



EUROPEAN CENTRAL BANK

EUROSYSTEM

iT2S CHANGE REQUEST FORM		
<b>General Information (Origin of Request)</b> <input type="checkbox"/> User Requirements (URD) or GUI Business Functionality Document (BFD) <input checked="" type="checkbox"/> Other User Functional or Technical Documentation (SYS)		
<b>Request raised by:</b> 4CB	<b>Institute:</b> 4CB	<b>Date raised:</b> 25/01/2022
<b>Request title:</b> RTS optimisation process: improvement dedicated to high volume corporate actions		<b>Request ref. no:</b> T2S-0783-SYS
<b>Request type:</b> Common	<b>Classification:</b> Scope enhancement	<b>Urgency:</b> Fast-track <sup>1</sup>
<b>1. Legal/business importance parameter<sup>2</sup>:</b> High	<b>2. Market implementation efforts parameter<sup>3</sup>:</b> Medium	
<b>3. Operational/Technical risk parameter<sup>4</sup>:</b> Medium	<b>4. Financial impact parameter:</b> High	
<b>Requestor Category:</b> Eurosystem	<b>Status:</b> Implemented	

**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 KPIs defined in the SLA<sup>5</sup> relying on a settlement processing capacity of 8000 transactions per minute without concentration of resources and 1200 transactions per minute otherwise<sup>6</sup>.

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 according to volumetric estimates).
- Under extreme contingency cases where peak volumes of transactions<sup>7</sup> remain unsettled at the end of NTS period. In this situation, this significant volume of unsettled transactions are submitted to the RTS processes for settlement.

Under these conditions, massive volumes of transactions<sup>8</sup> would be submitted to a settlement attempt in RTS *concurrently*<sup>9</sup>, in addition to the regular flow of injected settlement instructions.

Such scenario could cause undesired side-effects on settlement in RTS, and a change request is required 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

<sup>1</sup> This CR is requested as fast-track because it should be recommended for Release 7.0 so as to be tested in the context of Euroclear Finland migration in September 2023.

<sup>2</sup> Legal/business importance: High because it will improve the stability of T2S in case of peaks in settlement volume

<sup>3</sup> Market implementation efforts: Medium as it would require implementation efforts only for a minority of T2S actors

<sup>4</sup> 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).

<sup>5</sup> See FA Schedule 6 KPI for Real-time settlement time

<sup>6</sup> 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).

<sup>7</sup> One contingency scenario would be that EFi NTS CA peak volume of 850 000 transactions remain unsettled at the end of NTS period.

<sup>8</sup> Working assumption is that all CA related transactions will be send to T2S pre-matched (already matched).

<sup>9</sup> **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

settlement attempt<sup>10</sup>. 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<sup>11</sup> in order to reach an improved timeframe for the recycling and settlement of up to circa 350.000 transactions during RTS

### Description of requested change:

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This change request is fully dedicated to the first objective with a new mechanism to be implemented in the Settlement domain (SETT), in order to enhance the optimisation process in case of a high volume of Corporate Actions during RTS, in order to:

- prevent the settlement performance deterioration;
- avoid bottlenecks due to the triggering of the one-by-one optimisation process
- accelerate the optimisation process for high-volume corporate actions.

In order to improve the optimisation process during RTS, it is also planned with the T2S CR-761 "Enhance optimisation during RTS and maximize transaction throughput on the same resource" to remove the transactions with no possibility of being settled due to a lack of securities.

The change hereafter does not impact the settlement of high-volume corporate actions at their first attempt.

Instead, it introduces a slightly deferred optimisation process which applies to:

- corporate actions (group of transactions with ISO transaction code CORP type, same ISIN and same Instructing Party CSD<sup>12</sup>)<sup>13</sup>
- for which the number of unsettled transactions goes beyond a pre-defined threshold.<sup>14</sup>

In case such a 'high-volume' corporate action is identified:

- this corporate action is considered as one collection of transactions with CORP type with the same ISIN and same Instructing Party CSD, and will trigger an event that will allow to manage this corporate action separately from the standard optimisation process;
- a slightly deferred optimisation process is triggered; this process will be built on the same algorithm as the one-to-one optimisation process but will be triggered at a pre-determined frequency<sup>15</sup>, to be defined later on during the implementation phase.

The slightly deferred optimisation for corporate action transactions will be based on the following principle:

- Unsettled transactions belonging to a 'high volume corporate action present in the stock will be removed from the one-to-one optimisation process;
- They will be queued for the slightly deferred processing which will run at a regular fixed frequency.

This slightly deferred optimisation process will<sup>16</sup>:

- Analyse the overall corporate action for the same ISIN/CSD instead of analysing individually each transactions, by operating a technical netting;
- In case of lack, the process will try to solve remaining lacks if possible, by analysing the whole stock of transactions if need be.

By design, this improvement does not apply to Non-corporate action related transactions and to corporate action transactions that are below the threshold. In these cases, the optimisation process remains unchanged and continues to trigger on a one-to-one basis at the arrival of each new unsettled transaction.

<sup>10</sup> The CR 779 aims at optimizing the CORP processing by grouping them in collections before sending them to the booking/provisioning for five SETT processes (SPS in cases of Intraday Restrictions removal, regular recycling, massive recycling, Partial Settlement Attempt and Start of RTS) and by modifying the sorting method

<sup>11</sup> The CR 761 aims at enhancing the RTS processes by removing from the optimisation process the transactions with no chance of success and by improving the VPB (Validation Provisioning Booking) collections throughput for concentrated resources

<sup>12</sup> The term CSD refers to the Instructing Party

<sup>13</sup> To identify a Corporate Action, i.e. a group of transactions with transaction type CORP with the same ISIN and the same CSD

<sup>14</sup> The threshold is a technical parameter which defines the total number of transactions included in the Corporate Action beyond which the dedicated "slightly deferred optimisation process will be triggered. The exact level of the threshold will be defined at a later stage during the functional and technical design and fine-tuned with Non Functional Testing campaign. Current estimation 10 000 transactions

<sup>15</sup> This slightly deferred optimisation process triggers as frequently as possible in order to be in line with the User Requirements Document v9.0. This technical parameter will be defined at a later stage during the functional and technical design and fine-tuned with the Non Functional Testing campaign.

<sup>16</sup> The slightly deferred optimisation process will be based on the stock of unsettled Corporate Action related transactions present in the Recycling and Optimisation stock

**Submitted annexes / related documents:****Outcome/Decisions:**

- \*CRG on 28 February 2022: the CRG agreed to recommend CR-783 for T2S Steering Level Authorisation, following a fast-track approach.
- \*AMI-SeCo on 10 March 2022: the AMI-SeCo agreed with the CRG recommendation of CR-783 for T2S Steering Level Authorisation.
- \*CSG on 11 March 2022: the CSG agreed to authorise CR-783.
- \*NECSG on 11 March 2022: the NECSG agreed to authorise CR-783.
- \*MIB on 22 March 2022: the MIB agreed to authorise CR-783
- \*PMG on 31 March 2022: the PMG agreed to launch the detailed assessment of CR-783 in view of scoping in R2023.JUN.
- \*CRG on 6 July 2022: the CRG agreed to recommend to the PMG the implementation of CR-783 in R2023.NOV
- \*OMG on 27 July 2022: the OMG identified an operational impact from the inclusion of CR-783 in R2023.NOV
- \*PMG on 27 July 2022: the PMG agreed to recommend the inclusion of CR-783 in the scope of R2023.NOV
- \*CSG on 4 August 2022: the CSG approved the inclusion of CR-783 in the scope of R2023.NOV.
- \*NECSG on 4 August 2022: the NECSG approved the inclusion of CR-783 in the scope of R2023.NOV.
- \*MIB on 5 August 2022: the MIB approved the inclusion of CR-783 in the scope of R2023.NOV.

**Documentation to be updated:****UDFS**

Insert a foot note about the triggering of the optimisation process:

1.6.1.8 Posting

1.6.1.8.2 Overview

During real-time settlement, a first settlement is systematically attempted through the posting application process. Whatever the success or the failure of this first settlement attempt, its outcome is then used to trigger:  
 I In case of success: the settlement of pending Settlement Instructions or Settlement Restrictions with the new cash and/or securities resources and/or credit memorandum balance headroom provided;

I In case of failure\*: the settlement of pending Settlement Instructions or Settlement Restrictions with the possible resolution of gridlocks by looking for chains (simple circles, back-to-back or more complex chains).

