

Pontes

User Requirements Document (URD)

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1 INTRODUCTION

1.1 BACKGROUND

Pontes is a TARGET Service for the wholesale settlement of tokenised central bank money (“**CeBM**”). This service intends to establish interoperability between market DLT platforms and the TARGET services’ ecosystem, allowing Participants and market DLT operators to settle transactions on a 24/7/365 basis. Pontes is designed to be multi-currency, in line with other TARGET Services: the service shall be able to support all the currencies available in T2 Central Liquidity Management (CLM) component.

Pontes’ use cases include Delivery-versus-Payment, Payment-versus-Payment, and wallet-to-wallet transactions, as defined in this document. Pontes is integrated into and maintains the operational, functional, legal and regulatory structure of the TARGET Services. It provides its settlement functionalities on a Eurosystem Distributed Ledger Technology platform, a permissioned DLT-based platform, which provides settlement in tokenised CeBM.

This section outlines the Pontes project scope that the remaining chapters in the document further detail. This section also presents the principles that shall serve as the foundation for the service. In addition, this chapter presents the method for organising and presenting user requirements in subsequent chapters and directs readers to the glossary of terms.

1.2 OBJECTIVES

The main objectives of the envisaged service are:

- **to preserve the pivotal role of central bank money (CeBM) in wholesale settlement.** Ensure that the CeBM remains the safest, preferred settlement asset for tokenised wholesale transactions. Private sector substitutes are considered to be sub-optimal and carry higher risks to the Eurosystem’s core objectives and mandate, with concerns including the potential to undermine monetary sovereignty, transparency shortcomings and risks of capital flight from European credit institutions.
- **to pursue the Eurosystem mandate.** Ensure stability and resilience of the monetary and financial system within its competence.
- **to strengthen the strategic European Union (EU) autonomy and resilient European payments and capital markets ecosystem.** Ensure tokenisation and innovation develops in Europe in a safe and resilient way on European infrastructures and through European providers.
- **to provide Eurosystem’s guidance in a technological and financial changing market.** Ensure the Eurosystem’s guidance in next-generation market infrastructures, supporting a coherent policy direction in the emerging technological financial market landscape.
- **to support market needs and innovation.** Enable automated workflows (e.g. Delivery-versus-Payments, Payment-versus-Payments, lifecycle management...) on market DLTs platforms while keeping settlement in central bank money, catalysing EU-based innovation.
- **to broaden the settlement landscape beyond traditional Financial Market Infrastructures (FMIs).** Offer an interoperable pathway for tokenised assets to settle in CeBM in the TARGET Services, complementing offers by existing FMIs and reducing operational frictions.

- **to mitigate fragmentation via an interoperable Eurosystem solution.** Deliver cross-DLT interoperability and liquidity integration, fostering EU financial integration and lowering barriers to cross-border activity.
- **to advance European Union (EU) policy goals.** Provide enabling infrastructure for digital capital markets, supporting the Savings and Investments Union (SIU) objectives in Europe in addition to the international role of the euro.

1.3 SCOPE AND DESCRIPTION

Pontes is a service to enable settlement of Distributed Ledger Technology (DLT)-based wholesale transactions in tokenised central bank money (CeBM). It provides an operational bridge between market DLT platforms¹ and the Eurosystem's TARGET Services, allowing DLT-based transactions to settle safely and efficiently in CeBM.

For the settlement of the payment leg of transactions involving another leg on a market DLT platform, Pontes shall support all the financial instrument and assets meeting the eligibility criteria defined by the Eurosystem.

Pontes shall provide settlement services in Euro and, given its technical currency-agnostic implementation, in non-euro Central Bank money for the currencies available in T2 Central Liquidity Management (CLM) component. It shall be able to process transactional volumes in line with the non-functional requirements defined in this document, with around the clock settlement availability leveraging the Distributed Ledger Technology.

Moreover, Pontes shall enable the safe, efficient and reliable settlement in tokenised central bank money on a Eurosystem Distributed Ledger Technology (DLT) platform. It shall allow the Eurosystem (for the Euro currency) or the relevant currency-issuing central banks (for other currencies available in T2 CLM) to retain full control over the tokenised central bank money provided on the Eurosystem DLT.

The service shall enable interoperability with market DLT platforms, meaning that the service shall allow the Pontes actors, as defined in this document, to settle wallet-to-wallet² payments, as well as the payment leg on the Eurosystem DLT of Delivery-versus-Payment and Payment-versus-Payment transactions. The settlement of the other leg will be provided on the respective market DLT platforms.

Regarding the integration with the TARGET Services ecosystem, Pontes shall operate within the technical, operational and legal perimeter of the TARGET Services and shall integrate seamlessly into the TARGET Services' ecosystem, leveraging common components for³, inter alia, participant access, reference data management, liquidity management, business day management, billing and, where relevant, data warehouse and archiving. Pontes shall be established as a TARGET Service: the service shall host a new account type, as defined in this document (e.g. Dedicated Cash Wallet and Central Bank Wallet), to hold tokenised Central Bank Money.

The service shall comply with the standards for safety, resilience, cybersecurity, operational reliability, confidentiality, integrity, and availability as detailed in the non-functional requirements in Section 11. The service shall offer transparent and non-discriminatory access criteria and ensure equal treatment for all participants regardless of location, as long as the location of the Participant (and /or the Market DLT Operator) complies with the policy decision of the Eurosystem. Pontes shall rely exclusively on infrastructure components operated within the Pontes perimeter under the Pontes governance, with no Pontes-operated components on market DLT platforms. In the context of this document infrastructure components refer to software and/or hardware components.

¹ "Market DLT platform" refers to a DLT service platform used by market DLT operator(s) where eligible assets or financial instruments are cleared and/or settled and/or delivered.

² In this document, wallets are intended as accounts capable of holding tokenised central bank money in Pontes.

³ Potential deviations, arising due to the new technologies in the scope of Pontes, shall be assessed on a case-by-case basis but in line with the principle of non-duplication of data or component.

1.4 GENERAL PRINCIPLES

Pontes shall be based on the below principle:

- Principle 1:** Single settlement model with settlement in tokenised form.
- Principle 2:** Integration in the technical, operational and legal perimeter of TARGET Services, guaranteeing a high degree of interoperability within the current ecosystem.
- Principle 3:** Immediate settlement finality of the payment leg on the Eurosystem DLT of transactions in tokenised CeBM (irrevocable settlement finality).
- Principle 4:** Participants may hold tokenised CeBM balances overnight on Eurosystem DLT without the need of repatriation to T2 CLM, which, subject to policy decisions concerning the nature of tokenised balances, may contribute towards the minimum reserve requirements, interest calculation and overnight credit calculation.
- Principle 5:** Multi-currency availability, for all currencies available in T2 CLM.
- Principle 6:** Settlement on a 24/7/365 basis subject to increasing volume and workload requirements.
- Principle 7:** Full ledger replication and service continuity, maintaining a fully replicated, consistent ledger across all nodes in the Eurosystem DLT with simultaneous active redundancy to ensure uninterrupted data access and functionality despite any potential individual node outage.
- Principle 8:** Post-quantum resilient cryptographic capabilities by means of crypto-agility mechanisms enabling progressive migration towards standardised post-quantum algorithms, in alignment with the overall roadmap for achieving post-quantum resilient across TARGET.
- Principle 9:** Legal certainty through compliance with a harmonised and adaptable legal framework, while evolving with market best practices and policy requirements.

1.5 ORGANISATION AND PRESENTATION OF THE USER REQUIREMENTS

The Pontes User Requirements Document is organised into chapters presenting the various aspects of the project.

- **Chapter 1: Introduction** – describes the purpose of this document; recalls the principles on which Pontes is built; and provides guidance on how to read this document.
- **Chapter 2: High-level Process Description and Architecture** – aims at identifying the Pontes actors, presenting the overall scope and process description of the service.
- **Chapter 3: Eurosystem DLT** – aims at describing requirements that are DLT-specific, such as DLT network requirements, replication of data across the nodes and consensus-related requirements.
- **Chapter 4: Settlement in tokenised central bank money** – identifies requirements for the main use cases of the service (e.g. Delivery-versus-Payments, Payment-versus-Payment and wallet-to-wallet wholesale payments).
- **Chapter 5: Liquidity Management** – aims at describing the transfer of liquidity between Pontes and the other TARGET Services, via T2 CLM.
- **Chapter 6: Management of Wallets and Reference Data** – identifies requirements relevant to the management of wallets and other reference data in Pontes and in the Common Reference Data Management (CRDM) component of the TARGET Services.
- **Chapter 7: Reports** – identifies requirements for the reports that Pontes will provide.
- **Chapter 8: Queries** – identifies requirements for the queries that are available in Pontes.

- **Chapter 9: Interfaces** – identifies requirements pertaining to the technical communication of the Pontes interface with the different Pontes actors, the internal interface to the other TARGET Services and the technical communication among the nodes of the Eurosystem DLT.
- **Chapter 10: Other Functions** – identifies requirements regarding other functions relevant to Pontes (e.g. end-of-day processing).
- **Chapter 11: Non-Functional Requirements** – aims at describing the non-functional requirements of Pontes.
- **Chapter 12: Statistical Information** – identifies requirements for the statistical information reports that will be available in Pontes.
- **Chapter 13: Annex** – Annex with list of references, glossary and acronyms.

Individual requirements are grouped according to topic and in principle each requirement is presented with attributes. The different user requirements as presented in tables have the following attributes:

ID: This field specifies the unique reference. The identification of the requirement is a unique number, which will be valid for this requirement throughout the project. After agreement, it will be possible for any party to refer to this requirement via this ID. Requirements' substance and wording will evolve over time. Using the identification number, it will be possible to trace any modification of the requirements. Furthermore, the acceptance tests will be linked to the user requirements using this ID.

ID prefix	Chapter name
03	Eurosystem DLT
04	Settlement in Tokenised Central Bank Money
05	Liquidity Management
06	Management of Wallets and Reference Data
07	Reports
08	Queries
09	Interfaces
10	Other Functions
11	Non-Functional Requirements
12	Statistical Information

Name: This is a short label of the requirement. It helps the reader to quickly find a requirement within this document.

Requirement: This is the requirement, formulated in an unambiguous way. Requirements must be clear, concise, and measurable. The words "shall" "will" or "must" in a requirement indicate a compulsory feature of the system. The words "may" and "should" indicate options.

A detailed description of the requirement may be provided after the table.

2 HIGH-LEVEL PROCESS DESCRIPTION AND ARCHITECTURE

This chapter provides an overview of the actors and processes foreseen by the Pontes service.

2.1 ACTORS

The major actors of the Pontes service are the following:

- **Participants:**
 - Participants are the entities that hold dedicated cash wallets (DCWs) in Pontes,
 - Participants manage their own tokenised liquidity and are responsible for all transactions (as defined in this document) sent or received on their wallets,
 - Pontes DCWs are opened by the responsible central bank,
 - Upon configuration, participants can instruct transactions on behalf of one or more addressable entities.
 - Upon configuration, participants can instruct transactions on behalf of one or more participants (for wallet-to-wallet payments only).
- **Market DLT operators:**
 - Market DLT operators are the entities that offer DLT-based services on one or more market DLT platforms (outside the perimeter of the Pontes service),
 - Upon configuration, market DLT operators can instruct transactions on behalf of one or more participants (or addressable entities).
- **Addressable entity:**
 - Financial institutions, without own technical access to Pontes, that can settle transactions via a Participant's DCW.
 - Transactions will be sent to Pontes (i) by the Participant owning the DCW, (ii) by a market DLT operator configured to instruct transactions on behalf of the Participant owning the DCW or (iii) another Participant configured to instruct transactions on behalf of the Participant owning the DCW (limited to the wallet-to-wallet payments).
 - Even if an addressable entity has no technical access to Pontes, a minimum set of reference data (e.g. its BIC) is configured in Pontes.
- **Central Banks:**
 - A Central Bank provides cash wallet services to Participants for the settlement in tokenised Central Bank money, as defined in this document.
 - Additionally, a Central Bank can act as a Participant in Pontes.
- **Pontes Operator:**
 - The Pontes Operator is the entity that technically operates the service.
 - It has unrestricted access to all system data and functionality.

