

# T2-T2S Consolidation

Overview

30-09-2021

DeNederlandscheBank

EUROSYSTEM



# Why T2-T2S Consolidation?

## The vision 2020 and its three work streams

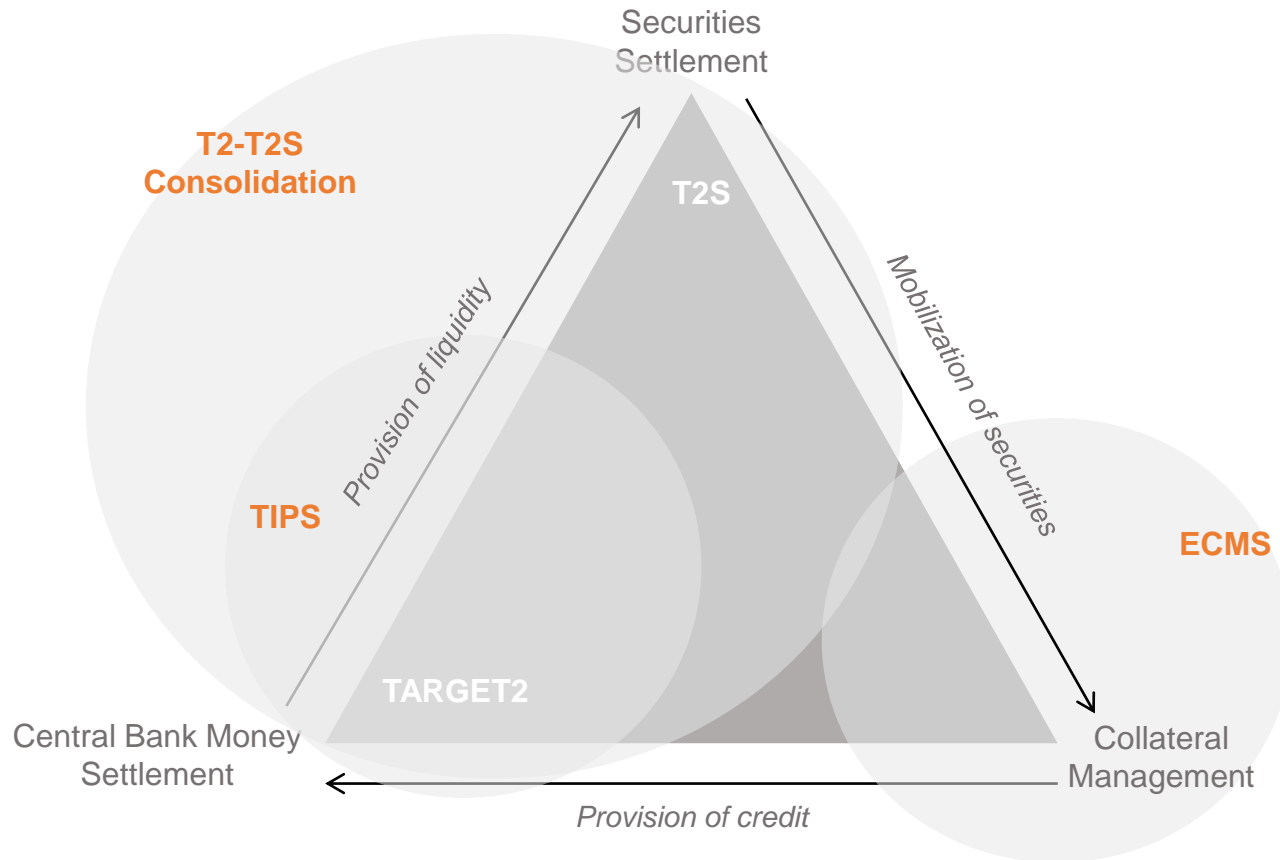
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T2-T2S Consolidation Training Session

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- Why T2-T2S Consolidation?
  - Overall Design
  - ESMIG
  - Outline of ISO
  - ISO 20022 and A2A messages

# Vision for the future of European financial market infrastructure

- Synergies between the initiatives:
  - TIPS
  - T2-T2S Consolidation
  - Eurosystem Collateral Management System



# Why T2-T2S Consolidation?

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# Why T2-T2S Consolidation?

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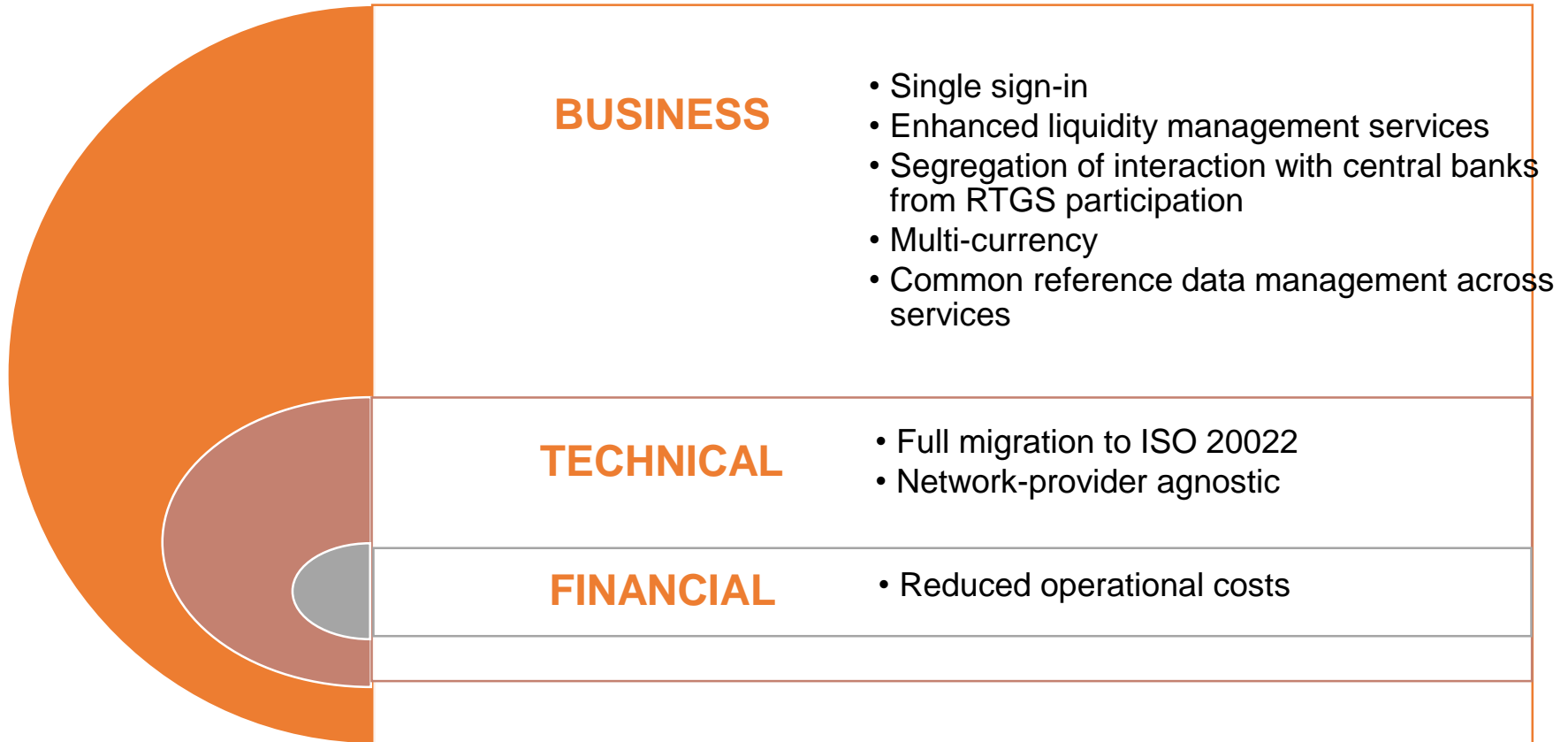
## MOTIVATION

- After more than a decade of TARGET2 running:
  - The payments landscape has changed significantly
  - The technical opportunities have been further increased and improved
  - The cost structure has been challenged

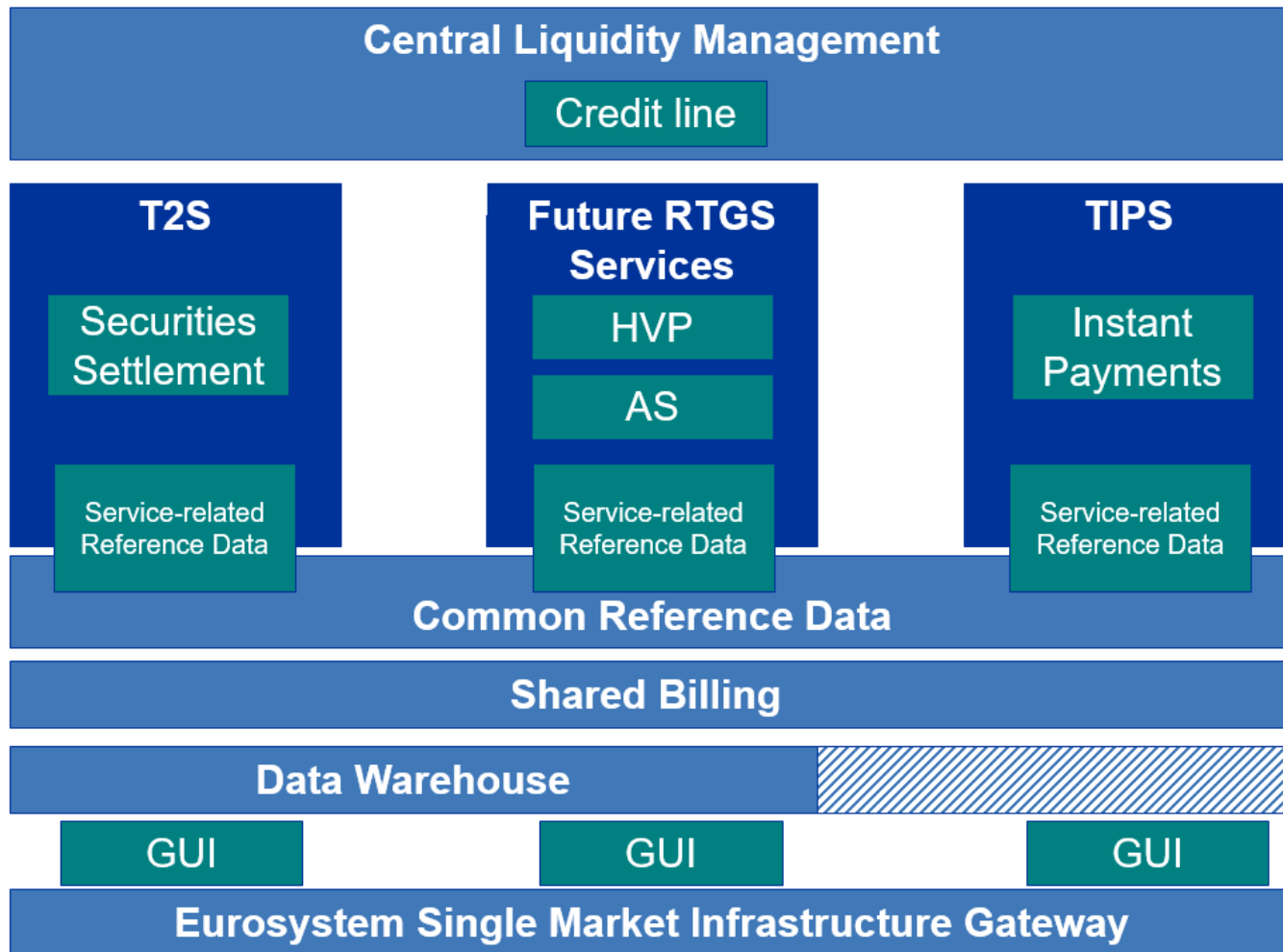
## OBJECTIVES

- Improved **efficiency**
- Optimized **liquidity management**
- Easier access to services via **harmonized interface**
- Enhancement of **RTGS** services
- **Aligned** use of **messaging standards**
- Reduced operational **costs**

# What is changing with the T2-T2S Consolidation project?

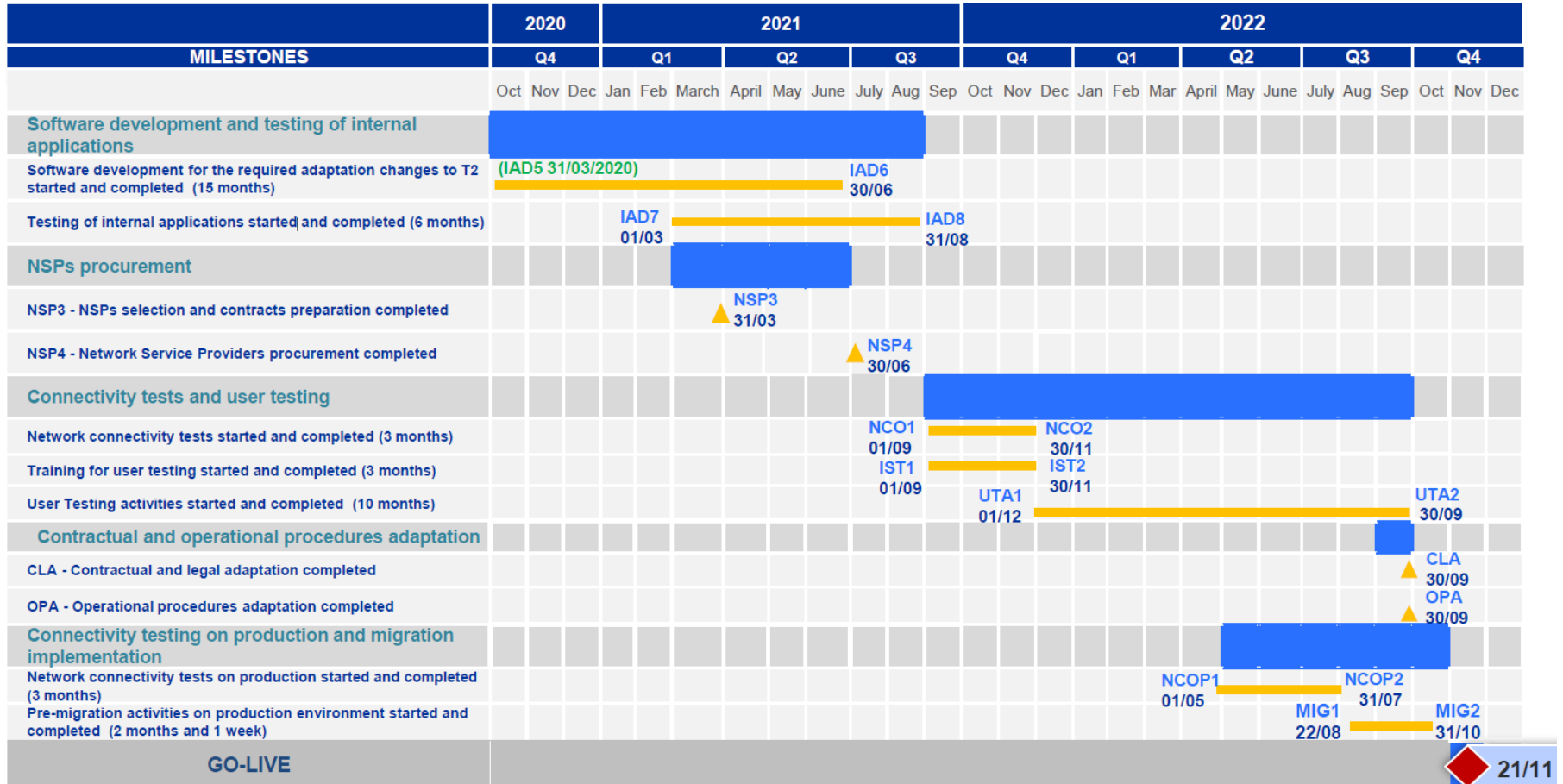


# Situation after T2-T2S Consolidation





# Project timeline on user side





# Overall Design

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# Overview

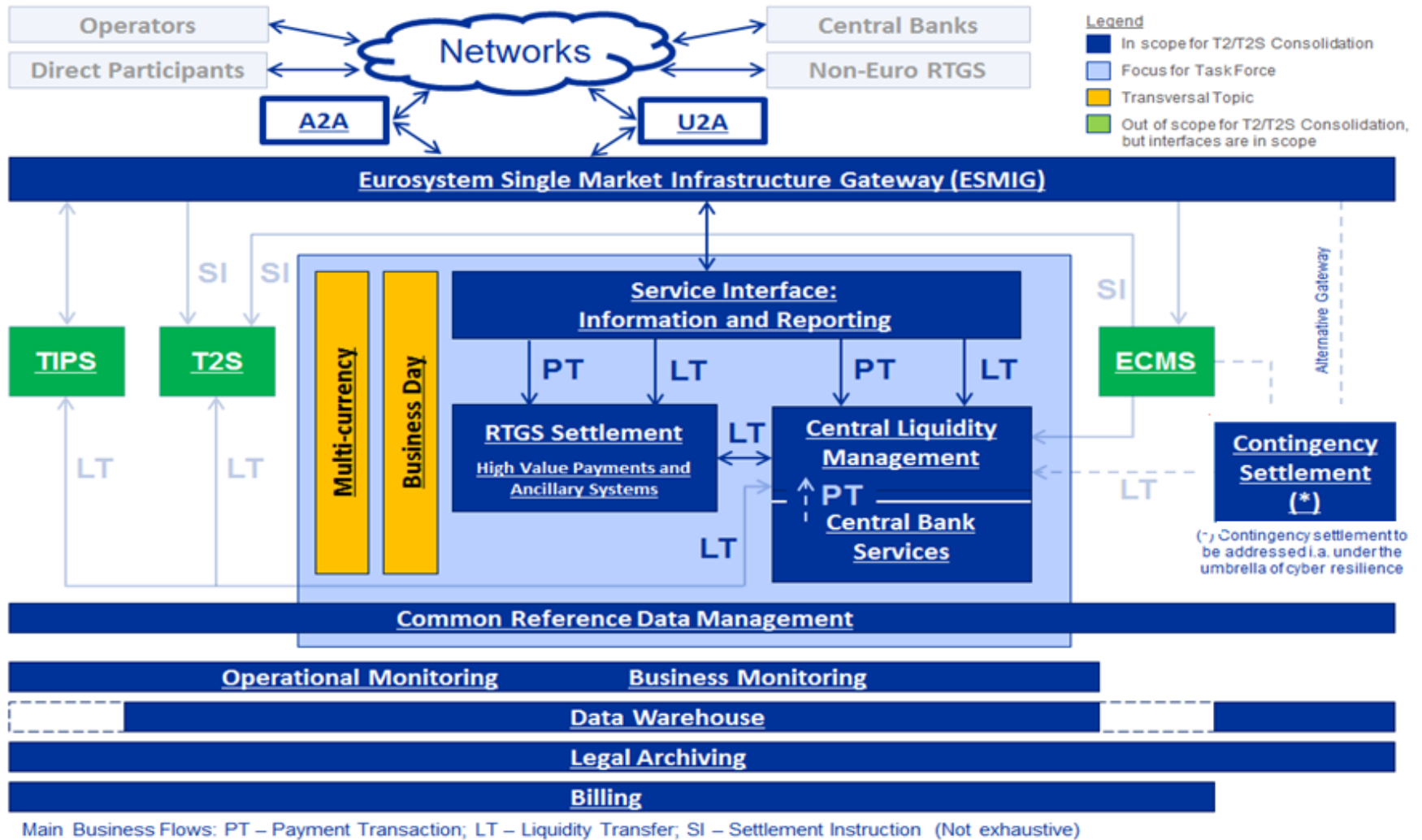
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How the system has been consolidated

What is a Service

What is a Common Component

# Overall Context Diagram



# Main concepts on CLM and RTGS

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## CLM: Design principles

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- **Centralised mechanism for steering, monitoring and management of liquidity**
- **Offering the possibility for an efficient provisioning of liquidity for**
  - T2S,
  - TIPS,
  - the settlement of (high-value) payments and
  - ancillary system settlement
- **Central source of liquidity by holding Main Cash Accounts (MCAs)**
- **Performing central bank operations**
  - Interaction with central banks segregated from real-time interbank and customer payments as well as ancillary transactions

## RTGS: Design principles

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- **Settlement of (high-value) payments on one or more dedicated cash accounts (RTGS DCAs)**
  - Provisioning of liquidity for RTGS DCAs aligned to already existing approach for T2S DCAs and TIPS DCAs
- **RTGS offers settlement in central bank money**
  - Any payment which should be processed in real-time and in central bank money can be executed in RTGS
- **Offering of settlement in central bank money for ancillary systems**
  - Specific functionality (different settlement procedures) supports the specific needs of ancillary systems

# Main concepts on Common Components

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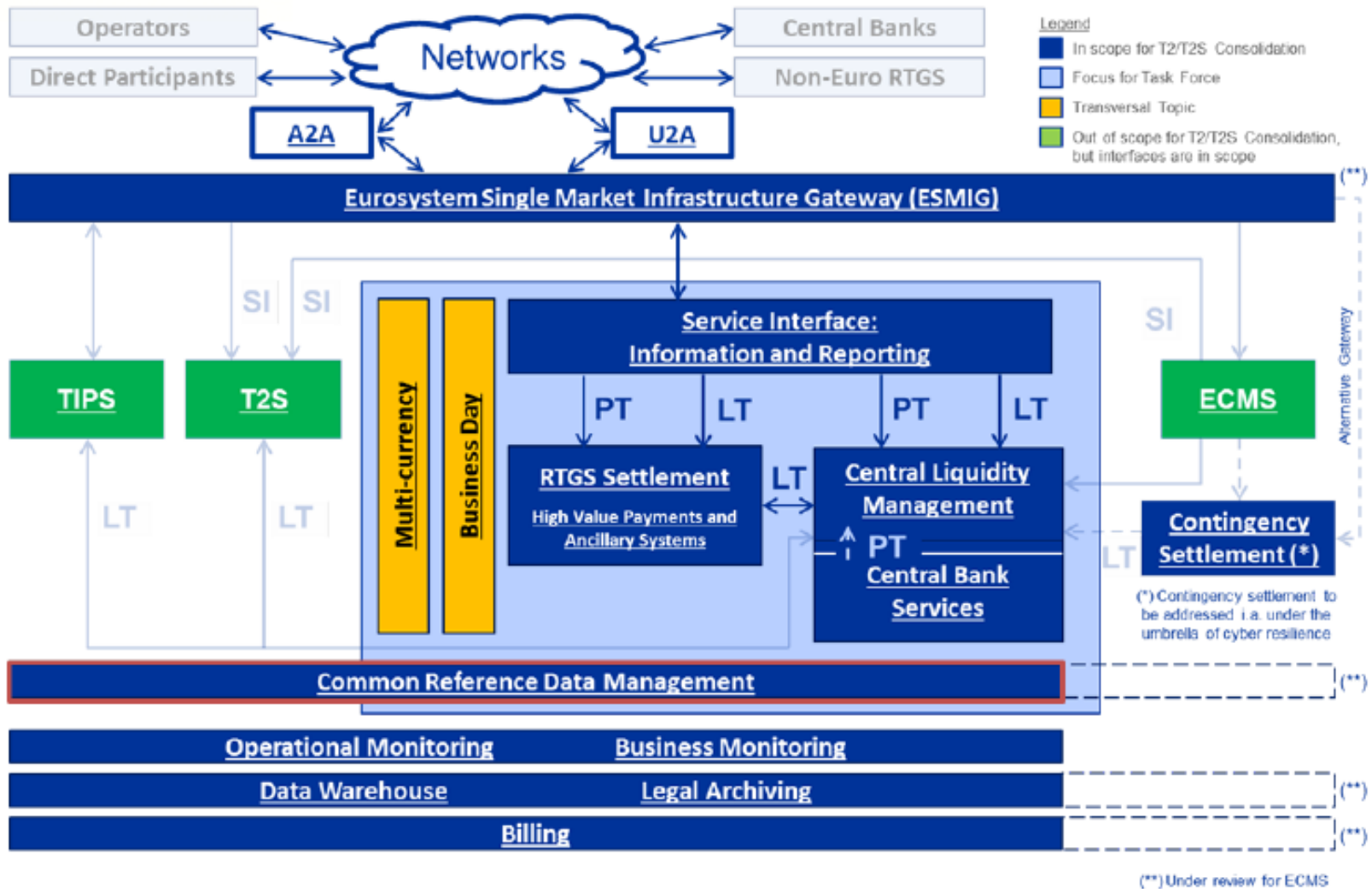
## Common Components - Main concepts

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This part of the presentation will provide an overview on Common Components (CoCo) in terms of Design, Principles and Infrastructure. With CoCo we are referring to:

- **Common Reference Data Management (CRDM)**
- **Business Day Management (BDM)**
- **Data Migration Tool (DMT)**
- **Billing (BILL)**
- **Legal Archiving (LeA)**
- **Data Warehouse (DWH)**
- **ECONS II**

