



EUROPEAN CENTRAL BANK

EUROSYSTEM

T2S 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> Eurosystem	<b>Institute:</b> 4CB	<b>Date raised:</b> 08/02/2023
<b>Request title:</b> T2S Billing – STSI enhancements from audit report		<b>Request No.:</b> T2S 0804 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> Medium		<b>2. Market implementation efforts parameter<sup>3</sup>:</b> Low
<b>3. Operational/Technical risk parameter<sup>4</sup>:</b> Low		<b>4. Financial impact parameter<sup>5</sup>:</b> Medium
<b>Requestor Category:</b> Eurosystem		<b>Status:</b> Allocated to a release

**Reason for change and expected benefits/business motivation:**

Within the scope of the audit mission, part of the 2021 Internal Auditors Committee (IAC) work programme, was to provide reasonable assurance on the adequacy and effectiveness of the risk management, controls and governance related to the T2S with a focus on the reliability of the billing process.

As an outcome of this work, the Internal Auditors Committee (IAC) was of the overall opinion that the controls for the reliability of the T2S billing process were insufficiently effective. Due to the fact that the reconciliation of invoices with source data was not part of the T2S requirements, there is the risk that errors of overcharging/undercharging may not be promptly detected, affecting the quick implementation of the respective corrective actions which can lead to financial and reputational impact.

The IAC recommended the MIB to enhance the controls and correspondingly amend the UDFS in order to allow the 4CB as service providers and the ECB T2S financials team on behalf of Eurosystem to reconcile the invoices generated with source data and ensure that automated invoices were correct and complete.

The MIB invited the 4CB to assess options to address the IAC recommendation considering the introduction of the new billing Common Component in R6.0 in June 2022 with particular reference, among others, to:

- Analysing possible solutions at functional and operational level with all the relevant stakeholders aimed at facilitating the reconciliation processes between source data and invoices, as well as instating advanced technical checks to monitor the completeness of data transfers from the different providing backend modules to STSI and Billing.

In this context, this change request is raised with the purpose to enhance the internal control/reconciliation checks of the billing process to ensure a correct and complete production of the automated invoices and the possibility to reconcile the invoices with the T2S billing source data.

**Description of requested change:**

In the current design for T2S billing, T2S source modules (e.g., LCMM, SETT, INTF, CRDM, BDM...) export data to

<sup>1</sup> Fast-track justification: A fast-track approach is requested in order to address as soon as possible the IAC finding and to avoid that potential new invoices are sent out without the proper billing information

<sup>2</sup> Legal/business importance parameter was set to 'Medium' with this change the T2S community will benefit from a moderate improvement being the increase in the consistency of the billing invoicing.

<sup>3</sup> Market implementation effort parameter was set to 'Low' because with this change will 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

<sup>4</sup> Operational/technical risk parameter was set to 'Low' because with this change it 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.

<sup>5</sup> Low < 100kEUR < Low-Medium < 200 kEUR < Medium < 400kEUR < High < 700kEUR < Very high

STSI<sup>6</sup>, which performs some checks during the data loading process: STSI checks that the received files are not corrupted and performs the load if all files have been received. After the daily computation, aggregated data are sent by STSI to BILL Common Component (from T2S R6.0 on). As a consequence of this approach, both STSI and BILL are not aware about the completeness of the source data: if data sent by the modules contains an error or is not complete, the STSI calculation could end up in a wrong calculation for the final invoices.

Mitigate the risk of the whole process results in a high complexity task, so the agreed approach is to split the mitigation measures needed to fulfil the abovementioned requirements about the T2S billing process into 4 Change Requests. **In this CR are considered process steps involving STSI and its interaction with BILL.**

During its daily activity, STSI performs computations and aggregations basing on the nature of each Service Items defined for T2S and described in the UDFS.

The solution to be designed should guarantee that possible malfunctions in this aggregation process, that can lead to the lack of recognition and aggregation of billable items stemming from raw data sent by T2S source modules, are recognised, underlined and notified for deeper investigations before the data are sent to BILL. This can be achieved by implementing a set of checks in order to perform some high-level statistics comparing the service items and the related quantities computed in the BD x of the month y under analysis related to Parties, Securities Accounts and Cash Accounts with the aggregations performed on the same Parties, Securities Accounts and Cash Accounts during past business days or historical periods<sup>7</sup>.