Section [6](#) provides a detailed explanation of the actors, including their relationships.

2.2 EUROSISTEM DLT

To enable the settlement of DLT-based wholesale transactions, Pontes shall be based on a secure, resilient, and reliable DLT-based platform operated under the governance of the Eurosystem.

In particular, the Eurosystem DLT shall ensure reliable operations even in the presence of technical failures or malicious actions affecting the nodes that are part of the DLT network. It shall enable the full replication of all ledger data across the nodes, avoiding that the unavailability of a node results in the unavailability of data or functionalities.

Section [3](#) collects user requirements related to the Eurosystem DLT, including network-related, data replication and monitoring requirements.

2.3 SETTLEMENT IN TOKENISED CENTRAL BANK MONEY

Pontes shall support Pontes Actors to settle transactions in tokenised Central Bank money.

In particular, Pontes shall support the settlement of delivery-versus-payment (DvP) transactions (with the delivery leg on the market DLT platforms), payment-versus-payment (PvP) transactions (with one payment leg on the market DLT platforms), and wholesale payments, each with the specific characteristics set out in this document.

Pontes is designed to be multi-currency, in line with other TARGET Services: the service shall be able to support all the currencies available in T2 Central Liquidity Management (CLM) component. The technical implementation of Pontes shall be currency agnostic in order to provide flexibility in the design. Currency conversion is not in scope, as well as currencies not available in T2 Central Liquidity Management (CLM) component.

Section [4](#) details the available use cases for Pontes as well the available settlement-related operations.

2.4 LIQUIDITY MANAGEMENT

Wallets in Pontes shall be wallets opened in the books of a Central Bank and are exclusively dedicated for the settlement of transactions in tokenised Central Bank money.

Pontes shall allow the transfer of liquidity between accounts in TARGET Services, via T2 CLM, and wallets in Pontes during the operating hours of T2 CLM provided that the account and the wallet are denominated in the same currency. Moreover, Pontes shall allow the transfer of funds between two wallets, being these two (i) Dedicated Cash Wallets belonging to the same Participant or (ii) a DCW and a Central Bank wallet.

A snapshot of the wallets in Pontes (including their balances) will be taken at the closing time of T2 CLM e.g. for the purpose of accounting and minimum reserve calculations in line with Eurosystem policy decisions.

Section [5](#) provides additional information liquidity management operations in Pontes.

2.5 MANAGEMENT OF WALLETS AND REFERENCE DATA

Central banks shall be responsible for maintaining the reference data of their respective banking community and shall act on behalf of their participants in contingency (i.e., for liquidity transfers, static data queries and reference data changes). Central banks own Central Bank wallets for liquidity management purpose (e.g. in case of T2 CLM unavailability).

Participants will be able to open one or more DCW in Pontes to facilitate the settlement of transactions with tokenised CeBM.

Participants may define Credit Memorandum Balances (CMBs) linked to their DCW, in order to define payment capacity limits for Addressable Entities.

Addressable Entities need to maintain contractual agreements with Participants in order to use their wallets for settlement. Similarly, Market DLT Operators need to have contractual arrangements with Participants and/or Addressable Entities in order to instruct on their behalf. Pontes will maintain links between the different actors in order to validate the authorisation configured on behalf of the Participants for the different functionalities.

Section [6](#) provides additional information regarding Wallets, CMBs and reference data management-related operations.

2.6 QUERIES AND REPORTS

Pontes will offer queries and reports to the Participants to support monitoring and reconciliation. Queries and reports critical to the management of the settlement process will be made available 24/7/365. The service will offer flexible report subscription to Participants.

Section [8](#) and section [7](#) provide additional information regarding queries and reporting functionalities in Pontes, respectively.

2.7 INTERFACES

Pontes shall provide an application-to-application (A2A) interface for transaction processing. Pontes will have a user-to-application interface (U2A) for a functionalities and queries, such as liquidity transfers, transactions, wallet blocking. The critical functionalities offered via the U2A interface will be available 24/7/365. However, some functionalities, such as Participant reference data creation, may not require round the clock availability and will instead be available during shorter time frames.

Section [9](#) details Pontes interfaces, including details for A2A and U2A interactions.

2.8 NON-FUNCTIONAL REQUIREMENTS

The Pontes service shall be scalable to support the expected growth of transactional volumes while operating 24/7/365.

Section [11](#) provides further details regarding Pontes non-functional requirements.

3 EUROSISTEM DLT

Pontes shall allow the Eurosystem (for the Euro currency) or the relevant currency-issuing central banks (for other currencies) to retain full control over the tokenised central bank money provided on the Eurosystem DLT platform, including inbound, outbound and intra service liquidity transfers, as well as transactions.

Pontes shall enable issuance and redemption of wholesale central bank money (wCeBM) in the form of DLT-based tokens that constitute direct, claims on the currency-issuing Central Banks. The service shall enable settlement of the payment leg of DLT-based transactions in tokenised form.

3.1 GENERAL REQUIREMENTS

Id	PONTES.UR.03.010
Name	Permissioned Eurosystem DLT platform
Description	Pontes shall be based on a secure, resilient, and reliable private permissioned DLT Eurosystem platform owned and operated under the governance of the Eurosystem.

ID	PONTES.UR.03.020
Name	Participant access and processing of requests
Requirement	Pontes shall provide a consistent and seamless access to its functionalities, for both User-to-Application (U2A) and Application-to-Application (A2A) interactions, with requests routed from the unified access point to any node based on the current workload and processed efficiently across the network by any node.

3.2 NETWORK

ID	PONTES.UR.03.030
Name	Network design and node architecture
Requirement	Pontes shall define and maintain a geographically distributed network architecture that ensures resilience, redundancy, and scalability in line with the non-functional requirements defined in this document. This will include a sufficient number and distribution of nodes to meet service, security, and governance requirements as defined by the Eurosystem.

The geographical distribution of the Pontes architecture must align, at a minimum, with the level of distribution in place for other TARGET Services. All technical components needed for interoperability transactions, including the nodes comprising Pontes' architecture shall be hosted by the Pontes Operator.

ID	PONTES.UR.03.040
Name	Consensus mechanism
Requirement	Pontes shall utilise a robust, fast and efficient consensus mechanism that is fully under control of the Eurosystem and in line with Eurosystem policy. The service shall be designed in a modular way to allow for changing or evolving the envisioned consensus mechanism in response to future needs, technological advancements, or emerging requirements, avoiding the lock-in to a specific consensus mechanism.

ID	PONTES.UR.03.050
Name	Secure consensus mechanism
Requirement	Pontes shall employ a consensus mechanism that ensures secure and reliable agreement on transaction validation and ordering, even in the presence of technical failures or malicious actions affecting nodes, such that the integrity and availability of the system's operations are not compromised.

ID	PONTES.UR.03.060
Name	Validation and continuity of service
Requirement	Pontes shall ensure that transactions and data entries are validated in an orderly and efficient manner by the nodes before being added to the ledger, in accordance with the rules defined by the Eurosystem in the current document.

ID	PONTES.UR.03.070
Name	Processing in a first in/first out manner
Requirement	Pontes shall process all transactions on a first in/first out (FIFO) basis without prioritisation or reordering of transactions.

Pontes Actors are not able to force Pontes to process specific transactions with a higher priority. The processing on a first in/first out (FIFO) basis therefore specifies that the service shall rely on the entry timestamp when collecting transactions to be added in the latest block of the Eurosystem DLT.

Id	PONTES.UR.03.080
Name	Shared ledger availability features
Description	Pontes shall always be available for settlement for any Pontes Actor, independently from its banking community, both in the event of DLT node technical failures and in presence of malicious actions trying to tamper with the shared ledger. Availability shall be ensured in line with PONTES.NFR.11.030.

Id	PONTES.UR.03.090
Name	Shared ledger security features
Description	Pontes shall ensure that the integrity of the shared ledger is guaranteed at all times by the usage of a secure consensus mechanism (PONTES.UR.03.050) and the utilization of digital signatures.

Id	PONTES.UR.03.100
Name	Nodes supporting consensus mechanism
Description	The service shall ensure that, for all currencies supported, a sufficient number of nodes are active to maintain continuous operation.

Pontes shall continue to process and settle transactions while at least the minimum number of nodes required by the consensus mechanism are available. Conversely, Pontes shall be able to identify when an insufficient number of nodes are able to successfully contribute to the consensus mechanism, cease processing new transactions, and reject them accordingly.

Id	PONTES.UR.03.110
Name	Network inquiries
Description	Pontes shall route the inquiries from the Pontes Actors, evaluate the health and status of available nodes (e.g. whether the node has the latest version of the ledger) and route each inquiry to the most appropriate node, i.e. distributing load across the nodes.

3.3 DATA

ID	PONTES.UR.03.120
Name	Data localisation
Requirement	Pontes shall ensure that all data processed and stored within the system resides within the European Economic Area (EEA). Any exceptions shall require explicit Eurosystem approval.

ID	PONTES.UR.03.130
Name	Data replication
Requirement	Pontes shall enable the automated and full replication of all ledger data across all nodes, avoiding that the unavailability of a node results in the unavailability of data or functionalities. The service shall maintain continuity for all Pontes Actors from any location, including in the event of node outages.

ID	PONTES.UR.03.140
Name	Logical data segregation
Requirement	Pontes shall provide a need-to-know data segregation through separation at logical level and strict access-control mechanisms.

ID	PONTES.UR.03.150
Name	Data visibility
Requirement	Pontes shall provide hierarchical data visibility in line with the TARGET Services (e.g. the operator has visibility into all the data; central banks have visibility into their data, and the data of their participants; the participants have visibility on their data) ⁴ .

ID	PONTES.UR.03.160
Name	Resilience to data corruption
Requirement	Pontes shall ensure that, in the event of data corruption on any node, the service supports mechanisms to restore data from a valid state (e.g. cold replication or equivalent) without impacting overall service integrity.

⁴ In line with the requirements of other TARGET Services, the ECB has visibility (i) in its role of Central Bank, of their data and the data of their participants and (ii) for operational purpose, the transit accounts (and transit wallets) and daily statistical information at service level (e.g. total amount settled, total number of transactions, ...)

3.4 TECHNOLOGY

ID	PONTES.UR.03.170
Name	Post-quantum readiness
Requirement	Pontes shall support post-quantum-resilient cryptographic capabilities by means of crypto-agility mechanisms, enabling progressive migration towards standardised post-quantum algorithms.

The migration of Pontes toward standardised post-quantum algorithms shall be conducted in alignment with the overall roadmap, strategic priorities, and expected objectives of the TARGET Services.

3.5 PROGRAMMABILITY

ID	PONTES.UR.03.180
Name	Scope extension via smart contract programmability
Requirement	Pontes shall enable programmability through the use of smart contracts as part of the Pontes Change and Release Management process, allowing flexibility to meet evolving Eurosystem and market needs, while supporting innovative use cases.

The extension of the functional scope of Pontes via smart contract programmability will be operationalised as part of the Pontes Change and Release Management process⁵.

⁵ A Change Request (CR) can be submitted by market participants and/or market DLT operators via their National Central Banks. As part of the Pontes Change and Release Management process, the smart contracts will be implemented and deployed by the Pontes Operator.

3.6 MONITORING

ID	PONTES.UR.03.190
Name	Real-time monitoring of nodes
Requirement	Pontes shall implement real-time monitoring of nodes and network health, performance, and connectivity. Automated alerts and escalation procedures shall be established to enable rapid detection and response to anomalies, outages, or security incidents affecting nodes of the network.

4 SETTLEMENT IN TOKENISED CENTRAL BANK MONEY

The objective of this chapter is to describe the core functionality of the Pontes service:

- Section 4.1 provides a high level overview of the use cases of Pontes,
- Section 4.2 covers requirements related to the interoperability transactions, i.e. delivery-versus-payment (DvP) and payment-versus-payment (PvP),
- Section 4.3 covers requirements related to on-chain one-leg transactions, i.e. wallet-to-wallet payments.

4.1 OVERVIEW

ID	PONTES.UR.04.010
Name	Type of transactions supported
Requirement	Pontes shall support the settlement of delivery-versus-payment (DvP) transactions (with the delivery leg on the market DLT platforms), payment-versus-payment (PvP) transactions (with one payment leg on the market DLT platforms), and wholesale payments, each with the specific characteristics set out in this document.

Pontes shall enable:

1. settlement of **delivery-versus-payment (DvP) transactions**,
2. settlement of **payment-versus-payment (PvP) transactions**,
3. settlement of **wallet-to-wallet (w2w) payment transactions**.

Id	PONTES.UR.04.020
Name	Settlement with finality in tokenised central bank money
Description	Pontes shall settle the instructed amount with finality in tokenised central bank money on wallets on the Eurosystem DLT. Settlement shall be irrevocable.

This also applies if the wallet to debit and credit is identical (e.g., in case a Participant or a Market DLT Operator send a transaction to one of the Addressable entities using the same wallet).

Settlement in tokenised CeBM shall be equivalent in legal effect to settling transactions in existing TARGET Dedicated Cash Accounts (DCAs) under the Settlement Finality Directive (SFD), and its future evolutions and the applicable national legal frameworks.

The settlement finality of the leg on the market DLT platforms, where relevant, will be dependent on the rules applicable to the relevant market DLT operator.

ID	PONTES.UR.04.030
Name	Multi-currency support
Requirement	Pontes is based on a multi-currency design, in line with other TARGET Services. The service is able to support all the currencies available in T2 Central Liquidity Management (CLM) component.

The technical implementation of Pontes shall be currency agnostic in order to provide flexibility in the design, i.e., settlement in tokenised non-euro Central Bank money. Currency conversion is not in scope, as well as currencies not available in T2 Central Liquidity Management (CLM) component.

ID	PONTES.UR.04.040
Name	Automated operations
Requirement	Pontes shall enable settlement of transactions within the scope of Pontes in an automated way, with manual intervention of Pontes Operator limited to predefined contingency procedures, as defined in the operational-related documents (which are outside the scope of the current document).

4.1.1 Participants' settlement-related functionalities

Table 4.1: Settlement-related functionalities available to Participants

Participants' settlement-related functionalities ⁶	U2A (2-eyes)	U2A (4-eyes)	A2A
Wallet to Wallet Payment ⁷	✓	✓	✓
Delivery-versus-Payment (DvP) Initialisation	✓	✓	✓
Delivery-versus-Payment (DvP) Payment	✓	✓	✓
Payment-versus-Payment (PvP) Initialisation	✓	✓	✓
Payment-versus-Payment (PvP) Payment	✓	✓	✓
Initialisation Query	✓		✓
Reveal Key	✓		✓

⁶ A Participant can instruct transactions on behalf of Addressable Entities. The table applies also to Central Banks acting as a Participant in Pontes.

⁷ Upon configuration, a Participant can instruct wallet-to-wallet payments on behalf of another Participant.

4.1.2 Market DLT operators' settlement-related functionalities

Table 4.2: Settlement-related functionalities available to Market DLT Operators

Market DLT Operators' settlement-related functionalities ⁸	U2A (2-eyes)	U2A (4-eyes)	A2A
Wallet to Wallet Payment	✓	✓	✓
Delivery-versus-Payment (DvP) Initialisation	✓	✓	✓
Delivery-versus-Payment (DvP) Payment	✓	✓	✓
Payment-versus-Payment (PvP) Initialisation	✓	✓	✓
Payment-versus-Payment (PvP) Payment	✓	✓	✓
Initialisation Query	✓		✓
Reveal Key	✓		✓

4.2 INTEROPERABILITY TRANSACTIONS

This section outlines the requirements for delivery-versus-payment (DvP) and payment-versus-payment (PvP) transactions, with one leg within Pontes (the cash-leg) and the other leg on a market DLT platform.

ID	PONTES.UR.04.050
Name	Robust interoperability mechanism
Requirement	Pontes shall ensure that, for any transaction requiring the all-or-none settlement of two legs, one for the Eurosystem and one for the market DLT platform (i.e., Delivery-versus-Payments and Payment-versus-Payment), the interoperability mechanism is robust, resilient, and able to maintain secure, reliable, and continuous operation.

Pontes relies on the Hash-Link protocol, or a potential evolution of it, as interoperability protocol.

The two legs one on the Eurosystem DLT and one on the market DLT platform are interdependent and conditional upon the same cryptographic proofs. Consequently, both legs of the transaction must be

⁸ Upon configuration, a Market DLT Operator can instruct transactions on behalf of Participants or Addressable Entities.

settled successfully and irrevocably, or neither is settled, thereby eliminating principal risk and preventing any partial completion under all circumstances.

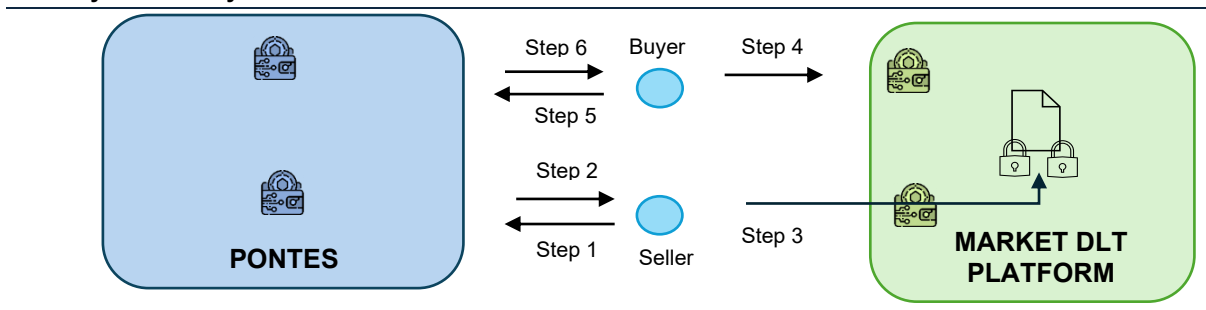
Figures 4.1 and 4.2 together with 4.3 illustrate the two phases of the workflow for a Delivery-versus-Payment transaction using the Hash-Link protocol⁹. The steps in the overall process are further detailed in the document. Exceptional cases, such as validation errors, are not depicted in the diagram, but mentioned in the explanations following the diagram.

The entities communicating with Pontes are:

- (i) The Buyer meaning a Participant (acting for itself or an Addressable Entity) or a Market DLT Operator (acting on behalf of the Participant or a Addressable Entity). In the context of the Delivery-versus-Payment transaction, it is the buyer (or a Market DLT Operator acting on behalf of the buyer) of an eligible asset on a Market DLT platform. It communicates with Pontes to debit a wallet.
- (ii) The Seller meaning a Participant (instructing for itself or an Addressable Entity) or a Market DLT Operator (instructing on behalf of the Participant or a Addressable Entity). In the context of the Delivery-versus-Payment transaction, it is the seller (or a Market DLT Operator acting on behalf of the seller) of an eligible asset on a Market DLT platform. It communicates with Pontes to initialise the Delivery-versus-Payment and to check that a wallet has been correctly credited.

Phase 1 – Initialisation

Figure 4.1
Delivery-versus-Payment with Hash-Link - Phase 1: initialisation



Step 1: The Seller sends a Delivery-versus-Payment Initialisation Request to Pontes. This request must contain all the mandatory fields to enable Pontes to perform its checks (see for example PONTES.UR.09.180). After successful validation, Pontes generates and stores two cryptographic keys (Execution Key and Cancellation Key) and the related hashes. Pontes keeps track of a timeout, by when the payment leg of the Delivery-versus-Payment has to be settled.

Step 2: Pontes sends the generated hashes for the Execution Key and Cancellation Key to the Seller.

⁹ The same workflow applies for Payment-versus-Payment transactions.

Step 3 (outside of Pontes): The Seller creates a Hash-Link Contract (HLC) on the market DLT platform with the information received as response of the Delivery-versus-Payment Initialisation Request. The Seller locks the relevant asset in the HLC on a market DLT platform. The asset is locked until one of the following conditions is satisfied:

1. The Buyer agrees (providing its signature) to release back the asset to the Seller → see Phase 2b – Unsuccessful scenario;
2. The Seller agrees (providing its signature) to release the asset to the Buyer → see Phase 2a – Successful scenario;
3. The Buyer forces the release of the asset to itself (providing the Execution Key, which is revealed by Pontes after successful settlement of the payment) → see Phase 2a – Successful scenario);
4. The Seller forces the release of the asset to itself (providing the Cancellation Key, which is revealed by Pontes after the timeout, if no payment has been settled) → see Phase 2b – Unsuccessful scenario.

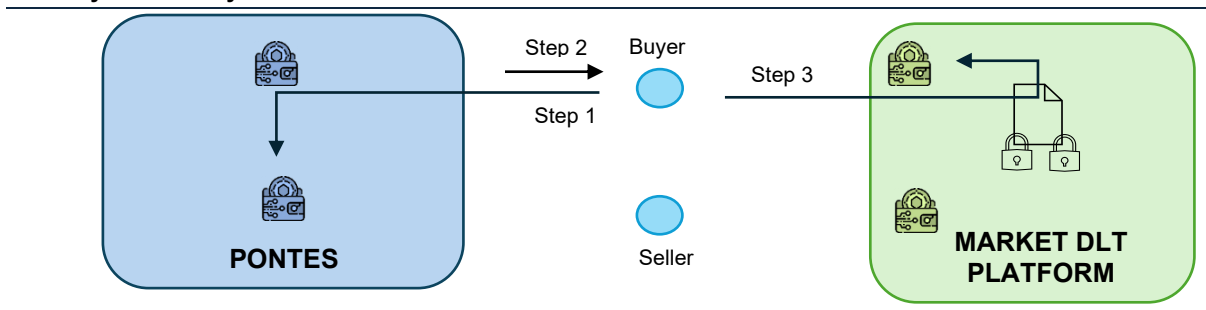
Step 4 (outside of Pontes): The Buyer becomes aware of the Delivery-versus-Payment identifier (because notified by the Seller or querying the market DLT platform).

Step 5/6 (optional): The Buyer sends an Initialisation Query to Pontes, providing the Delivery-versus-Payment identifier. Pontes sends the relevant hashes for the Execution Key and Cancellation Key to the Buyer, which can check the correctness of the Hash-Link Contract (HLC) initialisation.

Phase 2a – Successful scenario

Figure 4.2

Delivery-versus-Payment with Hash-Link - Phase 2a: Successful scenario



Step 1: The Buyer sends the Delivery-versus-Payment Payment request to Pontes. If the payment request reached Pontes before the timeout, it performs the validation. After successful validation (including availability of sufficient funds), Pontes settles the amount.

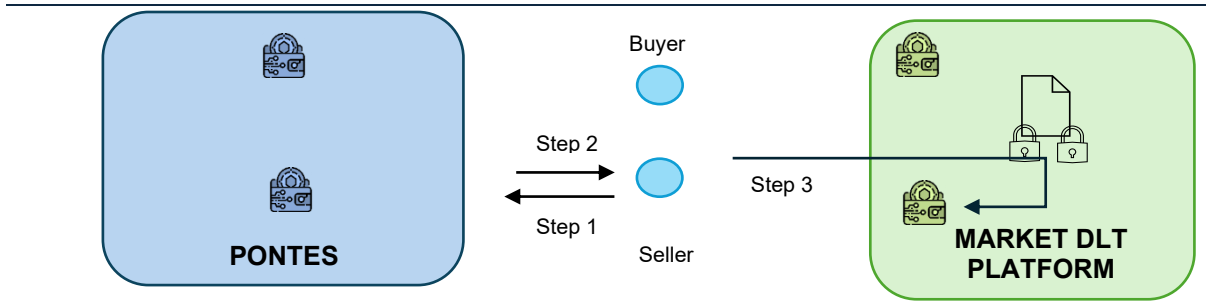
Step 2: Pontes sends a response to the Buyer. In case the payment is settled, the Execution Key is revealed to the Buyer. Otherwise, an error message is returned.

Step 3 (outside of Pontes): If the asset is not released by the Seller, the Buyer forces the release of the asset to itself (providing the Execution Key, revealed by Pontes).

Phase 2b – Unsuccessful scenario (alternative to Phase 2a)

Figure 4.3

Delivery-versus-Payment with Hash-Link - Phase 2b: Unsuccessful scenario



Step 1: The Seller sends the Reveal Key request to Pontes. Pontes performs the relevant validation (i.e. the request arrived after the timeout and no payment has been settled)

Step 2: Pontes sends a response to the Seller. In case of successful validation, Pontes reveals the Cancellation Key. Otherwise, an error message is returned.

Step 3 (outside of Pontes): If the asset is not released back to the Seller by the Buyer, the Seller forces the release of the asset to itself (providing the Cancellation Key, revealed by Pontes).

The agreement between the Buyer and the Seller on the details of the Delivery-versus-Payment (e.g. amount, asset, ...) is managed outside Pontes and it is not in the scope of this document.

Section 6.2 provides further details regarding the different actors and participation structure.

4.2.1 Delivery-versus-Payment

ID	PONTES.UR.04.060
Name	Delivery-versus-Payment (DvP)
Requirement	Pontes shall enable settlement of delivery-versus-payment (DvP) transactions in tokenised central bank money, where the payment leg is settled in the Eurosystem DLT, and the leg delivering the asset is settled on market DLT platform.

In the context of Delivery-versus-Payment transactions, Pontes shall foresee operations listed in the following table.

Table 4.3: List of requests and responses for Delivery-versus-Payment processing

Operation	Request / Response	Description
Delivery-versus-Payment (DvP) Initialisation	Request	Sent from the Seller ¹⁰ to request the initiation of the Delivery-versus-Payment transaction. This entails the creation of Execution Key and Cancellation Key, related hashes, Delivery-versus-Payment identifier. This message is covered in section 9.3.2.
	Response	Response received by the Seller with the status of the relevant initialisation request. Upon correct initialization of the Delivery-versus-Payment transaction, the Seller receives the Delivery-versus-Payment instance parameters (i.e. Delivery-versus-Payment identifier, timeout and Hashed Execution Key and Cancellation Key) enabling the Seller to lock the asset in a Hash-Link Contract (HLC) smart contract on the market DLT platform. This message is covered in section 9.3.2.
Initialisation Query	Request	Sent from the Buyer ¹¹ (or the Seller) to query an initialised Delivery-versus-Payment instance and retrieve its parameters. This would allow the Buyer for data validation, before sending the correspondent DvP Payment. This message is covered in section 9.3.2.
	Response	Response received by the Buyer (or the Seller) containing all the relevant data related to an initialised Delivery-versus-Payment instance. This message is covered in section 9.3.2.
DvP Payment	Request	Sent from the Buyer to settle the payment leg of a Delivery-versus-Payment transaction. This message is covered in section 9.3.2.
	Response	Response received by the Buyer with the status of the payment. Upon successful settlement, the Buyer receives a SETTLED payment status, together with the Execution Key that allows for asset unlocking on the market DLT platform (otherwise the Execution Key is not revealed to the Buyer). It contains the REJECTED payment status, e.g. in case the settlement attempt happens after the timeout. This message is covered in section 9.3.2.
Reveal Key (execution)	Request	Sent from the Buyer to query the status of the Delivery-versus-Payment transaction and retrieve the Execution Key, if the payment has been settled. This message is covered in section 9.3.2.
	Response	Response received by the Buyer with the status of the Delivery-versus-Payment and, if the payment has been successfully

¹⁰ In the context of a Delivery-versus-Payment transaction, Seller means a Participant (instructing for itself or an Addressable Entity) or a Market DLT Operator (instructing on behalf of the Participant or a Addressable Entity). It is the seller (or acts on behalf of the seller) of an eligible asset on a Market DLT platform. It communicates with Pontes to initialise the Delivery-versus-Payment and to check that a wallet has been correctly credited.

¹¹ In the context of a Delivery-versus-Payment transaction, the Buyer means a Participant (acting for itself or an Addressable Entity) or a Market DLT Operator (acting on behalf of the Participant or a Addressable Entity). It is the buyer (or acts on behalf of the buyer) of an eligible asset on a Market DLT platform. It communicates with Pontes to debit a wallet.

		settled, the Execution Key. This message is covered in section 9.3.2.
Reveal Key (cancellation)	Request	Sent from the Seller to query the status of the Delivery-versus-Payment transaction and retrieve the Cancellation Key, if the payment has not been settled and the timeout is expired. This message is covered in section 9.3.2.
	Response	Response received by the Seller with the status of the Delivery-versus-Payment and, if the payment has not been settled successfully and the timeout is expired, the Cancellation Key. This message is covered in section 9.3.2.
	Rejection Response	A response sent by Pontes to the Seller (or the Buyer) when Pontes failed to process the specific request due to, e.g. validation errors, rejection of the DvP Payment or timeout. This message is covered in section 9.3.2.

4.2.1.1 Delivery-versus-Payment (DvP) Initialisation

Figure 4.4
Delivery-versus-Payment (DvP) Initialisation Process Diagram

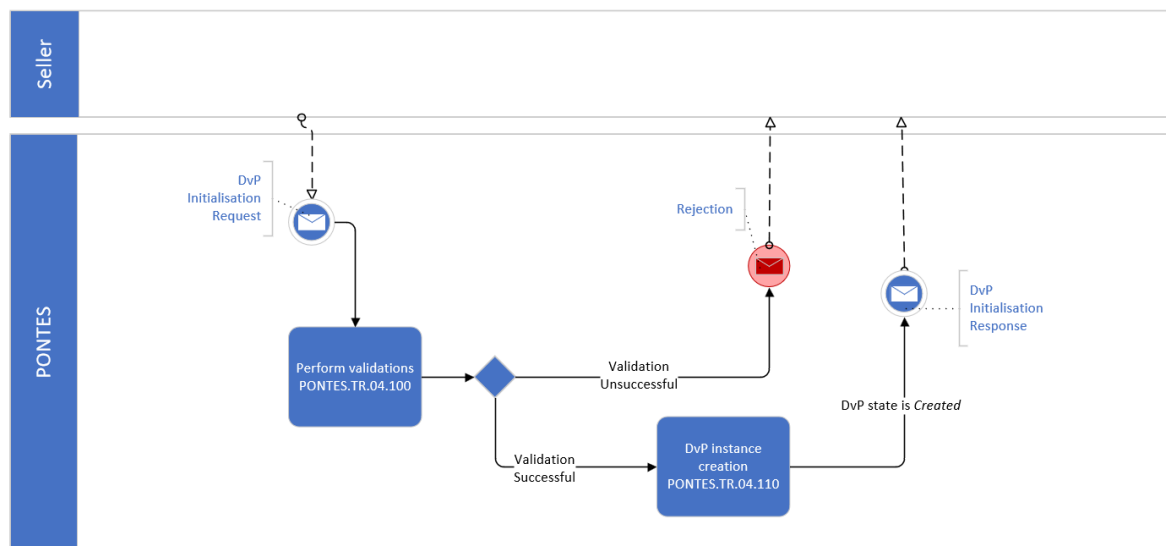


Table 4.4: List of tasks for the DvP Initialisation processing workflow

Task	Description
PONTES.TR.04.100	Execution of technical and business validations after the Seller requests a Delivery-versus-Payment instance; if the DvP initialisation request received is rejected, the Seller will receive an error response.
PONTES.TR.04.110	Upon successful completion of PONTES.TR.04.100, creation of the initialised Delivery-versus-Payment instance into Pontes, configured with the data received from the Seller.

ID	PONTES.UR.04.070
Name	Delivery-versus-Payment (DvP) Initialisation - Technical and business validation
Requirement	Pontes shall perform technical and business validations of the incoming Delivery-versus-Payment (DvP) Initialisation request.

Pontes shall validate the request and notify the requestor in case a validation error occurred¹². The performed validations are, at least, the ones defined in PONTES.UR.04.080, PONTES.UR.04.090, PONTES.UR.04.100, PONTES.UR.04.110, PONTES.UR.04.120, PONTES.UR.04.130. Moreover, all the rules defined in section 4.5 apply. Finally, Pontes shall validate that the received request is in line with PONTES.UR.09.180.

ID	PONTES.UR.04.080
Name	Derivation of wallet or CMB on the creditor side
Requirement	Pontes shall, for each transaction, identify the wallet to credit or CMB for which the headroom is to be increased (including the linked wallet to be credited). Pontes shall determine the wallet/CMB based on the Debtor BIC and currency of the transaction.

The Creditor BIC is uniquely linked to exactly one wallet or CMB.

ID	PONTES.UR.04.090
Name	Derivation of wallet or CMB on the debtor side
Requirement	Pontes shall identify for each transaction the wallet to debit or CMB for which to decrease the headroom (and linked wallet to debit). Pontes shall determine the wallet/CMB from the Creditor BIC and currency of the transaction.

The Debtor BIC is uniquely linked to exactly one wallet or CMB.

ID	PONTES.UR.04.100
Name	Detection of blocked wallet (or CMB) on the creditor side
Requirement	Pontes shall validate that the received transaction would not credit a wallet (or CMB) which is blocked for crediting.

Pontes rejects requests if the addressed wallet (or CMB) on the creditor side is blocked for crediting and informs the requestor accordingly.

ID	PONTES.UR.04.110
Name	Detection of blocked wallet (or CMB) on the debtor side

¹² In case of a successful validation, a DvP instance is created. The requestor receives a response after the processing of PONTES.TR.04.110.

Requirement	Pontes shall validate that the received transaction would not debit a wallet (or CMB) which is blocked for debiting.
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Pontes rejects requests if the addressed wallet (or CMB) on the debtor side is blocked for debiting and informs the requestor accordingly.

ID	PONTES.UR.04.120
Name	Currency validation
Requirement	Pontes shall validate that the currency specified in the received transaction matches the currency defined for both the wallets to debit and credit.

Pontes can only settle a transaction if the currency of the wallet on the debtor side matches the currency of the wallet on the creditor side and the currency of the transaction itself.

ID	PONTES.UR.04.130
Name	Validation of the opening and closing dates of accounts
Requirement	Pontes shall validate that the opening date of both the Buyer and Seller wallets are equal to or less than the current Business date. Furthermore, Pontes shall validate that the closing date of both the Buyer and Seller wallets are equal or greater than the current business date.

Pontes rejects the transaction if at least one of the two accounts fails to fulfil the aforementioned conditions.

ID	PONTES.UR.04.140
Name	Delivery-versus-Payment (DvP) Instance Creation
Requirement	Upon successful validation of the Delivery-versus-Payment (DvP) Initialisation, Pontes shall create a new DvP instance.

Pontes shall generate an ID, an Execution Key and a Cancellation Key, and their respective hashes, for the initialised DvP instance. The keys shall be stored in a secure way, ensuring data replication, and disclosed only in line with the rules defined in this document. Pontes shall be able to manage a timeout for the initialised DvP, based on the time in which the DvP has been initialised and a system parameter which defines the timeout for DvP transactions. The DvP instance status is initialised as Created. Finally, Pontes shall return to the requestor a response which is in line with PONTES.UR.09.190.

4.2.1.2 Initialisation Query

Figure 4.5
Initialisation Query Process Diagram

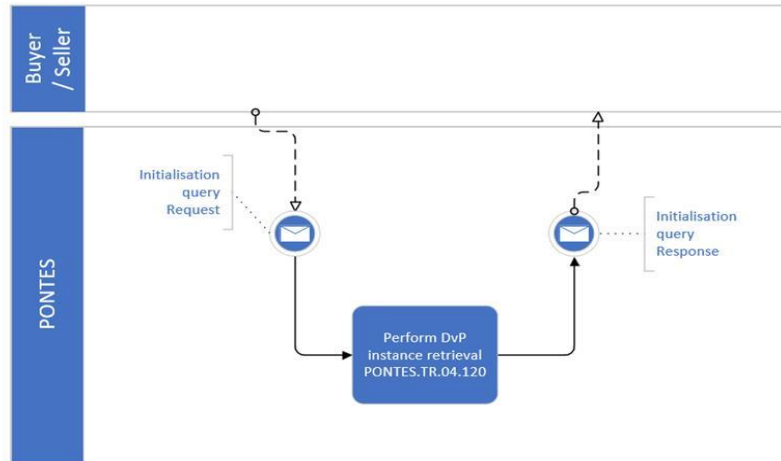


Table 4.5: List of tasks for the Initialisation Query processing workflow

Task	Description
PONTES.TR.04.120	Retrieval of specific DvP instance data to be forwarded to the requestor.

ID	PONTES.UR.04.150
Name	Initialisation Query - Technical and business validation
Requirement	Pontes shall perform technical and business validations of the incoming Initialisation Query request.

Pontes shall validate the request and notify the requestor in case a validation error occurred. The performed validations are, at least, the ones defined in PONTES.UR.04.160 and PONTES.UR.04.170. Moreover, all the rules defined in section 4.5 apply. Finally, Pontes shall validate that the received request is in line with PONTES.UR.09.210.

ID	PONTES.UR.04.160
Name	Initialisation Query – Participant and Market DLT Operator functional equivalence
Requirement	Pontes shall enable the functional equivalence between Participant and Market DLT Operator when sending an Initialisation Query

Pontes shall accept Initialisation Query requests for a Delivery-versus-Payment (DvP) instance:

- (in case the requestor is the Seller) from a Participant even if the Delivery-versus-Payment (DvP) instance has been initialised by a Market DLT Operator instructing on behalf of the Participant

- (in case the requestor is the Seller) from a Market DLT Operator even if the Delivery-versus-Payment (DvP) instance has been initialised by a Participant which specified the Market DLT Operator as legally responsible for the settlement of the leg on the Market DLT platform
- (in case the requestor is the Buyer) from the Participant owning the wallet to be debited or a Market DLT Operator that can instruct on behalf of that Participant.

ID	PONTES.UR.04.170
Name	Initialisation Query – Multiple Requests
Requirement	Pontes shall allow an Initialisation Query to be submitted multiple times for a single Delivery-versus-Payment (DvP) instance.

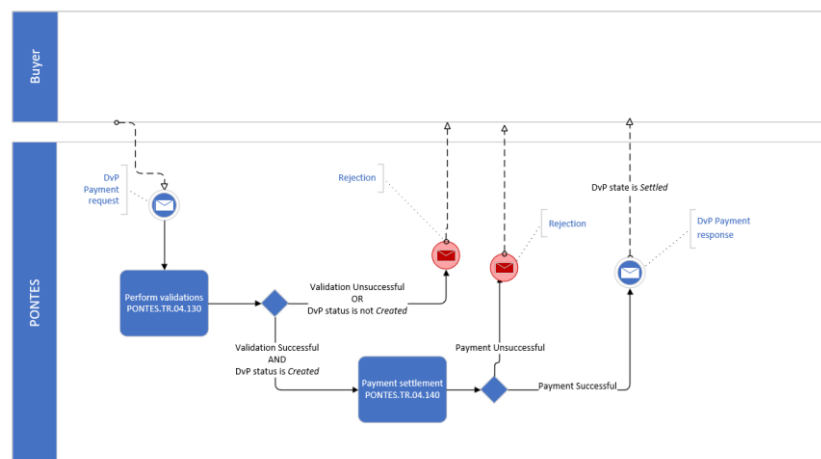
Pontes shall process and respond to each Initialisation Query independently, regardless of the number of prior submissions for the same DvP instance.

ID	PONTES.UR.04.180
Name	Initialisation Query – Instance Retrieval
Requirement	Pontes shall retrieve the information related to the Delivery-versus-Payment (DvP) instance requested.

Based on the information in the received Initialisation Query request, Pontes shall retrieve the relevant initialised DvP instance, if it exists. Finally, Pontes shall return to the requestor a response which is in line with PONTES.UR.09.230.

4.2.1.3 Delivery-versus-Payment (DvP) Payment¹³

Figure 4.6
DvP Payment Process Diagram



¹³ Tables and diagrams included in this User Requirements Document (URD) are intended to illustrate possible functional flows. Concrete technical implementation choices remain subject to further technical assessment and they will be elaborated as part User Detailed Functional Specification (UDFS) document.

Table 4.6: List of tasks for the DvP Payment processing workflow

Task	Description
PONTES.TR.04.130	Execution of technical and business validations; if the DvP payment request received is rejected, the Buyer will receive an error response.
PONTES.TR.04.140	Upon successful completion of PONTES.TR.04.130, the DvP payment transaction is forwarded to the Eurosystem DLT for settlement.

ID	PONTES.UR.04.190
Name	Delivery-versus-Payment (DvP) Payment - Technical and business validation
Requirement	Pontes shall perform technical and business validations of the incoming Delivery-versus-Payment (DvP) Payment request.

Pontes shall validate the request and notify the requestor in case a validation error occurred¹⁴. The performed validations are, at least, the ones defined in PONTES.UR.04.080, PONTES.UR.04.090, PONTES.UR.04.100, PONTES.UR.04.110, PONTES.UR.04.120, PONTES.UR.04.130, PONTES.UR.04.200, PONTES.UR.04.210. Moreover, all the rules defined in section 4.5 apply. Finally, Pontes shall validate that the received request is in line with PONTES.UR.09.240.

ID	PONTES.UR.04.200
Name	Delivery-versus-Payment (DvP) Payment – Participant and Market DLT Operator functional equivalence
Requirement	Pontes shall enable the functional equivalence between Participant and Market DLT Operator when sending a Delivery-versus-Payment (DvP) Payment request.

Pontes shall accept Delivery-versus-Payment (DvP) Payment requests for a Delivery-versus-Payment (DvP) instance:

- From a Participant even if the Delivery-versus-Payment (DvP) instance has been initialised by a Market DLT Operator instructing on behalf of the Participant
- From a Market DLT Operator even if the Delivery-versus-Payment (DvP) instance has been initialised by a Participant which specified the Market DLT Operator as legally responsible for the settlement of the leg on the Market DLT platform.

ID	PONTES.UR.04.210
Name	Delivery-versus-Payment (DvP) Payment – DvP instance status
Requirement	Pontes shall validate that Delivery-versus-Payment (DvP) Payment request is sent for DvP instance in the correct status.

When validating a Delivery-versus-Payment (DvP) Payment request, Pontes shall check, at least, that:

- the DvP instance exists,

¹⁴ In case of a successful validation, payment settlement is attempted according to PONTES.TR.04.140. The requestor receives a response after the processing of the task.

- the DvP instance is in status Created,
- the DvP instance information match the data in the Delivery-versus-Payment (DvP) Payment request,
- the timeout related to the DvP instance has not yet expired.

ID	PONTES.UR.04.220
Name	Delivery-versus-Payment (DvP) Payment – funds availability
Requirement	Pontes shall validate the availability of funds to settle a Delivery-versus-Payment (DvP) Payment.

Pontes shall ensure that the wallet to be debited is not blocked and has sufficient funds to cover the full amount of the Delivery-versus-Payment (DvP) Payment request. If sufficient funds are not available, the settlement attempt shall be rejected in its entirety, and no partial settlement shall occur. In the event of rejection, new settlement attempts shall be permitted through subsequent Delivery-versus-Payment (DvP) Payment requests once additional funds become available or new instructions are submitted.

ID	PONTES.UR.04.230
Name	Delivery-versus-Payment (DvP) Payment – settlement
Requirement	Upon successful validation of the Delivery-versus-Payment (DvP) Payment request, Pontes shall settle the DvP Payment.

Pontes shall settle for the full amount as specified in the request. The DvP instance status is updated to Settled. Finally, Pontes shall return to the requestor a response which is in line with PONTES.UR.09.250.

4.2.1.4 Reveal Key (Execution)

Figure 4.7
Reveal Key (Execution) Process Diagram

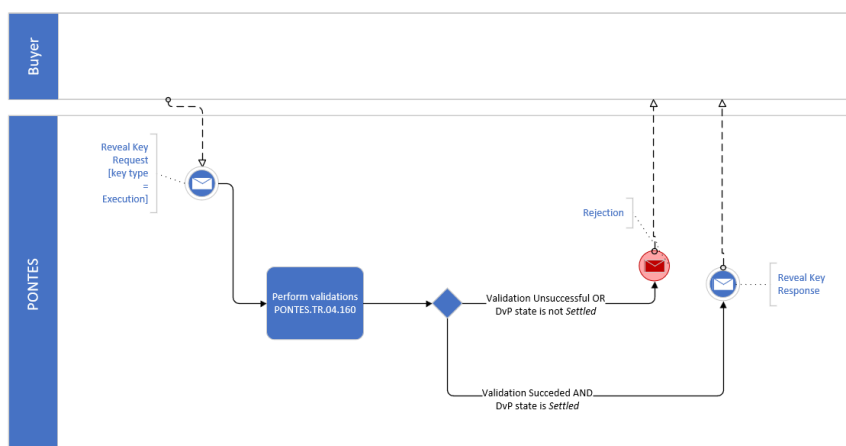


Table 4.7: List of tasks for the Reveal Key (Execution) processing workflow

Task	Description
PONTES.TR.04.160	Execution of technical and business validations; if the DvP status is Settled and the validations are successful the Buyer will receive the secret that can be used to force the transfer of the ownership of the asset on the Market DLT. Otherwise it will receive an error response.

ID	PONTES.UR.04.240
Name	Reveal Key (Execution) - Technical and business validation
Requirement	Pontes shall perform technical and business validations of the incoming Reveal Key (Execution) request.

Pontes shall validate the request and notify the requestor in case a validation error occurred. The performed validations are, at least, the ones defined in PONTES.UR.04.250, PONTES.UR.04.260, PONTES.UR.04.270, PONTES.UR.04.280. Moreover, all the rules defined in section 4.5 apply. Finally, Pontes shall validate that the received request is in line with PONTES.UR.09.260.

ID	PONTES.UR.04.250
Name	Reveal Key (Execution) – Identification
Requirement	Pontes shall identify that a Reveal Key request refers to the Execution Key, on the basis of a parameter in the request.

ID	PONTES.UR.04.260
Name	Reveal Key (Execution) – Participant and Market DLT Operator functional equivalence
Requirement	Pontes shall enable the functional equivalence between Participant and Market DLT Operator when sending a Reveal Key (Execution).

Pontes shall accept Reveal Key (Execution) requests for a Delivery-versus-Payment (DvP) instance:

- From a Participant (acting as Buyer in the DvP transaction) even if the Delivery-versus-Payment (DvP) instance has been initialised (and/or settled) by a Market DLT Operator instructing on behalf of the Participant
- From a Market DLT Operator even if the Delivery-versus-Payment (DvP) instance has been initialised (and/or settled) by a Participant which specified the Market DLT Operator as legally responsible for the settlement of the leg on the Market DLT platform.

ID	PONTES.UR.04.270
Name	Reveal Key (Execution) – DvP instance status
Requirement	Pontes shall validate that Reveal Key (Execution) is sent for DvP instance in the correct status.

When validating a Reveal Key (Execution) request, Pontes shall check, at least, that:

- the DvP instance exists,
- the DvP instance is in status Settled.

ID	PONTES.UR.04.280
Name	Reveal Key (Execution) – Multiple Requests
Requirement	Pontes shall allow a Reveal Key (Execution) to be submitted multiple times for a single Delivery-versus-Payment (DvP) instance.

Pontes shall process and respond to each Reveal Key (Execution) independently, regardless of the number of prior submissions for the same DvP instance.

ID	PONTES.UR.04.290
Name	Reveal Key (Execution) – Execution Key disclosure
Requirement	Upon successful validation of the Reveal Key (Execution) request, Pontes shall disclose the Execution Key.

Upon successful validation of the Reveal Key (Execution) request, Pontes shall return to the requestor a response which is in line with PONTES.UR.09.270 (containing the Execution Key).

4.2.1.5 Reveal Key (Cancellation)

Figure 4.8
Reveal Key (Cancellation) Process Diagram

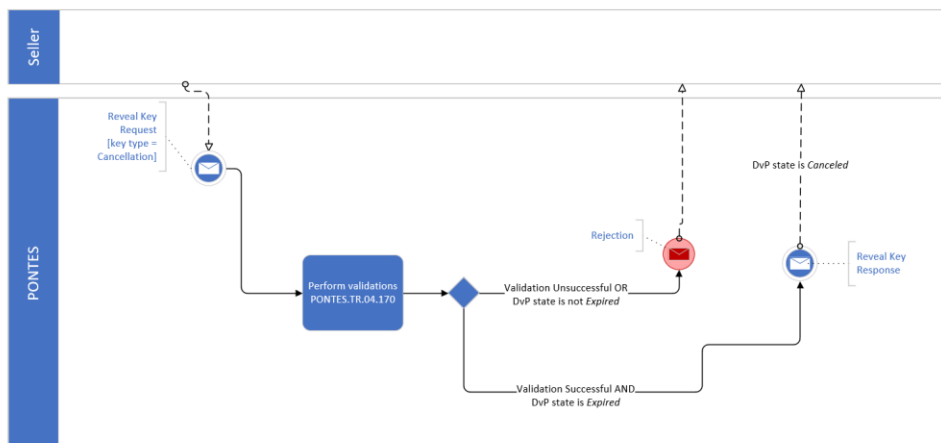


Table 4.8: List of tasks for the Reveal Key (Cancellation) processing workflow

Task	Description
PONTES.TR.04.170	Execution of technical and business validations; if the DvP status is Expired and the validations are successful the Seller will receive the secret to unlock the asset on the asset DLT. Otherwise, it will receive an error response.

ID	PONTES.UR.04.300
Name	Reveal Key (Cancellation) - Technical and business validation
Requirement	Pontes shall perform technical and business validations of the incoming Reveal Key (Cancellation) request.

Pontes shall validate the request and notify the requestor in case a validation error occurred. The performed validations are, at least, the ones defined in PONTES.UR.04.310, PONTES.UR.04.320, PONTES.UR.04.330, PONTES.UR.04.340. Moreover, all the rules defined in section 4.5 apply. Finally, Pontes shall validate that the received request is in line with PONTES.UR.09.260.

ID	PONTES.UR.04.310
Name	Reveal Key (Cancellation) – Identification
Requirement	Pontes shall identify that a Reveal Key request refers to the Cancellation Key, on the basis of a parameter in the request.

ID	PONTES.UR.04.320
Name	Reveal Key (Cancellation) – Participant and Market DLT Operator functional equivalence
Requirement	Pontes shall enable the functional equivalence between Participant and Market DLT Operator when sending a Reveal Key (Cancellation).

Pontes shall accept Reveal Key (Cancellation) requests for a Delivery-versus-Payment (DvP) instance:

- From a Participant (acting as Seller in the DvP transaction) even if the Delivery-versus-Payment (DvP) instance has been initialised by a Market DLT Operator instructing on behalf of the Participant
- From a Market DLT Operator even if the Delivery-versus-Payment (DvP) instance has been initialised by a Participant which specified the Market DLT Operator as legally responsible for the settlement of the leg on the Market DLT platform.

ID	PONTES.UR.04.330
Name	Reveal Key (Cancellation) – DvP instance status
Requirement	Pontes shall validate that a Reveal Key (Cancellation) is sent for DvP instance in the correct status.

When validating a Reveal Key (Cancellation) request, Pontes shall check, at least, that:

- the DvP instance exists,
- the DvP instance is in status Expired (the timeout for the DvP instance expired and it has not been settled successfully).

ID	PONTES.UR.04.340
Name	Reveal Key (Cancellation) – Multiple Requests
Requirement	Pontes shall allow a Reveal Key (Cancellation) to be submitted multiple times for a single Delivery-versus-Payment (DvP) instance.

Pontes shall process and respond to each Reveal Key (Cancellation) independently, regardless of the number of prior submissions for the same DvP instance.

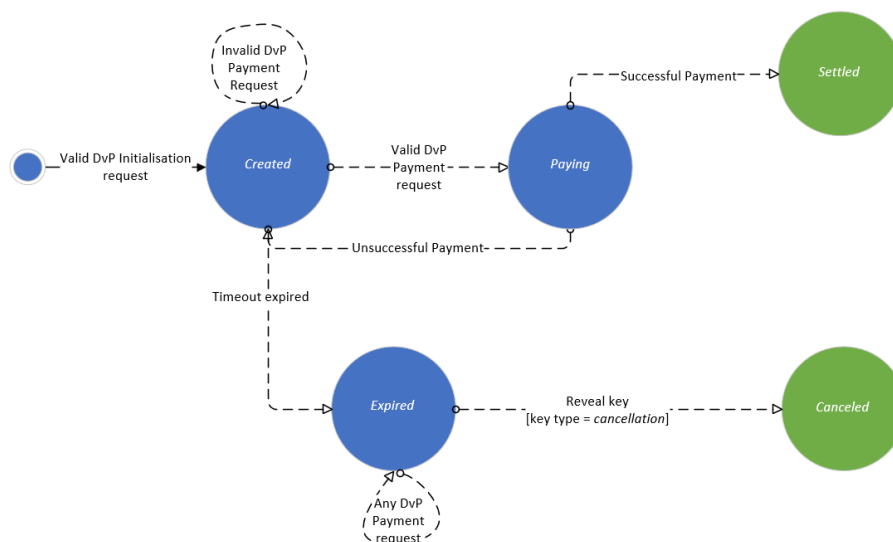
ID	PONTES.UR.04.350
Name	Reveal Key (Cancellation) – Cancellation Key disclosure
Requirement	Upon successful validation of the Reveal Key (Cancellation) request, Pontes shall disclose the Cancellation Key.

Upon successful validation of the Reveal Key (Cancellation) request, Pontes shall return to the requestor a response which is in line with PONTES.UR.09.210 (containing the Cancellation Key).

4.2.1.6 Delivery-versus-Payment Lifecycle

ID	PONTES.UR.04.360
Name	Delivery-versus-Payment Lifecycle Management
Requirement	Pontes shall manage the lifecycle of a Delivery-versus-Payment (DvP) transaction in accordance with the stages described in the diagram below.

Figure 4.9
Delivery-versus-Payment Status Diagram



4.2.2 Payment-versus-Payment

ID	PONTES.UR.04.370
Name	Payment-versus-Payment (PvP)
Requirement	Pontes shall enable settlement of payment-versus-payment (PvP) transactions in tokenised central bank money, where one payment leg is settled in the Eurosystem DLT, and the other payment leg is settled on market DLT platform.

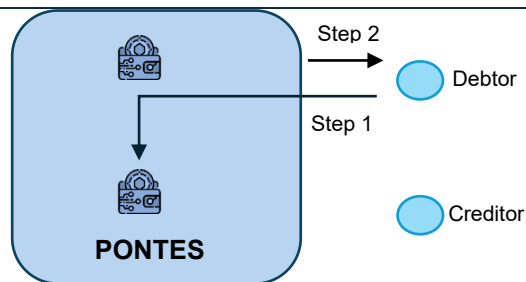
Pontes shall enable PvP transactions in line with the requirements for DvP transactions, as defined in section 4.2.1. The requests and responses for PvP transactions are defined in section 9.3.3.

4.3 ON-CHAIN ONE LEG TRANSACTIONS

This section outlines the requirements for wallet-to-wallet payments.

Figure 4.10 illustrates the workflow for a wallet-to-wallet payment in Pontes. The steps in the overall process are further detailed in the document. Exceptional cases, such as validation errors, are not depicted in the diagram, but mentioned in the explanations following the diagram.

Figure 4.10
Wallet-to-Wallet Payment



Step 1: The Debtor sends the Wallet-to-Wallet Payment request to Pontes. After successful validation (including availability of sufficient funds), Pontes settles the amount.

Step 2: Pontes sends a response to the Debtor. In case the payment is settled, a successful response is returned. Otherwise, an error message is returned.

4.3.1 Wallet-to-Wallet Payment¹⁵

ID	PONTES.UR.04.380
Name	Wholesale payments
Requirement	Pontes shall enable settlement of wholesale payments in tokenised central bank money only where such payments arise in the context of eligible asset transactions (e.g. coupon payments, margin calls, etc.) or other automated wholesale payments.

In the context of Wallet-to-Wallet Payments, Pontes shall foresee operations listed in the following table.

¹⁵ Tables and diagrams included in this User Requirements Document (URD) are intended to illustrate possible functional flows. Concrete technical implementation choices remain subject to further technical assessment and they will be elaborated as part User Detailed Functional Specification (UDFS) document.

Table 4.9: List of requests and responses for Wallet to Wallet payments

Operation	Request / Response	Description
Wallet-to-Wallet payment	Request	Sent from the Debtor to settle a Wallet-to-Wallet payment. This message is covered in section 9.3.4.
	Response	Response received by the Debtor with the status of the Wallet-to-Wallet payment. This message is covered in section 9.3.4.
	Rejection Response	A response sent by Pontes to the Debtor when Pontes failed to process the specific request due to, e.g. validation errors. This message is covered in section 9.3.4.

Figure 4.11
Wallet to Wallet Payment Process

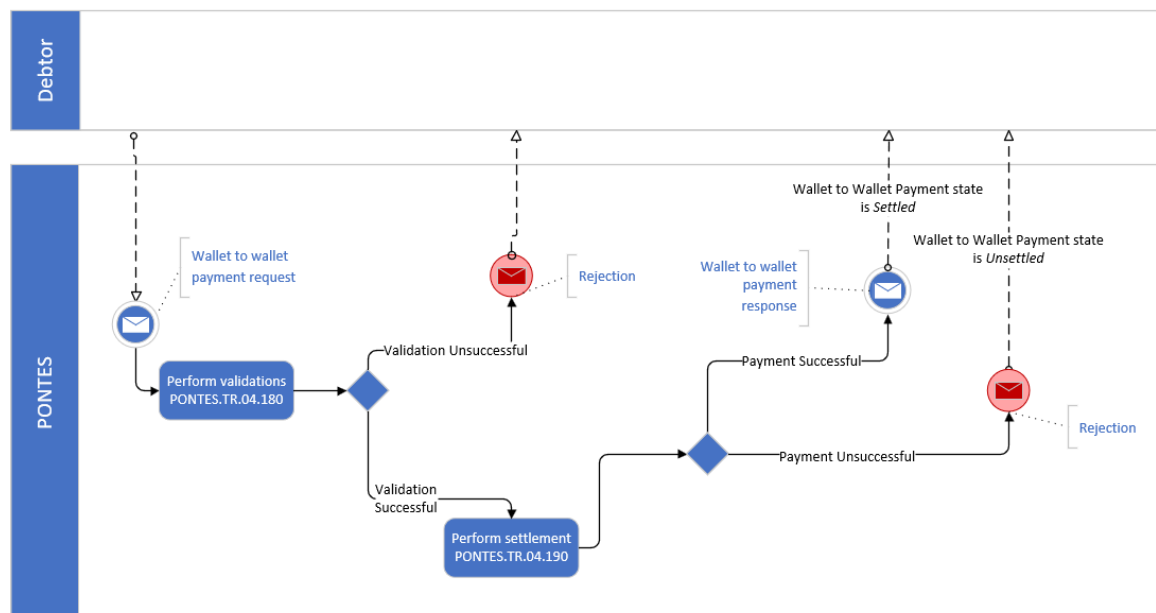


Table 4.10: List of tasks for the Wallet-to-Wallet Payment processing workflow

Task	Description
PONTES.TR.04.190	Execution of technical and business validations after the Debtor initiates a W2W payment; if the request is rejected, the Debtor will receive an error response.
PONTES.TR.04.200	Upon successful completion of PONTES.TR.04.190, the W2W payment is forwarded to the Eurosystem DLT for settlement.

ID	PONTES.UR.04.390
Name	Wallet-to-Wallet Payment - Technical and business validation
Requirement	Pontes shall perform technical and business validations of the incoming Wallet-to-Wallet Payment request.

Pontes shall validate the request and notify the requestor in case a validation error occurred. The performed validations are, at least, the ones defined in PONTES.UR.04.080, PONTES.UR.04.090, PONTES.UR.04.100, PONTES.UR.04.110, PONTES.UR.04.120, PONTES.UR.04.130. Moreover, all the rules defined in section 4.5 apply. Finally, Pontes shall validate that the received request is in line with PONTES.UR.09.310.

ID	PONTES.UR.04.400
Name	Wallet-to-Wallet Payment – funds availability
Requirement	Pontes shall validate the availability of funds to settle a Wallet-to-Wallet Payment.

Pontes shall ensure that the wallet to be debited has sufficient funds to cover the full amount of the Wallet-to-Wallet Payment request. If sufficient funds are not available, the request shall be rejected in its entirety, and no partial settlement shall occur.

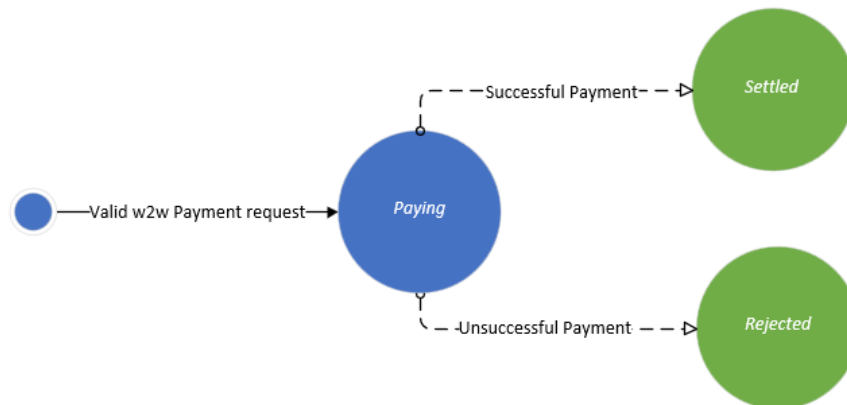
ID	PONTES.UR.04.410
Name	Wallet-to-Wallet Payment – settlement
Requirement	Upon successful validation of the Wallet-to-Wallet Payment request, Pontes shall settle the Wallet-to-Wallet Payment.

Pontes shall settle for the full amount as specified in the request. The Wallet-to-Wallet payment status is updated to Settled. Finally, Pontes shall return to the requestor a response which is in line with PONTES.UR.09.320.

4.3.1.1 Wallet-to-wallet payment Lifecycle

ID	PONTES.UR.04.420
Name	Wallet-to-Wallet Lifecycle Management
Requirement	Pontes shall manage the lifecycle of a Wallet-to-Wallet payment transaction in accordance with the stages described in the diagram below.

Figure 4.12
Wallet-to-Wallet Payment Status Diagram



4.4 GENERAL REQUIREMENTS

ID	PONTES.UR.04.510
Name	Technical and business validation
Requirement	Pontes shall perform technical and business validations of the incoming request. The business validation shall terminate when it encounters the first error.

Pontes validates an incoming request and reports an error in the response to the requestor in case a validation error occurred. The checks performed during the business validation are specified in this document for each request. In addition, technical validations are performed (e.g. the format of the received request is the expected one).

ID	PONTES.UR.04.520
Name	Authorisation to send a request
Requirement	Pontes shall validate that the party that sent a request is authorised to send it.

Pontes shall validate that the party that sent a request is authorised to do it, in line with the requirements defined in this document including PONTES.UR.06.490 and PONTES.UR.06.280.

ID	PONTES.UR.04.530
Name	Error response in case of a validation error
Requirement	Pontes shall inform the party sending the request with an error response in case a validation error occurred. The error response shall include a rejection reason code and optionally a description.

The error shall include at least a code and a description like in the standard error format for HTTP API (see [RFC 9457](#)).

5 LIQUIDITY MANAGEMENT

The objective of this chapter is to outline the Pontes liquidity management functionality providing a detailed overview of the transfer of liquidity from/to T2 (and other TARGET Services) to/from Pontes and between Pontes dedicated cash wallets belonging to the same Participant.

5.1 OVERVIEW

Pontes must support outbound and inbound liquidity transfers from/to T2 (and other TARGET Services) allowing management of tokenised liquidity of any Pontes dedicated cash wallet. Liquidity transfers can only be performed between DCWs and accounts in the TARGET Services denominated in the same currency.

Furthermore, Pontes must support intra service liquidity transfers, between two wallets:

- Liquidity transfers from / to Central Bank wallets are always possible,
- Liquidity transfers between two DCWs are only possible if the two DCWs belong to the same Participant¹⁶.

ID	PONTES.UR.05.010
Name	Wholesale CeBM tokens
Requirement	The service shall enable issuance and redemption of wholesale central bank money (wCeBM) in the form of DLT-based tokens that constitute direct, claims on the currency-issuing Central Banks.

ID	PONTES.UR.05.020
Name	One transit account in T2 CLM and one transit wallet in Pontes per currency
Requirement	Pontes shall make use of one transit account in T2 CLM per currency for all the liquidity transfers from/to TARGET Services. This is implemented via a transit wallet per currency in PONTES.

To transfer liquidity between T2 (and other TARGET Services) and Pontes, for each currency, a transit wallet in Pontes and the related transit account in T2 CLM are used. Both are managed by the respective issuer Central Bank. The transit account in T2 CLM mirrors the transit wallet in Pontes balance for the same currency.

¹⁶ In contingency situations a Central Bank may act on behalf of a Participant for liquidity management purpose. No act-on-behalf functionality is foreseen for liquidity management purpose between Participants.

The transit wallet in Pontes for each currency is used for the transfer of liquidity from/to Pontes. It is managed by the respective Central Bank (see also section [6.2](#)). The transit account in T2 CLM and the transit wallet in Pontes for the Euro currency are managed by the ECB.

ID	PONTES.UR.05.030
Name	Liquidity management process consistency
Requirement	Pontes shall enable the management of tokenised central bank money using processes and tools that are functionally consistent (even if potentially technologically different) with those applied to central bank money in existing TARGET Services. It shall include integration with the Central Liquidity Management (CLM) component of T2 for monitoring and liquidity management.

ID	PONTES.UR.05.040
Name	Overnight tokenised liquidity
Requirement	Pontes shall allow participants to hold their tokenised central bank money balances overnight on the Eurosystem DLT platform without having to repatriate them back to the Central Liquidity Management (CLM) component of T2.

