EUROPEAN CENTRAL BANK

EUROSYSTEM

General Information (Origin of Request) ☐ User Requirements (URD) ☒ Other User Functional or Technical Documentation (SYS)		
Request raised by: Eurosystem	**Institute:** 4CB	**Date raised:** 28/02/2019
Request title: Billing common component – T2S Migration		**Request ref. no:** T2S 0706 SYS
Request type: Common	**Classification:** Maintenance	**Urgency:** Normal
1. Legal/business importance parameter: Medium		**2. Market implementation efforts parameter:** Low
3. Operational/Technical risk parameter: Medium		**4. Financial impact parameter:** No financial impact
Requestor Category: Eurosystem		**Status:** Implemented

This Change Request is one of the T2S Change Requests related to the T2-T2S Consolidation Project. The tentative distribution of these Change Requests per functional area and T2S release is summarised in the table below (as of 2 November 2020):

	R4.0 (Jun 2020)	R4.2 (Nov 2020)	R5.0 (Jun 2021)	R5.2 (Nov 2021)	R6.0 (Jun 2022) T2S>ESMIG	R6.1 (Sep 2022)	R6.2 (Nov 2022)
ESMIG (Connectivity)					CR-701		
CRDM (Reference data)	CR-719	CR-721	CR-704 CR-696		CR-705		
BILL (Billing)				CR-697	CR-706	CR-706 decommissioning	
BDM (Business day)		CR-698			CR-707		
DWH (Historical data)					CR-699		
LEA (Legal archiving)					CR-700		
T2–T2S communication		CR-702 (ICL) CR-703 (camt.050)	CR-729				CR-734
Liquidity management			CR-708 (Outbound LT) CR-709 (Cash sweep)				
Maintenance window			CR-710				

Reason for change and expected benefits/business motivation:

The T2-T2S Consolidation project envisions that a Billing (BILL) common component shall provide features to gather and aggregate billable items from all the Eurosystem Market Infrastructure services and the Eurosystem collateral management application (ECMS) and to manage these pieces of information for the creation of the invoices in a centralised way.

At functional level, BILL shall offer the functionalities for calculating the invoices and managing the invoices' lifecycles as required by the future T2 (RTGS, CLM), TIPS and ECMS. Moreover, BILL shall cover the current T2S Invoice Management functionalities minimising the impact for the T2S application and the T2S users.

The access to BILL shall be possible in U2A mode (for all functions) and in A2A mode (for a subset of functions).

The authentication process and the service authorization process (i.e. the authorization to submit a request to BILL) shall take place at centralised level (in the Eurosystem Single Market Infrastructure Gateway, ESMIG), whereas the function-specific authorisation process shall take place on the basis of the privileges granted in the Common Reference Data Management (CRDM).

The following diagram shows a conceptual overview of BILL and its interactions with the other Eurosystem Market Infrastructure services.

On top (blue items) the services/components providing billable items are depicted. On the left (green items) the diagram shows the common components providing to/receiving from BILL data for informational/data enrichment purposes. On the right are the stakeholders interacting with BILL, plus CLM receiving direct debit messages are shown. On the right side is present ECMS, which provides the invoice data monthly to BILL for the creation of the invoice – amounts already calculated on ECMS side.
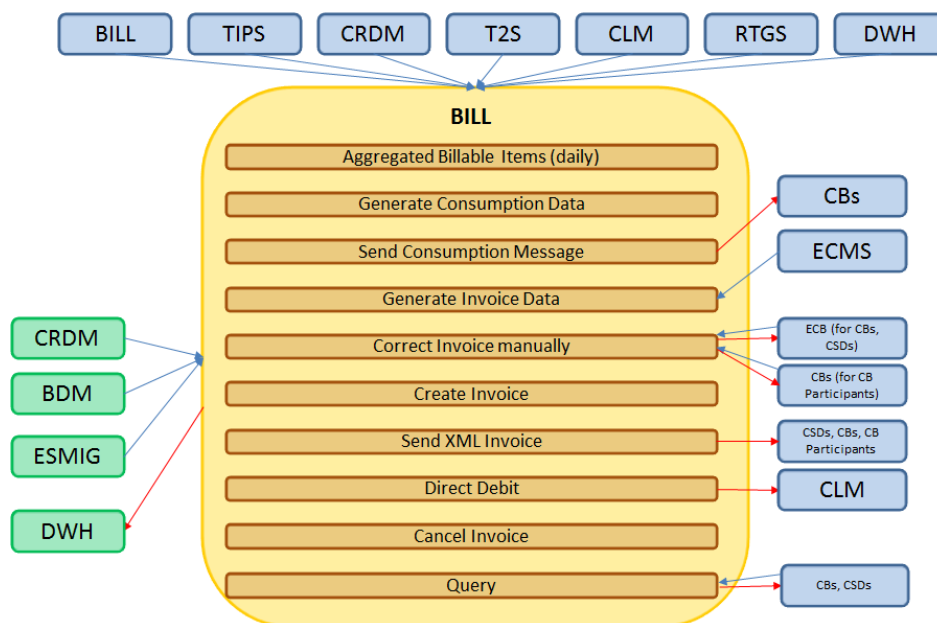
BILL shall offer invoicing functionalities for all the Eurosystem Market Infrastructure services (T2S, T2 CLM, T2 RTGS TIPS) and the Eurosystem collateral management application (ECMS).