# Common Reference Data Management (CRDM): Context Diagram



# CRDM: Design Principles

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- CRDM is an evolution of the present SDMG in T2S
- CRDM software is made of:
  - a set of new functions
  - already existing SDMG functions
  - new functions cloning/enriching already existing SDMG functions
- CRDM meets all the T2S requirements. The evolution of SDMG towards CRDM is transparent for the T2S modules. CRDM maintains the present interfaces and the access to CRDM is backward compatible
- CRDM will progressively meet the needs coming from TIPS, CLM, RTGM, ECMS

## Business Day Management (BDM): Design Principles

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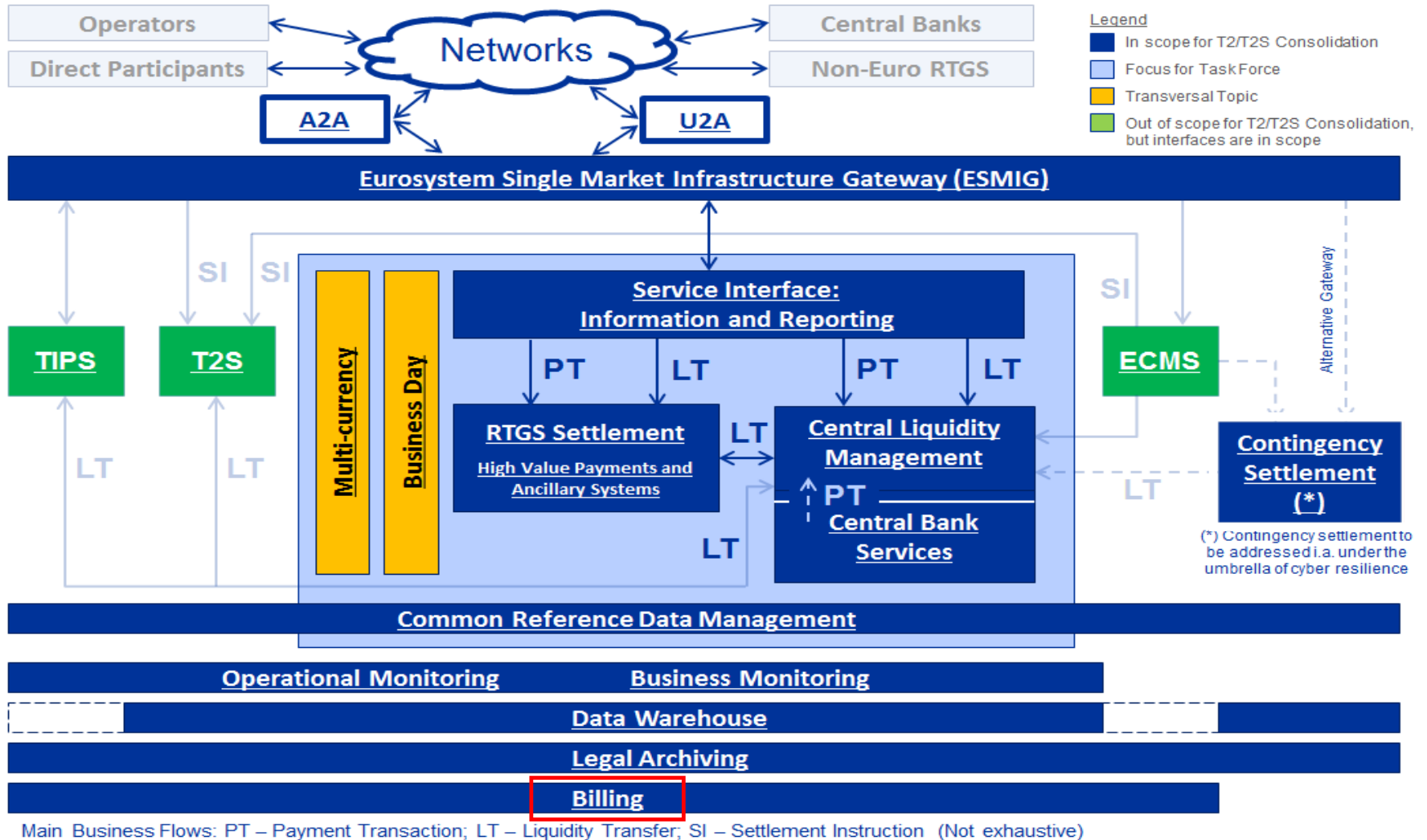
- The Business Day Management shared service is an evolution of the present SCHED in T2S. It includes:
  - Already existing T2S functions
  - A set of New functions cloning/enriching already existing T2S SCHED functions
- BDM meets all the T2S SCHED requirements. The evolution of Scheduler towards BDM is transparent for the T2S modules. BDM maintains the present interfaces and the access to BDM is backwards compatible
- A new web interface accessible via the ESMIG is available
- Also an A2A interface is available for some inquiries
- BDM runs in Region 1 and 2 and is subjected to rotation

# The Data Migration Tool (DMT): Design Principles

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- The Data Migration tool (DMT) is an enrichment of the present DMT in T2S. The DMT software is made of a set of new functions and already existing DMT functions
- The DMT is an alternative to the standard A2A and U2A channels, whereby CSDs and NCBs will have the opportunity to perform bulk data upload for a subset of CRDM and LCMM entities
- The DMT is a Web Application based on J2EE technology, running on IBM WAS hosted on mainframe and using DB2 and MQ subsystems
- Excel and/or CSV files can be uploaded, released and downloaded by customers

# Billing: Context Diagram



## Billing: Design Principles (1/2)

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- The Billing common component selects and packages billing information, generates consumption and invoice data, sends invoices and instructs direct debits
- The Billing common component collects all billable events from services (T2, TIPS, T2S), components (CRDM, DWH, BILL) as well as billable information (e.g. participation) from CRDM
- A single centralized application calculates invoices data for all the Services (T2S, T2, TIPS, ECMS)

## Billing: Design Principles (2/2)

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- Billing issues a separate invoice for each settlement service/applications: T2S, TIPS, T2 (for RTGS and CLM) and ECMS.
- The ECMS data will be aggregated and priced in ECMS and then imported in Billing as invoice data.
- The usage of common components Legal Archiving, Contingency Settlement (ECONSII), Business Day Management and ESMIG is not charged.



# BILL main concepts

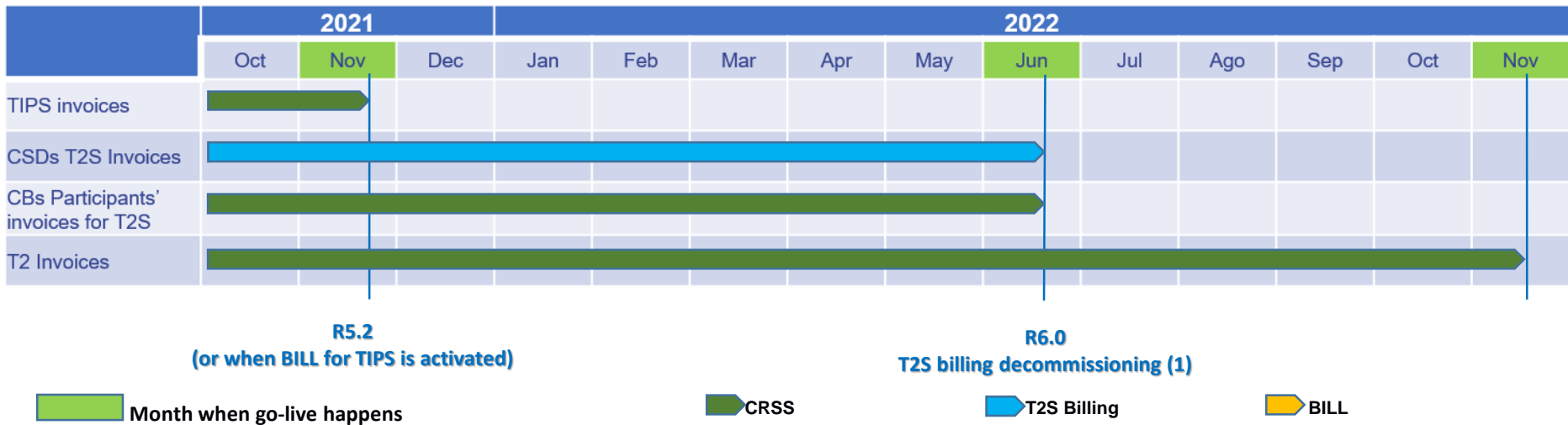
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## Invoices

- BILL creates the invoices per TARGET Service and per party. Invoice creations means:
  - The Invoice total amount is calculated on the basis of the Invoice Data and related Manual Corrections – the data are considered “frozen” from this moment on.
  - The Invoice is marked with an Invoice ID. BILL generates a unique, unambiguous invoice number for each created invoice. The generated distinct invoice number has a pattern that allows identifying the service and the Country the invoice is issued for.
  - If the camt.077 is properly configured in the message subscription and the Direct Invoicing flag in the Invoice configuration, the camt.077 is generated and sent.
  - The Invoice PDF is created and can be accessed via screen.(1)

(1) CBs' Participants can access the screen to download their PDF invoices.

# BILL timeline



**(1) T2S Billing module will remain live three months after June 2022 to let users deal with the previously created invoices in the retention period**

# BILL related messages and screens

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## • MESSAGES OVERVIEW

- BillingReportRequest (camt.076)

- The message is sent to make the following types of queries:
  - Cumulative Billing Data Query;
  - Itemised Billing Data Query.

Refer to UDFS 3.1.1. BillingReportRequest for additional details.

- BillingReport (camt.077)

- The BillingReport is sent by the Billing common component to provide with :
  - the official invoice
  - status of a previously sent cancellation of the latest valid invoice
  - consumption data message
  - response to a camt.076 user query.

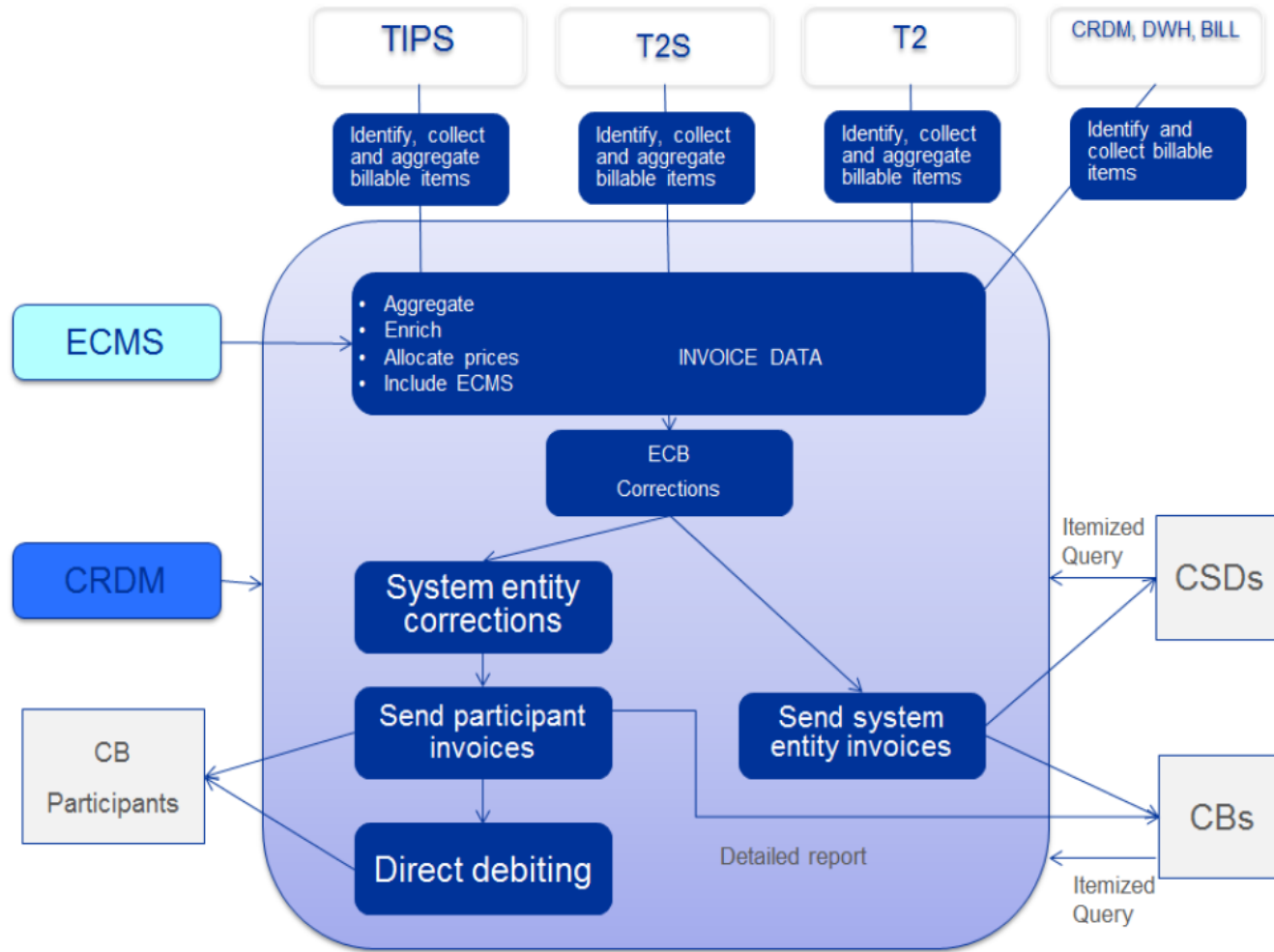
Refer to 3.1.2. BillingReport (camt.077) for additional details.

## BILL related messages and screens

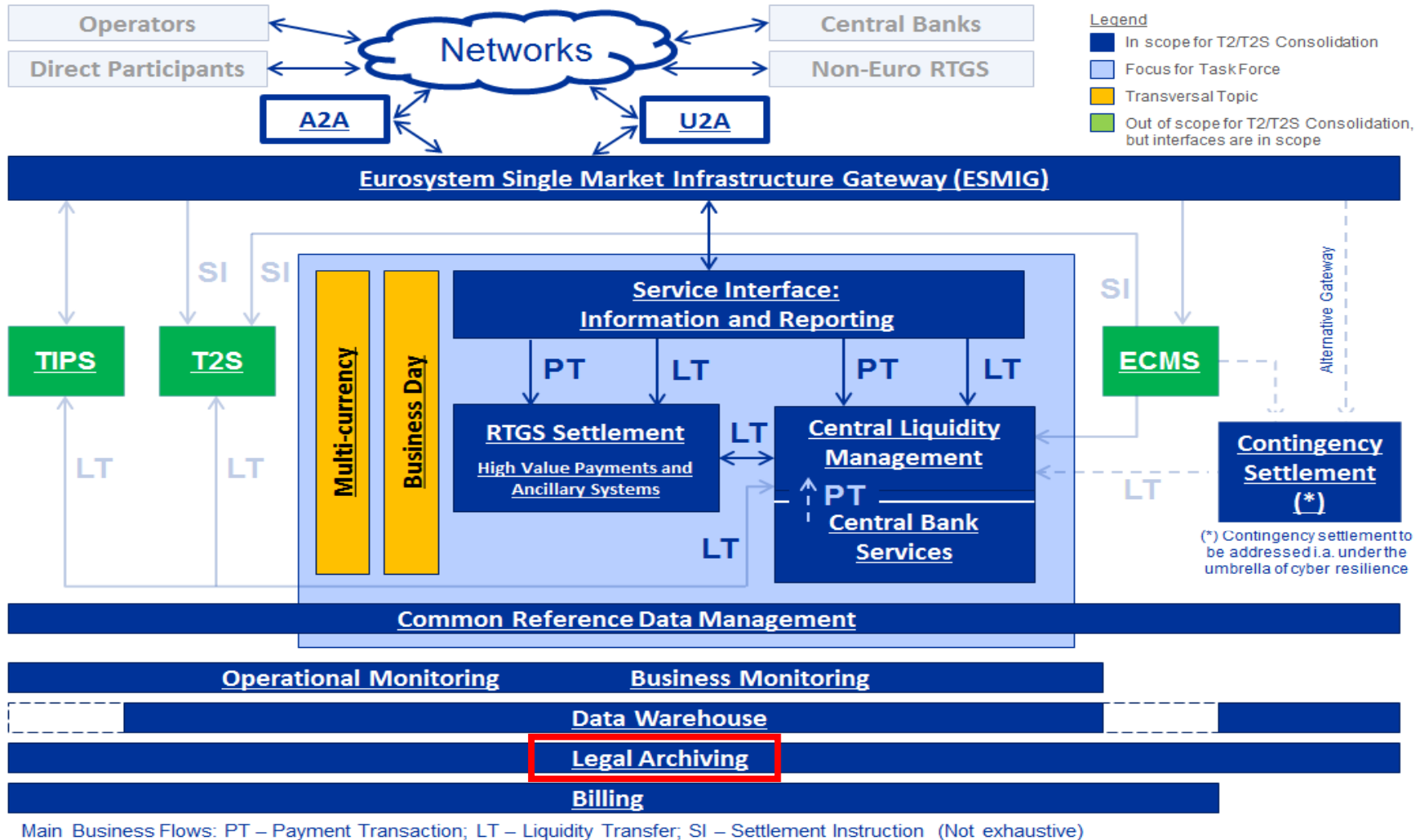
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- CRDM configuration.
  - Parties can opt to route invoices to a different Distinguished Name
  - This can be done by creating a Conditional Routing
    - Allowing filtering for “camt.077” message type
    - Linked to a distinguished name which must be included as a Party Technical Address and linked to the appropriate Network Service

# Billing: High Level Overview



# Legal Archiving: Context Diagram

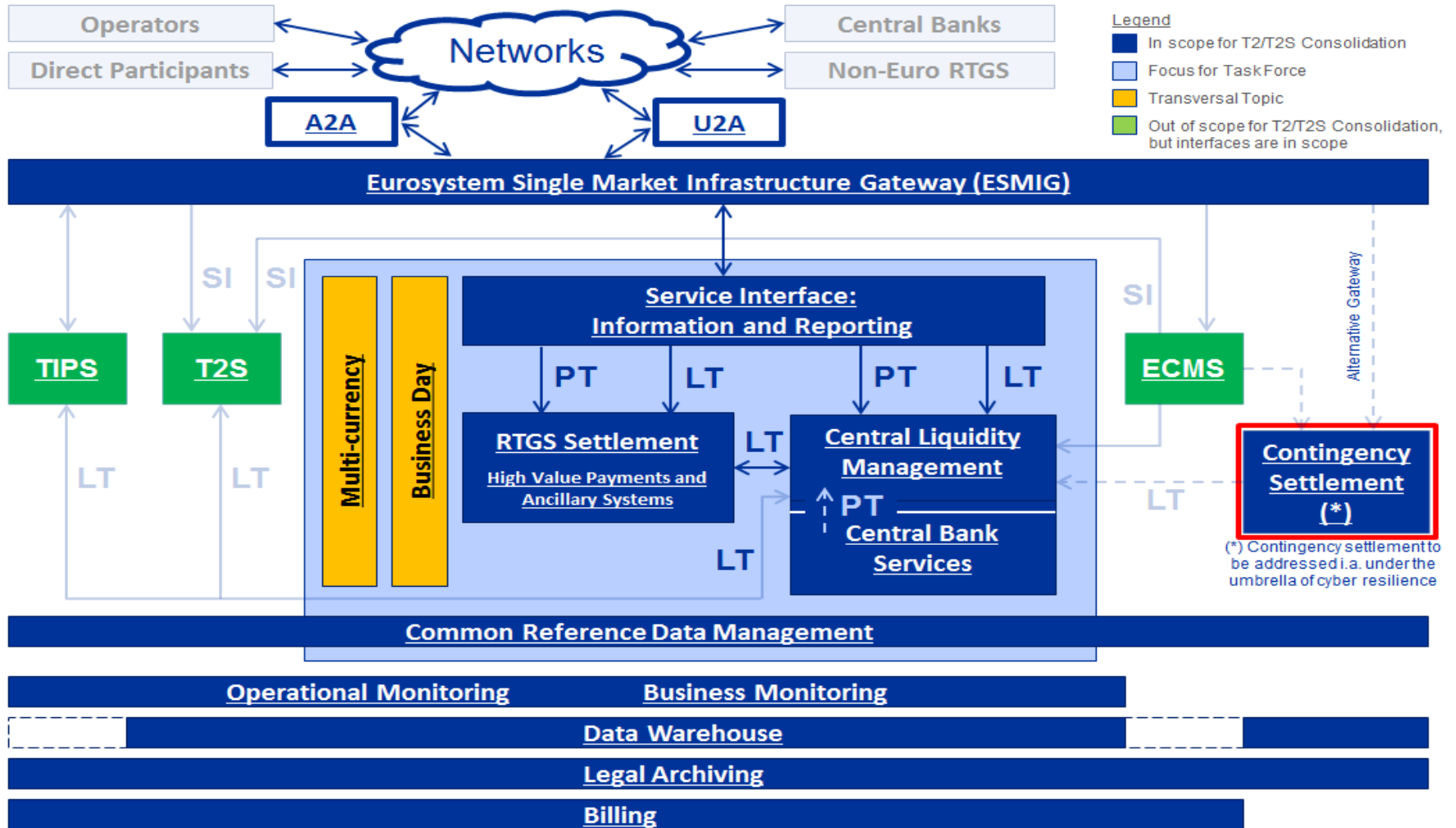


## Legal Archiving: Design Principles

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- The Legal Archiving (LeA) service collects all information which is subject to legal archiving requirements
- The data to be archived encompasses inbound and outbound messages of legal relevance, e.g. all payment orders
- A few internal messages between the services (e.g., a collateral settlement instruction from ECMS to SETTLEMENT) are legally archived as well
- Information related to U2A operations with Non Repudiation of Origin (NRO) is archived as well

