EUROPEAN CENTRAL BANK

EUROSYSTEM

T2S CHANGE REQUEST FORM			
General Information (Origin of Request) ☐ User Requirements (URD) or GUI Business Functionality Document (BFD) ☒ Other User Functional or Technical Documentation (SYS)			
Request raised by: Eurosystem	**Institute:** 4CB	**Date raised:** 05/05/2025	
Request title: RTS Enhancement: Reducing the ODB coupling between SETT and LCMM		**Request No.:** T2S 0852 SYS	
Request type: Common	**Classification:** Scope enhancement	**Urgency:** Normal	
1. Legal/business importance parameter[1]: Medium		**2. Market implementation efforts parameter[2]:** Low	
3. Operational/Technical risk parameter[3]: Low		**4. Financial impact parameter[4]:** High	
Requestor Category: 4CB		**Status:** Authorised by T2S Steering Level	

Reason for change and expected benefits/business motivation:

Since 2019, the proportion of transactions settling in RTS (versus NTS) has been regularly increasing and represented in 2023 up to 43% of total settled volumes on T2S platform.

This trend is expected to accelerate with the implementation of T+1 project and the onboarding of end investor accounts and markets in the coming years. So, there is the need to enhance the RTS process to allow T2S platform to face these upcoming challenges, in particular to support additional volumes, better handle peaks of volumetry and foster the usage of T2S CPU during this period.

This change request is based on one evolution proposed in the context of the T2S Strategic Evolution initiative focusing on enhancing the interaction between Settlement module and LCMM via an optimised usage of resources.

- Updating during RTS (reduce the coupling between SETT and LCMM) : Proposal 1.17

in the T2S Strategic Evolution Report.

The current communication architecture between LCMM and SETT regarding the data updates (instructions status, positions, balances....), is based on the coupling in terms of the data exchanged: during RTS, the update of instruction status on LCMM platform is done directly by SETT in the same order as in the Settlement module, assuring the consistency of information between SETT and LCMM.

However, this architecture creates a high dependency between SETT and LCMM in the processing of status updates. This consumes huge settlement module capacities. In case of high volumes or in case of issue occurring between SETT and LCMM, this may affect SETT performance and cause delays, especially during recycling processes or during the cut-off periods.

Due to the high complexity of such change, during the preliminary assessment of the change request T2S-0845-SYS, the way forward proposed is to split the decoupling as following:

- Part 1 (under change request T2S-0845-SYS perimeter): Updating during RTS (reduce the IDB coupling between SETT and LCMM).

- Part 2 (scope of a new change request): Updating during RTS (reduce the ODB coupling between SETT and LCMM).

[1] Legal/business importance parameter was set to “Medium” since with this change a better usage of the CPU capacity will be achieved without this impacting the settlement efficiency.

[2] Market implementation effort parameter was set to “Low” since this change will not require a long implementation test campaign on the user side.

[3] Operational/technical risk parameter was set to “Low” since this change is 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] Low < 100kEUR < Low-Medium < 200 kEUR < Medium < 400kEUR < High < 700kEUR < Very high

Description of requested change:

The change will consist in modifying the way SETT & LCMM modules interact during RTS for the updates of status and to align RTS with NTS process, by reducing the coupling between both modules.

The goals are:

- To reduce the coupling between SETT and LCMM for status updates of the ODB, in order to further reduce the usage of resources on SETT side and consequently allowing SETT to focus its capacity on its own processes mainly during recycling processes or during the cut-off periods of high volumes, such as they are expected for T+1.
- To maintain the current performance in terms of consistency of information between LCMM and SETT (i.e. to avoid an increase of the time that currently elapses between a status update takes place in SETT and its reflection in LCMM).

The architectural concept of T2S consists of an Operational Database (ODB) and an Informational Database (IDB) for the storage of dynamic data (for example securities positions, cash balances, limits utilisations, settlement instructions, etc.). The source of data for queries and reports is the IDB, while the ODB is used internally by each T2S domain.

Under the new architecture to implement, the status update of the LCMM ODB will be performed by LCMM based on information received from SETT module and not anymore directly by SETT, relieving the pressure on settlement processing especially during critical and peak activities. Changes required in the design and potential impact on resources at LCMM side will be analysed during the DA phase.

This change should be transparent for users in terms of implementation effort and functionality, therefore the message sequencing order should be respected to keep the consistency of the T2S actors processing of messages.

The IDB decoupling is a mandatory step and its implementation within T2S-0845-SYS is a pre-requisite for the implementation of the ODB decoupling.

NFT tests will allow to check that there is no impact for customer and in term of performance when dealing with high volumes.

From a planning standpoint, this change would benefit from the prior implementation of the change request T2S-0849-SYS (RTS Enhancements: Minimising the sending of SETT/LCMM internal messages), since it would drastically reduce the workload associated with database updates.