The current T2S billing modules will be decommissioned.

As far as T2S is concerned, BILL is expected to start gathering billing data from the decommissioning of the T2S billing invoice processes onwards. The Billing common component is not meant to manage the T2S billing data or the T2S invoices created before the T2S Billing invoice processes decommissioning.

BILL will rely on CRDM data for configuration purposes while it will maintain in its local database the dynamic data.

BILL is expected to cover all the functionalities existing in the current T2S Invoice Management process (invoice generation, invoice confirmation, invoice cancellation, invoice sending and querying) and it will calculate the invoices in accordance to the agreed pricing scheme.

The Invoice Management process will be preserved to the maximum extent possible for the CSDs: the service items structure will be maintained and the process will be kept in line with the current invoicing process, nevertheless CSDs will interact with the new BILL in A2A and U2A mode.

As far as CBs functionalities are concerned the process will be amended, due to Central Banks participating in other services than T2S.

The general description of BILL component and the new functionalities to be developed are handled in the separate CR "Billing common component development". This Change Request focuses on the impact on T2S stemming from its migration to T2-T2S Consolidation and related decommissioning of the existing Billing module.

New Billing common component features

The process design foresees that all the services/service components/common components export their billable items at the end of the business day to BILL that organises the received data into consumption data, grouped by Service Item and relevant Parties (i.e. parties to be charged and their responsible CSD or CB). Moreover, ECMS provides once a month the already calculated invoice data.

BILL at the beginning of the month N calculates the due amounts and creates the invoices for the month N-1.

The Billing module takes care of a possible cancellation of an invoice sending to the involved CSD or CB the related XML message and giving the possibility to create a new invoice for the relevant month.

As far as T2S is concerned, the future Billing process design foresees the gathering of all the billable items from the involved common components and from the T2S modules.

In detail, the new common component foresees that:

- the T2S modules and the relevant common components (e.g. CRDM and ESMIG) export their data at the end of the business day making them available for BILL;
- BILL organises daily the received data into the consumption data;
- BILL, at the beginning of the month N, calculates amounts and aggregates them for the activities falling in the month N-1, aggregating Invoice Data. In case a CB has opted for it, BILL sends them the consumptions messages. The consumption messages are not foreseen for CSDs;
- CBs users are allowed to insert additional positive or negative items (manual corrections) to the invoice data for their community. ECB users are allowed to insert additional positive or negative items (manual corrections) to CSDs and CBs invoice data;
- BILL, after specific trigger, calculates the invoices from invoice data and manual corrections and prepares the related PDF files. It properly informs CSDs and CBs sending them the related XML file – if they have subscribed for it;
- BILL offers to CBs that opted for it the direct debiting of the due amounts to their Participants. This feature is not possible for CSD Participants;
- BILL offers to CSDs, CBs and CB Participants the possibility to search and download their invoices. ECB is allowed to access CSDs and CBs invoices;
- In case a cancellation of the invoice is needed, BILL informs the CB or CSD accordingly. It gives, then, the possibility to create a new invoice for the relevant month.

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Description of requested change:

The introduction of the new BILL common component will imply some changes in the current T2S customer experience. Any amendment has been considered in order to preserve the current process to the maximum extent possible.

Process changes

As far as the CSDs entities are concerned, the billing process will be preserved to the maximum extent possible.

As far as the CBs are concerned, the process will be changed in order to cover the functionalities already offered by the Billing component of TARGET2 – that will be replaced by BILL – allowing the direct debiting of the due amounts.

Moreover, BILL common component will allow a properly authorised user to amend invoices before their sending.

The following features are new compared to the current T2S Invoicing management:

- Option to receive consumption files (CB side only);
- Possibility to opt for the sending of the invoice in XML format (CSDs side and CBs side);
- Management of the invoice for the community (CBs side only, i.e. Payment banks and Ancillary systems);
- Amendment of the invoices for the community (CBs side only);
- Possibility for ECB users to amend the CSDs and CBs invoices;
- Direct debiting (CBs side);
- Access to the invoices (CSDs and CBs).

It is expected that the usage of the agreed interim solution regarding pooling and redistribution of fees related to TARGET2/CLM – T2S interaction (ECB capital key approach) is applied already in the context of this CR.

Reference and dynamic data changes

BILL common component will rely on CRDM objects for what reference data is concerned. Changes in CRDM are described in the separate CR "Billing common component development".

As far as the billing configuration is concerned, the list of Service Items in use for T2S is not foreseen to be amended. As such, new queries or messages currently not covered by the current list of Service Items will not be added to the T2S invoices.

Impact analysis on the Object/Functions for Reference and Dynamic data

Changes in the A2A messages

The messages camt.076 and camt.077 will be decommissioned from T2S interface The messages camt.076 and camt.077 will be decommissioned from T2S interface starting from R6.1 (September 2022) and offered by BILL starting from R6.0 (June 2022). The BILL version of camt.076 and camt.077 may differ from the T2S version.

In the interim period between R6.0 (June 2022) and R6.1 (September 2022) customers are allowed to send A2A queries (camt.076) and receive the related answer via ESMIG both to:

- T2S Interface (using the current camt.076/camt.077 message version) to query billing data managed by T2S until June 2022 (for the T2S retention period);
- BILL Interfaces (using the new version of camt.076/camt.077 as for R6.0 mentioned in this CR) to query billing data managed by BILL.

The distinction of the interface to be addressed should be done by the customer at transport level (for camt.076), as already foreseen for ESMIG (CR701).

Changes in the U2A functionalities

BILL will replace the current existing Billing module. It is expected to offer the customers the possibility to search and display their own invoices.

For CB users, the additional features of managing invoices for their participants is expected.

The List of Service Items will be shown in the CRDM screens accessible via the T2S GUI.

- The following GUI screens will be decommissioned from T2S (starting from R6.1 - September 2022) and substituted by the ones developed as part of the new Billing common component,:Cumulative Billing Data – Search/List

- Cumulative Billing Data – Details

- Itemised Billing Data – Search/List

- Itemised Billing Data – Details

- Invoice Data Configuration – (Edit)

In addition, the following GUI screens will be decommissioned from T2S starting from R6.1 (September 2022)::

- Intra-month billing information – New/Edit

- PDF Invoice Data - Search/List Screen

Finally, the PDF Invoice format (CSDs and CBs side) will be modified. In the interim period between R6.0 (June 2022) and R6.1 (September 2022) customers are allowed to access via ESMIG both to:

- T2S GUI, to query invoices and billing data managed by T2S until June 2022 (for the T2S retention period);
- BILL GUI, to use the complete list of BILL functionalities for the billing data managed by BILL.

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Submitted annexes / related documents:

T2S_0706_SYS_Annex_01a_UDFS_Chapter_1-2_updated

T2S_0706_SYS_Annex_01b_UDFS_camt.076 camt.077 and BRs_updated

T2S_0706_SYS_Annex_02_UHB

T2S_0706_SYS_Annex_03_GFS

Documentation to be updated:

See Annexes 01a, 01b, 02 and 03

High level description of Impact:

Outcome/Decisions:
* CRG on the 20 March 2019: The CRG has agreed to launch the preliminary assessment of CR-706.
* CRG on the 3 September 2019: The CRG agreed to recommend the CR for authorisation by the T2S Steering Level.
* AMI-SeCo on 16 October 2019: The AMI-SeCo agreed with the recommendation of the CRG.
* CSG on 25 October 2019: The CSG authorised the CR for allocation to a T2S release.
* NECSG on 28 October 2019: The NECSG authorised the CR for allocation to a T2S release.
* MIB on 8 November 2019: The MIB authorised the CR.
* PMG on 27 March 2020: The PMG proposed to allocate this CR to T2S release 6.0.
* CRG on 18 December 2020: the CRG agreed to recommend to the PMG the inclusion of CR-706 in R6.0.
* OMG on 21 December 2020: the OMG identified an operational impact for CR-706.
* PMG on 22 December 2020: the PMG recommended the inclusion of CR-706 in STP for R6.0 for approval by the Steering Level.
* CSG on 7 January 2021: the CSG approved the inclusion of CR-706 in STP for R6.0.
* NECSG on 7 January 2021: the NECSG approved the inclusion of CR-706 in STP for R6.0.
* MIB on 27 January 2021: the MIB approved the inclusion of CR-706 in STP for R6.0.
* PMG on 13 August 2021: the PMG agreed to launch the detailed re-assessment of CR-0706 in view of scoping in Release 6.0 and the accessibility of the old BILL.
* OMG on 25 October 2021: the OMG confirmed its previous operational assessment
* CRG on 09 November 2021: the CRG confirmed its previous recommendation of CR-706.
* PMG on 09 November 2021: the PMG confirmed its previous recommendation to include CR-706 in R6.0.

Preliminary assessment:
- **Impacted modules:** INTF, Operational Services - Billing
- **Release : 6.0**
- **Findings:**

  CSLD CR-0016 has been raised in order to evolve BILL requirements. During the detailed assessment of CR-0706, any possible change or clarification to the list of functions and screens listed above and stemming from CSLD CR-0016 assessment will be reported.

- **Open issues/ questions to be clarified by the originator:**
  The feasibility to anticipate the T2S invoices management for CBs and CB Participants already with CSLD go-live has to be confirmed during the detailed assessment.

Detailed assessment:

EUROSYSTEM ANALYSIS – GENERAL INFORMATION	
T2S Specific Components	**Common Components**

	LCMM			
	Instructions validation			
	Status management			
	Instruction matching			
	Instructions maintenance			
	Penalty Mechanism			

	Settlement			
	Standardisation and preparation to settlement			
	Night-time Settlement			
	Daytime Recycling and optimisation			
	Daytime Validation, provisioning & booking			
	Auto-collateralisation			

	Liquidity Management			
	Outbound Information Management			
	NCB Business Procedures			
	Liquidity Operations			

	T2S Interface *(as of June 2022 without Static Data Management, Communication for SDMG, Scheduler, Billing)*			
	Communication			
X	Outbound Processing			
X	Inbound Processing			

	Static Data Management *(until June 2022)*		Common Reference Data Management *(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	

	Statistics and archive		Statistics and archive	
X	Statistical information (until June 2022)	X	Short term statistical information	
X	Legal archiving (until June 2022)		Legal archiving (from R6.0)	
			Data Warehouse (from R6.0)	

	Information *(until June 2022 containing reference data)*		CRDM business interface *(from R6.0 June 2022)*	
	Report management	X	Report management	
	Query management	X	Query management	
		X	Communication	
		X	Outbound Processing	
		X	Inbound Processing	

	Operational Services			
	Data Migration (T2S DMT)		Data Migration (CRDM DMT, from R6.0)	
	Scheduling (until June 2022)		Business Day Management (from R6.0)	
		X	Business Day Management business interface (from R6.0)	
X	Billing (until June 2022)	X	Billing (from R6.0)	
		X	Billing business interface (from R6.0)	
	Operational Monitoring		Operational and Business Monitoring	
	OMEGA Templates			

Impact on major documentation		
Document	**Chapter**	**Change**
Impacted GFS chapter	3.3.11.12 Billing configuration	Structure of Service items must consider bands and tariffs.
	3.8 Operational Services	Reference to CBs participants to be added
		The chapter 3.8.5 Billing must be amended in order to take care of the new module BILL. In particular:
	3.8.5.1 Dynamic Data managed by the module	insert the dynamic datamodel as in BILL
	3.8.5.2 Description of the entities	describe the entities as in BILL
	3.8.5.3 Diagram of the module	Insert the diagram of the module as in BILL.
	3.8.5.4 Description of the module	Describe the BILL module.
	3.8.5.5 Description of the functions of the module	Describe the BILL functions.
	3.8.5.6 Billing (BI) use cases	Describe the uses cases as in BILL.
	3.8.5.7 Processing of Billing use cases DIAGRAM 48 - GENERATION, CONFIRMATION/CANCELLATION OF BILLING DATA AND SEND INVOICE	Describe the processing as in BILL.
	3.2.2 Dynamic data managed by the domain	Update table for Inbound and Outbound Individual message
	3.2.4.3 Description of the functions of the module	Deletion of T2S BILL related flows
	3.2.4.4 Description of the input/output of the module	Deletion of T2S BILL related flows
	3.2.5.3 Description of the functions of the module: 3 – Check A2A Message Subscription	Deletion of reference to Invoices and Invoice cancellations
	4 – Create Business Payload A2A	Deletion of T2S BILL related flows
	3.2.5.4 Description of the Input/Output of the module	Deletion of T2S BILL related flows
	4.1.5 QU: Queries	Decommission the billing Queries
Impacted UDFS chapter	1.1.5.7 Invoicing management	Definition of invoicing management to be redefined.
	1.3.4 Message subscription	To be amended in order to allow configuration for camt.077 message (Invoice, Cancellation and Consumption Message).