# ECONS II: Context Diagram



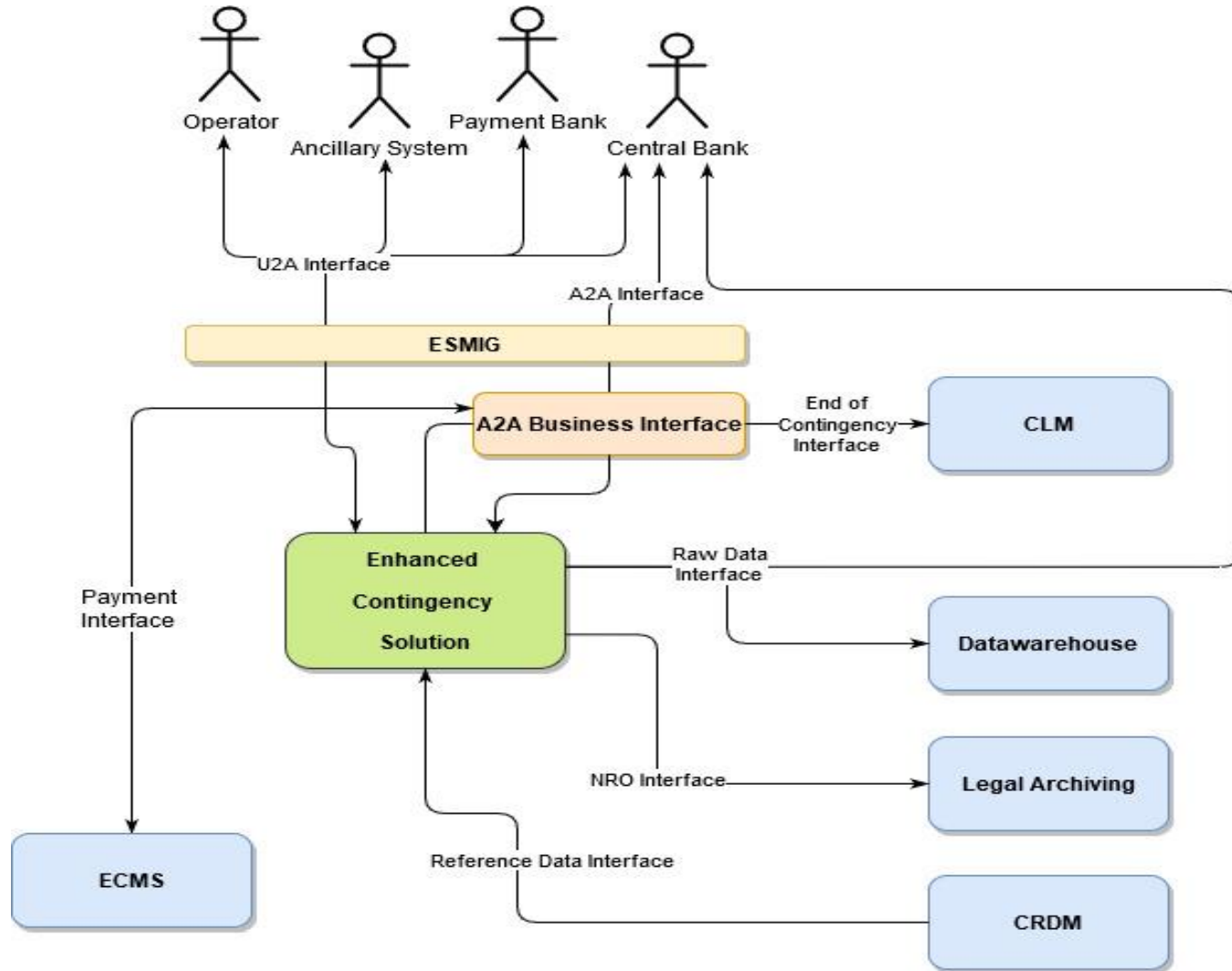


## ECONS II: Design Principles

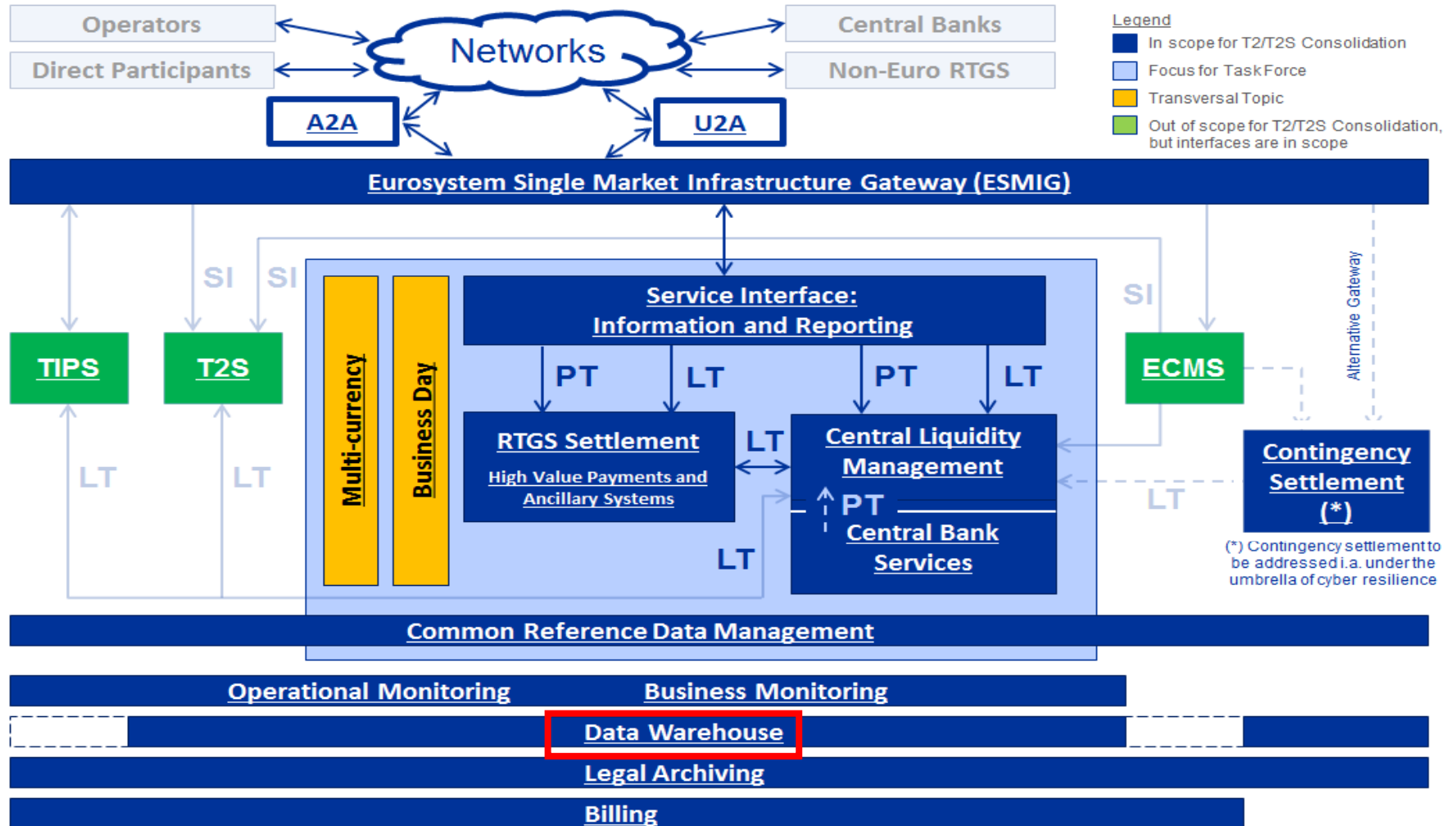
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- The contingency component aims at addressing the situation where the T2 service, i.e. the CLM and/or the RTGS component is not usable
- The contingency component, when activated, provides:
  - Real-time gross settlement in Central Bank Money for Payment Orders and Ancillary System transactions submitted by ECONS II Actors, in the event of unavailability of CLM and/or RTGS components;
  - Liquidity management functionalities to support the contingency settlement;
  - Queries and reporting tools to support monitoring and reconciliation activities;
  - Contingency session opened for several business days (up to 5 business days).

# ECONS II: High Level Overview



# Data Warehouse: Context Diagram



Main Business Flows: PT – Payment Transaction; LT – Liquidity Transfer; SI – Settlement Instruction (Not exhaustive)

# Data Warehouse: Design Principles

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- The Data Warehouse (DWH) collects business information and data derived from services and common components
  - The aim of the DWH is to consolidate information from CLM, RTGS, T2S, ECONS II, CRDM, Billing and BDM
- DWH is designed to support business decisions by allowing data consolidation and reporting at different aggregation levels
- The data in the DWH can be used for business analysis, reporting and visualisation purposes by the CBs, ancillary systems and payment banks
- Data is populated into the DWH through the processes of extraction, transformation and loading

# Question Time

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# ESMIG

## The new layer for all TARGET Services

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target  
services

# Agenda

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ESMIG introduction

A2A – Application to Application

U2A – User to Application

Digital Signature Services

Closed Group of Users

## ESMIG at a glance

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- ESMIG is a single service providing network connectivity and a messaging interface to the different market infrastructures of the Eurosystem.
- ESMIG is a common market infrastructure component that multiple market infrastructures will use; T2S, T2, TIPS and ECMS.
- It reduces operational complexity for both market participants and Eurosystem; it centralizes different networks, harmonizes protocols, graphical interfaces and certificates management.
- Participants to different market infrastructures access their respective systems through a common platform which is aggregating - and thus masking - all their diversities.

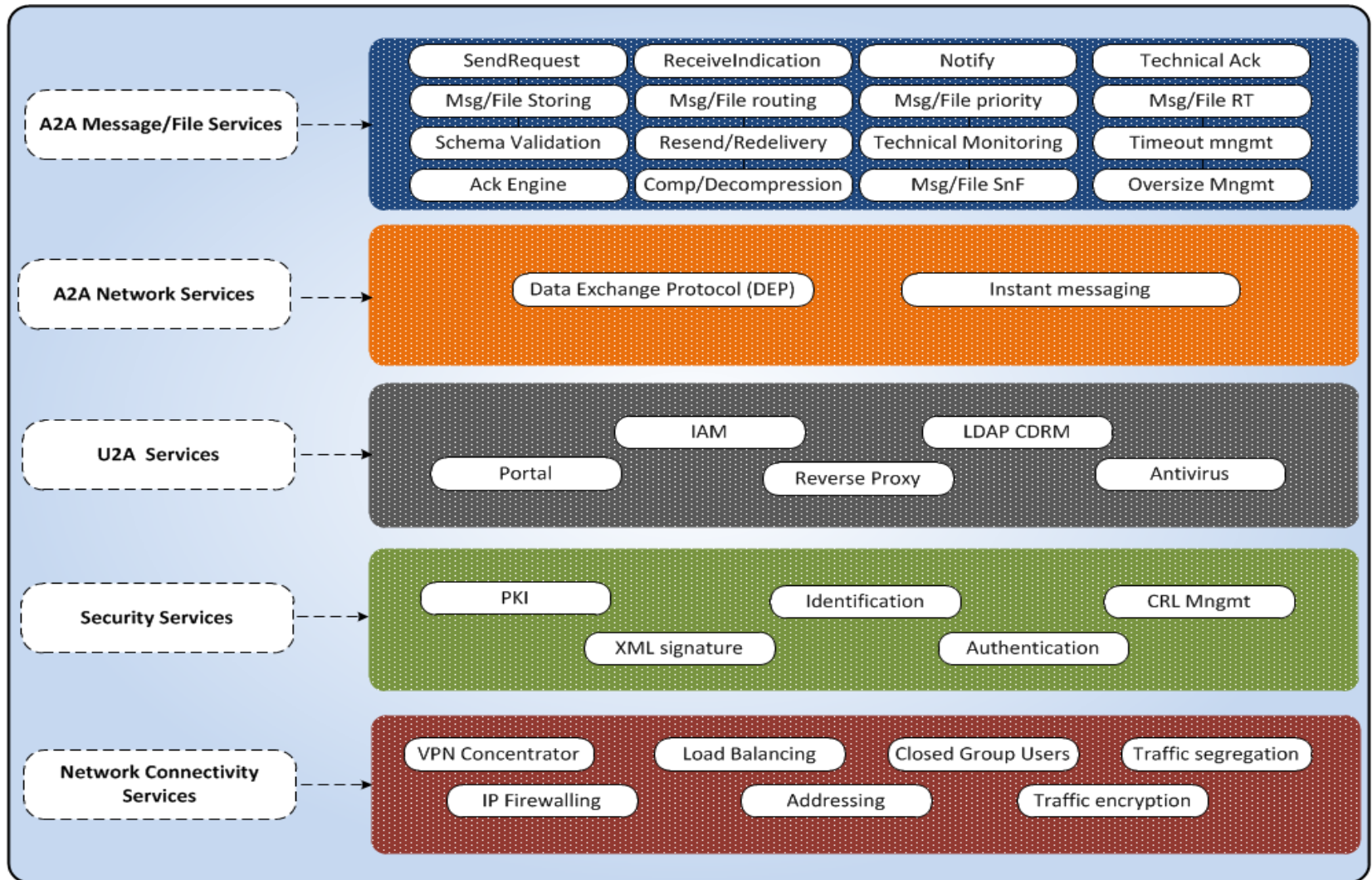


## ESMIG Service Layers

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- ESMIG is composed by multiple layers, each one supporting specific services:
  - Network connectivity services
  - Security services
  - U2A services
  - A2A network services
  - A2A message/file services
- ESMIG is based on a catalogue of services concept. The different platforms (T2 / T2S / TIPS / ECMS) can require different set of ESMIG services, platforms are different from each other (i.e. T2, T2S, ECMS and TIPS Common Component use for A2A exchange DEP protocol, while TIPS Core use MEPT one).
- ESMIG is aggregating differences, harmonizing them when possible.
- For ESMIG A2A we will focus on DEP protocol since the MEPT one is used only by TIPS and its usage is not affected by T2-T2S Consolidation project.

# ESMIG Service Layer the big picture

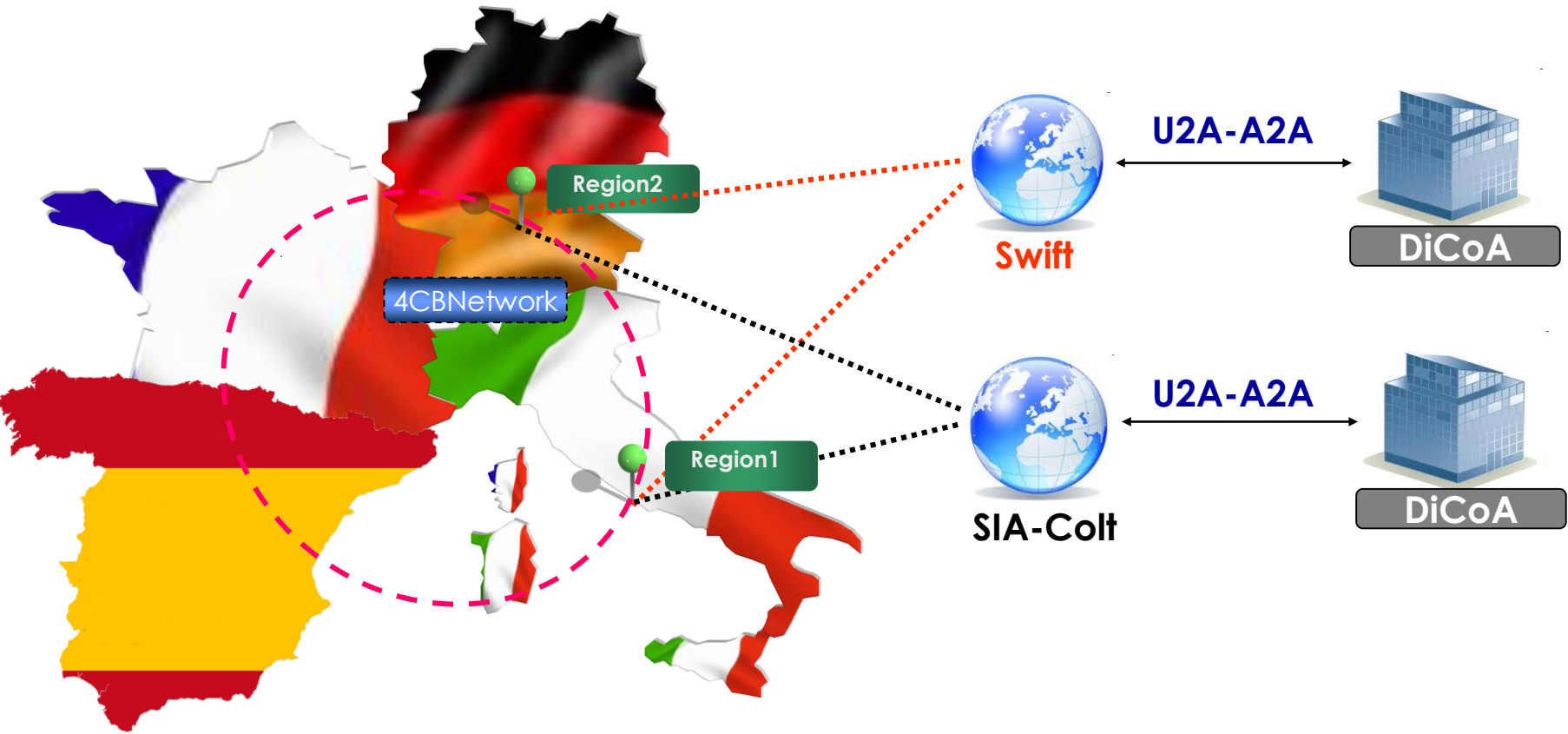


# ESMIG – TARGET Service: Specific/Common Component addressing

TARGET Service	Specific Component	Common Component
T2	CLM	DWH
	RTGS	CRDM
	ECONS	BILLING
T2S	T2S	BDM
		DWH
		CRDM
		BILLING
ECMS	ECMS	BILLING
TIPS	TIPS <sup>1</sup>	CRDM
		BILLING

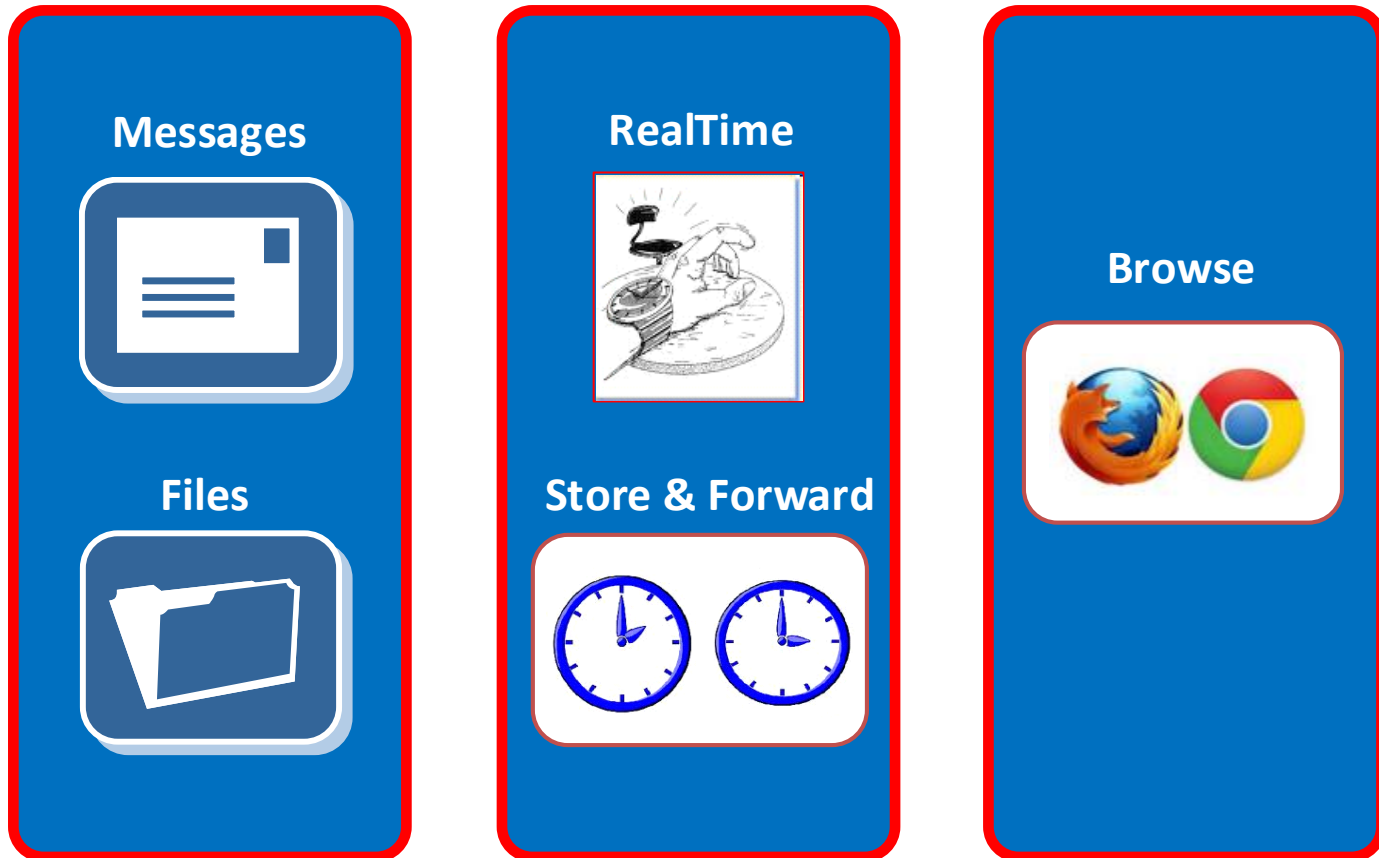
1 - TIPS specific component use a dedicated protocol named MEPT

# ESMIG – NSP connectivity



# ESMIG - Messaging protocols

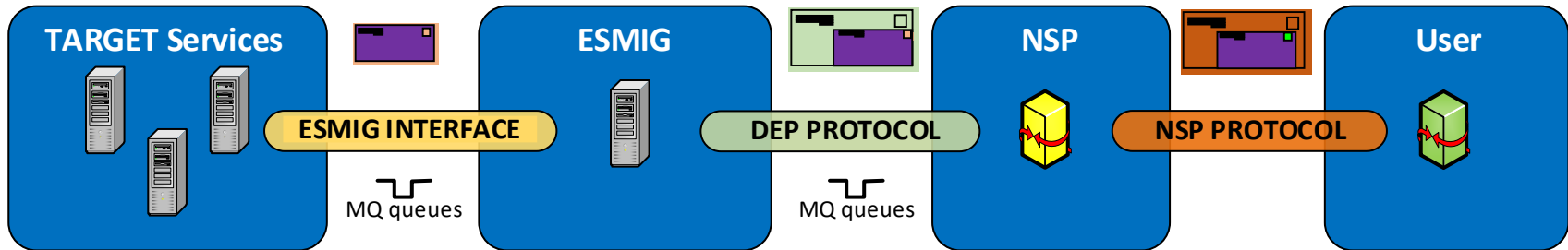
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# A2A – Application to Application

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# DEP protocol – introduction



- The communication with user via NSPs is intermediate by NSP providers
- To manage in ESMIG the different communication solution an “ad hoc” protocol has been defined DEP (Data Exchange Protocol) based on WebSphere MQ transport
- DEP protocol allows the user to change the communication solution and the ESMIG to be decoupled from the NSP protocol
- The aim of the DEP is to ensure the ESMIG network interface is independent from the users’ choice about the NSP network connection

## DEP protocol – message structure

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- Distinction between file channel and message channel is based on the size of the transported data
- Message and file definition from a business point of view is different from the technical transport definition, this means that a business message/file can be transported over a message/file technical transport channel

	<i>Maximum length</i>
<i>Message channel</i>	<b>32 KB</b>
<i>File channel</i>	<b>32 MB</b>



## A2A – Store-and-Forward

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- In the Store-and-Forward message/file exchange, communication is based on a **Request-only** pattern (in some message exchange patterns this is also named “In-Only”, while the Request-Response scheme is named “In-Out”). This means a response isn’t expected for each request the client submits to the server.
- The Store-and-Forward service is managed consistently in the dialog between the ESMIG platform and the DiCoA, on ESMIG side this means managing the SnF incoming traffic using the DEP protocol primitive to handle the SnF inbound queue status (enabled / disabled).

## A2A - Real-Time

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- In the Real-Time message/file exchange the communication is based on a **Request-Response** pattern. This means that for each Request the client submits to the server, a Response is expected to be sent from the server to the client
- **Request-Response** chain must be completed in 60 seconds: in case that the Response production is not finished within the 60 seconds, then the communication should be interrupted
- To overcome the time and oversize constrain, the “timeout management” and “oversize management” functions are consistently managed by ESMIG using the NSP connection

## A2A – Timeout and Oversize management features

### Timeout management

Due to a timeout limit of the network provider the execution time of a query request is limited. If the execution is not finished within a certain period of time, the network communication is interrupted.

In order to heal the timeout limit of the network provider, ESMIG applies an effective protocol. ESMIG defines a timeout limit that anticipates the timeout limit of the network provider. If the processing takes longer than the ESMIG timeout limit the transfer mode of the response changes from real-time to store and forward

### Oversize management

When the size of the response is suitable the same channel that was used for the query request is used.

The query response is sent in Real-Time mode.

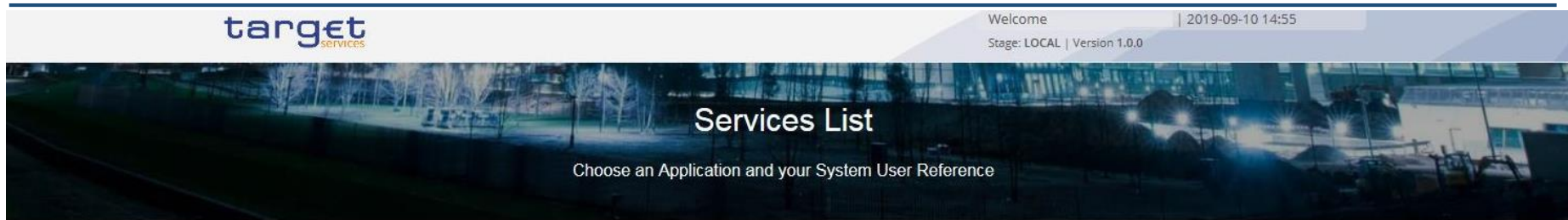
When the request is sent via the message channel and the size of the response is too large for a transfer via the message channel the file Store-and-forward channel is used.

ESMIG sends an “Inbound Processing Rejection” ReceiptAcknowledgement **as response of the Real-Time mode interaction** to the user(sender) indicating the change of the transfer mode”. The query response is sent in Store-and-Forward mode according to the user’s default routing rule.

# U2A - User to Application

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# ESMIG Portal – Look and feel



**Choose a Service**

T2     ECMS     T2S     TIPS

**Choose Component or Application**

- Billing
- Business Day Management
- CLM
- CRDM
- Data Migration Tool
- Data Warehouse

**Choose a System User**

- 918299
- 993393
- 993399
- 998899

Submit

## ESMIG Portal – Request processing

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When accessing the ESMIG Portal without any authentication, the user is redirected to the IAM page that asks user to authenticate the access validating the user's distinguished name (DN).

After authentication, the person must choose the logical “user” he wants to impersonate, selecting it among a set of user-IDs that have been previously linked to his DN. This selection is done in the ESMIG Portal.

Therefore, the ESMIG portal allows and guides the person accessing the system to:

- **choose the service** among the authorised services accessible by at least one user-ID linked to the DN of the user;
- **choose the component/application** among the authorised components and applications accessible by at least one user-ID linked to the DN of the user;
- **choose the user** to impersonate when accessing such an application.

After this process, the ESMIG Portal redirects the user to the homepage of the application selected (e.g. CRDM, DMT, TIPS, etc.).

