

T2-T2S CONSOLIDATION

USER REQUIREMENTS DOCUMENT

FOR

COMMON COMPONENTS

-ANNEX FOR CENTRAL BANKS ONLY-

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1 BILLING (BILL)

1.1 OVERVIEW

1.1.1 Context Diagram

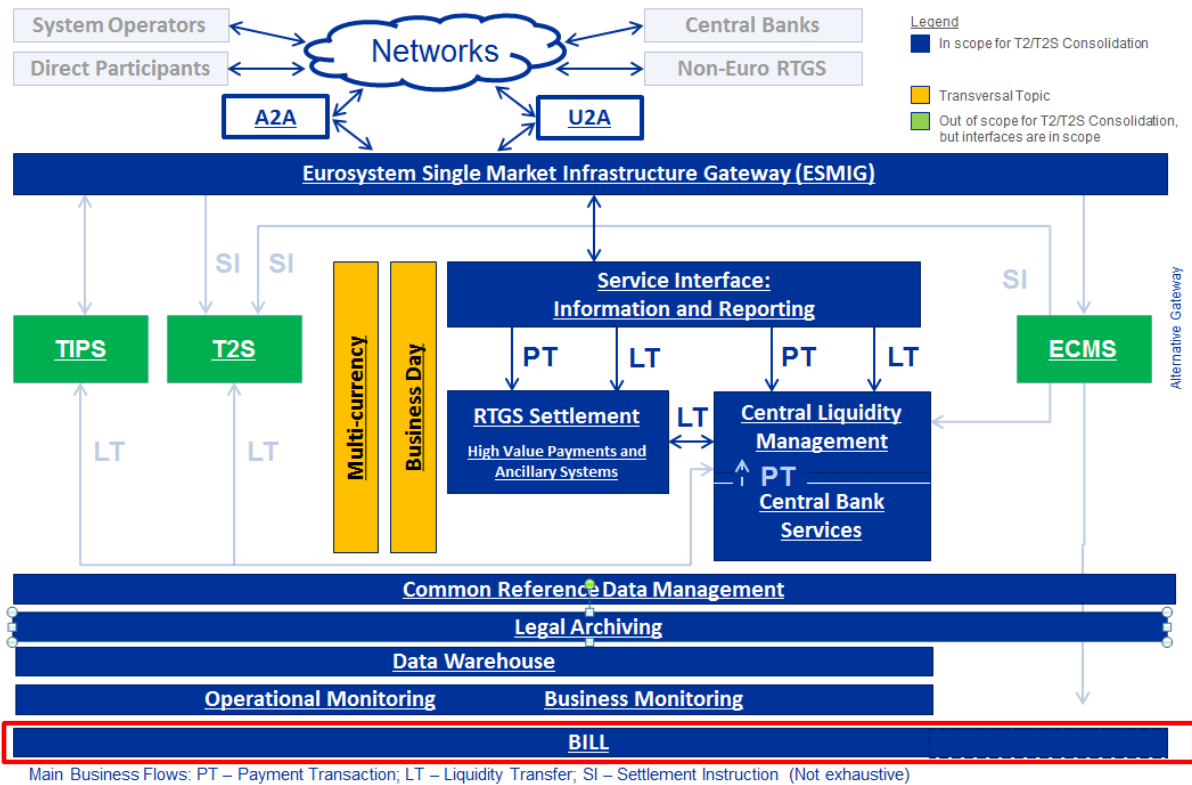


Figure 1: Context diagram for Billing

1.1.2 Business Processes

Business Process	BP Reference	Business Process Description
Aggregate Billable Items Daily	SHRD.CB.BP.BILL.AGBD	Each of the following services and components: RTGS, T2S, TIPS, CLM, CRDM, DWH and BILL, produces billable items on a daily basis. These billable items are aggregated and enriched to produce consumption data including both traffic and participation data
Generate Consumption and Invoice Data	SHRD.CB.BP.BILL.GIND	Monthly process to generate consumption and invoice data
Correct Invoice Manually (optional)	SHRD.CB.BP.BILL.MACO	Process to add manual corrections to invoice data already generated
Send consumption message	SHRD.CB.BP.BILL.SECF	Monthly process to send consumption messages to Central Banks (CBs) including those not making use of the invoicing provided by Billing Note: For CSDs, the process will remain unchanged compared to today
Create Invoice (optional)	SHRD.CB.BP.BILL.CRIN	The invoice is created from the invoice data and manual corrections
Send XML Invoice (optional)	SHRD.CB.BP.BILL.SEIN	The XML invoice is sent to the Invoice addressee
Direct Debit (optional)	SHRD.CB.BP.BILL.SEDD	A direct debit according to the invoice is instructed
Cancel Invoice (optional)	SHRD.CB.BP.BILL.CAIN	Cancel a chosen invoice
Billing Reporting	SHRD.CB.BP.BILL.REP	Reporting requirement related to billing

Table 1: Business Processes for Billing

1.1.3 Billing Process - Terms and definitions used

Term	Definition
Billing	Component for selecting and packaging billing information, generating consumption and invoice data, sending invoice and instructing direct debits
Billable Items	Consumption and circumstances to be billed, e.g. traffic data coming from a Eurosystem Market Infrastructure Service or participation data coming from CRDM
Consumption data	Aggregated billable items
Consumption message	Message containing packaged consumption data that can be delivered to system entities
Invoice data	Consumption data enriched with prices, and Account to be debited
Fee Originator	Party who has initiated or caused the billable item in the system (sent the A2A message or performed the U2A action). The Fee Originator must always refer to a Party.
Party to be charged	Party to whom the billable item is assigned due to a contractual agreement
Invoice addressee	Identifies street address / A2A routing for invoice that is created for "party to be charged" (this reference data is different from "party to be charged" official business street address)
Account to be debited	The MCA that will be debited with the amounts on the invoice (can be different from the account owned by the "party to be charged" for example in case of outsourcing arrangements).
System entity	CB or CSD in a billing context

Table 2: Billing terms and definitions used

1.1.4 Billing Process – Functional Design

The overall billing process is, from a functional point of view, designed as depicted by the diagram below:

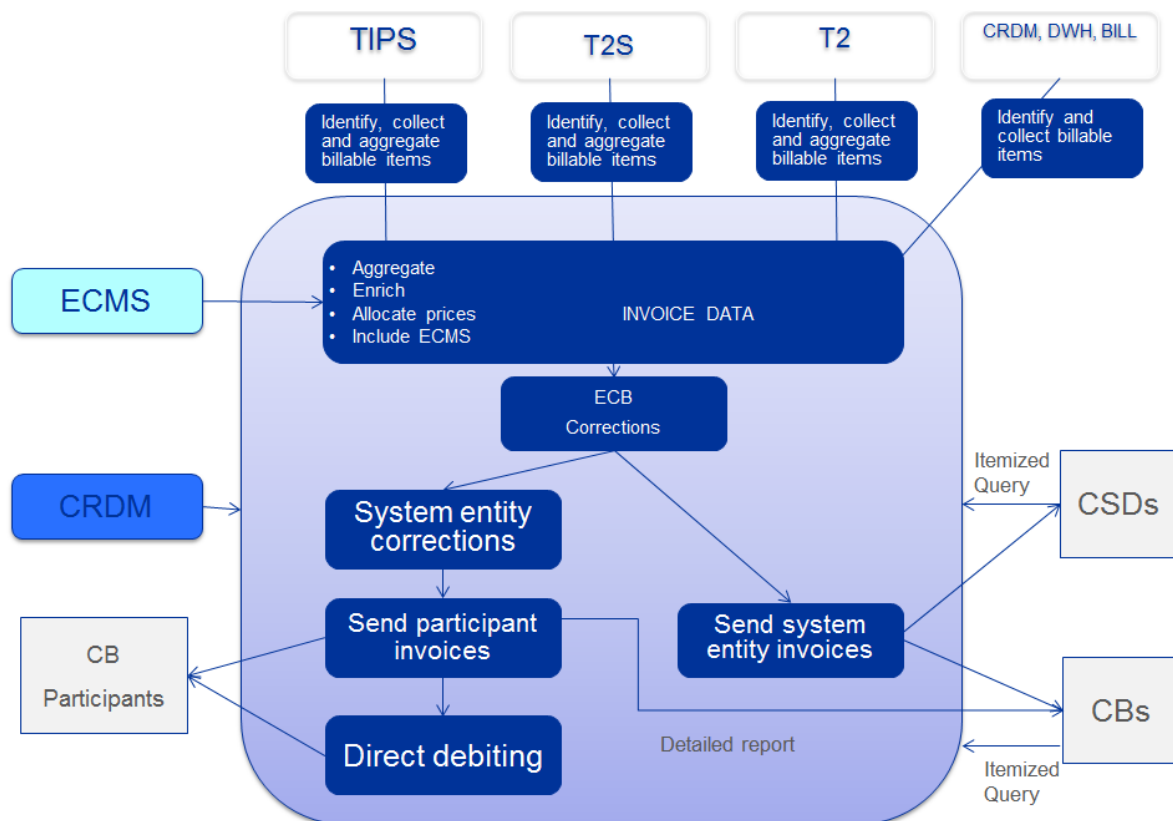


Figure 2: Functional overview of the Billing process

A Billing common component (BILL) will collect all billable events from services (T2, TIPS, T2S), components (CRDM, DWH, BILL) as well as billable information (e.g. participation) from CRDM.¹ The enrichment and aggregation process to prepare the data for billing will happen in BILL.

BILL will issue a separate invoice for each settlement service/applications: T2S, TIPS, T2 (for RTGS and CLM) and ECMS. The usage of common components CRDM, DWH, BILL will be charged through the above invoices (except for ECMS). The usage of common components Legal Archiving, Contingency Settlement, Business Day Management and ESMIG will not be charged.

	T2S	TIPS	T2	ECMS
CRDM	Yes	Yes	Yes	No
DWH	Yes	n/a	Yes	n/a

¹ If a Party or account is active on at least one business day during the month, there shall be an entry in the consumption data for that Party or account.

BILL	Yes	Yes	Yes	No
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Each settlement service/application has its dedicated list of billable items in CRDM, reflecting the fact that for each of those settlement service/applications a separate invoice is issued. Billable items related to common components (DWH, BILL, CRDM) are reflected in the list of billable items of each settlement service/application. Each list of billable items price list is organised according to three service item categories:

- Settlement Services
- Account Management Services
- Information Services

Queries and reports executed in CRDM, DHW and BILL are covered under Information Services. Existence of reference data in CRDM (i.e. owning an account) is covered under Account Management Services.

BILL will manage two levels of invoicing: system entity invoices, issued by the ECB to CSDs and NCBs, and participant invoices, issued by system entities. System entities may either:

- issue participants invoices in BILL; or
- issue participants' invoices outside of BILL :
 - A CB will have access to a report including the detailed invoice data and can query BILL for itemized invoice data. It may also subscribe to a consumption message.
 - A CSD can query BILL for itemized invoice data

In any case, an NCB and CSDs invoicing its parties outside of BILL will be issued a system entity invoice, totalling fees for its own consumption and that of its participants.

By default, the billing period is set to one calendar month.

Note: In the figure above, CRDM is depicted twice. The occurrence on the upper right corner is related to CRDM as a component which will produce billable items, whereas the occurrence on the left hand side is related to CRDM as an input for the enrichment and aggregation process within Billing.

Note: The ECMS data will be aggregated and priced in ECMS and then imported in BILL as invoice data.

1.1.4.1 ENRICHMENT PROCESS

The services and components will identify and collect the billable items. The services and components will identify the Fee originator (e.g. Party instructing the system) and enrich billable items with relevant information, such as the Party to be charged and system entity.

1.1.4.2 INVOICING PROCESS

Once the invoice data is generated, and before invoices are created, the ECB shall in a centralised manner be able to manually correct the invoice data. These manual corrections (billable items, amounts or percentages) shall be logged within the billing information but must not modify existing aggregated invoice data. Corrections to billable items shall include consumption and amount, both could be positive or negative. Amounts and percentages could be positive or negative. In consecutive step, the CBs for their communities may apply similar corrections. After the invoices are sent (system entity and participant level) and until they are paid, the Operator shall be able to cancel and regenerate the invoices for all services/applications and participants.

System entities (CBs and CSDs) and CB participants will receive their XML invoices based on their parameter configuration.

CSDs will receive XML invoices for T2S services as system entities, and will continue to use the current process, i.e. querying the itemised invoice data to invoice their participants.

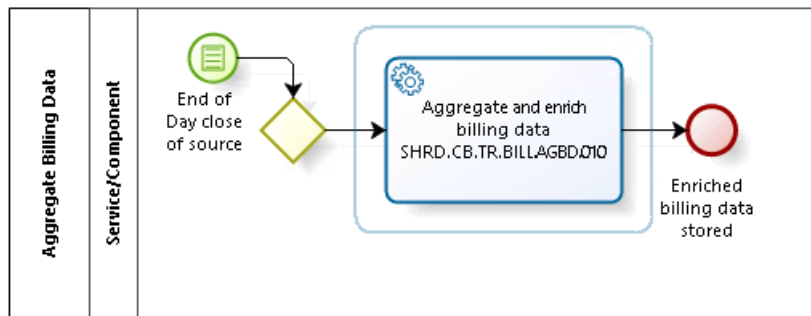
Finally, for the Parties for which a direct debit option has been set up in CRDM, the Main Cash Accounts (MCAs) specified as the Account to be debited will be debited according to the invoices. If the option for automated direct debits has not been chosen, the collection of fees has to be ensured through other, operational means, in agreement between the Party to be charged and the relevant Central Bank.

Id	SHRD.CB.UR.BILL.OVVW.010.010
Name	Invoicing Sequence
Description	<p>Each process step shall be manually launched by the service operator or scheduled. It shall be launched or scheduled separately for each service/application, for all relevant system entities together.</p> <p>The operator shall have the tools and/or operational procedures to undo and rerun each process step and correct/adjust its output. In particular it shall be able to adjust consumption data, regenerate invoice data and cancel/re-create invoices.</p>

1.2 AGGREGATE BILLABLE ITEMS (DAILY)

Business Process Ref: SHRD.CB.BP.BILL.AGBD

1.2.1 Business Process Model



Business Process Model 1: Aggregate Billable items daily

1.2.2 Process Overview

Process goal:

This business process describes the enrichment and aggregation of consumption for services and components.

The gathering of data and the aggregation of data for each service or component shall be executed independently so that any delay or error on one service/component will not affect the management of the data/invoices of the others. The process on common components shall have an effect on the overall process, since common component information is relevant for the overall computation. Aggregation starts when data for the service are “complete”.

The billing process elaborates the billing information for the relevant Party to be charged following a bottom-up, sequential approach in terms of aggregation levels, starting with the bill of the individual participant and aggregating further to the bill of a CB or of a CSD.

Process context:

- ▶ The generic process and its descriptions are valid for all billable items for all services and components.

Pre-conditions:

- ▶ The raw data from the various services and components is available.