		Answers to invoice queries are still working without message subscription.
	1.5.1 Business application configuration	adding VAT ID for the invoices under Billing reference data section.
	1.5.7 Invoicing management	to be aligned to the possible actions of Operators under BILL
	1.6.5.7 Invoicing	the processes of data gathering, invoice data creation, invoice creation and invoice cancellation must be described here. Since the decision taken is to leave the list of Service Items as it is the tables containing the service items will remain untouched.
	1.6.5.7.7 Parameter Synthesis	Configuration for CBs to be reported.
	3.3.3.30 BillingReportRequestV01 (camt.076.001.01)	Message to be aligned to the BILL version.
	3.3.3.31 BillingReportV01 (camt.077.001.01)	Message to be aligned to the BILL version.
	2.24.3 Inbound and outbound messages	Deletion of camt.077
	4.1 Index of Business Rules and Error Codes	Update/Deletion of BR IIMP088
	1.6.4.4.3 Query management process	Decommission the Billing Queries from Table 188
	2.18.3 Inbound and outbound messages	Decommission the Billing Queries from the Table
Additional deliveries for Message Specification	camt.076 BillingReportRequest camt.077 BillingRepot (Annex: ServiceItemNamesandCodes)	camt.076 and camt.077 message usage guidelines in MyStandards will be updated in order to support all BILL functionalities.
UHB	New BILL related screens: • Invoice Data – Search/List screen • Invoice Data – Details screen • Itemised Invoice Data – Search/List screen • Itemised Invoice Data – Details screen • Manual Correction – Search/List screen • Manual Correction – Details screen • Manual Correction – New/Edit screen • PDF Invoice Data – Search/List screen • Consumption Data – Search/List screen (operator only) • Consumption Data – New screen (operator only)	New BILL screens to be describe in the context of T2S UHB

	• Invoice Data – New screen (operator only) • Revision/Audit trail –List screen (operator only) • Revisions/Audit Trail – Details screen (operator only) T2S Billing related screens • 2.4.1.23 Cumulative Billing Data - Search/List Screen • 2.4.1.24 Cumulative Billing Data - Details Screen • 2.4.1.27 Itemised Billing Data - Search/List Screen • 2.4.1.28 Itemised Billing Data - Details Screen • 2.4.1.28 Intra-Month Billing Information - New Screen (Operator only) • 2.4.1.29 Invoice Data Configuration - New/Edit Screen (Operator only) • 2.4.1.32 PDF Invoice Data - Search/List Screen (Operator only) • 3.19.1 Configuration of Billing Data (Operator only) • 3.21.1 Creation of a New Invoice Data Configuration (Operator only)	T2S Billing related screens must be removed from the UHB.
	3.18 Billing Data 3.18.1 Monitoring of Billing Data 3.18.1.1 View Billing Data	Business cases to be amended in the context of BILL
External training materials	T2S_BA_QM T2S_FA_WS4_Part2_QM	Update of the training module, deletion of billing related queries Update of the training module, deletion of billing related queries

Links with other requests: CR-0697 Billing Common Component Development			
Links	Reference		Title	

Summary of functional, development, infrastructure and migration impacts

The present CR deals with the transition of CBs and CSD users to the new CSLD BILL component that will offer functionalities for the gathering of billing data and invoicing management.

The new CSLD BILL aims to the centralized management of the billing data for all service. Under a pure T2S perspective, the expected impacts are as described below.

A2A

The messages camt.076 and camt.077 are decommissioned under T2S starting from R6.1 (September 2022) and offered under CSLD BILL component starting from R6.0 (June 2022). The schema of the messages will be amended in order to support all functionalities of BILL and to be used for multiple services, even if it will maintain all the functionalities and the data offered under T2S.
Main changes which will be performed:

- the service has to be added as search criteria in camt.076 and as returned element in all camt.077 business cases;
- party identification structures has to be updated according with the MR2019 on both messages;
- optional tax structure has to be introduced for camt.077;
- manual correction structure has to be added in the camt.077;
- consumption message business case has to be introduced for camt.077.