# Digital Signature Services

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## PKI usage

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ESMIG and users can use, based on the chosen connectivity options, between two PKI infrastructures:

- SWIFT PKI
- SIA-Colt PKI

PKI infrastructures will be used to generate:

- Certificates associated to digital keys used to secure the channel used for WMQ connection between NSP and the ESMIG
- Certificates associated to digital keys used for the signature of DEP ExchangeHeader and inside the Technical Acknowledgement when non-repudiation has to be used at DEP level
- Certificates associated to digital keys used for the signature of business payload that is transported by the DEP protocol
- Certificates associated to digital keys for users' authentication in U2A interaction via smartcard, usb token or remote HSM



## ESMIG – A2A digital signature services

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The Messages/Files exchanged are provided with two digital signatures:

- **the Technical Envelope signature**
    - These signatures are performed on DEP protocol data units exchanged by the ESMIG and by the NSP by means of digital certificates issued by the NSP PKI.
  - **the Business Layer signature**
    - The purpose of the Business Layer signature is to authenticate the business sender and guarantee the integrity of the business payload.
- 
- The signature is stored in the BAH in case of individual messages or in the file BFH in case of a file.
  - For information on the Business Layer signature format, please refer to the ESMIG User Detailed Functional Specifications available on the ECB website.

## ESMIG – U2A digital signature services

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- U2A digital signature services are based on:
  - fat client (“Go>Sign Desktop client”) to be installed on the Di.Co.A. workstations (either physical or virtual);
  - servers on ESMIG side, providing the digital signature services (signing/verification) to the relevant TARGET service GUI.
- U2A NRO solution will be based on Ascertia products and will be adopted by ESMIG for all the TARGET Services.
- Therefore only one Go>Sign Desktop client version will be distributed and used by customers.

# Closed Group of Users

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## **CGU – Closed Group of Users**

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### **NSP Unique identification of users**

The NSP shall identify all its Directly Connected Actors and the ESMIG in a unique way. The NSP shall guarantee the identification via digital certificates. For A2A traffic the NSP shall transfer to the receiver the identity of the sender (technical sender). The NSP shall include this information in the DEP message and file envelope for the A2A.

### **User identification and authentication**

The ESMIG A2A components will trust NSP for identification and authentication of the sender (technical sender), while ESMIG U2A will authenticate the user via digital certificates.

## CGU – General rules

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The aim of CGU is:

- manage the access restrictions to different TARGET Services environments:
    - Test & Training (IAC, EAC, UTEST);
    - Production.
  - ensure logical message segregation between Test & Training and Production environments;
  - restrict the access to the A2A and U2A services to the authorised parties only.
- 
- The subscription to a CGU, and any subsequent modification to such subscription, shall be arranged through an electronic workflow.
  - Upon request from the ESMIG Operator, the NSP shall withdraw from the CGU an user within one hour.

# CGU – Sample segregation table

DiCoA	TARGET Service	CGU	Environment
End user	Service 1	U2A Only	Test & training
			Production
		U2A + A2A	Test & Training
			Production
End user	Service 2	U2A Only	Test & training
			Production
		U2A + A2A	Test & Training
			Production



# Thank you for your attention

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target  
services



# Outline of ISO 20022 and A2A messages

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T2-T2S Consolidation Training Session



# Agenda

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An explanation of ISO 20022

FIN Y-Copy versus V-Shape

A walk through of UDFS Part III

How to read a Usage Guideline

Use of samples and online testing

Message Portfolio

## Why did Eurosystem decide to migrate to fully-fledged ISO 20022?

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ISO 20022 has become the established global language for payment messages. While the list of benefits is quite exhaustive, here are a few reasons to adopt the standard in the Eurosystem:

- Interoperability with other MIs (HVPSPPlus recommendations);
- More flexible standard;
- Use of structured data to enable end-to-end automation;
- Less manual intervention;
- Network Service Provider agnostic;
- Rich message scope to transport more information;
- Broader message portfolio;
- High performance thanks to schema validation (reduce basic errors in back ends and network);
- Worldwide adoption.

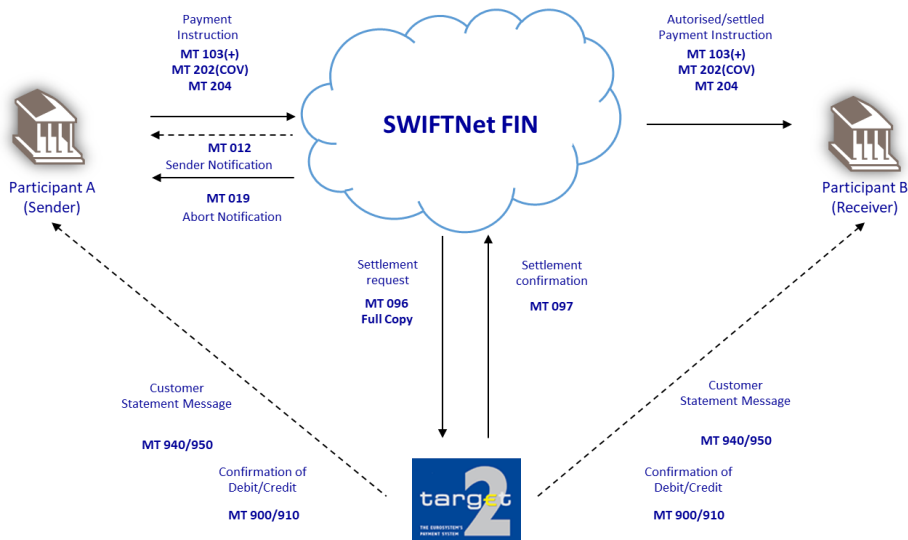
# Outline of ISO 20022 and A2A messages

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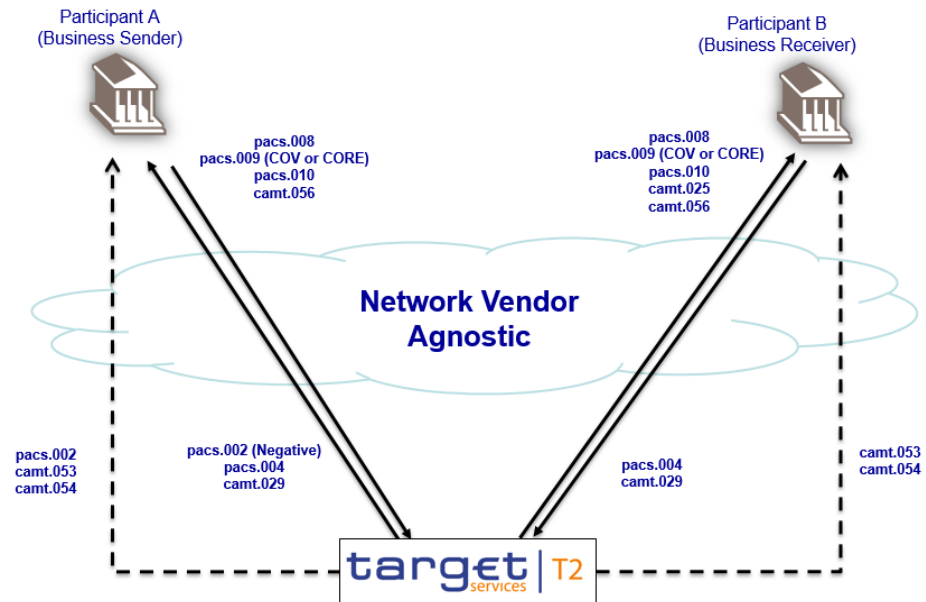
FIN Y-Copy versus ISO 20022 V-Shape model

# The evolution of TARGET2

## TARGET2 FIN based Y-Copy Message Flow



## T2 NSP Agnostic and V-Shape approach



# Outline of ISO 20022 and A2A messages

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Walk through of UDFS Part III

# Walk through of UDFS part III

The User Detailed Functional specifications (UDFS) Part III provides an in-depth description of all XML messages:


- **Chapter 11.3** constitutes the link between all processes explained in Part II and their corresponding messages in Part III;
- **Chapter 11.5** provides an overview of business scenarios set up to bring a message example into context in RTGS and into a relation to other message examples;
- **Chapter 12\*** delivers the full list of messages, the structure of the schema and links to MyStandards Usage Guidelines.

\* In CLM chapters 12 and 13



# Chapter 11.5 business scenarios

Extract from Chapter 11.5 to show a complete business scenario to illustrate the proper usage of messages and one **sample** of a payment message in chapter 12.4.3.3 of RTGS UDFS



Messages - general information

Business scenarios

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**Business scenario 022 – RTGS pacs.008 revocation request after settlement**

Overview	Message examples
<p>A pacs.008 payment message is fully processed and settled. The business sender has not subscribed to receive pacs.002 for successful settlement, so no pacs.002 is produced.</p> <p>After settlement has occurred, a revocation (cancellation/refund) chain is started and passed through to the next party in the payment chain.</p> <p>Shortly afterwards, the next party returns a camt.029 inbound to RTGS, rejecting the cancellation request which RTGS then forwards on backwards to the sender of the original camt.056 cancel request.</p>	<p><a href="#">Inbound_pacs.008_RTGS_CustomerCreditTransferOrder_bs022.xml</a></p> <p>Outbound_pacs.008_RTGS_CustomerCreditTransfer_bs022.xml</p> <p>Inbound camt.056 RTGS PaymentCancellationRequest bs022.xml</p> <p>Outbound_camt.056_RTGS_PaymentCancellationRequest_bs022.xml</p> <p>Outbound camt.029 RTGS PaymentCancellationRequestStatus Forwarded_bs022.xml</p> <p>Inbound camt.029 RTGS PaymentCancellationRequestStatus Rejected_bs022.xml</p> <p>Outbound camt.029 RTGS PaymentCancellationRequestStatus Rejected_bs022.xml</p>

**Table 171 - Business scenario 022 – RTGS pacs.008 revocation request after settlement**

**Usage case: Customer Credit Transfer (Scenario 022)**

In this usage example, the outbound pacs.008 is a duplicate of the previous inbound pacs.008, with the addition of an RTGS settlement reference ("RTGS-p008b022") and the actual settlement time in RTGS ("2019-10-07T09:38:50.393+00:00").

Message item	Utilisation
<b>Group Header</b>	
Message ID	NONREF
/Document/FIToFICstmrCdtTrf/GrpHdr/MsgId	
Creation Date Time	2019-10-07T09:38:00+00:00
/Document/FIToFICstmrCdtTrf/GrpHdr/CreDtTm	
Number Of Transactions	1
/Document/FIToFICstmrCdtTrf/GrpHdr/NoOfTx	
Settlement Method	CLRG

# UDFS Part III Chapter 12 List of Messages

## 12 List of messages

Chapter	Message code	Message name
<b>Administration (admi)</b>		
<a href="#">SystemEventNotification (admi.004)</a> [ 410]	admi.004	SystemEventNotification
<a href="#">ReportQueryRequest (admi.005)</a> [ 422]	admi.005	ReportQueryRequest
<a href="#">ReceiptAcknowledgement (admi.007)</a> [ 425]	admi.007	ReceiptAcknowledgement
<b>Cash Management (camt)</b>		
<a href="#">GetAccount (camt.003)</a> [ 428]	camt.003	GetAccount
<a href="#">ReturnAccount (camt.004)</a> [ 430]	camt.004	ReturnAccount
<a href="#">GetTransaction (camt.005)</a> [ 433]	camt.005	GetTransaction
<a href="#">ReturnTransaction (camt.006)</a> [ 435]	camt.006	ReturnTransaction
<a href="#">ModifyTransaction (camt.007)</a> [ 437]	camt.007	ModifyTransaction
<a href="#">GetLimit (camt.009)</a> [ 440]	camt.009	GetLimit
<a href="#">ReturnLimit (camt.010)</a> [ 443]	camt.010	ReturnLimit
<a href="#">ModifyLimit (camt.011)</a> [ 447]	camt.011	ModifyLimit
<a href="#">DeleteLimit (camt.012)</a> [ 450]	camt.012	DeleteLimit
<a href="#">GetBusinessDayInformation (camt.018)</a> [ 453]	camt.018	GetBusinessDayInformation
<a href="#">ReturnBusinessDayInformation (camt.019)</a> [ 455]	camt.019	ReturnBusinessDayInformation
<a href="#">ReturnGeneralBusinessInformation (camt.021)</a> [ 461]	camt.021	ReturnGeneralBusinessInformation
<a href="#">Receipt (camt.025)</a> [ 463]	camt.025	Receipt
<a href="#">ResolutionOfInvestigation (camt.029)</a> [ 475]	camt.029	ResolutionOfInvestigation
<a href="#">GetReservation (camt.046)</a> [ 488]	camt.046	GetReservation
<a href="#">ReturnReservation (camt.047)</a> [ 491]	camt.047	ReturnReservation

Each message has its own structure:

- Overview and scope of the message;
- An outline of the schema with a link to the documentation in MyStandards;
- The message in business context with a use case and a reference to the sample

## Example with an admi.007

12.1.3 ReceiptAcknowledgement (admi.007)

12.1.3.1 Overview and scope of the message

This chapter illustrates the *ReceiptAcknowledgement* message.

12.1.3.2 Schema

### Outline of the schema

The *ReceiptAcknowledgement* message is composed of the following message building blocks.