Submitted annexes / related documents:

Outcome / Decisions:

*CRG on 8 January 2025: the CRG agreed to launch the preliminary assessment of CR-0852.
*CRG on 18 June 2025: the CRG agreed to recommend the authorisation of CR-0852 by the T2S Steering Level.
*CSG on 27 June 2025: the CSG agreed to authorise CR-0852.
*NECSG on 27 June 2025: the NECSG agreed to authorise CR-0852.
*MIB on 4 June 2025: the MIB agreed to authorise CR-0852.

Documentation to be updated:

Preliminary assessment:

- **Financial Impact:** High (Part 1) and High (Part 2)
- **Impacted Modules**: SETT and LCMM
- **Other security impact:** no
- **Impact on other Eurosystem Services (T2, TIPS) or projects (ECMS):** no
- **Risks:** no

Findings:

The architectural concept of T2S consists of an Operational Database (ODB) and an Informational Database (IDB) for the storage of dynamic data (for example securities positions, cash balances, limits utilisations, settlement instructions, etc.). The source of data for queries and reports is the IDB, while the ODB is used internally by each T2S domain.

During the preliminary assessment 4CB identified a high complexity and significant risk to implement the decoupling of both the ODB and the IDB simultaneously for the following reasons:

- Decoupling both databases at the same time would require a significantly long implementation period.
- Architectural changes can only be tested to a certain extent in testing environments. In production, with real volumes and operational complexities, unexpected issues could arise.
- Determining in test environments the necessary increase in infrastructure resources required in LCMM to handle operations previously executed in SETT without affecting the current performance, can result challenging and potentially inaccurate.

Instead, a more phased and controlled approach is recommended, starting with the IDB first, and undertaking the decoupling of the ODB in a subsequent release. This approach would have the following benefits:

- Mitigate risks and manage complexity more effectively.
- The IDB decoupling is a mandatory step and its first implementation will allow to identify and resolve any unexpected issues with the advantage that the risks are lower than those that could arise from the decoupling of the ODB.

Consequently, the assessment is split as following:

Part 1

- **Improve Optimisation process (Related to Proposal 1.14 in the T2S Strategic Evolution Report).**
- **Updating during RTS (reduce the IDB coupling between SETT and LCMM) (Related to proposal 1.17 in the T2S Strategic Evolution Report).**

Part 2

- **Updating during RTS (reduce the ODB coupling between SETT and LCMM) (Related to proposal 1.17 in the T2S Strategic Evolution Report).**

It is proposed to assess part 1 and part 2 in separate CRs, part 1 being included in this CR (CR-845) and part 2 being a separate CR from the DA-phase. The current CR-0845 contains both parts in its description and should be updated once the new CR draft is introduced to the CRG.

Part 2 preliminary assessment (new CR-0XXX):

- **Updating during RTS (reduce the ODB coupling between SETT and LCMM) (Related to proposal 1.17 in the T2S Strategic Evolution Report)**

SETT:

1. **Reducing of the ODB coupling between SETT and LCMM communication during RTS period**
    - The current processes used for the communication between SETT and LCMM will be changed in order to avoid that SETT updates directly in a synchronous way, the LCMM ODB by triggering the LCMM services. Instead, SETT will send to LCMM in an asynchronous way the required information to allow LCMM to perform the updates itself.
    - The current interfaces used to update LCMM ODB will be modified by adding a serial number in order to allow LCMM to process the flows received from SETT in the same order as they were sent.
    - Following RTS processes and interfaces are impacted by this Change Request:
        - Instructions Status Update request interface (addition of a serial number and possible other data needed by LCMM),
        - Instruction Status Information / Maintenance Status Information interface (To be assessed if it can be removed during RTS when LCMM is ready to rely on the Status Update flow to manage the Status Information),
        - Collateral Instruction / Settlement Restriction creation request interface used in the context of creation of ACO instructions, Use of Restrictions SR or CoSD activation (addition of a serial number and possible other data needed by LCMM)
        - Contingency tools (COLGEN, Repro Tool, Cross-Domain queries…).

LCMM:

The goal is to reduce the coupling between SETT and LCMM for status updates of the ODB, in order to further reduce the usage of resources on SETT side.

With the current design and resources allocation, the time lapse where there are inconsistencies between SETT and LCMM is minimized (i.e., the time between a status update in SETT and its reflection in the LCMM ODB is minimal and difficult to reduce further).

To avoid an increase of inconsistencies between LCMM's ODB and SETT, which could lead to errors in the system affecting operations, the implementation of this architecture change should include an adequate increase in infrastructure resources for LCMM, to at least maintain the current performance. Such increase will be analyzed in the detailed assessment phase. Additionally, mechanisms and operations currently in place in SETT side will need to be implemented on LCMM side.

Detailed assessment: