



EUROPEAN CENTRAL BANK

EUROSYSTEM

T2S CHANGE REQUEST FORM		
General Information (Origin of Request)		
<input checked="" type="checkbox"/> User Requirements (URD) or GUI Business Functionality Document (BFD) <input type="checkbox"/> Other User Functional or Technical Documentation (SYS)		
Request raised by: 4CB	Institute: 4CB	Date raised: 17/08/2021
Request title: Dynamic allocation of processing priority to massive concurrent settlement attempts and optimisation limit		Request ref. no: T2S-0770-URD
Request type: Common	Classification: Scope enhancement	Urgency: Fast-track
1. Legal/business importance parameter¹: High		2. Market implementation efforts parameter²: Medium
3. Operational/Technical risk parameter³: Medium		4. Financial impact parameter: (provided by 4CB)
Requestor Category: Eurosystem		Status: Withdrawn

Reason for change and expected benefits/business motivation:

T2S is designed to support settlement of high volumes of transactions [e.g. Corporate Actions (CA)] during the NTS period which is tailored for the sequencing and the processing of those high volumes using specific mechanisms (NTS algorithms, batch settlement under NTS cycles and sequences).

T2S also settles continuous flows of transactions during RTS in compliance with the ceilings and KPI defined in the SLA⁴ relying on a settlement processing capacity of 8000 transactions per minute without concentration of resources and 1200 transactions per minute otherwise⁵.

An analysis conducted by the ECB/4CB in the context of the upcoming migration of Euroclear Finland (EFi) to T2S, as end-investor market, has identified the possibility of infrequent massive volumes of transactions that would be submitted instantaneously to a settlement attempt, e.g.:

- For CA processing related transactions: (i) concentrated on the same security or cash resource, (ii) put under Intraday restriction and (iii) then released and massively recycled upon receipt of new resources (up to circa 350 000 CA related transactions in the EFi scenario).
- Under extreme contingency cases where peak volumes of transactions (up to circa 850 000 for EFi CA scenario) remain unsettled at the end of NTS period. In this situation, this massive volume of unsettled transactions are submitted to the RTS processes for settlement.

Under these conditions, massive volumes of transactions would be submitted to a settlement attempt *concurrently*⁶, in addition to the regular flow of injected settlement instructions.

Such scenario could cause strong side-effects on settlement in RTS, and a change request shall be considered to support the following objectives:

- Objective 1: Enhance the RTS settlement processing in order to keep the Real-time settlement time compliant with the SLA despite any possible massive volume of transactions submitted concurrently to a settlement attempt. These enhancements aim to handle such exceptional massive concurrent settlement attempts for one CSD without impact on the other CSDs.
- Objective 2: Enhance the processing capacity of 1200 transactions per minute in case of concentration of resources in order to reach an improved timeframe for the recycling and settlement of up to circa 350.000 transactions during RTS.

¹ Legal/business importance: High because it will improve the stability of T2S in case of peaks in settlement volume

² Market implementation efforts: Medium as it would require implementation efforts only for a minority of T2S actors

³ Operational/technical risk: Medium because even if the changes are made on the T2S settlement module, they apply only in very specific scenarios (exceptionally high volumes of settlement instructions).

⁴ See FA Shedule 6 KPI for Real-time settlement time

⁵ Currently the maximum throughput in Settlement booking does not exceed 1 200 collections updates/minute in case the collection involves the same debited cash or securities account or the same credited securities account. This limit is due to a technical constraint (database simultaneously update limit).

⁶ **Concurrently** means at the same time, in addition to instructions that are injected and submitted to a settlement attempt for which the Real-time settlement time KPI applies

Description of requested change:

This change request is fully dedicated to the first objective⁷ with several mechanisms to be implemented in the Settlement domain (SETT), in order to enhance the settlement capacity processing under the context of possible Concurrent Massive Settlement Attempt (**CMSA**), relying on new technical parameters⁸ (N,R)

The mechanisms and the associated parameters shall be implemented in a way only to tackle those specific scenarios and avoid any negative impact on existing CSDs business and processing capacity, based on the analysis of production volumes.