\* In case of a high-volume event of corporate actions, failing transactions will be submitted to a dedicated process for optimisation triggered at regular time intervals

**EUROSYSTEM ANALYSIS – GENERAL INFORMATION**

T2S Specific Components		Common Components
<b>LCMM</b>		
	Instructions validation	
	Status management	
	Instruction matching	
	Instructions maintenance	
	Penalty Mechanism	
<b>Settlement</b>		
	Standardisation and preparation to settlement	
	Night-time Settlement	
X	Daytime Recycling and optimisation	
	Daytime Validation, provisioning & booking	
	Auto-collateralisation	
<b>Liquidity Management</b>		

	Outbound Information Management		
	NCB Business Procedures		
	Liquidity Operations		
<b>T2S Interface</b> (as of June 2022 without Static Data Management, Communication for SDMG, Scheduler, Billing)		<b>Eurosystem Single Market Infrastructure Gateway</b> (from R6.0 June 2022)	
	Communication		Communication
	Outbound Processing		Outbound Processing
	Inbound Processing		Inbound Processing
<b>Static Data Management</b> (until June 2022)		<b>Common Reference Data Management</b> (from R6.0 June 2022)	
	Party data management		Party data management
	Securities data management		Securities data management
	Cash account data management		Cash account data management
	Securities account data management		Securities account data management
	Rules and parameters data management		Rules and parameters data management
<b>Statistics and archive</b>		<b>Statistics and archive</b>	
	Statistical information (until June 2022)		Short term statistical information
	Legal archiving (until June 2022)		Legal archiving (from R6.0)
		X	Data Warehouse (from R6.0)
<b>Information</b> (until June 2022 containing reference data)		<b>CRDM business interface</b> (from R6.0 June 2022)	
	Report management		Report management
	Query management		Query management
			Communication
			Outbound Processing
			Inbound Processing
<b>Operational Services</b>			
	Data Migration (T2S DMT)		Data Migration (CRDM DMT, from R6.0)
	Scheduling (until June 2022)		Business Day Management (from R6.0)
			Business Day Management business interface (from R6.0)
	Billing (until June 2022)		Billing (from R6.0)
			Billing business interface (from R6.0)
	Operational Monitoring		Operational and Business Monitoring
	MOP Contingency Templates		

Impact on major documentation		
Document	Chapter	Change
Impacted GFS chapter		
Impacted UDFS chapter	1.6.1.8 Posting 1.6.1.8.2 Overview	Add a footnote indicating that, in case of a high-volume event of corporate actions, failing transactions will be submitted to a dedicated optimisation process triggered at regular time intervals
Impacted GDPR message/ screen fields		No impact
Other documentations		

Links with other requests			
Links	Reference		Title
<b>OVERVIEW OF THE IMPACT OF THE REQUEST ON THE T2S SYSTEM AND ON THE PROJECT</b>			
<b>Summary of functional, development, infrastructure and migration impacts</b>			
<p>A new optimisation process dedicated to failed transactions issued from a high-volume corporate action event should be created.</p> <p>This process will be built on the same algorithm as the one-to-one optimisation process but will be triggered at a pre-determined frequency, meaning their optimization will wait for this new process to be triggered ("slightly differed" optimization)</p> <p>Therefore:</p> <ul style="list-style-type: none"> <li>• Unsettled transactions belonging to a "high volume corporate action" present in the R&amp;O stock will be removed from the regular one-to-one optimisation process;</li> <li>• They will be queued for the slightly deferred processing.</li> </ul> <p>This slightly deferred optimisation process will:</p> <ul style="list-style-type: none"> <li>• Analyse the overall corporate action for the same ISIN/CSD instead of analysing individually each transactions, by operating a technical netting;</li> <li>• In case of lack, the process will try to solve remaining lacks if possible, by analysing the whole stock of transactions if need be</li> </ul> <p>By design, this improvement does not apply to non-corporate action related transactions and to corporate action transactions whose number is below a given threshold.</p> <p>In those cases, the optimisation process remains unchanged and continues to trigger on a regular one-to-one basis upon arrival of a new unsettled transaction.</p>			
<b>Main cost drivers</b>			
<ul style="list-style-type: none"> <li>- Implementation of the new deferred optimisation process</li> <li>- Adaptation of the Data Model</li> </ul>			
<b>Impact on other TARGET Services and projects</b>			
No impact on other Eurosystem projects (CSLD, ECMS or TIPS)			
<b>Summary of project risk</b>			
n.a.			
<b>Security analysis</b>			
No adverse effect has been identified during security assessment.			



24 June 2022

## Cost assessment on Change Requests

<b>T2S-783-SYS – RTS Improvement of the optimisation process dedicated to Corporate Action high volume</b>			
One-off	Assessment costs*		
	- Preliminary	2,000.00	Euro
	- Detailed	10,000.00	Euro
One-off	Development costs	412,031.08	Euro
Annual	Operational costs		
	- Maintenance costs	35,875.27	Euro
	- Running costs	0.00	Euro

\*The relevant assessment costs will be charged regardless of whether the CR is implemented (Cf. T2S Framework Agreement, Schedule 7, par. 5.2.3).