### MessageIdentification

### Usage case: Message Rejection Notification (Scenario 013)

In this usage example, RTGS is advising the business sender (CB) of a previous camt.050 message that the BAH that was used, has been rejected by RTGS validation. The failing reason code is "H001" (missing data relating to duplicate message) and the appropriate text for this error is also included. The previous camt.050 can be identified using the camt.050 BAH BizMsgId, which is supplied on the admi.007.

Message item	Utilisation
Message ID	NONREF
/Document/RctAck/MsgId/MsgId	
Related Reference	Inc050b013-BAHId
/Document/RctAck/Rpt/RptdRef/Ref	
Status Code	H001
/Document/RctAck/Rpt/ReqHdlg/StsCd	
Description	Element related is missing
/Document/RctAck/Rpt/ReqHdlg/Dsc	

Table 211 - ReceiptAcknowledgement (admi.007) – usage case Message Rejection Notification (Scenario 013)

Usage case example: admi.007\_RTGS\_ReceiptAcknowledgement\_Error\_bs013.xml



# Outline of ISO 20022 and A2A messages

---

Use of samples and online testing

# Generation and publication of samples

target | pacs.009\_FIToFIFinancialInstitutionCreditTransfer\_pacs.009.001.08  
RTGS\_pacs\_guidelines ( Technical version: 114 , Version: UDFS v2.2 , Format: MX , Status: Final )  
Version: UDFS v2.2 Status: Final

▼ Show details

Content Result View **Sample Messages** Impact Analysis Comments

Graph Tree

Download All

Inbound_pacs.009_AS-D_FICreditTransferOrder_SBTI_bs561.xml	Valid	Actions
Inbound_pacs.009_RTGS_FICreditTransferOrder_bs024.xml	Valid	Actions
<b>Inbound_pacs.009_RTGS_FICreditTransferOrder_bs026.xml</b>	Valid	Actions
Inbound_pacs.009_RTGS_FICreditTransferOrder_bs027.xml	Valid	Actions
Inbound_pacs.009_RTGS_FICreditTransferOrder_bs076.xml	Valid	Actions
Inbound_pacs.009_RTGS_FICreditTransferOrder_COV_bs028.xml	Valid	Actions
<b>Outbound_pacs.009_RTGS_FICreditTransfer_bs027.xml</b>	Valid	Actions
Outbound_pacs.009_RTGS_FICreditTransfer_bs076.xml	Valid	Actions

Once the base ISO 20022 message (in our example, a pacs.009 FI Credit transfer) has been customised, **samples** can be produced following the new schema restrictions and validated in the **Readiness Portal**.

**Valid samples** are attached directly to the Usage Guideline. They are ready for download either as a batch or individually, and can be tested in the **Readiness Portal**

MyStandards Readiness Portals for external message testing  
[https://www.ecb.europa.eu/paym/pdf/consultations/Readiness\\_Portal\\_for\\_message\\_testing.pdf](https://www.ecb.europa.eu/paym/pdf/consultations/Readiness_Portal_for_message_testing.pdf)

# Testing of samples in the Readiness Portal- an overview



Readiness Portal

target T2 Readiness Portal RTGS

Readiness Portal for testing the compliance of RTGS related messages with the specifications provided in the User Detailed Specifications (UDFS) and SWIFT MyStandards

Search:  Group by:

▼ To RTGS

<p><b>pac.002_FIToFIPaymentStatusReport_pacs.002.00</b> 1.10</p> <p><b>64</b> Completed Tests</p> <p><b>43</b> Valid Tests</p> <p>Total Completed Tests: 666 Total Valid Tests: 357</p> <p>Format: MX Version: UDFS v2.2 Status: Final</p> <p>Documentation Download Samples History Test</p>	<p><b>pac.002_FIToFIPaymentStatusReport_pacs.002.00</b> 1.10</p> <p><b>357</b> Completed Tests</p> <p><b>180</b> Valid Tests</p> <p>Total Completed Tests: 666 Total Valid Tests: 357</p> <p>Format: MX Version: UDFS v2.1 Addendum April Status: Final</p> <p>Documentation Download Samples History Test</p>	<p><b>pac.004_PaymentReturn_pacs.004.001.09</b></p> <p><b>296</b> Completed Tests</p> <p><b>136</b> Valid Tests</p> <p>Total Completed Tests: 296 Total Valid Tests: 136</p> <p>Format: MX Version: UDFS v2.2 Status: Final</p> <p>Documentation Download Samples History Test</p>
<p><b>pac.008_FIToFICustomerCreditTransfer_pacs.008.001.08</b></p> <p><b>2690</b> Completed Tests</p> <p><b>1273</b> Valid Tests</p> <p>Total Completed Tests: 2690 Total Valid Tests: 1273</p> <p>Format: MX Version: UDFS v2.2 Status: Final</p> <p>Documentation Download Samples History Test</p>	<p><b>pac.008_FIToFICustomerCreditTransfer_pacs.008.001.08</b></p> <p><b>12493</b> Completed Tests</p> <p><b>5119</b> Valid Tests</p> <p>Total Completed Tests: 21491 Total Valid Tests: 7471</p> <p>Format: MX Version: UDFS v2.1 Addendum April Status: Final</p> <p>Documentation Download Samples History Test</p>	

## One-stop shop:

- One testing portal per Usage Guideline and direction;
- samples available for download on the platform;
- Upload |Test| get immediate results| fix errors | re-test;
- if more information needed the documentation is available from the portal.

RTGS Readiness Portal Community

<https://www2.swift.com/mystandards/#/cmt/ wpOiOHYqEemDd9gsigzjA!collections>

CLM Readiness Portal Community

<https://www2.swift.com/mystandards/#/cmt/ KcNNgHYqEemDd9gsigzjA!collections>

# Testing of samples in the Readiness Portal-immediate results

target T2 Readiness Portal RTGS PUBLISHED

Valid pacs.009\_FIToFIFinancialInstitutionCreditTransfer\_pacs.009.001.08

12-02-2021 13:49

Summary

WARNING 1  
WARNING 2  
WARNING 3  
WARNING 4

Warning Details:

Invalid FI BIC.

Valid BICs for financial institutions are registered and published by the ISO 9362 Registration Authority in the ISO directory of BICs, and consist of eight (8) or eleven (11) contiguous characters.

See documentation

Impacted lines:

Line 31

Test Upload Save as Sample Download Message

```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <Document xmlns="urn:iso:std:iso:20022:tech:xsd:pacs.009.001.08" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="
3 <FICdtTrf>
4 <GrpHdr>
5 <MsgId>NONREF</MsgId>
6 <CreDtTm>2020-02-07T09:00:00+00:00</CreDtTm>
7 <NbOfTxs>1</NbOfTxs>
8 <SttlmInf>
9 <SttlmMtd>CLRG</SttlmMtd>
10 <ClrSys>
11 <Cd>TGT</Cd>
12 </ClrSys>
13 </SttlmInf>
14 </GrpHdr>
15 <CdtTrfTxInf>
16 <PmtId>
17 <InstrId>Inp009b561-InsId2</InstrId>
18 <EndToEndId>Inp009b561-E2EIdB</EndToEndId>
19 <UETR>a009b561-59c5-41e9-be4c-d45102fc201e</UETR>
20 </PmtId>
21 <PmtTpInf>
22 <LclInstrm>
23 <Cd>SBTI</Cd>
24 </LclInstrm>
25 </PmtTpInf>
26 <IntrBkSttlmAmt Ccy="EUR">130000.00</IntrBkSttlmAmt>
27 <IntrBkSttlmDt>2020-02-07</IntrBkSttlmDt>
28 <SttlmPrty>URGT</SttlmPrty>
29 <InstgAgt>
30 <FinInstnId>
31 <BICFI>PBAAEFFAC1</BICFI>
32 </FinInstnId>
33 </InstgAgt>
```

## Valid with warnings:

While the structure of the message is schema compliant, some of the BICs used are not valid, registered BICs

## Test area:

Ability to change or correct the sample online and re-test from the same window.

# Outline of ISO 20022 and A2A messages

---

Example of a valid xml sample

# Message portfolio

CLM and RTGS portfolios consist on *admi*, *camt*, *head*, *pacs* and *pain* business areas to cover business functionalities such as queries, query-responses, cash transfer (orders), revocation and recall, reservation, limit and minimum reserve management or reports and notifications.

## RTGS

admi.004, admi.005, admi.007

camt.003, camt.004, camt.005, camt.006, camt.007, camt.009, camt.010, camt.011, camt.012, camt.018, camt.019, camt.021, camt.025, camt.029, camt.046, camt.047, camt.048, camt.049, camt.050, camt.053, camt.054, camt.056

head.001, head.002

pacs.002, pacs.004, pacs.008, pacs.009, pacs.010

pain.998\*

\*multiple sub types available

## CLM

admi.004, admi.005, admi.007

camt.003, camt.004, camt.005, camt.006, camt.018, camt.019, camt.025, camt.029, camt.046, camt.047, camt.048, camt.049, camt.050, camt.053, camt.054, camt.056, camt.998\*

head.001, head.002

pacs.002, pacs.009, pacs.010

# Message portfolio - a pacs.009 sample

```

--<AppHdr xsi:schemaLocation="urn:iso:std:iso:20022:tech:xsd:head.001.001.01
RTGS_BusinessApplicationHeader_head_001_BusinessApplicationHeader_head_001_001_01_20191022_0816.xsd"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns="urn:iso:std:iso:20022:tech:xsd:head.001.001.01">
  - <Fr>
    - <FIId>
      - <FinInstnId>
        <BICFI>UBSWCHZHXXX</BICFI>
        - <ClrSysMmbId>
          <MmbId>BizSenderb027UserId</MmbId>
          </ClrSysMmbId>
        </FinInstnId>
      </FIId>
    </Fr>
  - <To>
    - <FIId>
      - <FinInstnId>
        <BICFI>COBADEFFXXX</BICFI>
      </FinInstnId>
    </FIId>
    </To>
    <BizMsgId>Inp009b027-BAHId</BizMsgId>
    <MsgDefId>pacs.009.001.08CORE</MsgDefId>
    <CreDt>2021-02-19T13:07:00Z</CreDt>
    <!-- <Sgntr> Signature detail </Sgntr -->
  </AppHdr>

```

```

- <Document xsi:schemaLocation="urn:iso:std:iso:20022:tech:xsd:pacs.009.001.08
RTGS_pacs_guidelines_pacs_009_FIToFIFinancialInstitutionCreditTransfer_pacs_009_001_08_20191021_1544%20(1).xsd"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns="urn:iso:std:iso:20022:tech:xsd:pacs.009.001.08">
  - <FICdtTrf>
    - <GrpHdr>
      <MsgId>NONREF</MsgId>
      <CreDTm>2019-10-07T10:00:00+00:00</CreDTm>
      <NbOfTxs>1</NbOfTxs>
    - <SttlmInf>
      <SttlmMtd>CLRG</SttlmMtd>
      - <ClrSys>
        <Cd>TGT</Cd>
      </ClrSys>
    </SttlmInf>
    </GrpHdr>
    - <CdtTrfTxInf>
      - <PmtId>
        <InstrId>Inp009b027-InsId</InstrId>
        <EndToEndId>Inp009b027-E2EId</EndToEndId>
        <UETR>e009b027-59c5-41e9-be4c-d45102fc201e</UETR>
      </PmtId>
      <IntrBkSttlmAmt Ccy="EUR">77000.00</IntrBkSttlmAmt>
      <IntrBkSttlmDt>2019-10-07</IntrBkSttlmDt>
      <SttlmPrty>URGT</SttlmPrty>
    - <InstgAgt>
      - <FinInstnId>
        <BICFI>UBSWCHZHXXX</BICFI>
      </FinInstnId>
    </InstgAgt>
    - <InstdAgt>
      - <FinInstnId>
        <BICFI>COBADEBB120</BICFI>
      </FinInstnId>
    </InstdAgt>
    - <Dbtr>
      - <FinInstnId>
        <BICFI>UBSWCHZHXXX</BICFI>
      </FinInstnId>
    </Dbtr>
    - <Cdtr>
      - <FinInstnId>
        <BICFI>COBADEFFXXX</BICFI>
      </FinInstnId>
    </Cdtr>
    </CdtTrfTxInf>
  </FICdtTrf>
</Document>

```

## Pacs.009 inbound to RTGS:

- BAH (head.001) + Document (pacs.009CORE) provided by Business Sender UBSWCHZHXXX to RTGS in order to settle and credit EUR 77000.00 on RTGS cash account COBADEBB120 belonging to COBADEFFXXX
- Settlement Priority URGT

# Outline of ISO 20022 and A2A messages

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Thank you for your attention.