Time constraints:

- ▶ Services and components shall perform the daily aggregations before the raw data for the next day becomes available for aggregation

Expected results:

- ▶ The billable items will be aggregated, enriched and stored.

Triggers:

- ▶ The process will be initiated by the End of Day close of the services

1.2.3 User Requirements

1.2.3.1 AGGREGATE AND ENRICH BILLABLE ITEMS

Task Ref: **SHRD.CB.TR.BILL.AGBD.010**

Id	SHRD.CB.UR.BILL.AGBD.010.010
Name	End of Day close of service
Description	An End of Day close of service event shall trigger the daily aggregation and enrichment of service-specific transactional data.

The aggregation and enrichment of transactional data for a service or component can only take place after it has completed its processing for a given business day. This ensures that the transactional data that needs to be aggregated are complete for the relevant business day.

Id	SHRD.CB.UR.BILL.AGBD.010.020
Name	Daily Aggregation
Description	The key for the daily aggregation shall be based on: <ul style="list-style-type: none"> • Business date • Party to be charged • Service item code • Service

Id	SHRD.CB.UR.BILL.AGBD.010.030
Name	End of Day close of service for TIPS
Description	A service event for TIPS shall trigger the daily aggregation and enrichment of instant payment transactional data.

Id	SHRD.CB.UR.BILL.AGBD.010.040
Name	End of Day close of service for T2 (CLM and RTGS)
Description	When T2 changes its business day, an End of Day close of service event for CLM and RTGS shall trigger the daily aggregation and enrichment of CLM and RTGS transactional data.

Id	SHRD.CB.UR.BILL.AGBD.010.050
Name	End of Day close of service for Common Components
Description	An event for each relevant Common component (DWH, BILL, CRDM) shall trigger the daily aggregation and enrichment of the component's data.

Id	SHRD.CB.UR.BILL.AGBD.010.060
Name	End of Day close of service for T2S
Description	When T2S changes its business day, an End of Day close of service event for T2S shall trigger the daily aggregation and enrichment of T2S transactional data.

Id	SHRD.CB.UR.BILL.AGBD.010.070
Name	Identification of Party to be charged
Description	The party to be charged shall be derived from service-specific and common reference data for each billable item (Fee Originator and Party to be charged can be different entities)

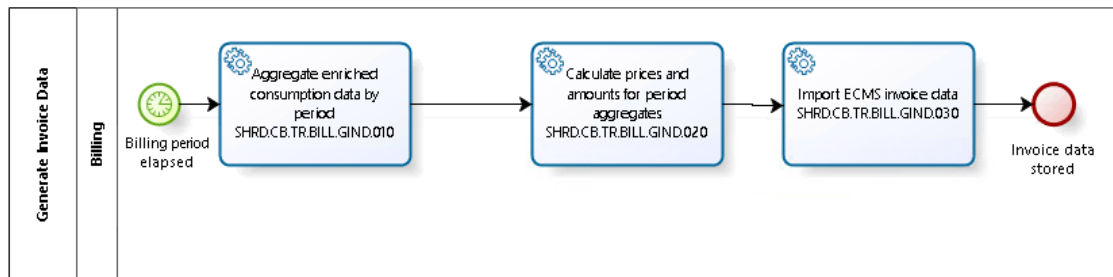
Id	SHRD.CB.UR.BILL.AGBD.010.080
Name	Consumption data target format
Description	<p>BILL shall receive from services and components consumption data structured as follows:</p> <ul style="list-style-type: none"> • Service/component/application the consumption data stems from; • Business date; • Billable item; • Grouping classification for billable items (e.g. settlement, information, account management); • Debited/credited account of the underlying transaction (subject to the respective billable item charging rule); • Account holder of the aforementioned account; • Fee Originator; • Party to be charged; • Total count of the billable item; and • System entity (CB/CSD) of the Party to be charged. <p>The data structure is standardised for all settlement services, components and applications.</p>

Id	SHRD.CB.UR.BILL.AGBD.010.090
Name	Store aggregated and enriched consumption data
Requirement	<p>BILL shall store the daily aggregated and enriched consumption data and relevant information related to it:</p> <ul style="list-style-type: none">• Date• Billing period• Party to be charged• Service item code• Grouping classification for billable items (e.g. settlement, information, account management);• Quantity• Assigned Service*.• System Entity <p>*The Assigned Service is derived by BILL for the billable items coming from common components. Entities closed/deleted during the billing period and relevant for the billing are taken into consideration</p>

1.3 GENERATE CONSUMPTION AND INVOICE DATA (MONTHLY)

Business Process Ref: SHRD.CB.BP.BILL.GIND

1.3.1 Business Process Model



Business Process Model 2: Generate Consumption and Invoice Data

1.3.2 Process Overview

Process goal:

This business process describes the generation of monthly consumption and invoice data for the different services and applications.

The gathering of data and the aggregation of data for each service or component shall be executed independently so that any delay or error on one service/component will not affect the management of the data/invoices of the others. The process on common components shall have an effect on the overall process, since common component information is relevant for the overall computation. Aggregation starts when data for the service are “complete”.

Process context:

- ▶ The generic process and its descriptions are valid for all consumption data for all services and applications.

Pre-conditions:

- ▶ The enriched daily aggregates from process “Aggregate Billable Items (Daily)” (SHRD.BP.BILL.AGBD, see section 1.2 in this User Requirements Documents) are available for the full period.

Time constraints:

- ▶ First business day after the billing period

Expected results:

- ▶ Billing will produce monthly consumption and invoice data and store it afterwards.

Triggers:

- ▶ The process will be initiated at the end of the billing period.

1.3.3 User Requirements

1.3.3.1 AGGREGATE ENRICHED CONSUMPTION DATA BY PERIOD

Task Ref: SHRD.CB.TR.BILL.GIND.010

Id	SHRD.CB.UR.BILL.GIND.010.010
Name	Aggregate by period: Trigger
Description	BILL shall aggregate by period at the end of the billing period. By default, the processing schedule is on a calendar month basis unless it is manually adjusted for a specific period by the service operator.

Id	SHRD.CB.UR.BILL.GIND.010.020
Name	Aggregation by period: Billing Period
Description	BILL shall aggregate all the charges within the billing period.

Id	SHRD.CB.UR.BILL.GIND.010.030
Name	Billing period: Definition
Description	A billing period spans a full calendar month. The service operator can change this default value to a shorter period. The processes described in this URD would then have a shorter cycle.

Id	SHRD.CB.UR.BILL.GIND.010.040
Name	Check for completeness of consumption data
Description	BILL shall check the completeness of the stored enriched consumption data. For instance, all daily aggregates have to be available for the aggregation by billing period.

Id	SHRD.CB.UR.BILL.GIND.010.050
Name	Produce period aggregates
Description	<p>BILL shall aggregate daily consumption data over the billing period and structure it into monthly consumption data as follows:</p> <ul style="list-style-type: none"> • Service • Billable item • Service category (Settlement Services, Account Management Services or Information Services) • Account of the underlying transaction • Party to be charged for the billable item • Total count of the billable item (quantity) • System entity (CB/CSD) of the Party to be charged. <p>The data structure is standardised for all settlement services and components.</p>

Note: An individual transaction can generate more than one billable item.

Id	SHRD.CB.UR.BILL.GIND.010.060
Name	System entity aggregation
Description	BILL shall allow for aggregation at system entity level.
Requirement	A second aggregation will be based on the system entity to which the Party to be charged is attached. This ensures that the quantities and amounts for the system entity are the sum of quantities and amounts for parties (to be charged) under the system entity, excluding taxes and manual corrections.

1.3.3.2 INVOICE DATA GENERATION: CALCULATE PRICES AND AMOUNTS FOR PERIOD AGGREGATES

Task Ref: SHRD.CB.TR.BILL.GIND.020

Id	SHRD.CB.UR.BILL.GIND.020.010
Name	Lists of billable items
Description	The operator shall maintain a dedicated list of billable items in CRDM for each service/application, reflecting the fact that for each service/applications a separate invoice is issued. Billable items related to common components (DWH, BILL, CRDM) are reflected in the list of billable items of each settlement service/application.

Id	SHRD.CB.UR.BILL.GIND.020.020
Name	Service categories
Description	<p>Each list of billable items list in CRDM is organised according to three service item categories:</p> <ul style="list-style-type: none"> ▪ Settlement Services ▪ Account Management Services ▪ Information Services <p>Queries and reports executed in CRDM, DHW and BILL are covered under Information Services. Existence of reference data in CRDM (i.e. owning an account) is covered under Account Management Services.</p>

Id	SHRD.CB.UR.BILL.GIND.020.030
Name	Calculate aggregate amounts
Description	<p>BILL shall, for each relevant aggregate, assign a unit price per billable item. The unit prices are derived from the service's list of billable items in CRDM.</p> <p>BILL shall then compute amounts to be charged based on the unit prices pricing rules, and, in case of variable fees, the underlying consumption.</p>

Id	SHRD.CB.UR.BILL.GIND.020.040
Name	Pricing rules: Fee types
Description	<p>Each billable item will have an assigned price based on one of the below fees:</p> <ul style="list-style-type: none"> ▪ Fixed fees - a single fixed fee (flat rate) for a billable item (regardless the underlying consumption) with a monthly: <ul style="list-style-type: none"> ○ Fixed independent fees ○ Fixed fees dependent on a tariff and/or a parameter – a fee depends on the tariff, which a given participant has been assigned to in CRDM, as well as it may additionally depend on a parameter manually assigned by the CB in CRDM (e.g. value of transactions executed by a participant in the previous year). ▪ Variable fees - a unit price, which has to be multiplied by the consumption of this billable item: <ul style="list-style-type: none"> ○ Variable independent fees ○ Variable fees dependent on a tariff and/or a band – a fee depends on the tariff, which a given participant has been assigned to in CRDM. It may additionally depend on a set of bands assigned by BILL (e.g. the use of degressive pricing structure based on the underlying volume of the respective billable item in the current billing period) and, for RTGS payments, on the billing group to which a party may belong to. <p>For this differentiation, BILL shall be supported by the CRDM.</p>

Id	SHRD.CB.UR.BILL.GIND.020.050
Name	Pricing rules: Price allocation for variable fees
Description	<p>For the billable items allocated to variable independent fees and variable fees dependent on a tariff (and not a band), the amount to be charged can be calculated by multiplying the total consumption of that item by the allocated unit price.</p> <p>For the billable items allocated to variable fees dependent on tariff and a band, the amount to be charged is determined on a cumulative basis, by splitting the total consumption of that billable item to the respective bands and allocating respective unit prices to each of this consumption. The total consumption may be aggregated at billing group level for RTGS payments, if the party belongs to a billing group. See SHRD.CB.UR.BILL.GIND.020.055.</p>

Id	SHRD.CB.UR.BILL.GIND.020.055
Name	Pricing rules: Billing group
Description	<p>The volumes of RTGS payments across payment banks belonging to a billing group will be aggregated for the purpose of computing transaction fees. The billing group leader's tariff will be used to derive applicable band prices. The composition of the billing group to be taken into account is the one on the day the computation for the relevant billing period is done.</p> <p>The total transaction fee will then be broken down among the billing group members according to each member's share of the total volume (through a prorating).</p>

Id	SHRD.CB.UR.BILL.GIND.020.060
Name	Prices: Dimensions
Description	Each billable item may have a different price depending on the service/ application, tariff, band and parameter.

Id	SHRD.CB.UR.BILL.GIND.020.070
Name	Prices: Format
Description	The prices shall have a precision of four digits after the decimal separator.

Id	SHRD.CB.UR.BILL.GIND.020.0850
Name	Prices: Currency
Description	Prices are denominated in Euro. See multi-currency section 1.12

Id	SHRD.CB.UR.BILL.GIND.020.090
Name	Pricing rules: Value added tax (VAT)
Description	<p>BILL shall derive the value added tax amounts based on the billable item, service/application and system entity to which the Party to be charged is assigned to.</p> <p>Parties can be set up as tax exempt if they are not subject to VAT. In that case, even if their invoice contains service items which are subject to VAT, no VAT amounts will be computed.</p> <p>CBs shall be able to assign a VAT rate to “free text “manual invoice corrections. Manual corrections related to an existing service item will have the VAT rate already defined for that service item (which cannot be changed when the manual correction is performed).</p> <p>VAT is only applicable to participant invoices.</p> <p>However, the itemized tax amounts (i.e. by service item) on participant invoices will be included in reports available to system entities (they will not be included in itemized messages sent in return to system entity queries).</p> <p>Up to 5 VAT rates can be defined at CB level for each service as catalogue, which will be applied at service item level. Zero VAT is the one applied as default. Central Banks will maintain a VAT rate (potentially zero) for each service item and system entity.</p> <p>In case of a billing group across borders, the local VAT rates, i.e. the VAT rates attached to the service item in the central bank of the participant will apply, not the VAT rates attached to the service item in the central bank of the billing group leader.</p>

Id	SHRD.CB.UR.BILL.GIND.020.100
Name	Add information on the Invoice addressee and Account to be debited
Description	<p>Basing on the CRDM data, BILL derives the Invoice addressee and the Account to be debited for each Party to be charged, for the given service. The account to be debited is a MCA which is not necessarily under the same system entity as the party to be charged.</p>

Id	SHRD.CB.UR.BILL.GIND.030.010
Name	Store Invoice Data
Description	BILL shall store the invoice data created.

1.3.3.3 IMPORT ECMS INVOICE DATA

Task Ref: **SHRD.CB.TR.BILL.ECMS.030**

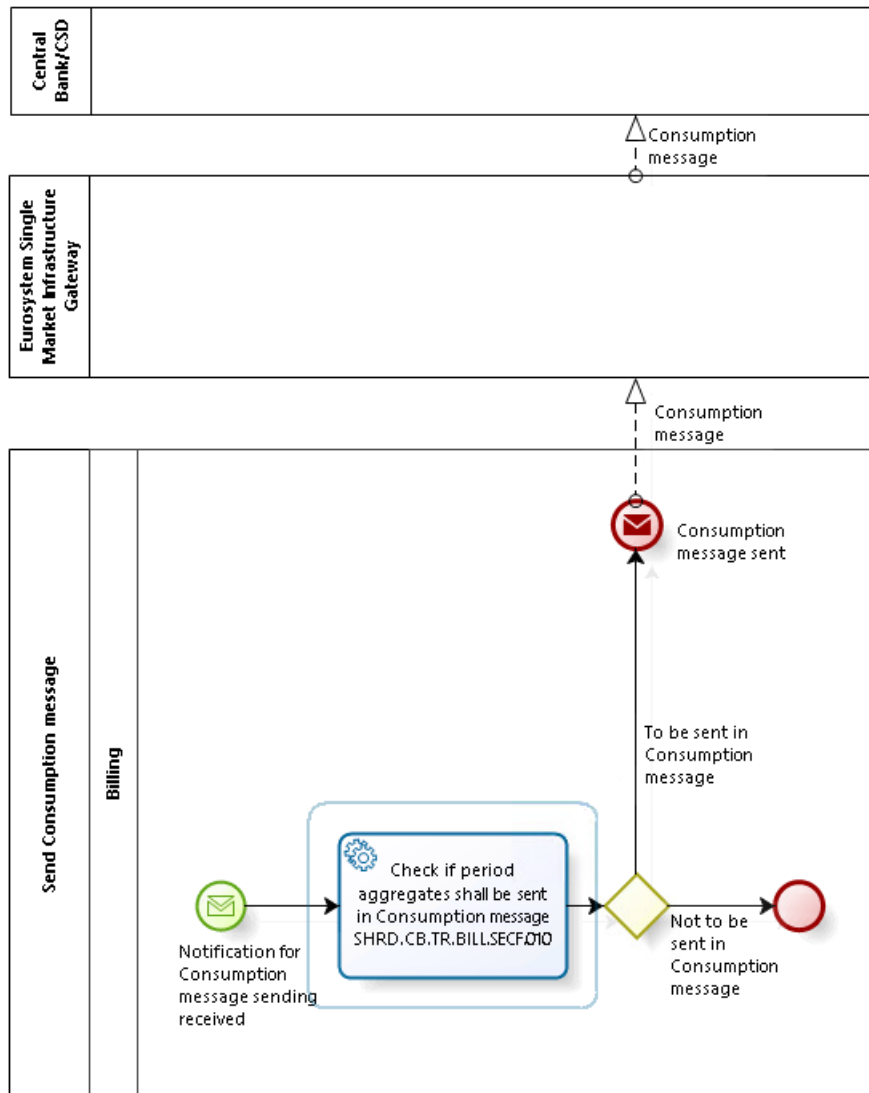
Id	SHRD.CB.UR.BILL.ECMS.030.010
Name	End of billing period close of service for ECMS
Description	ECMS shall trigger the sending from ECMS to BILL of the ECMS monthly invoice data. The ECMS invoice data can be cancelled and reimported until it is part of a non-cancelled invoice.

Id	SHRD.CB.UR.BILL.GIND.030.020
Name	Notify billing function on stored invoices
Description	<p>BILL shall notify the Operator upon status change of invoice data. The notification will thus be done:</p> <ul style="list-style-type: none">• Once the billing/invoicing process (or a rerun) has been completed for a service (component/application)/system entity/participant;• Once the status of an already created invoice data has changed.

1.4 SEND CONSUMPTION MESSAGE

Business Process Ref: SHRD.CB.BP.BILL.SECF

1.4.1 Business Process Model



Business Process Model 3: Send Consumption Message

1.4.2 Process Overview

Process goal:

This business process describes the sending of the consumption XML message. The system will give the possibility to automatically send the consumption message to the system entities opting for their reception.

If the operator adjusts consumption data, the consumption messages shall be generated again and resent.

Process context:

- ▶ The generic process and its descriptions are valid for all services and components.

Pre-conditions:

- ▶ The period aggregates from process “Generate Invoice Data” (SHRD.CB.BP.BILL.GIND, see section 1.3 in this User Requirements Document) are available for the specific service (component/application) /system entity and billing period.

Time constraints:

- ▶ None

Expected results:

- ▶ Billing will either send a consumption message to the specific system entity if specified so or
- ▶ Will do nothing.

Triggers:

- ▶ The process will be initiated by a notification for availability of the consumption message sent from process “Generate Invoice Data” (SHRD.CB.BP.BILL.GIND, see section 1.3 in this User Requirements Document).

1.4.3 User Requirements

1.4.3.1 CHECK IF PERIOD AGGREGATES SHALL BE SENT IN CONSUMPTION MESSAGE

Task Ref: SHRD.CB.TR.BILL.SECF.010

Id	SHRD.CB.UR.BILL.SECF.010.010
Name	Push consumption message to authorised system entity
Description	BILL shall push, if configured by the authorised system entities (CBs), the consumption messages to the authorised system entities on a monthly basis.

Id	SHRD.CB.UR.BILL. SECF.010.020
Name	Consumption message: Content
Description	The consumption message shall contain the aggregated consumption data. It must not contain prices

1.5 CORRECT INVOICE MANUALLY

Business Process Ref: SHRD.CB.BP.BILL.MACO

1.5.1 Process Overview

Process goal:

This business process describes the manual correction in U2A of invoices by the ECB and System entities. Such corrections will be handled in delta-mode. For instance, charges can only be reduced

through entries with reverse charges and increased through additional entries with additional charges – no “direct manipulation” of invoice data is allowed.

Process context:

- ▶ The generic process and its descriptions are valid for all invoices for all services and applications.

Pre-conditions:

- ▶ The stored invoice data specified is available.

Time constraints:

- ▶ The process can only run within a given time frame for corrections (see SHRD.CB.UR.BILL.MACO.020.010 on corrections time frame).

Expected results:

- ▶ Billing will either send a U2A rejection notification with the appropriate error code(s)
- ▶ Or Will store the manual corrections and send a U2A success notification

Triggers:

- ▶ The process will be initiated by a manual correction done by the ECB or System Entity.

1.5.2 User Requirements

1.5.2.1 TIMEFRAME

Task Ref: SHRD.CB.TR.BILL.MACO.020

Id	SHRD.CB.UR.BILL.MACO.020.010
Name	Corrections time frame
Description	BILL shall allow for U2A manual corrections only within a given time frame after the generation of invoice data. The time frame depends on the service (application) and billing period and can be configured as a system parameter per service or application. BILL shall allow for manual corrections only until the relevant invoice is generated. ECB manual corrections on system entity level should be done before CB corrections.

1.5.2.2 APPLY CORRECTIONS

Task Ref: SHRD.CB.TR.BILL.MACO.030

BILL shall allow for manual interventions by the ECB and system entities.

Id	SHRD.CB.UR.BILL.MACO.030.010
Name	Manual corrections: amounts
Description	<p>BILL shall allow for U2A manual corrections at party/service (application)/billable item/billing period / system entity level , in a form of</p> <ul style="list-style-type: none"> • A positive or negative amount; or • An increase/decrease of consumption of an existing service item • A percentage increase/decrease resulting in a positive or negative amount <p>The correction can be based on an existing service item code (i.e. by selecting a service item code from the list) or a “free text” service item.</p> <p>The amount can be assigned to an existing service item code (and then a VAT rate can be applied) or to a “free text” service item code.</p> <p>A manual correction done by the ECB will be included in a system entity invoice. It may impact a participant invoice.(when it books manual corrections, the ECB should decide whether the corrections will impact participant(s) and which participant(s))</p> <p>A manual correction done by a national central bank will be included in a participant invoice and will not be retroactively propagated to any system entity invoice.</p>

Id	SHRD.CB.UR.BILL.MACO.030.020
Name	Manual corrections: free text
Description	BILL shall allow the ECB and the CBs to key in a free text as a manual correction which will then be included in the footer of the invoice

Id	SHRD.CB.UR.BILL.MACO.030.030
Name	ECB Invoice Corrections
Description	In exceptional circumstances, it shall possible to extract and load ECB invoice manual corrections in bulk.

1.6 CREATE INVOICE

Business Process Ref: SHRD.CB.BP.BILL.CRIN

1.6.1 Process Overview

Process goal:

This business process describes the creation of invoices for the different settlement services/applications.

Process context:

- ▶ The generic process and its descriptions are valid for all invoice data for all services/applications.

Pre-conditions:

- ▶ The invoice data from process “Generate Invoice Data” (SHRD.CB.BP.BILL.GIND, see section 1.3 in this User Requirements Document), and optionally corrections from the process “Correct Invoice Manually” (SHRD.CB.BP.BILL.MACO, see section 1.4 in this User Requirements Document) are available for the full period.

Time constraints:

- ▶ None

Expected results:

- ▶ Billing will create an invoice and store it afterwards.

Triggers:

- ▶ The process will be initiated either by a manual action by the Operator or
- ▶ An automated time trigger after a pre-defined period of time.

1.6.2 User Requirements

1.6.2.1 TIMEFRAME

Task Ref: SHRD.CB.TR.BILL.CRIN.020

Id	SHRD.CB.UR.BILL.CRIN.020.010
Name	Invoice creation time frame
Description	BILL shall allow for creation of invoices only within a given time frame after the creation of the invoice data. The time frame depends on the service (application).

1.6.2.2 PRODUCE INVOICE

Task Ref: SHRD.CB.TR.BILL.CRIN.030

Id	SHRD.CB.UR.BILL.CRIN.030.010
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Name	Invoices for settlement services and applications
Description	BILL will issue a separate invoice for each service/applications: T2S, TIPS, T2 and ECMS. The usage of common components CRDM, DWH, BILL will be charged through the above invoices (except for ECMS).

Id	SHRD.CB.UR.BILL.CRIN.030.020
Name	System entity invoice and participant invoice
Description	<p>BILL will manage two levels of invoices:</p> <ul style="list-style-type: none"> ▪ Invoices for CB participants, comprising of the fees of an individual participant of a given service are issued by their system entity ▪ Invoices for system entities (CBs and CSDs), including a cumulative overview of fees for the participants within its community of a given service and its own fees for the usage of a given service, are issued by the ECB <p>For the purpose of billing, each participant is linked to one (and only one) system entity.</p> <p>If a system entity has opted to invoice its participants outside BILL, no participant invoice shall be created for participants of this system entity.</p>

As special instance of this approach, the ECMS will produce CB-to-CB invoices, based on the logic of the invoice participants, whereby a CB sets up as its participants all the other CBs it will invoice.

Id	SHRD.CB.UR.BILL.CRIN.030.030
Name	Invoice format
Description	<p>System entity invoice and participants' invoices will be produced in two formats:</p> <ul style="list-style-type: none"> ▪ XML, as camt.077 invoice message ▪ In PDF

Id	SHRD.CB.UR.BILL.CRIN.030.040
Name	XML invoice accessibility
Description	<p>The XML invoice will be sent to the technical address selected by the system entity/party to be charged.</p> <p>The underlying invoice data and a copy of the XML invoice will be available in DWH to the invoice issuer and recipient for a period of 10 years after its generation (but there will be no predefined report for this purpose).</p>

Id	SHRD.CB.UR.BILL.CRIN.030.050
Name	PDF invoice accessibility

Description	<p>PDF invoices will be available for download in BILL for a period of three months after its generation.</p> <p>The pdf invoice will be available for querying in DWH for a period of 10 years after its generation (but there will be no predefined report for this purpose).</p> <p>Both the invoice recipient (system entity/party to be charged) and invoice issuer (ECB/CB) have access to the pdf invoice. A central bank can download in bulk all pdf invoices it has issued for a given service/billing period.</p>
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Id	SHRD.CB.UR.BILL.CRIN.030.060
Name	Derivation rules: Invoice due date
Description	<p>BILL shall derive the invoice due date based on the service or application and the invoice date, by adding a number of business days to the invoice date (which number of business days will be configured by the operator and depends on: service/application and whether this is a system entity or a participant invoice). The T2 business calendar shall be the basis for the identification of the proper due date.</p>

Id	SHRD.CB.UR.BILL.CRIN.030.061
Name	Invoice Number
Description	<p>BILL shall generate a unique invoice number for each participant invoice.</p> <p>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.</p>

Example: 0101XXXXX for Italy, T2, 0102XXXXX for Italy, TIPS, 0103XXXX for Italy, ECMS, 0201XXXXX for Germany, T2, 0202XXXXX for Germany, TIPS, etc.

Id	SHRD.CB.UR.BILL.CRIN.030.070
Name	Different billing addresses
Description	<p>BILL shall derive the Invoice addressee from the following attributes:</p> <ul style="list-style-type: none"> • Service/application • Party to be charged.

Note: As participants can request to have the invoice for each service/ application delivered to different in-house departments, different Invoice addressees (e.g. one per service/application) have to be derived from the Party to be charged for the various services/applications.

Id	SHRD.CB.UR.BILL.CRIN.030.080
Name	PDF Invoice header

Description	<p>The PDF invoice header shall contain the following fields</p> <ul style="list-style-type: none"> • Logo of the invoice issuer (ECB/National Central Bank) • Name, address, VAT Id of invoice issuer • Invoice date and due date • Name, address, VAT Id of invoice recipient (including CSD VAT ID for their system entity invoice) • Title • Invoice number • Service/Application, billing period
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Id	SHRD.CB.UR.BILL.CRIN.030.090
Name	PDF Invoice body
Description	<p>The PDF invoice body shall contain lines with the following columns</p> <ul style="list-style-type: none"> • Line number • Label • Service item code • VAT Rate (for participant invoices only) • Quantity • Unit price • Total amount <p>The manual corrections shall be displayed as separate lines.</p> <p>The subtotal per VAT rate will be displayed as separate lines.</p> <p>The subtotal without tax and the total tax amount will be displayed as separate lines.</p> <p>At the level of the total billed amount per Party, the aggregated charges (high-precision decimals) are rounded to two digits</p> <p>There shall be no item with zero amounts appearing in the invoice (general rule applicable to all invoice lines)</p>

Id	SHRD.CB.UR.BILL.CRIN.030.100
Name	PDF Invoice footer
Description	<p>The PDF invoice footer shall contain the following fields:</p> <ul style="list-style-type: none"> • Grand total • Legal mentions, which can be defined for each national central bank and the ECB • Means of payment <ul style="list-style-type: none"> ○ If party to be charged is subject to direct debiting, this field should indicate the MCA which will be debited ○ Otherwise, sentence indicating how to pay (central bank dependent)

	<ul style="list-style-type: none"> Free text, which can be defined at invoice level at the same time as manual corrections
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Id	SHRD.CB.UR.BILL.CRIN.030.101
Name	PDF Invoice without VAT: request for payment
Description	<ul style="list-style-type: none"> A system entity may select for a given settlement service an alternative participants invoice template with no mention of VAT, and more specifically: <ul style="list-style-type: none"> No VAT Id of invoice issuer No VAT Id of invoice recipient No VAT rate and VAT amount columns Mention of “reference period” instead of “billing period” No subtotals with/without VAT No indication of the document being an invoice but rather a “request for payment”, including a specific title different from the invoice title, for each central bank.

Id	SHRD.CB.UR.BILL.CRIN.030.110
Name	Participant Invoice customisations
Description	<p>National Central Banks can customise the following fields of the pdf invoice of participants/request for payments:</p> <ul style="list-style-type: none"> Header <ul style="list-style-type: none"> Name of issuer Address of issuer VAT Id of issuer (only for the invoice) Body: no customisation Footer <ul style="list-style-type: none"> Legal Mentions Free text Means of payment <p>All fields above can be customised at the level of the central bank and settlement service, and will be common for all invoices issued by a central bank for a settlement service, except for the free text field, which can be customised for each invoice as a manual correction.</p> <p>The service operator can customise on behalf of National Central Banks the Logo and the title to be shown in the Participants' invoices/request for payment (with potentially a different title for the invoice and request for payment).</p>

Id	SHRD.CB.UR.BILL.CRIN.030.120
Name	Store Invoices
Description	<p>BILL shall store the invoices and shall track their status. The status can be:</p> <ul style="list-style-type: none">• Created, but not sent;• Sent , but Direct Debit not sent;• Sent , and Direct Debit sent or not needed• Paid• Cancelled/Overwritten. <p>BILL shall assign a unique invoice ID to the invoices. The status after the execution of this process will be " Created, but not sent ".</p>

Id	SHRD.CB.UR.BILL.CRIN.030.130
Name	Status of stored invoices
Description	<p>BILL shall store and display status changes of invoices. The notification will thus be done:</p> <ul style="list-style-type: none">• Once the billing/invoicing process (or a rerun) has been completed for a Service/system entity/participant;• Once the status of an already created invoice has changed.

1.7 SEND XML INVOICE

Business Process Ref: SHRD.CB.BP.BILL.SEIN

1.7.1 Process Overview

Process goal:

This business process describes the sending of an XML invoice. Upon manual request by the Operator or an automated trigger, BILL shall send an XML invoice.

Process context:

- ▶ The generic process and its descriptions are valid for all (system entity and participant) invoices for all services and applications.

Pre-conditions:

- ▶ The stored XML invoices from process “Create Invoice” (SHRD.CB.BP.BILL.CRIN, see section 1.6 in this User Requirements Document) are available for the specific service (component/application)/system entity and the billing period and in a proper status.

Time constraints:

- ▶ None

Expected results:

- ▶ Billing will either send, optionally, a rejection notification with the appropriate error code(s) to the Operator or
- ▶ Will send the XML invoice and, optionally, a success notification to the Operator.

Triggers:

- ▶ The process will be initiated either by a U2A request sent by the Operator or
- ▶ An automated time trigger after a pre-defined period of time.

1.7.2 User Requirements

1.7.2.1 PERFORM BUSINESS VALIDATION

Task Ref: SHRD.CB.TR.BILL.SEIN.020

Id	SHRD.CB.UR.BILL.SEIN.020.010
Name	Send invoice: Manual trigger
Description	BILL shall allow the Operator to request in U2A the sending of an XML invoice already created.

Id	SHRD.CB.UR.BILL.SEIN.020.020
Name	Send Invoice: Automatic Trigger
Description	<p>BILL shall automatically trigger the sending of an XML invoice, either individually or in batches, after a predefined period of time depending on:</p> <ul style="list-style-type: none"> • Billing period; • Billed service, and application; and • System entity <p>Authorised users shall be able to de-activate the automatic sending for specific services or applications, for specific billing periods.</p>

Id	SHRD.CB.UR.BILL.SEIN.020.030
Name	Business Validation: invoice sending parameters
Description	<p>BILL shall validate the following invoice sending parameters given in the U2A sending request:</p> <ul style="list-style-type: none"> • Billing period; • Billed service/application; • System entity; <p>If the respective CB/CSD has not subscribed for camt.077 invoice message and therefore no invoice shall be sent from Billing, the business validation fails and the process stops and, optionally, provides appropriate messages.</p>

Id	SHRD.CB.UR.BILL.SEIN.020.040
Name	Business Validation: invoice status
Description	<p>BILL shall send the latest created XML invoice (i.e. with status "Invoice created, but not sent") for the given sending parameters upon positive business validation and shall change the status of the invoice.</p> <p>The status after the execution of this process will be "Invoice Sent , but Direct Debit not sent" or "Invoice Sent , and Direct Debit sent or not needed", depending on the need to issue a direct debit for the related invoice;</p> <p>If there is no latest created invoice (i.e. with status "Invoice created, but not sent"), the business validation fails and the process stops and, optionally, provides rejection notifications with the appropriate error code(s).</p>

Id	SHRD.CB.UR.BILL.SEIN.020.050
Name	Routing of the XML invoices
Description	BILL shall send the XML invoices to the participants in A2A according to the billing participant configuration.

1.8 CANCEL INVOICE

Business Process Ref: SHRD.CB.BP.BILL.CAIN

1.8.1 Process Overview

Process goal:

This business process describes the cancellation of an invoice. Upon manual request by the Operator, BILL shall cancel an invoice created and not yet paid. For the Parties with a direct debit option, the pre-specified MCAs will not be debited for the amounts reported in invoices for which the status is changed to "cancelled".

Process context:

- ▶ The generic process and its descriptions are valid for all invoices for all services and applications.

Pre-conditions:

- ▶ The invoice specified is available and in a proper status.

Time constraints:

- ▶ None

Expected results:

- ▶ Billing will either send a U2A rejection notification with the appropriate error code(s) to the Operator or
- ▶ Will cancel the invoice, generate a pdf cancellation file and optionally send a cancellation xml message, and send a U2A cancellation notification to the Operator.

Triggers:

- ▶ The process will be initiated by a U2A cancellation request from the Operator.

1.8.2 User Requirements

1.8.2.1 PERFORM BUSINESS VALIDATION

Task Ref: SHRD.CB.TR.BILL.CAIN.020

Id	SHRD.CB.UR.BILL.CAIN.020.010
Name	Cancel invoice: Manual trigger
Description	BILL shall allow the Operator to request in U2A the cancellation of an invoice already created.

Id	SHRD.CB.UR.BILL.CAIN.020.020
Name	Business validation: invoice cancel parameters
Description	<p>BILL shall validate the following mandatory parameters given in the cancellation request:</p> <ul style="list-style-type: none"> • Billing period • Billed service/application; • Charged Party • System entity • Invoice Number

Id	SHRD.CB.UR.BILL.CAIN.020.030
Name	Business validation: invoice status
Description	<p>BILL shall check for the availability of the invoice to be cancelled. The invoice status must be:</p> <ul style="list-style-type: none"> • Invoice Created, but not sent yet; • Invoice Sent, but Direct Debit not sent; or • Invoice Sent, and Direct Debit not needed; <p>If not any of the above, BILL shall reject the request and display the appropriate error message.</p>

1.8.2.2 STOP PROCESSING OF INVOICE AND SEND CANCELLATION

Task Ref: SHRD.CB.TR.BILL.CAIN.030

Id	SHRD.CB.UR.BILL.CAIN.030.010
Name	Stop sending of invoice and debiting
Description	Upon authorised and valid request, Billing set the invoice status to "Cancelled". It shall cancel the process of sending invoice and optionally the direct debiting for the given parameters.
Id	SHRD.CB.UR.BILL.CAIN.030.020
Name	Generate and send invoice cancellation
Description	After an invoice is cancelled, BILL shall generate a pdf invoice cancellation document, and, if the party has subscribed to XML invoices, send an XML invoice cancellation.

1.9 DIRECT DEBIT

Business Process Ref: SHRD.CB.BP.BILL.SEDD

1.9.1 Process Overview

Process goal:

This business process describes the sending of a direct debit. Upon manual request by the Operator or an automated trigger, BILL shall optionally send a direct debit for the Parties: the pre-specified MCAs will be debited according to the invoices sent out.

Process context:

- ▶ The generic process and its descriptions are valid for all invoices for all services and applications.

Pre-conditions:

- ▶ The stored invoices from process "Create Invoice" (SHRD.CB.BP.BILL.CRIN, see section 1.7 in this User Requirements Document) are available and sent for the specific service (application)/system entity and the billing period and in a proper status.

Time constraints:

- ▶ None

Expected results:

- ▶ Billing will either send, optionally, a U2A rejection notification with the appropriate error code(s) to the Operator or
- ▶ Will send the direct debit and, in case of manual trigger, a U2A success notification to the Operator.

Triggers:

- ▶ The process will be initiated either by a U2A request sent by the Operator or
- ▶ An automated time trigger after a pre-defined period of time.

1.9.2 User Requirements

1.9.2.1 PERFORM BUSINESS VALIDATION

Task Ref: SHRD.CB.TR.BILL.SEDD.020

Id	SHRD.CB.UR.BILL.SEDD.020.010
Name	Direct Debit: Manual trigger
Description	BILL shall allow the Operator to request in U2A the sending of a direct debit.

Id	SHRD.CB.UR.BILL.SEDD.020.020
Name	Direct Debit: Automatic Trigger

Description	<p>BILL shall automatically trigger the sending of a direct debit, either individually or in batches, after a predefined period of time depending on:</p> <ul style="list-style-type: none"> • Billing period; • Billed service/application; and • System entity <p>Authorised users shall be able to de-activate the automatic sending for specific services or applications, system entities, or participants, for specific billing periods.</p>
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Id	SHRD.CB.UR.BILL.SEEDD.020.030
Name	Business Validation: Direct Debit sending parameters
Description	<p>BILL shall validate the following direct debit parameters given in the U2A request:</p> <ul style="list-style-type: none"> • Billing period; • Billed service/application; • System entity <p>If the respective CB has not opted for the sending of direct debits, and therefore no direct debit shall be sent from Billing, the business validation fails and the process stops and, optionally, provides rejection notification with the appropriate error code(s).</p>

Id	SHRD.CB.UR.BILL.SEEDD.020.040
Name	Business Validation: Direct Debit status
Description	<p>BILL shall send the direct debit for the sent invoice (i.e. with status "Sent, but Direct Debit not sent") for the given sending parameters upon positive business validation and shall change the status of the invoice.</p> <p>The status after the execution of this process will be "Invoice Sent and Direct Debit sent or not needed".</p> <p>If there is no latest sent invoice (i.e. with status "Invoice Sent, but Direct Debit not sent"), the business validation fails and the process stops and, optionally, provides rejection notifications with the appropriate error code(s).</p>

1.9.2.2 CREATE DIRECT DEBIT (FOR PARTICIPANTS INVOICE)

Task Ref: SHRD.CB.TR.BILL.SEEDD.030

Id	SHRD.CB.UR.BILL.SEEDD.030.010
Name	Create direct debits
Description	<p>If chosen in the setup of the billed CB participant's reference data, BILL shall create a direct debit to debit the pre-defined account for debits and credit the pre-defined account for credits.</p> <p>The account to be debited shall be an MCA.</p>

	For internal bookkeeping purposes and in order to enable system entities to differentiate revenues for administrative purposes, BILL shall assign an invoice reference to the direct debit.
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Id	SHRD.CB.UR.BILL.SEEDD.030.020
Name	Different accounts
Description	BILL shall be able to send direct debits linked to invoices per service, component or application to different MCAs, which shall be configured in the participant's Common Reference Data and could be different from the participant's MCA being billed. The MCA to be debited may be under the responsibility of another national central bank.

Id	SHRD.CB.UR.BILL.SEEDD.030.030
Name	Account to be credited
Description	The account to be credited is a mandatory field when setting up the direct debits. The account to be credited shall be set up for each service, component and application, for all participants by each CB or by the ECB depending on the policy applicable to the service and application.

1.10 BILLING: REPORTING REQUIREMENTS

Business Process Ref: SHRD.CB.BP.BILL.REP

This process describes the provision of predefined reports related to billing data by Data Warehouse. Data will be stored in Data Warehouse, and as any query in DWH, information can be downloaded (see section 6 on Data Warehouse in the User Requirements Document for Common Components). Sorting and filtering shall be available for all reports.

1.10.1 User Requirements

Id	SHRD.CB.UR.BILL.REP.010.010
Name	Consumption data
Description	<p>Consumption data and participation/reference data shall be retrievable per fee originator and per charged Party as well as per system entity of the charged Party (CB or CSD) for each service, component and application.</p> <p>A system entity (CB or CSD) shall have read access to the billing/invoicing information collected for their charged participants, including those charges generated by other participants allocated to other system entities (cross border links, branches, etc.) billed through its charged participants. The ECB shall have access to billing/invoicing data across the system for all participants/system entities.</p>

Note: In the case of cross-border aggregation of charges, some CBs could have read access to some consumption and invoice data of participants allocated to other CBs.

Id	SHRD.CB.UR.BILL.REP.010.020
Name	Reporting on Billing: Monitoring the invoicing activity
Description	<p>Reporting shall be possible On invoicing activity (invoice counts and EUR value, with subtotals and % share of grand total);</p> <ul style="list-style-type: none"> • Per system entity; • Per participant; • Per Ancillary System; • Per service/application; • Per billing period; and • Per invoice type. <p>Only authorised Central Banks have read access to the report.</p>

Id	SHRD.CB.UR.BILL.REP.010.030
Name	Reporting on Billing: Audit of critical data for a given time window
Description	<p>Reporting shall be available:</p> <ul style="list-style-type: none"> • On modifications of critical data; • For a given time window; • Per system entity; • Per participant; • Per Ancillary System; and • Per Distinguished Name. <p>Only authorised Central Banks have read access to the report.</p>

Id	SHRD.CB.UR.BILL.REP.010.040
Name	Reporting on Billing: Revenues reporting
Description	<p>Reporting shall be available on revenues and underlying quantities:</p> <ul style="list-style-type: none"> • Per service/application • Per service category (settlement services/account management services/information services) • Per service item, by tariff and value band • Per nature of the fees: <ul style="list-style-type: none"> - Fixed fees - Variable fees • Per billing period • Per participant <p>Only authorised Central Banks have read access to the report.</p>

Note: By the reporting means described above, the Central Banks can, for internal bookkeeping and administrative purposes, differentiate their revenues.

Id	SHRD.CB.UR.BILL.REP.010.050
Name	Reporting on Billing: Detailed consumption
Description	<p>Reporting shall be available on:</p> <ul style="list-style-type: none"> • On consumption; • Per service/component/application; • For a given time window; • Per Ancillary System; • Per participant; • Per billable item • Per account. <p>Only authorised Central Banks have read access to the report.</p>

Id	SHRD.CB.UR.BILL.REP.010.060
Name	Reporting on Billing: Detailed participation
Description	<p>Reporting shall be available on:</p> <ul style="list-style-type: none"> • On participation; • Per service/component/application; • For a given time window • Per participant <p>Only authorised Central Banks have read access to the report.</p>

Id	SHRD.CB.UR.BILL.REP.010.070
Name	Reporting on Billing: Validity of accounts to be debited
Description	Data shall be available in the data warehouse on the accounts configured as accounts to be debited.

Id	SHRD.CB.UR.BILL.REP.010.070
Name	Reporting on Billing: Accounts with no consumption
Description	Data shall be available in the data warehouse on the accounts with no consumption in a given billing period.

Id	SHRD.CB.UR.BILL.REP.010.080
Name	Participant invoicing report to central banks
Description	<p>detailed invoice data and invoice details shall be available in the data warehouse:</p> <ul style="list-style-type: none"> • Invoice Number • Invoice date • Invoice due date • Fee originator • Reachable Party (TIPS only) • Party to be charged • Debited account (for settlement services) • Credited account (for settlement services) • Account (for information and account management services) • Banking group • Billing Group • Settlement Service • Service item code and description • Billing period • Quantity • Unit Price • EUR Amount • VAT Rate • VAT Amount • Account to be debited • Invoice address <p>Not all fields are mandatory. For example if an invoice data is not included in an invoice (invoice not created), it should be available in the data warehouse without “invoice number” field.</p> <p>Consumption data should be available in the data warehouse even if the price is zero.</p> <p>This shall include manual corrections done by the ECB and the national central banks.</p> <p>Central banks shall be able to define several reports based on this data:</p> <ul style="list-style-type: none"> • with different aggregation/granularity (as several data items listed above are sub dimensions of others) • with different filters: excluding/including different services, service items, fee types (fixed dependent, fixed independent, variable dependent, variable independent), participant types (AS/banks), lines

with zero amounts, lines with no invoice number.

1.11 ECMS

Id	SHRD.CB.UR.BILL.ECMS.010
Name	ECMS
Description	<p>BILL shall be able to load monthly invoice data from ECMS and subsequently handle such invoice data in the regular invoicing process described above. The system operator shall be able to cancel the invoice data received from ECMS and load a new file.</p> <p>The billing module allows for billing across CBs on the basis of the related reference data setup in CRDM</p>

The latter requirement assumes that the NCB to be charged will be modelled as a participant under the charging NCB as a system entity

1.12 MULTI-CURRENCY

Id	SHRD.CB.UR.BILL.MCUR.010
Name	Multi-Currency
Description	All requirements in this chapter 1 are for pricing, invoicing and debiting in EUR. However the modular design of the BILL should allow adding currencies in the future without changes to the EUR implementation.

A national central bank hosting accounts in multiple currencies would be represented in CRDM as one separate system entity for each currency. Participants having accounts at a central bank in multiple currencies would also be represented by multiple parties (one under each system entity).

1.13 BILLING – NON-FUNCTIONAL REQUIREMENTS

1.13.1 Availability

Id	SHRD.CB.UR.BILL.NFR.020
Name	Availability
Description	Availability of BILL measured on a quarterly basis shall be at least 95%.

1.13.2 Disaster Recovery

Id	SHRD.CB.UR.BILL.NFR.030
Name	Recovery Time Objective
Description	BILL shall ensure a recovery time objective value of three days.

The recovery time objective (RTO) is the maximum amount of time required for recovery or restart of the service to a specified point of consistency. BILL shall be restored within three days after the decision to restart the component.

1.13.3 Performance Requirements

Id	SHRD.CB.UR.BILL.NFR.040
Name	Maximum Batch Processing Time
Description	BILL shall process the billing files in maximum one day. This applies for possible reruns as well.

The processing of the data relevant for BILL shall not exceed one day. Should a rerun be necessary the one day limit applies as well.

2 CLM REPOSITORY

Business Process Ref: SHRD.CB.BP.CRDM.REP

Process Overview

The process describes the compilation, the content and delivery of the CLM repository. The CLM repository shall provide valuable business information to the central banks.

Process context:

- ▶ This process is a background process providing information for Central Banks.

Pre-conditions:

- ▶ None

Time constraints:

- ▶ Maintenance window

Expected results:

- ▶ A CLM repository based on CRDM contents is compiled and delivered in time and format as requested.

Triggers:

- ▶ Scheduled process

User Requirements

Id	SHRD.CB.UR.CRDM.REP.000.010
Name	distribution of CLM repository
Description	CRDM shall distribute the CLM repository only to the central banks. The repository shall be available in both push and pull mode. Also, it shall be possible to retrieve a full or delta copy of the repository upon request.

All CLM accounts will be published by default in the repository, however upon decision of the respective central bank, an account could not be published in the repository.

Id	SHRD.CB.UR.CRDM.REP.000.020
Name	Frequency of repository distribution
Description	CRDM shall distribute a CLM repository update on a regular basis when there are changes to the repository.

Id	SHRD.CB.UR.CRDM.REP.000.030		
Name	Structure of the CLM repository		
Description	CRDM shall provide the CLM repository according to the following structure:		
	Field name	Format	Note
	BIC	BIC 11	BIC of CLM account holder
	BIC	BIC 11	BIC of CLM account
	Institution Name	105x	Institution name of CLM account holder
	Account number	34x	CLM account number
	Responsible CB	2x	Country code of responsible Central Bank
	Type of change	1x	Type of change with the following possible values: A: added M: modified D: deleted U: unchanged
	Valid from	YYYYMMDD	Date from which the entry is valid
Valid till	YYYYMMDD	Date up to which the entry is valid (if not specified is equal to "99991231")	

3 LEGAL ARCHIVING (LAR)

3.1 OVERVIEW

The component for legal archiving collects all information which is subject to legal archiving requirements. This comprises currently all incoming and outgoing business transactions from and to Parties as well as relevant reports such as account statements. The information has to be stored in its original content and format and has to be accessible within its retention period. The means to access the data have to be in place while the data is retained.

If possible, a single solution for legal archiving and Data Warehouse shall be used to reduce development and operating costs. If a solution is found in Data Warehouse to store and seal data subject to legal archiving in its original format and in a way future manipulation is prevented no separate solution has to be built.

3.1.1 Context Diagram

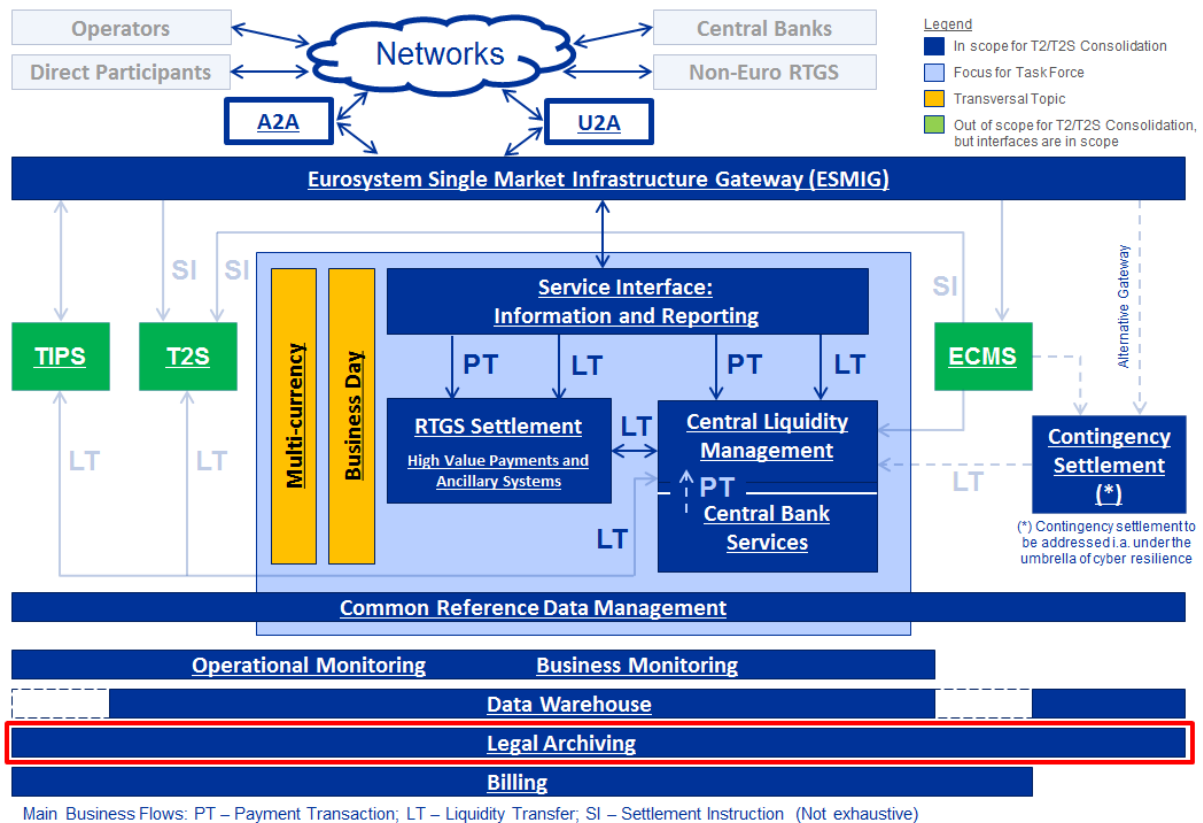


Figure 3: Context diagram for Legal Archiving

3.1.2 Business Processes

Business Process Name	BP Reference	Business Process Description
Collect Information for Legal Archiving	SHRD.CB.BP.LAR.COLL	Process to collect data within the various services, components and applications
Gather Information	SHRD.CB.BP.LAR.GATH	Process to access collected information for legal requests

Table 3: Business Processes for Legal Archiving

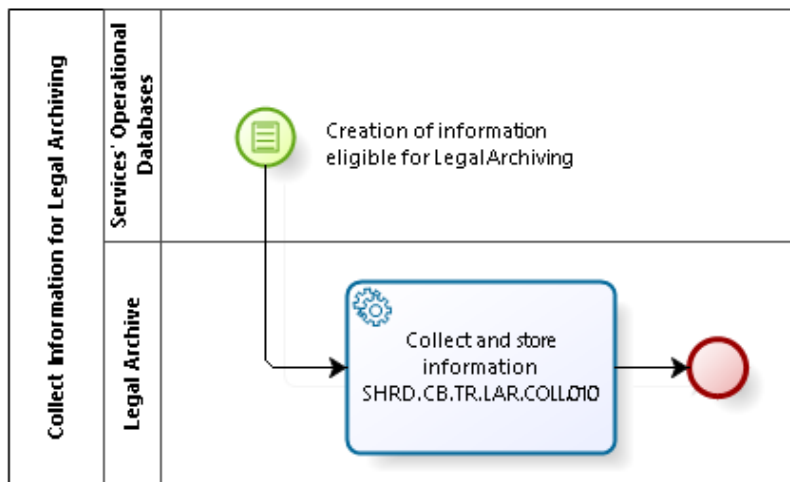
3.2 COLLECT INFORMATION FOR LEGAL ARCHIVING

Business Process Ref: SHRD.CB.BP.LAR.COLL

This business process describes the archiving of legally relevant data for regulatory purposes. It encompasses the archiving for legal reasons of inbound and outbound messages and files processed in Eurosystem Single Market Infrastructure Gateway (ESMIG). Archived messages will be retained for a pre-defined period of 10 years.

The process flow description is not intended to pre-determine any solution, e.g. that messages need to be sent to Legal Archive on the one hand, or sending of messages to Legal Archive might not be needed on the other hand. That will ultimately depend on the technology chosen.

3.2.1 Business Process Model



Business Process Model 4: Collect Information for Legal Archiving

3.2.2 Process Overview

Process goal:

The process describes collection and storage of business data relevant for legal archiving without influencing the smooth operations of the services, components and applications.

Process context:

- ▶ This process runs in the background to retrieve data from operational databases.

Pre-conditions:

- ▶ None

Time constraints:

- ▶ None

Expected results:

- ▶ Data relevant for legal archiving and being in a final state is stored in a way which makes it impossible to manipulate or delete it before the expiry of the retention period.

Triggers:

- ▶ Finalisation of data relevant for legal archiving.

3.2.3 User Requirements

3.2.3.1 COLLECT AND STORE INFORMATION

Task Ref: **SHRD.CB.TR.LAR.COLL.010**

The information identified to be archived will be collected and loaded into Legal Archive.

Id	SHRD.CB.UR.LAR.COLL.010.010
Name	Legal Archiving - Collection
Description	Upon the finalisation of data entries which require legal archiving the services, components and applications shall provide data for the legal archive.

Id	SHRD.CB.UR.LAR.COLL.010.020
Name	Legal Archiving Scope
Description	The data to be archived encompasses inbound and outbound messages of legal relevance, e.g. all payment orders. Messages between the services, components and applications (e.g. a collateral settlement instruction from ECMS to T2S) do not need to be legally archived. Neither do queries, technical messages or logs for U2A activities. Legal Archive shall be able to handle a broader scope if necessary.

Id	SHRD.CB.UR.LAR.COLL.010.030
Name	Data Format
Description	The data in Legal Archive shall be stored in its original format.

Id	SHRD.CB.UR.LAR.COLL.010.040
Name	Data Protection
Description	The data archived has to be protected and secured in its original format. Neither changes nor deletions shall be possible once information is legally archived.

Id	SHRD.CB.UR.LAR.COLL.010.050
Name	Archive Retention period
Description	The data archived will be retained for specific retention periods. Legally relevant messages, e.g. all payment orders, are archived for at least 10 years.

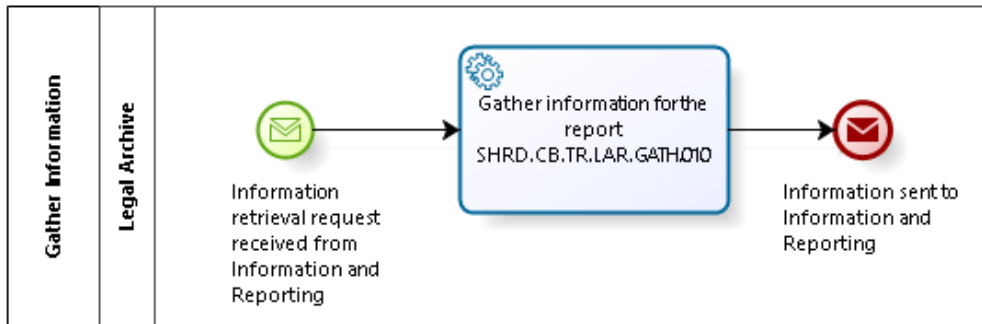
In the detailed specification it might be possible to differentiate retention period of different data sources or local regulation rules. Nevertheless the means for storing data at least 10 years has to be in place.

3.3 GATHER INFORMATION

Business Process Ref: SHRD.CB.BP.LAR.GATH

This business process describes the access to legally archived information. Legal Archiving only describes the data gathering process. Other issues, for example, report generation, data preparation or available views, will be handled by the TARGET Service Desk, the user interacting by external channels such as mail.

3.3.1 Business Process Model



Business Process Model 5: Gather Information

3.3.2 Process Overview

Process goal:

This process describes the access to data stored in Legal Archive. Upon request the archived data will be returned.

Process context:

- ▶ Any access to data contained in Legal Archive is described by this process.

Pre-conditions:

- ▶ None

Time constraints:

- ▶ None

Expected results:

- ▶ The requested data shall be returned by the process.
- ▶ The data access shall not jeopardise the service level for operations.

Triggers:

- ▶ Information requests

3.3.3 User Requirements

3.3.3.1 GATHER INFORMATION FOR THE REPORT

Task Ref: SHRD.CB.TR.LAR.GATH.010

Id	SHRD.CB.UR.LAR.GATH.010.010
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Name	Information Access
Description	Upon request, access to the collected information shall be available to the TARGET Service Desk.

It is currently foreseen that only operators have read access to data in Legal Archive.

Id	SHRD.CB.UR.LAR.GATH.010.020
Name	Information display
Description	The display of information will be managed by the TARGET Service Desk, and sent to the requester by external means.

3.4 NON-FUNCTIONAL REQUIREMENTS FOR LEGAL ARCHIVING

3.4.1 Availability

Id	SHRD.CB.UR.LAR.NFR.020
Name	Availability
Description	Availability, calculated on a quarterly basis, shall be at least 97.5%.

Legal Archiving may be subject to incidents or failures, which may cause a temporary and unforeseen interruption of availability of the component. Regardless of the total number of such unplanned interruptions, the overall availability calculated on a quarterly basis shall be at least 97.5%.

3.4.2 Disaster Recovery

Id	SHRD.CB.UR.LAR.NFR.030
Name	Recovery Point Objective
Description	Legal Archiving shall ensure a recovery point objective of zero minutes to recover to the complete set of archived data in the event of site failures or where there is a loss of a complete region.

The recovery point objective (RPO) is a point of consistency to which a user wants to recover or restart the service.

Id	SHRD.CB.UR.LAR.NFR.040
Name	Recovery Time Objective
Description	Legal Archiving shall ensure a recovery time objective value of four days in the event of site failures or where there is a loss of a complete region

The recovery time objective (RTO) is the maximum amount of time required for recovery or restart of the service to a specified point of consistency. In the event of a site failure, Legal Archiving shall ensure maximum time of unavailability of four days starting from the time when the decision to restart the component is made up to the time the component is restored. In the event of a major failure or a regional disaster, Legal Archiving shall ensure maximum time of unavailability of four days starting from the time when the decision to restart the component is made up to the time the component is restored.

3.4.3 Performance Requirements

Id	SHRD.UR.LAR.NFR.050
Name	Query Response Time
Description	Legal Archiving shall handle simple queries with in an elapsed time of one day for 95% of the interactions. For complex queries the response time shall be four days for 100% of the interactions. A possibility to abort long-running queries shall be given.

A basic query is a query to retrieve a single object. User interactions to retrieve complex data or large amounts of data shall be handled with the possibility of an extended response time.

4 CONTINGENCY COMPONENT (CONT)

4.1 OVERVIEW

The Contingency Component is based on the Enhanced Contingency Solution (hereinafter referred to as “ECONS I”) being part of TARGET2, i.e. the real-time gross settlement (RTGS) system owned and operated by the Eurosystem.

The requirements for the Contingency Component² (CONT) reflected in the current document depict a further development of ECONS I and its adjustment to the T2/T2S consolidated environment.

4.1.1 Context Diagram

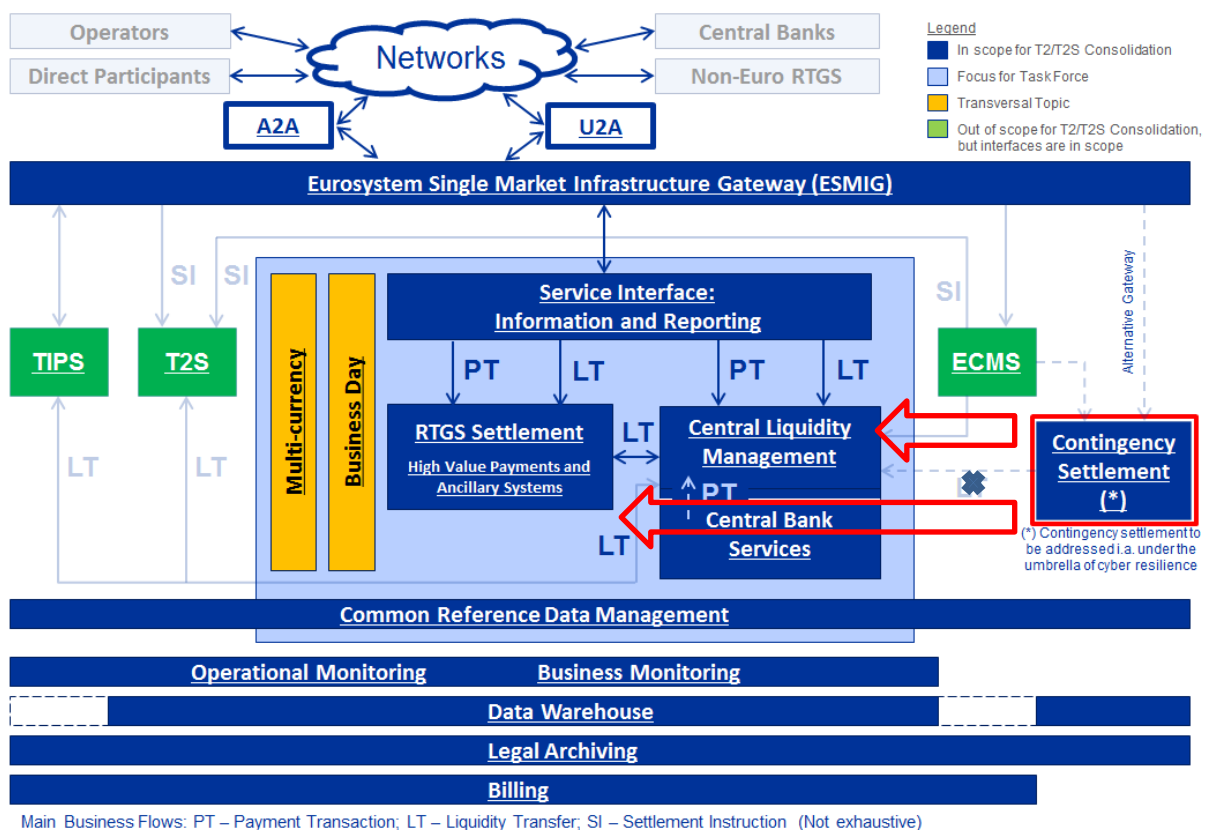


Figure 4: Context diagram for the Contingency Component

4.1.2 General Description of Contingency cases

The Contingency Component aims at addressing the situation where the T2 service, i.e. the CLM and/or the RTGS component is not usable³. Following the activation, the Contingency Component will

² Occasionally also referred to as ECONS II

³ As a general rule, the usage of the contingency component is envisaged only for major failures, regional disasters, or cyber-attack. However, where there is a limited number of unprocessed time-critical transactions

always replace both the CLM and the RTGS component. The Contingency Component may be also used for the liquidity movements for TIPS and/or T2S purposes.

The settlement of transactions in a contingency case shall be performed on specific accounts dedicated for contingency settlement, having a starting balance of zero. The liquidity used for the processing in the Contingency Component may be obtained from other available sources⁴ or be based on already available (i.e. expressly reserved for contingency purposes) collateral or newly provided collateral. Overall, with the exception of the provision of new collateral via a collateral management system, it is assumed that T2S is not essential in providing collateral for the fresh liquidity used in the Contingency Component.

It shall be ensured that the contingency activities are traceable (e.g. through specific transaction reference numbers) and reconcilable with the production CLM and RTGS components after recovery. The Contingency Component shall be complementary to and independent from the production service, and it can run in parallel with the latter (e.g. for testing purposes or for realignment of CLM/RTGS and Contingency Component). It is also required that the Contingency Component is strictly safeguarded from cyber-attacks targeting the production system in order to provide a high-level of assurance of its availability.

4.1.3 General Assumptions for the Contingency Component

Assumption – Non-availability/non-accessibility of RTGS and/or CLM (including Central Bank Services - CBS)

It is assumed that the T2 service, i.e. the RTGS and/or the CLM component (including CBS) are not available or not accessible to the participants⁵. Additionally, it is assumed that the network connections between the participants involved and the Contingency Component are available.

Another assumption is that the software used by the Contingency Component is not compromised.

4.1.4 User Requirements for Connectivity to the Contingency Component

Id	SHRD.CB.UR.CONT.CONN.010
Name	Connectivity - Access to the Contingency Component through ESMIG
Description	The Contingency Component shall be accessible through an instance of ESMIG segregated from the production system.

Note: The rationale behind this is that, if the standard network connectivity or an additional (restrictive) network connectivity which had been implemented is fully available despite the general contingency case, the Contingency Component shall be accessible through this network connectivity without being impacted by the “problems” of the production system.

in RTGS or CLM (e.g. monetary policy related transactions) at the time of the incident, then this can lead to the activation of the contingency component, whatever is the cause of the non-usability.

⁴ The liquidity can be provided for example via transfers from T2S DCAs and TIPS DCAs or from outside the Target services. As concerns the transfer of liquidity from Target services to the contingency cash account this would work as follows: liquidity is transferred from the participants TIPS and/or T2S DCA(s) to a central bank DCA. Subsequently the funds would be moved from the contingency cash account owned by the central bank to the contingency cash account of the respective participant. Hence, this would always require manual intervention. The exact way of transferring funds from TIPS DCAs to the contingency account can only be described once a change request currently under consideration has been approved.

⁵ In the context of this section 4 and unless otherwise specified the term “participant” refers to central banks, banks and ancillary systems.

4.1.5 User Requirements for Common Reference Data

Id	SHRD.CB.UR.CONT.CRDM.010
Name	Reference data – basis
Description	The Contingency Component shall, for those reference data items needed in the Contingency Component, use the latest non tampered reference data available from the latest activated set of the Common Reference Data and valid for the business day the incident occurs ⁶ . Reference data shall be propagated to the Contingency Component on a daily basis.

Id	SHRD.CB.UR.CONT.CRDM.020
Name	Reference data – entities
Description	<p>The Contingency Component shall use the following entities from the Common Reference Data:</p> <ul style="list-style-type: none"> • Party (including all ancillary systems, participants and central banks) • Party Name • Party Address • Party Code (BIC) • Banking Group • Contingency Cash Account • Contingency Technical Account • Transit Accounts • Currency • SWIFT BIC Directory • Service used by parties • User [with specific ECONS II related privileges] • Distinguished Name • Roles [specific ECONS II related roles] • Privilege [specific ECONS II related privileges] • Access rights based on Roles and Privileges [specific role to access ECONS II] • The Party Service Link connecting a party to ECONS II should be included as it can be that not all parties need access to ECONS II.

Note: Central Banks shall ensure that, in the Common Reference Data, there is only one contingency (as relevant, cash or technical) account per MCA (BIC) and currency. The contingency account and the linked cash account must have the same currency.

Id	SHRD.CB.UR.CONT.CRDM.030
Name	Reference data – blocking of account and participant
Description	The Contingency Component shall allow the Market Infrastructure Service Desk and the central banks to block/unblock accounts and participants/ancillary systems.

⁶ Technical and/or organizational measures shall be in place to ensure the integrity of the data in case of a successful cyber-attack.

Note: Upon confirmation from the responsible central bank, there should be a possibility to submit/receive payments even if the account is blocked.

Deletion does *not* need to be supported by the Contingency Component. After the contingency case, the Contingency Component does *not* need to reconcile the reference data with the CRDM or another Shared Services. Related operational procedures should be put in place.

If an account is blocked because a participant has been suspended or its participation in T2 needs to be terminated, there is an obligation to inform other users accordingly. As the Contingency Component does not offer a broadcast functionality other means of communication would need to be used.

4.1.6 User Requirements for Actor Interactions with Contingency Component

Id	SHRD.CB.UR.CONT.UI.010
Name	Access to GUI (U2A)
Description	The Contingency Component shall allow for a U2A connection through a Graphical User Interface.

Id	SHRD.CB.UR.CONT.UI.011
Name	Access via A2A
Description	The Contingency Component shall allow for an A2A connection for central banks.

Id	SHRD.CB.UR.CONT.UI.020
Name	Status of the Contingency Component
Description	The Contingency Component shall be permanently inaccessible and segregated from the production system. With this status, it is ensured that no one can access it by default/by accident. The opening as well as the closing (once the contingency case has ended) of the Contingency Component is performed at a centralised level. There shall be technical and organizational measures to ensure that the effects of a cyber-attack targeting the production system are not propagated to the Contingency Component upon activation.

Id	SHRD.CB.UR.CONT.UI.040
Name	Liquidity provision
Description	The Contingency Component shall allow CBs to transfer liquidity from/to their own accounts in the Contingency Component to/from the accounts of their participants and ancillary systems in A2A and U2A mode (the latter through a GUI).

Id	SHRD.CB.UR.CONT.UI.050
Name	Monitoring of account balances
Description	The Contingency Component shall allow each participant/ancillary system to monitor its account balances in U2A mode via GUI and in addition in A2A mode for central banks.

Id	SHRD.CB.UR.CONT.UI.060
Name	Liquidity Monitoring
Description	The Contingency Component shall provide a facility to CBs for the continuous monitoring of liquidity on all accounts of their participants/ancillary systems in U2A mode via screens. The screen should allow for the use of filters and export the data (e.g. in .xls or .csv format).

Id	SHRD.CB.UR.CONT.UI.070
Name	Payment Order Processing - entry of payments
Description	<p>The Contingency Component shall allow participants to set up single payments in U2A mode (banks and CBs). The Contingency Component shall allow CBs to set up payments and liquidity transfers on behalf of their participants in U2A (banks) and A2A (ancillary systems) mode. The following attributes are required:</p> <ul style="list-style-type: none"> • Debited account (Identified by BIC11) • Credited account (Identified by BIC11) • Amount • Currency • Automatic reference (created by the Contingency Component). <p>The following attributes are required optionally and are purely descriptive for tracking purposes:</p> <ul style="list-style-type: none"> • reference given by the customer including the payment type (within the first 4 characters)

Note: the automatic reference is created by the Contingency Component and it is not shown in the entry payment screen. Therefore the Contingency Component offers one field, where the participant (bank and CBs) can (optionally) insert 4 characters.

Id	SHRD.CB.UR.CONT.UI.080
Name	Sending of Ancillary System transaction files
Description	The Contingency Component shall allow CBs to send transaction files for ancillary systems on their behalf in A2A mode. The Contingency Component shall validate if the file contains a list of AS transactions with the necessary attributes.

Note: Only Central Banks will have the possibility to send files for AS on their behalf.

Id	SHRD.CB.UR.CONT.UI.090
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Name	Monitoring of transactions
Description	The Contingency Component shall allow each participant/ancillary system to monitor its transactions in U2A mode.

Note: There is *no* specific requirement on automated notifications on a settlement success/failure of a payment order to the participants/ancillary systems. Information is only provided via GUI browsing.

Id	SHRD.CB.UR.CONT.UI.100
Name	Payment Order Processing - status information
Description	The Contingency Component shall provide a facility to CBs for the continuous monitoring of the payment order status of all their participants and the status of AS transactions from ancillary systems via an U2A screen. All payment orders (incl. AS transaction) shall be viewable and searchable for the whole duration of the incident. It shall be possible to filter the data (e.g. per business day).

Id	SHRD.CB.UR.CONT.UI.110
Name	Reporting - statements of accounts
Description	In case of a contingency session opened for several business days, the Contingency Component shall provide statements of accounts with an overview of the balances for the central banks, participants and ancillary systems within each End of Day process to allow them to reconcile their transactions.

Id	SHRD.CB.UR.CONT.UI.120
Name	Reporting – General Ledger files
Description	The Contingency Component shall provide General Ledger files to Central Banks within each End of Day process, covering the Contingency Component activities.

Note: The Contingency Component shall provide the financial data needed for the preparation of Eurosystem daily publications, e.g. the daily aggregated Eurosystem financial data.

Id	SHRD.CB.UR.CONT.UI.130
Name	Central Banks - provision of raw data files
Description	The Contingency Component shall make the raw data available to the CBs within each End of Day process covering the activities on the Contingency Component.

Note: In addition, Central Banks can access the raw data through the Data Warehouse after recovery.

Id	SHRD.CB.UR.CONT.UI.150
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Name	Data Warehouse/Legal Archiving - provision of raw data files
Description	The Contingency Component shall provide raw data to the Data Warehouse/Legal Archiving, after recovery.

4.1.7 User Requirements for Liquidity Management

Id	SHRD.CB.UR.CONT.LIQ.010
Name	Starting Balances
Description	When opening the Contingency Component the starting balance on all accounts shall be "zero".

Id	SHRD.CB.UR.CONT.LIQ.020
Name	Separate provisioning
Description	The Contingency Component shall enable a Collateral Management System ⁷ to inject liquidity in A2A mode to the contingency accounts.

Note: The amount to be provided needs to be elaborated by the Central Bank outside of the Contingency Component.

The liquidity transfer should take the form of a message debiting a CB contingency account and crediting a participants' contingency account in the Contingency Component.

It should be also possible to provide liquidity to Contingency Component by making liquidity movements between TIPS⁸/T2S DCAs and the contingency accounts.

Id	SHRD.CB.UR.CONT.LIQ.030
Name	End of Day Processing: Change of business date and continuation of balances
Description	The Contingency Component shall be able to change the business date (i.e. to remain active for more than one business day) and to carry over balances with the change of business day during the contingency case until its closure.

Note: The Contingency Component does *not* need to calculate the minimum reserves and excess liquidity as well as the respective interests *during* the contingency case, even if the contingency case lasts through the last day of the minimum reserve period. This shall be performed after recovery outside the Contingency Component by each CB. Moreover a usage of the Standing Facilities is not foreseen.

Id	SHRD.CB.UR.CONT.LIQ.040
Name	Transfer of balances and further necessary information after closure of the contingency case
Description	The Contingency Component shall transfer the balances remaining on the

⁷ In order to be able to cope with the future link to ECMS.

⁸ The exact way of transferring funds from TIPS DCAs to the contingency account can only be described once a change request currently under consideration has been approved.

contingency accounts after the closure of the contingency case.

Note: The Contingency Component does *not* need to calculate the minimum reserves and excess liquidity as well as the respective interests after recovery.

4.1.8 User Requirements for Mechanisms of the Settlement Flow

Due to the systemic nature, very critical payments (e.g. margin calls with CCPs) have to be settled with highest priority, also considering that there is only limited amount of liquidity available in the Contingency Component. Since no technically enforced mechanism will be in place to prioritise such transactions and given the fact that banks and ancillary systems have direct access to the contingency facility, Central Banks shall have the possibility to impose an ad-hoc prioritisation or “cherry picking” of very critical transactions through operational means. This is to ensure that very critical payments are settled before other critical ones are processed.

Id	SHRD.CB.UR.CONT.SETT.010
Name	Validation of payments/Liquidity transfers
Description	The Contingency Component shall allow Central Banks to agree/disagree in two eyes principle on the processing of each payment order/liquidity transfer order entered by the participants in U2A mode. With the exception of blocked accounts, the Market Infrastructure Service Desk shall be able to activate/deactivate the “agree/disagree” functionality for all CBs. The Contingency Component shall allow central banks to select a number of payments and agree/disagree on their processing in one go.

Id	SHRD.CB.UR.CONT.SETT.020
Name	Settlement of payments/Liquidity transfers/AS transactions
Description	The Contingency Component shall attempt settlement of a payment/liquidity transfer/AS transaction immediately after it has been submitted for settlement by the Participant and agreed by the Central Bank. If the first attempt failed, the Contingency Component shall reject the payment order (no queuing mechanism is in place). The Contingency Component shall provide information via GUI to the participant about the transaction on the status of the payment order (e.g. waiting for CB approval, settled, rejected) upon request. AS transaction files submitted by the Central Bank for settlement will not trigger the agree/disagree functionality.

4.1.9 Non-functional Requirements

Id	SHRD.CB.UR.CONT.NFR.010
Name	Response Time Goals
Description	The Contingency Component shall be able to process 95% of the transactions under five minutes.

Id	SHRD.CB.UR.CONT.NFR.020
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Name	Peak Workload per minute
Description	The Contingency Component shall be able to process 1,000 transactions per minute, enduring the peak load for at least 20 minutes.

Id	SHRD.CB.UR.CONT.NFR.025
Name	Peak Workload per day
Description	The Contingency Component shall be able to process in average 40,000 transactions per day, enduring the peak load 55,000 for at least 5 days.

Id	SHRD.CB.UR.CONT.NFR.030
Name	Service times
Description	The Contingency Component shall operate during regular T2 Service business hours. However, it shall be available around the clock throughout the contingency case, apart from during necessary functional or technical maintenance windows. The operator shall have a possibility to adjust the timing of the operating day of the Contingency Component.

Note: If the Contingency Component changes the business date, there must be an End of Day/Start of Day phase through which the Contingency Component is not available. Apart from that, there are no specific time windows for specific settlement mechanisms during the contingency case. The operating hours can be modified by the operator, subject to a decision of the Crisis Managers. However, there is no specific night time settlement.

Id	SHRD.CB.UR.CONT.NFR.040
Name	Technical System sizing
Description	The Contingency Component shall be technically sized to allow processing and storage of up to five consecutive business days.

Id	SHRD.CB.UR.CONT.NFR.050
Name	Maximum Start Up Time
Description	The Contingency Component shall be up and running immediately, and no later than 5 minutes, after the decision on its activation.

Id	SHRD.CB.UR.CONT.NFR.060
Name	Hardware, Operation System and Software
Description	Segregation and risk profile – The Contingency Component shall minimize to the extent possible the dependency on services and systems in the production platform (e.g. Operating Systems, Application servers, DBMS) and be fully segregated in terms of technical and organizational measures from the production platform (e.g. access is granted to users via authentication tokens that are segregated from those used in the production system). The Contingency Component shall be run on a hardware/software platform which has a significantly different risk profile from the one RTGS and CLM are

running on, in order to ensure that the effects of a successful cyber-attack are not easily propagated to the Contingency Component.

5 USER INTERACTION

The objective of this section is to provide the user requirements related to user interactions covering the usage of U2A or A2A mode. A Graphical User Interface (GUI) shall be provided, offering functionality to access information in U2A mode.

These requirements do not imply any particular consideration with regard to design and the implementation of the actual screens.

5.1 GENERAL USER REQUIREMENTS FOR USER INTERACTION

The following general requirements shall apply to RTGS, CLM and Common Components.

5.1.1 Query

Id	SHRD.CB.UR.ALL.UI.010
Name	Query Audit Trail
Description	<p>Each component shall provide the functionality to query through U2A interface the modified data at the attribute level, the user performing the change and the timestamp of the change.</p> <p>It shall be visible which attributes were changed, together with the new values.</p> <p>The query shall return relevant business attributes of the Audit Trail.</p> <p>Central banks will be able to query in A2A audit trails on parties and accounts.</p>

Id	SHRD.CB.UR.ALL.UI.020
Name	Query System time
Description	<p>All components shall provide the functionality to query system time to align the time of a connected application through an application-to-application interface (A2A).</p> <p>The query shall return the System time.</p>

5.1.2 Action

Id	SHRD.CB.UR.ALL.UI.030
Name	Amend/ Revoke Task(s)
Description	All components shall provide the functionality to amend/ revoke task(s) through the U2A interface.

Id	SHRD.CB.UR.ALL.UI.040
Name	Act on behalf
Description	<p>All components shall provide the functionality to act on behalf through U2A and A2A interfaces for:</p> <ul style="list-style-type: none"> Central Banks, to act on behalf of any Party belonging to their banking community, and

	<ul style="list-style-type: none"> The TARGET Service Desk, to act on behalf of any Party.
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Id	SHRD.CB.UR.ALL.UI.050
Name	Access rights
Description	All components shall ensure that a user can only access functionality and data that is allowed by the access rights granted to the user through the Roles associated with the user.

Id	SHRD.CB.UR.ALL.UI.060
Name	Four-eyes (confirm, revoke, amend)
Description	All components shall provide the functionality to use the four-eyes approval, allowing the authoriser to confirm, revoke or amend.

5.2 USER INTERACTION FOR BILLING

5.2.1 Query

It shall be noted that not all possible queries in Billing are listed below due to that fact that the fee structure has not been agreed yet.

Id	SHRD.CB.UR.BILL.UI.010
Name	Query consumption data for each service and component per billing period
Description	<p>BILL shall provide the functionality to query consumption data for each service and component per billing period. The Central Bank user can query within his data scope.</p> <p>The user shall specify the following mandatory selection criteria. In addition the query shall allow the user to specify an optional selection criterion.</p> <p>Consumption for following services can be queried:</p> <ul style="list-style-type: none"> T2 TIPS T2S <p><u>Mandatory selection criteria:</u></p> <ul style="list-style-type: none"> Party to be charged BIC Billing Period (YYYY-MM) <p><u>Optional selection criterion:</u></p> <ul style="list-style-type: none"> Service/component <p>The query shall return all business attributes of the consumption for each service (and component consumption within the service) per billing period, including its processing status.</p>

Id	SHRD.CB.UR.BILL.UI.020
Name	Query invoice data and manual corrections of participant per billing period
Description	<p>BILL shall provide the functionality to query the invoice data and manual corrections of participant per billing period.</p> <p>The Central Bank user can query within his data scope. The user shall specify the following mandatory selection criteria.</p> <p><u>Mandatory selection criteria:</u></p> <ul style="list-style-type: none"> • Billable Party BIC • Billing Period (YYYY-MM) <p>The query shall return all business attributes of the invoice data and manual correction of the participant per billing period.</p>

Id	SHRD.CB.UR.BILL.UI.030
Name	Query Ancillary System invoice data and manual corrections per billing period
Description	<p>BILL shall provide the functionality to query Ancillary System invoice data and manual corrections per billing period.</p> <p>The Central Bank user can query within his data scope, which is determined by the Party BICs. The user shall specify the following mandatory selection criteria.</p> <p><u>Mandatory selection criteria:</u></p> <ul style="list-style-type: none"> • Ancillary System Billable Party BIC • Billing Period (YYYY-MM) <p>The query shall return all business attributes of Ancillary System invoice data and manual corrections per billing period, including their processing status.</p>

Id	SHRD.CB.UR.BILL.UI.040
Name	Query prices for each service item
Description	<p>BILL shall provide the functionality to query unit prices for each service item.</p> <p>The user shall specify the following mandatory selection criteria.</p> <p><u>Mandatory selection criteria:</u></p> <ul style="list-style-type: none"> • Service/component/application • Billable Item <p>The query shall return all business attributes of service item for each service and application.</p>

Id	SHRD.CB.UR.BILL.UI.050
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Name	Query VAT Rates
Description	<p>BILL shall provide the functionality to query the VAT information.</p> <p>The Central Bank user can query VAT rate applicable for their system entity. The user shall specify the following mandatory selection criteria.</p> <p><u>Mandatory selection criteria:</u></p> <ul style="list-style-type: none"> • Service/application • Billable Items <p>The query shall return all business attributes of VAT information.</p>

The table below represents a summary of the queries and actions in Billing for CBs.

Query / Action	U2A	A2A
Query itemized invoice data, manual corrections	x	x
Query consumption for each participant, service, and application per billing period	x	x
Query Unit prices	x	
Query VAT rates	x	

Table 4: Summary of queries and actions in U2A and A2A mode for Billing

5.3 USER INTERACTION FOR COMMON REFERENCE DATA MANAGEMENT

5.3.1 Query

Id	SHRD.CB.UR.CRDM.UI.010
Name	Query Banking Group
Description	<p>CRDM shall provide the functionality to query Banking Group through the U2A interface.</p> <p>The query shall return all business attributes of Banking Group.</p>

Id	SHRD.CB.UR.CRDM.UI.015
Name	Query Billing Group
Description	<p>CRDM shall provide the functionality to query Billing Group through the U2A interface.</p> <p>The query shall return all business attributes of a Billing Group.</p>

5.3.2 Action

Id	SHRD.CB.UR.CRDM.UI.020
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Name	Create Account
Description	CRDM shall provide the functionality to create an account through the U2A interface.

Id	SHRD.CB.UR.CRDM.UI.030
Name	Amend Account
Description	CRDM shall provide the functionality to amend an account through the U2A interface.

Id	SHRD.CB.UR.CRDM.UI.035
Name	Close Account
Description	CRDM shall provide the functionality to close an account through the U2A interface.

Id	SHRD.CB.UR.CRDM.UI.040
Name	Delete Account
Description	CRDM shall provide the functionality to delete an account through the U2A interface.

Id	SHRD.CB.UR.CRDM.UI.050
Name	Create Banking Group
Description	CRDM shall provide the functionality to create a Banking Group through the U2A interface.

Id	SHRD.CB.UR.CRDM.UI.060
Name	Amend Banking Group
Description	CRDM shall provide the functionality to amend a Banking Group through the U2A interface.

Id	SHRD.CB.UR.CRDM.UI.070
Name	Delete Banking Group
Description	CRDM shall provide the functionality to delete a Banking Group through the U2A interface.

Id	SHRD.CB.UR.CRDM.UI.071
Name	Create Billing Group
Description	CRDM shall provide the functionality to create a Billing Group through the U2A interface. Only a party under the responsibility of the central bank can be selected as

	billing group leader.
Id	SHRD.CB.UR.CRDM.UI.072
Name	Amend Billing Group
Description	CRDM shall provide the functionality to amend a Billing Group through the U2A interface. Central banks may add or remove their payment banks from a billing group, even if it did not create the billing group. The billing group leader cannot be changed.
Id	SHRD.CB.UR.CRDM.UI.073
Name	Delete Billing Group
Description	CRDM shall provide the functionality to delete a Billing Group through the U2A interface. Only the Central Bank that has originally created the billing group could delete it. A Billing Group can be deleted even if it is not empty.
Id	SHRD.CB.UR.CRDM.UI.080
Name	Create Party
Description	CRDM shall provide the functionality to create a Party through the U2A interface. When creating the Party it shall be possible to set up links between MCA and DCAs for liquidity management and minimum reserve purposes.
Id	SHRD.CB.UR.CRDM.UI.090
Name	Amend Party
Description	CRDM shall provide the functionality to amend a Party through the U2A interface.
Id	SHRD.CB.UR.CRDM.UI.100
Name	Delete Party
Description	CRDM shall provide the functionality to delete a Party through the U2A interface.
Id	SHRD.CB.UR.CRDM.UI.110
Name	Block Party
Description	CRDM shall provide the functionality to block a Party in the case of insolvency (or a similar event) in order to exclude it from all services, components and applications through the U2A interface.

Id	SHRD.CB.UR.CRDM.UI.120
Name	Unblock Party
Description	CRDM shall provide the functionality, through the U2A interface, to unblock a Party where the reason for blocking is no longer applicable and the Party is entitled to participate in all services, components and applications.

Id	SHRD.CB.UR.CRDM.UI.130
Name	Create Direct Debit Mandate
Description	CRDM shall provide the functionality to create a direct debit mandate through the U2A interface. Note: Create the reference data for mandates to allow direct debits between accounts that are eligible for direct debits.

Id	SHRD.CB.UR.CRDM.UI.140
Name	Amend Direct Debit Mandate
Description	CRDM shall provide the functionality to amend a direct debit mandate through the U2A interface.

Id	SHRD.CB.UR.CRDM.UI.150
Name	Delete Direct Debit Mandate
Description	CRDM shall provide the functionality to delete a direct debit mandate through the U2A interface.

Id	SHRD.CB.UR.CRDM.UI.160
Name	Block Cash Account
Description	CRDM shall provide the functionality to block an account through the U2A interface. It shall be possible to block debits and/or credits.

Id	SHRD.CB.UR.CRDM.UI.170
Name	Unblock Cash Account
Description	CRDM shall provide the functionality to unblock an account through the U2A interface.

Id	SHRD.CB.UR.CRDM.UI.180
Name	Create reference data in the directory
Description	CRDM shall provide the functionality to create reference data in the directory through the U2A interface.

Id	SHRD.CB.UR.CRDM.UI.190
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Name	Amend reference data in the directory
Description	CRDM shall provide the functionality to amend reference data in the directory through the U2A interface.

Id	SHRD.CB.UR.CRDM.UI.200
Name	Delete reference data in the directory
Description	CRDM shall provide the functionality to delete reference data in the directory through the U2A interface.

Id	SHRD.CB.UR.CRDM.UI.210
Name	Grant access rights to banks, Ancillary System
Description	CRDM shall provide the functionality to grant access rights through the U2A interface.

Id	SHRD.CB.UR.CRDM.UI.220
Name	Create Events
Description	<p>CRDM shall provide the functionality to create an event through the U2A interface.</p> <p>Note: the respective event will become valid from the next business day only (i.e. for D+1). While CBs can define only domestic events applicable to their banking community (e.g. cut-off for cash withdrawals), system wide events are under the responsibility of the operator.</p>

Id	SHRD.CB.UR.CRDM.UI.230
Name	Amend Domestic Events
Description	<p>CRDM shall provide the functionality to amend an event through the U2A interface.</p> <p>Note: the respective modification will be applicable from the next business day only (i.e. for D+1). While CBs are responsible for domestic events like cut-off for cash withdrawals, the system wide events are under the responsibility of the operator.</p>

Id	SHRD.CB.UR.CRDM.UI.240
Name	Delete Events
Description	<p>CRDM shall provide the functionality to delete an event through the U2A interface.</p> <p>Note: the respective deletion will be applicable from the next business day only (i.e. for D+1). While CBs can delete their own domestic events; the</p>

	system wide events are under the responsibility of the operator.
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Id	SHRD.CB.UR.CRDM.UI.250
Name	Amend System Events (Operator only)
Description	CRDM shall provide the functionality to amend an event through the U2A interface Note: System wide events can be defined timewise by the operator (for D+1)

Id	SHRD.CB.UR.CRDM.UI.260
Name	Create Central Bank (Operator only)
Description	CRDM shall provide the functionality to create Central Bank through the U2A interface. Note: This functionality is only available for the operator.

Id	SHRD.CB.UR.CRDM.UI.270
Name	Create Liquidity Transfer Group
Description	CRDM shall provide the functionality to a CB to create a Liquidity Transfer Group for a participant through the U2A interface

Id	SHRD.CB.UR.CRDM.UI.280
Name	Amend Liquidity Transfer Group
Description	CRDM shall provide the functionality to a CB to amend a Liquidity Transfer Group for a participant through the U2A interface.

Id	SHRD.CB.UR.CRDM.UI.290
Name	Delete Liquidity Transfer Group
Description	CRDM shall provide the functionality to a CB to delete a Liquidity Transfer Group for a participant through the U2A interface.

The table below represents a summary of the queries and actions in CRDM for CBs.

Query / Action	U2A	A2A
Query Banking Group	x	
Create/Amend/Close/ Delete Account	x	
Create/Amend/ Delete Banking Group	x	
Create/Amend/ Delete Billing Group	x	
Create/Amend/ Delete Party	x	
Block / Unblock Party	x	

Query / Action	U2A	A2A
Create/Amend/ Delete Direct Debit Mandate	x	
Block / Unblock Cash Account	x	
Create/ Amend/ Delete reference data in the directory	x	
Grant access rights to banks, Ancillary System	x	
Create / Amend Domestic/ Delete Events	x	
Amend System Events (Operator only)	x	
Create Central Bank (Operator only)	x	
Create/ Amend/ Delete Liquidity Transfer Group	x	

Table 5: Summary of queries and actions in U2A and A2A mode for Common Reference Data Management

5.4 USER INTERACTION FOR DATA WAREHOUSE (DWH)

Data Warehouse shall allow Central Banks to conduct analytical researches with the possibility to freely design ad-hoc reports choosing relevant information data, joining queries across different data sources (T2S, RTGS (HVP/AS), CLM and CRDM) and setting conditions and filters.

As well, a list of pre-defined reports will be made available in the field of intraday credit (credit line and intraday credit via repo transactions), participant activity, billing and oversight (subset of the currently available pre-defined reports). The information and the listed reports below are not exhaustive; they will be defined in detail during the realisation phase of the project.

Results can be displayed on a screen or exported to various file types.

In order not to disrupt data analysis after the migration from TARGET2 to the future RTGS and CLM, access to historical data from TARGET2 and T2S shall be provided.

5.4.1 Query

Id	SHRD.CB.UR.DWH.UI.010
Name	Query Analytics
Description	<p>Data Warehouse shall provide the functionality to query all available business relevant information for analytical research through the U2A interface. The Central Bank user can query within his data scope, which is determined by the Party BICs.</p> <p>The user shall be able to:</p> <ul style="list-style-type: none"> • Define the data entities to be returned; • Join different data sources (e.g. CLM, RTGS, etc.), specifying the type of the join; • Set conditions for executing the queries (e.g. 'BIC=AAAA%'); • Apply filters and sorting; • Aggregate; • Use result sets of pre-run queries; • Apply statistical functions; and • Limit amount of results. <p>Data Warehouse shall at minimum include access to the following information:</p> <ul style="list-style-type: none"> • All transaction-level information (including settled and unsettled transaction

	<p>messages)</p> <ul style="list-style-type: none"> • All balances • All changes of credit line • All limits, reservations and other potential information with regard to the liquidity management of the participants • Participant data • Business event • Billing and invoices data
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Id	SHRD.CB.UR.DWH.UI.011
Name	Summary of required data scope (settlement services)
Description	<p>The Central Bank user can query within his data scope, which is determined by the Party BICs.</p> <p>Access to granular data for all components shall include:</p> <ul style="list-style-type: none"> • CLM and all transactions between CLM and other settlement services; • Central Bank related operations / transactions (open market operations, Standing Facilities, Reserve Management, Billing etc.); • Transactions related to participant's liquidity management; • RTGS and Ancillary System transactions; • Transactions on T2S DCAs; • All reference and static data

Id	SHRD.CB.UR.DWH.UI.012
Name	Summary of required data scope (types of data):
Description	<p>The Central Bank user can query within his data scope, which is determined by the Party BICs.</p> <p>Data in DWH shall at minimum include access to:</p> <ul style="list-style-type: none"> • All (original) transaction messages (settled and unsettled); • All End of Day balances; • All changes of credit lines; • All limits, reservations and other potential information with regard to the liquidity management of the participants; • Participant data; and • Business events.

Id	SHRD.CB.UR.DWH.UI.013
Name	Summary of required data scope (attributes)
Description	<p>The Central Bank user can query within his data scope, which is determined by the Party BICs.</p> <p>Transaction-level information shall be provided especially about:</p> <ul style="list-style-type: none"> • Type of ISO 20022 compliant message (e.g. "pacs.008" or "camt.050"); • Operation identifier (e.g. "SF" for transactions related to Standing

	<p>Facilities);</p> <ul style="list-style-type: none"> • Priority of the transaction; • Settlement status of the transaction (e.g. "FI" for finally settled or "R" for rejected payment orders); • Payment type code and name derived from the transaction (e.g. "LTTIPS" / "Liquidity transfer from CLM to TIPS"); • Information (BIC, Account number, Legal Entity Identifier, Distinguished Name etc.) on all Parties (debited / credited participants, intermediaries as well as instructing Party and beneficiary) involved in a transaction; • Amount of transaction; • Introduction date and time; and • Settlement date and time. • UETR • Origin UETR
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Id	SHRD.CB.UR.DWH.UI.014
Name	Predefined Queries / Reports
Description	<p>Data Warehouse shall provide a subset of predefined reports/queries for business cases that are relevant to all CBs:</p> <ul style="list-style-type: none"> • Transaction search; • Statement of Account ; • Statistical Framework Report displaying the volume and value for each month and each payment/settlement service (overall and per CB) • Note: The classification relevant for the statistical framework shall be reviewed and defined during the realisation phase of the project. • Participant Report(s) (displaying the number of Parties and accounts overall/per settlement service/per CB for a given day); • Participation Type Report (displaying the number of direct/indirect/etc. Parties overall/per settlement service/per CB for a given day); • Minimum Reserve Fulfilment Report (displaying for all MFIs of a CB the Minimum Reserve fulfilment for a given day); • Use of Standing Facilities (displaying for all MFIs of a CB the use of Overnight Deposit and Marginal Lending Facility); • Credit Line Report (displaying for all MFIs of a CB the maximum amount and usage of credit line for a given day); • Banking Group Report (displaying information with regard to the Parties and accounts belonging to the same Banking Group); and • Critical Participants Report (allowing identifying "critical participants" in the system or within a settlement service). <p>The Central Bank user can query within his data scope, which is determined by the Party BICs.</p>

Id	SHRD.CB.UR.DWH.UI.015
Name	Create and save a query as an ad-hoc report
Description	Data Warehouse shall allow the creation of an ad-hoc report from scratch or

	<p>based on a predefined report.</p> <p>Data Warehouse shall provide the functionality to save the created ad-hoc report for later adaptation and usage.</p> <p>Ad-hoc reports can be saved either for personal use or for sharing among all Central Banks. The results returned by such reports shall respect the data scope of the Central Bank user performing the query, which is determined by the Party BICs.</p>
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Id	SHRD.CB.UR.DWH.UI.016
Name	Eurosystem analysis
Description	Data Warehouse shall support granting access at an aggregated level to Eurosystem data for analytic purposes. However, for these purposes access to personal information (e.g. name and address of Parties) shall not be granted.

Id	SHRD.CB.UR.DWH.UI.017
Name	Statistical Framework Reports
Description	Data Warehouse shall provide the functionality to store statistical data and to produce statistical reports.

Id	SHRD.CB.UR.DWH.UI.018
Name	Billing Reports
Description	Reports or data defined in the paragraph 1.9 Billing: Reporting Requirements should be made available in the data warehouse.

5.4.2 Display

Id	SHRD.CB.UR.DWH.UI.020
Name	GUI requirements for analytics
Description	Data Warehouse shall provide user-friendly interface to design the queries and view the results. The interface shall give a business-oriented view of the data, including access to aggregated data.

5.4.3 Action

Id	SHRD.CB.UR.DWH.UI.030
Name	Export result sets
Description	Data Warehouse shall have an export functionality allowing transferring the results of a query to a chosen export format (e.g. .csv, .pdf, .xlsx, .txt) through the U2A interface.

Id	SHRD.CB.UR.DWH.UI.040
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Name	Scheduling
Description	It shall be possible to schedule the reception of reports / the result of ad-hoc reports defined by the users.

5.5 USER INTERACTIONS FOR BUSINESS MONITORING

Id	SHRD.CB.UR.BM.UI.010
Name	Business Monitoring
Description	Business Monitoring shall provide the functionality to monitor the status and behaviour of the system from a business perspective via U2A mode. The monitoring menu shall be available for National Service Desks (Level 2) only.

The functions of the Business Monitoring are listed in the table below.

Function	Description
System	Display the availability of the whole system
Liquidity	Display information regarding payment orders and liquidity on an aggregated level. See “Query aggregated liquidity for all cash accounts (only for Crisis Managers)” (CLM.CB.UR.CBS.UI.070, see section 3.2.1 on Query in the Annex to the User Requirements Document for Central Liquidity Management)
Payments	Monitoring of the processing of all payment orders. The information shall be provided on an aggregated level. See “Query payment orders per status for the whole banking community” (CLM.CB.UR.CLM.UI.040, see section 3.3.1 on Query in the Annex to the User Requirements Document for Central Liquidity Management)
Ancillary Systems	Monitoring of the processing of Ancillary System payment and transfer orders and availability of Ancillary System
Standing Facilities	Monitoring of the usage of Standing Facilities related to SF participants. See “Query Standing Facilities transaction of the respective banking community” (CLM.CB.UR.CBS.UI.010, see section 3.2.1 on Query in the Annex to the User Requirements Document for Central Liquidity Management)
Reserve Management	Monitoring of the fulfilment of minimum reserve requirements related to (national) RM participants. See “Query minimum reserve requirements per participant” (CLM.CB.UR.CBS.UI.020, see section 3.2.1 on Query in the Annex to the User Requirements Document for Central Liquidity Management)

Table 6: Business Monitoring functions

5.6 USER INTERACTIONS FOR OPERATIONAL MONITORING

Id	SHRD.CB.UR.OM.UI.010
Name	Operational Monitoring
Description	Operational Monitoring shall provide the functionality to monitor system and

business activities via U2A mode. This functionality shall cover the monitoring needs of the TARGET Service Desk (Level 3).

6 BUSINESS DATA DEFINITIONS

6.1 ENTITIES AND ATTRIBUTES

Id	SHRD.CB.UR.BDD.010
Name	Invoice Data
Description	<p>This entity shall denote any information required for billing of any service, component or application.</p> <p><u>Mandatory attributes:</u></p> <ul style="list-style-type: none"> • Identifier The unique technical identifier of Invoice Data • Invoice Identifier The unique technical identifier of an Invoice • Party to be charged The Party incurring charges for services provided; • Billing Period The period for which charges are billed; • Charge Type Fixed or per item; • Billable Item Identifies the item for which a charge is made; and • Billable Item Price Either a single price for the Billable Item or a tiered pricing structure based on a parameter such as the volume of transactions within the period or the value of the transactions / balances etc. <p><u>Optional attributes:</u> n/a</p>

Id	SHRD.CB.UR.BDD.020
Name	Invoicing Information
Description	<p>This entity shall denote any information required for invoicing of any service, component or application.</p> <p><u>Mandatory attributes:</u></p> <ul style="list-style-type: none"> • Invoice Identifier The unique technical identifier of an Invoice • Debited Account The account from which payment is to be collected; • Billing Address The address to which the bill shall be sent; <p><u>Optional attributes:</u> n/a</p>

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