In the interim period between R6.0 (June 2022) and R6.1 (September 2022) customers are allowed to send A2A queries (camt.076) and receive the related answer via ESMIG both to:
- T2S Interface (using the current camt.076/camt.077 message version) to query billing data managed by T2S until June 2022 (for the T2S retention period);
- BILL Interfaces (using the new version of camt.076/camt.077 as for R6.0 mentioned in this CR) to query billing data managed by BILL.

The distinction of the interface to be addressed should be done by the customer at transport level (for camt.076), as already foreseen for ESMIG (CR701).

Please note, that the two versions of camt.077 are not compatible. T2S will continue to work with the draft4 version until R6.1. For BILL draft6 applies.
The adaption of the current T2S Billing to draft6 is discarded due to high sunk costs.
This leads to three possibilities for the customer in PROD:
- Draft4 and draft6 are used in parallel until R6.1 and handled on customer side
- Draft4 is supported until shortly before the second June invoice (covering the 13/06 – 30/06 period). That means the data from the old Billing can still be requested with draft4. After that draft6 is introduced for the new billing.
- Draft6 is supported with the beginning of R6.0 and for the old Billing only U2A is used.

A similar logic would apply to the camt.076 (draft3 version to query T2S Billing vs. draft4 version to query BILL)

The decommissioning of the current T2S billing modules with Release 6.1 should be handled as a PBI.

Process
In order to receive the camt.077, CBs and CSDs must subscribe the message.

CBs will be allowed to configure the Direct Debiting for their participants.
The DD feature is designed to be executed between CSLD BILL and T2 CLM. Since T2 CLM is expected to go-live with release 6.2 (November 2022), an interim solution covering the period between June 2022 and November 2022 must be put in place.

It is expected that the usage of the agreed interim solution regarding pooling and redistribution of fees related to TARGET2/CLM – T2S interaction (ECB capital key approach) is applied already in the context of this CR.

U2A
The T2S GUI related to the T2S Billing functionalities will be decommissioned starting from R6.1 (September 2022). From R6.0 (June 2022). , the CBs and CSDs users must rely on the CSLD BILL component screens in order to access the invoice data.

 In the interim period between R6.0 (June 2022) and R6.1 (September 2022) customers are allowed to access via ESMIG both to:
- T2S GUI, to query invoices and billing data managed by T2S until June 2022 (for the T2S retention period);
- BILL GUI, to use the complete list of BILL functionalities for the billing data managed by BILL.

Since the T2S billing screens are replaced by the CSLD BILL screens, the user experience will differ.

In details:
- o Cumulative Billing Data screens will be substituted under CSLD by Invoice Data – Search/List screen and Invoice Data – Details screen
- o Itemised Billing Data screens will be replaced under CSLD by Itemised Invoice Data – Search/List screen and Itemised Invoice Data – Details screen
- o Users will have access to the screen PDF Invoice Data – Search/List screen
- o The list of Service Items will be accessed through CRDM screens instead than though SDMG screens.

CBs user will have access to additional functionalities previously not foreseen in T2S:

- Management of the invoice for the community;

- Amendment of the invoices for the community;
- Access to the invoices (owns and for the community).

CSD users will be allowed to search and download their PDF invoices. The invoice data and relevant invoices will be maintained for three months.

The PDF invoice format could differ from the one currently used in T2S. In particular, the Invoice Number will be created with a specific pattern related to the Service T2S and the system entity the invoice is related to ("The country and service/application should be identified in the first digits of the invoice number, such that invoice numbers within a country and service are increasing by increments of one.") and the Service the invoice is related to is always explicitly reported among the header information.

Operational Impact
Since BILL goes live in the middle of a billing period (June 2022), the invoices for June must be separated into two different documents: for each CB/CSD, one is produced in T2S (from the beginning of June 2022 to the go-live date) and another one is produced in the new CSLD BILL (from the go-live date to the end of June).
Under a pure T2S viewpoint, this implies an additional operational impact to be taken into account.

Impact on other TARGET Services and projects
No impact on ECMS, CSLD and TIPS TARGET2: cross service impact with CSLD CR0068 and T2S-0706-SYS, therefore TARGET2 CR-844 PAPSS CRSS TARGET2 adaptations due to migration to CSLD BILL needs to be implemented.
Summary of project risk
n.a.
Security analysis
No potentially adverse effect was identified during the security assessment.