- **For the first objective a first mechanism is created** to avoid possible overflow in the Settlement provisioning/booking module due to transactions under **CMSA**. A new parameter (N) shall specify the level beyond which SETT is facing transactions under CMSA.

As a basis in order to always meet the SLA for the Real-time settlement time KPI, the Settlement transactions that are submitted to a settlement attempt directly following the injection of the associated settlement instructions during RTS are not subject to CMSA for their first settlement attempt.

Therefore the new mechanism will be used only for the following settlement processes creating internally to the Settlement process collections that can be under CMSA during RTS for settlement provisioning/booking:

- Standardization and Preparation to Settlement (SPS)
 - intraday restriction removal
 - update CMB limit
- Regular Recycling
- Massive Recycling
- Partial Settlement Attempt (at start of Partial Settlement Window)
- Start RTS process⁹

Meaning that **only settlement transactions that are submitted to a settlement attempt by the processes above** may be identified as being under CMSA in which case they are allocated with a lower processing priority allowing to not impact all the other flows of settlement attempt. During low booking activity (weekend, night, after 11 am), transactions under CMSA will have the full booking capacity while when high activity occurs, they will have a lower processing priority.

As a result, the Real-time settlement KPI will remain fully compliant to the SLA for all CSDs.

- **For the first objective a second mechanism is created** to prevent at any time of the RTS period the Optimization¹⁰ process from overflow and high CPU consumption due to the settlement of transactions under CMSA. This mechanism shall limit the number of transactions subject to Optimisation to a maximum of R¹¹ transactions per CSD whether they are or not under CMSA.

⁷ A second change request CR-761 is addressing the second objective above together with a limited improvement of the Optimization process in relation to the first objective.

⁸ These parameters shall be internal technical parameters allowing to monitor the settlement process in order to comply with the SLA without any need for the market to identify and interact with these parameters. They will be estimated during the detailed specifications and adjusted during the testing phase, taking also into consideration the historical figures of CSDs in T2S

⁹ This concerns the transactions that have entered T2S post the end of C2SX and prior the start of RTS having not yet been subject to a settlement attempt

¹⁰ Optimization process refers to the Optimisation process described in GFS §2.3.4.3 Daytime Recycling and Optimisation. It does not refer to the UDFS §1.9 Optimizing (that describes all optimizing features of T2S i-e technical netting, partial settlement, autocollateralisation etc...).

¹¹ R is a global parameter for T2S applying per CSD

By construction, this mechanism will prevent overflow due to transactions under CMSA, although it applies to all transactions, whether they are or not under CMSA.

Assessment of the time needed to settle a volume of transactions under CMSA during RTS

The T2S ability to settle a volume of transactions during the RTS depends: (i) on the number of transactions submitted to settlement at a given point of time, (ii) on the settlement throughput and (iii) on the remaining time available for the RTS period.

The aim with the implementation of the CR-761 is to reach a throughput of 8000 transactions per minute with or without concentration of resources for transactions under CMSA.

However, the processing capacity for transactions under CMSA may be lowered depending on other activity (see first mechanism described in this CR).

As a consequence, it is not possible to predict the exact time needed for the settlement of transactions under CMSA during RTS as it depends on the other activities running at the same time. A proxy assessment of the time needed for the settlement in production of such CMSA volumes in RTS can be analyzed based at the implementation phase on historical distribution of the volumes during the RTS settlement period.

Submitted annexes / related documents:

Outcome/Decisions:

CRG on 17 January 2022: The CRG members took note of the withdrawal of CR-770

Documentation to be updated:

URD (to be confirmed): CMSA logic could be described in 7.2 Settlement processing - Sequencing and prioritisation and/or 8.1 Settlement, optimisation and recycling procedures and/or 9.2 Specific settlement procedures