In case of the complete missing of a service items included in a set of relevant ones<sup>8</sup> or in case a service items aggregated quantity deviates by a parameterizable percentage(s)<sup>9</sup> with respect to the quantities calculated in past business dates mentioned above or it is above/below a parameterizable threshold(s)<sup>7</sup>, an alarm should be raised to Operational Team (OT)/ Technical Team (TT)/ Last Level Intervention (LLS) teams in order to perform deeper investigations.

After the daily aggregation of billable items, STSI produces three files and it daily sends them to BILL: each file contains daily aggregated billable items referred respectively to Party, Cash Accounts and Securities Accounts, with the aggregated quantity for each service item.

The solution to be designed should guarantee that all data from a BD contained in the three files are correctly received by BILL without alteration or loss of data. This can be achieved by implementing a check in STSI and BILL to ensure that (i) for every BD all three files are sent by STSI and received by BILL and (ii) exactly the same number of records for each file are sent by STSI and received by BILL. In case of inconsistencies identified, then:

- an alarm to Operational Team (OT)/ Technical Team (TT)/ Last Level Intervention (LLS) teams is raised;
- it must be possible to send again the interested file(s) for a specific BD to BILL. BILL should be able to acquire the updated file(s) and to correctly manage the invoice data contained.

It should be possible to repeat the procedure in case an inconsistency is found/an alarm is raised during a new sending.

#### **Submitted annexes / related documents:**

---

#### **Outcome/Decisions:**

---

\*CRG on 31 May 2023: the CRG agreed to recommend CR-804 for authorisation by the T2S Steering Level following a fast-track approach.

\*AMI-SeCo on 16 June 2023: the AMI-SeCo agreed with the CRG recommendation of CR-804 for T2S Steering Level Authorisation.

\*CSG on 14 June 2023: the CSG agreed to authorise CR-804.

\*NECSG on 14 June 2023: the NECSG agreed to authorise CR-804.

\*MIB on 22 June 2023: the MIB agreed to authorise CR-804.

\*PMG on 30 June 2023: the PMG agreed to launch the detailed assessment of CR-804 with a view of scoping in Release 2024.JUN.

\*CRG on 13 December 2023: the CRG agreed to recommend to the PMG the inclusion of CR-804 in the scope of R2024.NOV.

\*PMG on 12 December 2023: the PMG agreed to recommend the inclusion of CR-804 in the scope of R2024.NOV.

---

<sup>6</sup> Short Term Statistical Information.

<sup>7</sup> The business days/billing periods/historical periods to be used as comparison is defined in the Detailed Assessment of the CR as the previous month.

<sup>8</sup> The set of the service items to be checked is defined in the Summary of functional, development, infrastructure and migration impacts below.

<sup>9</sup> The percentage(s)/threshold(s), the scope(s) and application scenario(s) are defined in the Summary of functional, development, infrastructure and migration impacts below.

\*OMG on 15 December 2023: the OMG identified no operational impact from the inclusion of CR-804 in the scope of R2024.NOV.

\*CSG on 21 December 2023: the CSG approved the inclusion of CR-804 in the scope of R2024.NOV.

\*NECSG on 21 December 2023: the NECSG approved the inclusion of CR-804 in the scope of R2024.NOV.

\*MIB on 21 December 2023: the MIB approved the inclusion of CR-804 in the scope of R2024.NOV.

**Documentation to be updated:****Preliminary assessment:**

Not performed.

**Detailed assessment:****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		
	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>		<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 (until June 2022)</b>		<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	X	Rules and parameters data management
<b>Statistics and archive</b>		<b>Statistics and archive</b>	
	Statistical information (until June 2022)	X	Short term statistical information
	Legal archiving (until June 2022)		Legal archiving (from R6.0)
			Data Warehouse (from R6.0)
<b>Information (until June 2022 containing reference data)</b>		<b>CRDM business interface (from R6.0 June 2022)</b>	
	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		No impact
Impacted UDFS chapter		Wording proposals to be provided during implementation phase.
Additional deliveries for Message Specification (UDFS, MyStandards, MOP contingency templates)		No impact
UHB	<b>FIT</b> CRDM UHB - Annex for Service Operator	New dedicated section for the screen used by the Operational Team to insert the parametric lists used for STSI checks.
Other impacted documentation (FA Sch. 05, FA Sch. 07)		No impact
Impacted GDPR message/ screen fields		No impact
Links with other requests		
Links	Reference	Title

#### OVERVIEW OF THE IMPACT OF THE REQUEST ON THE T2S SYSTEM AND ON THE PROJECT

##### Summary of functional, development, infrastructure and migration impacts

In order to fulfil the requirements contained in the CR text for the enhancing of the internal control/reconciliation checks of the billing process for a correct and complete production of the automated invoices and to allow the reconciliation of the invoices with the T2S billing source data, the following mitigation measures should be put in place on STSI side:

##### Mitigation measures on STSI side.

It should be guaranteed that possible malfunctions in the STSI daily aggregation process or issues on T2S source modules not yet identified, are recognised, underlined and notified for deeper investigations before the data are sent to BILL. This in order to avoid the lack of recognition and aggregation of billable items stemming from raw data sent by T2S source modules.

