>
</tr>
<tr>
<td>Other A2A requests</td>
<td>95% in 3 seconds, 100% in 60 seconds</td>
</tr>
</tbody>
</table>

The previous indicators are monitored and measured by a test system (watchdog) directly connected to the interface subsystem of the 4CB domain of T2S that automatically send a predefined set of messages each 5 minutes to measure the response time.

IV.3.3.3 File transfer Throughput

The file transfer throughput is defined as the maximum number of megabytes per hour that the interface subsystem is able to process in one hour. The 4CB commits to meet the following indicators:

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Maximum throughput³</th>
</tr>
</thead>
</table>

³ The figures have been evaluated taking into account the following assumption: as specified in the table in paragraph IV.3.1, the foreseen number of transactions in the night time peak hours is 389,375, using 6 messages per transaction the amount of messages to be exchanged is 2,336,251. The average size of messages is 4KB. This means an overall throughput of about 9GByte in the night time peak hour, 50% for the inbound and 50% for the outbound traffic.
The processing of the file transfers does not affect the performance of the real time traffic.

### IV.3.3.4 Response time for Statistical Information and Legal Archiving

<table>
<thead>
<tr>
<th>Key Factor</th>
<th>Criteria</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enquiries and other processing queries response time</td>
<td>Reference value</td>
<td>maximum 1 minute for the 50% of a sample of 10 representative queries</td>
</tr>
<tr>
<td></td>
<td></td>
<td>maximum 5 minutes for 100% of a sample of 10 representative queries</td>
</tr>
<tr>
<td>Measurement Method</td>
<td>Difference between receiving time of the query and sending time of the response</td>
<td></td>
</tr>
<tr>
<td>Measurement Scope</td>
<td>Ad-hoc queries are excluded</td>
<td></td>
</tr>
<tr>
<td>Delay for processing a request for restitution of legal archiving data</td>
<td>Reference value</td>
<td>maximum 72 hours for the 100% of the requests</td>
</tr>
<tr>
<td></td>
<td>Measurement Method</td>
<td>Difference between receiving time of the request and the sending of the response (or the notification that the data is available for the download)</td>
</tr>
<tr>
<td></td>
<td>Measurement Scope</td>
<td>Conservation of data for 10 years, plus the current year. T2S calendar dates</td>
</tr>
</tbody>
</table>

### IV.4 Service support

The time span when support is given by the 4CB is divided between:

- **standard support hours**: from 06:30 until 19:30 on every T2S operating day except Catholic Easter Friday, Catholic Easter Monday and 1st of May;

- **Non-standard support hours**: all times on T2S Operating Days which fall outside the Standard Support Hours.

During Non-standard Support Hours the 4CB Crisis Managers 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 below). Should such priorities incident start within the standard support hours, they will be followed according to the latter resolution times.

Test and training services in the EAT and UTEST environments are available and support by the Service Provider is given from Monday to Thursday from 08:00 until 17:00 . On Friday the service ends at 15:00 for change management and housekeeping. Under exceptional circumstances the test environment could be not available for patches, fixes and enhancements; in such cases the Service Provider will agree these exceptions with the Service User.

The 4CB as Service Provider will set up and operate a T2S Service Desk which is meant to act as the unique point of contact for the Eurosystem as well as for the CSDs and non-Euro area NCBs for reporting incidents, problems and to ask for guidance and consultancy on the T2S system usage. For some limited issues related to connectivity problems DCPs will be entitled to directly contact the T2S Service Desk too. In order to be able to contact the T2S Service Desk, the Eurosystem, the CSDs, non-Euro area NCBs and the DCPs will be provided with:

1. Two telephone numbers for the Production environment and two for the Test and Training;
2. Two fax numbers;
3. Two Cebamail addresses (for NCBs only);
4. Two e-mail addresses (for all counterparties).

The maximum number of simultaneous incoming telephone calls will be equal to 10 (ten), while the maximum number of incoming telephone calls served by an operator will be equal to 8 (eight).

Mobile phone numbers will be provided for outside standard support hours availability. All communications will be conducted in English. T2S Service Desk support will be conducted in English.

In order to track all incident reported by the Eurosystem CBs, the CSDs, non-Euro area NCBs and the DCPs, the T2S Service Desk will be equipped with a Trouble Management System (TMS) which the entitled counterparties will have access to.

The table below lists the priorities which will be used to categorize incidents.
<table>
<thead>
<tr>
<th>Incident/Problem Priority</th>
<th>Severity</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priority 1</td>
<td>Critical</td>
<td>Complete unavailability of all Services provided by the 4CBs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Complete unavailability of one or more of the services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Settlement and Liquidity Management, Information, Static Data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>for which no workaround is available.</td>
</tr>
<tr>
<td>Priority 2</td>
<td>Urgent</td>
<td>Unavailability of a service, but an effective workaround is available</td>
</tr>
<tr>
<td>Priority 3</td>
<td>Medium</td>
<td>All services are available, but some are experiencing performance</td>
</tr>
<tr>
<td></td>
<td>priority</td>
<td>problems</td>
</tr>
<tr>
<td>Priority 4</td>
<td>Low priority</td>
<td>Query or service request</td>
</tr>
</tbody>
</table>

Upon acceptance of the incident, the T2S Service Desk will assign a reference number to it, as well a priority level. The reference number will allow the T2S Users to consult the incident’s status in the Trouble Management System.

For each incident accepted by the 4CB, the Response Time is defined as the time between the incident being accepted and it being addressed, i.e. the start of the action to resolve the incident.

The Response Time for a particular incident depends on the moment of communication of such incident to the T2S Service Desk, i.e. whether the incident is communicated during or outside the standard support hours:

<table>
<thead>
<tr>
<th>During standard support hours</th>
<th>During non standard support hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 15 minutes</td>
<td>60 minutes</td>
</tr>
</tbody>
</table>

For each incident accepted by the 4CB, the Resolution time is the time between the start of action to resolve the incident and the time it is actually solved or a workaround is available.

<table>
<thead>
<tr>
<th>Incident Priority</th>
<th>Resolution Time for incident reported during standard support hours</th>
<th>Resolution Time for incident reported during non standard support hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2 hours</td>
<td>3 hours</td>
</tr>
</tbody>
</table>
The T2S Service Desk will have the possibility to act on behalf of an Eurosystem CBs, non-Euro area NCBs, a CSD or (in limited cases) a DCP experiencing problems. For instructions submitted by the NCBs a fax with call-back will be used. For instructions submitted by CSDs or DCPs e-mails certified by Certification Authorities recognised by the Eurosystem shall be used. The T2S Service Desk will be able to execute up to 60 instructions per hour through the User-to-Application (U2A) interface. Above this threshold instructions will be executed on a best effort basis only.

[...]