This can be achieved by changing STSI in order to implement the following set of checks:

a) check on key service items. In case of the complete missing of a service items included in a set of relevant ones, then an inconsistency/deviation is found. The set of key service items should be based on parametric lists, depending on party type (NCB and CSD) and connectivity mode (A2A + U2A and U2A only). For example, service items 110 and 111 should be always present for A2A parties. Configurable lists for party type and connectivity mode (4 lists, CSD\_A2A+U2A, CSD\_U2AOnly, NCB\_A2A+U2A, NCB\_U2AOnly), should be configured by the Operator in CRDM using business values provided by the ECB Financials Team.

b) high-level statistics on service items, comparing the daily aggregated quantity of each service items with the

average quantity computed in the last month for the same S.E. In case a service items daily aggregated quantity for a specific S.E. deviates by a parameterizable percentage with respect to average of the quantities calculated in past month for the same S.E. and service item, then an inconsistency/deviation is found. The deviation percentages to be used for the comparison for each service item respect to the average value should be provided by ECB Financials Team and configured by the Operator in CRDM.

In case of any inconsistency/deviation identified, then:

- an alarm to Operational Team (OT)/ Technical Team (TT) teams is raised by STSI;
- the billing process is *not interrupted* (the invoice creation in BILL), *excepted in case the inconsistency/deviation is identified during the last day of the billing period*;
- In case of an issue, the resolution should be performed by the last day of the billing period. After its resolution it must be possible to send again the interested file(s) for a specific BD to BILL and BILL should be able to acquire the updated file(s) and to correctly manage the invoice data contained. In case this would not be possible, an operational procedure for the data inclusion in an invoice or in a credit/debit note should be put in place;
- In the absence of technical issues, so in case the deviation comes from T2S actors' business, the deviation should be notified by the Operational Team to the ECB Financials team. The reason behind the deviations might be investigated, if relevant, at business level by ECB Financials team.

A new CRDM screen, a new entity in the CRDM data model and dedicated CUD procedures should be put in place in order to allow the Operational Team to insert the parametric lists mentioned in the point 2.a (check on key service items), 2.b (high-level statistics on service items).

Mitigation measures for STSI – BILL interaction:

*Check on the daily files sent by STSI to BILL.* It should be guaranteed that all data from a BD contained in the three files sent by STSI to BILL are correctly received by BILL without alteration or loss of data. This can be achieved by implementing a check in STSI and BILL to ensure that (i) for every BD all three files are sent by STSI and received by BILL and (ii) exactly the same number of records for each file are sent by STSI and received by BILL.

In case of any inconsistency/deviation identified, then:

- an alarm to Operational Team (OT)/ Technical Team (TT) teams is raised by BILL;
- the billing process is *temporarily interrupted on BILL side*;
- after the investigation and the solving of the issue, it must be possible to re-acquire the interested file(s) for a specific BD to correctly manage the invoice data contained.

**Main cost drivers:**

- Implementation of mitigation measures for STSI and the interaction between STSI and BILL (check on key service items functionality, high-level statistics on service items, "Monitor Alarms' Presence" functionality, "Check Execution Control" functionality) with impact on CRDM BE/GUI , STSI and BILL Common Components.

**Impact on other TARGET Services and projects**

No impact on other Eurosystem services (T2, TIPS) or projects (ECMS) has been identified during detailed assessment.

**Summary of project risk**

No risk has been identified during security assessment.

**Security analysis**

No adverse effect has been identified during security assessment.



27 November 2023

## Cost assessment on Change Requests

<b>T2S-804-SYS – T2S Billing – first set of amendments stemming from audit report</b>			
One-off	Assessment costs* - Preliminary - Detailed	not charged 10,000.00	Euro Euro
One-off	Development costs	385,821.14	Euro
Annual	Operational costs		
	- Maintenance costs	29,622.90	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).