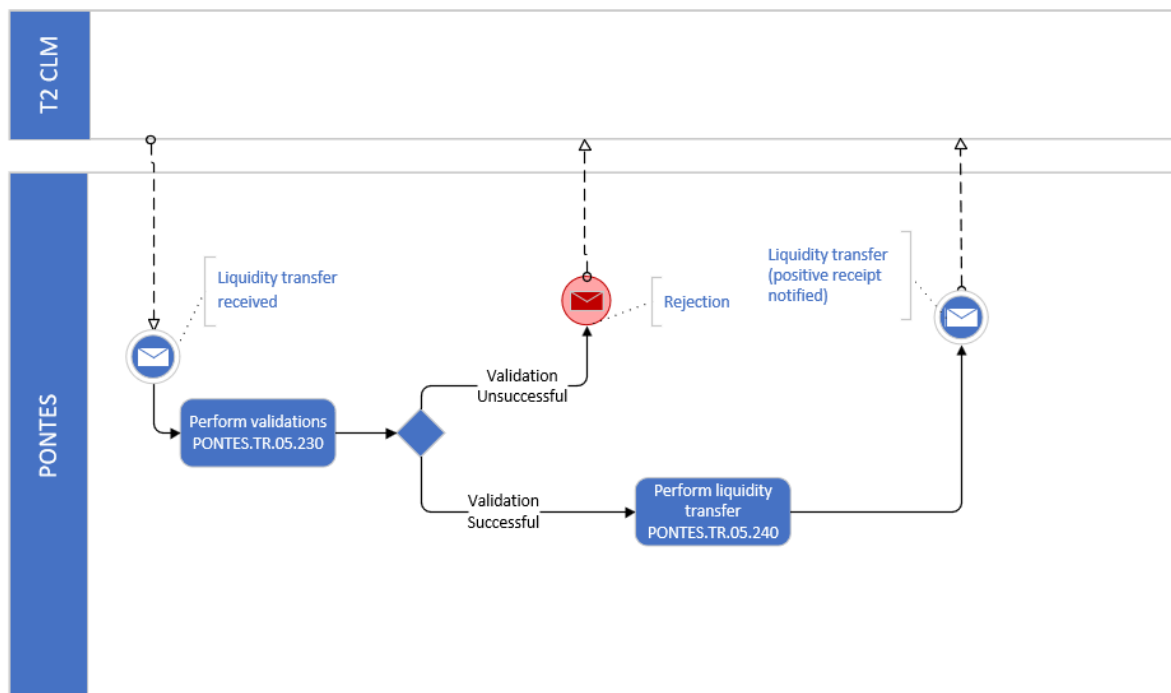
ID	PONTES.UR.05.050
Name	Minimum reserve requirements, interest calculation and overnight credit calculation
Requirement	Pontes shall support policy decisions concerning the nature of tokenised balances with respect to their potential contribution towards the minimum reserve requirements, interest calculation and overnight credit calculation.

ID	PONTES.UR.05.060
Name	Liquidity management integration with T2
Requirement	Pontes shall integrate seamlessly with the T2 Central Liquidity Management (CLM) for liquidity monitoring and management.

ID	PONTES.UR.05.070
Name	Flexible Liquidity management
Requirement	Pontes shall enable Participants to manage their liquidity through the Central Liquidity Management (CLM) component of T2, consistent with established TARGET liquidity management principles.

5.2 INBOUND LIQUIDITY TRANSFERS¹⁷

Figure 5.1
Inbound Liquidity Transfer Process Diagram



¹⁷ Tables and diagrams included in this User Requirements Document (URD) are intended to illustrate possible functional flows. Concrete technical implementation choices remain subject to further technical assessment and they will be elaborated as part User Detailed Functional Specification (UDFS) document.

Table 5.1: List of requests and responses for inbound liquidity transfers processing

Message	Request / Response	Description
Liquidity Transfer message	ISO message	Originated in T2-CLM, contains info about the wallet to be credited and the amount. This message is covered in section 9.3.5.
	ISO message	Originated in Pontes, can entail a negative receipt message in case an error occurred (e.g. unsuccessful validation in Pontes) or a positive receipt otherwise. This message is covered in section 9.3.5.

Table 5.2: List of tasks for the inbound liquidity transfers processing workflow

Task	Description
PONTES.TR.05.230	Execution of technical and business validations; the inbound liquidity transfer is rejected as soon as one validation fails. This task is covered in section 5.6.1.
PONTES.TR.05.240	Settle the funds with finality, i.e., crediting the relevant wallet and debiting the Transit Wallet in Pontes. This task is covered in section 5.6.4.

5.3 OUTBOUND LIQUIDITY TRANSFERS¹⁸

¹⁸ Tables and diagrams included in this User Requirements Document (URD) are intended to illustrate possible functional flows. Concrete technical implementation choices remain subject to further technical assessment and they will be elaborated as part User Detailed Functional Specification (UDFS) document.

Figure 5.2
Outbound Liquidity Transfer process

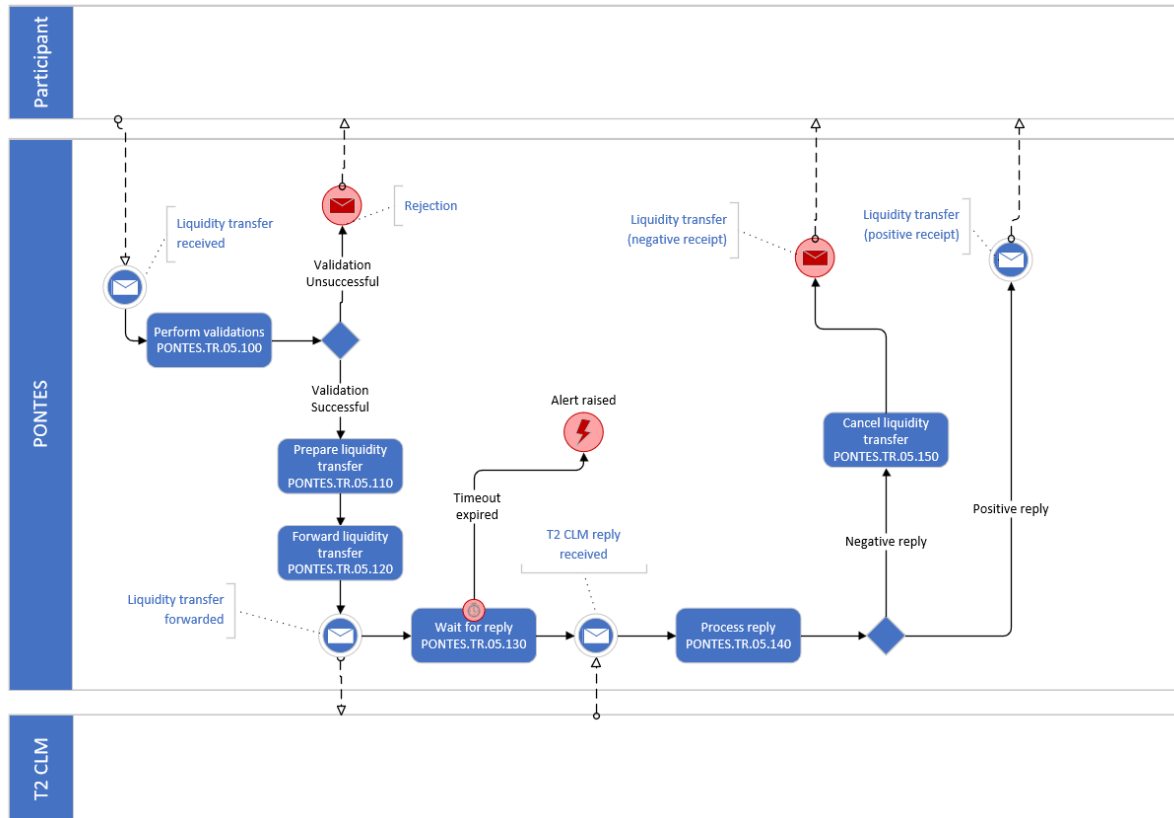


Table 5.3: List of requests and responses for outbound liquidity transfers processing

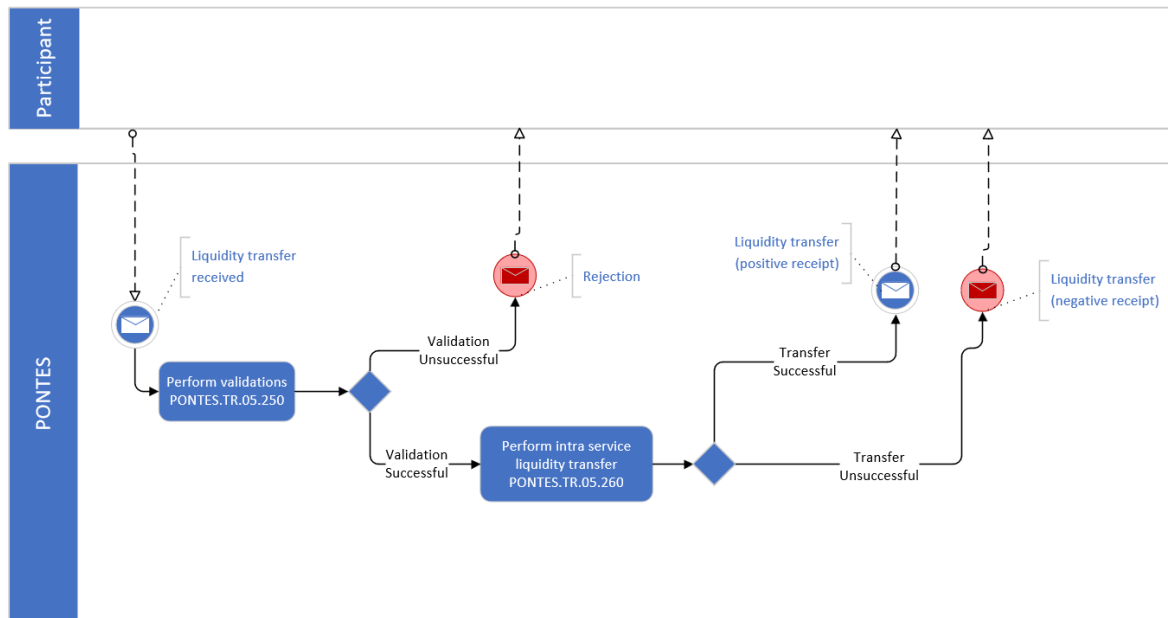
Message	Request / Response	Description
Liquidity Transfer	Request	Received by Pontes, contains info about the wallet to be debited and the amount. This message is covered in section 9.3.5
	Response	Originated in Pontes, can entail a negative receipt message in case an error occurred (e.g. unsuccessful validation in Pontes) or a positive receipt otherwise. This message is covered in section 9.3.5
Liquidity Transfer message	ISO message	Sent by Pontes, this message is forwarded by Pontes to T2 CLM (based on the data in the Liquidity Transfer Request), after successful settlement in Pontes. This message is covered in section 9.3.5
T2-CLM reply	ISO message	Received by Pontes, an ISO message sent by T2 CLM accepting or rejecting a liquidity transfer. This message is covered in section 9.3.5.

Table 5.4: List of tasks for the outbound liquidity transfers processing workflow

Task	Description
PONTES.TR.05.100	Execution of technical and business validations; the outbound liquidity transfer is rejected as soon as one validation fails. This task is covered in section 5.6.2.
PONTES.TR.05.110	Settlement of the funds with finality, i.e., debiting the relevant wallet and crediting the Transit Wallet in Pontes. This task is covered in section 5.6.4.
PONTES.TR.05.120	Forward of the liquidity transfer message to the T2-CLM. This task is covered in section 5.6.5.
PONTES.TR.05.130	Wait for settlement confirmation from the T2-CLM. This task is covered in section 5.6.6.
PONTES.TR.05.140	Process the reply from the T2-CLM and send positive receipt to the initiator of the liquidity transfer upon successful settlement in the T2-CLM. This task is covered in section 5.6.7.
PONTES.TR.05.150	Reverse the liquidity transfer and send a negative receipt to the initiator of the liquidity transfer message, in case of rejection from the T2-CLM. This task is covered in section 5.6.8.

5.4 INTRA SERVICE LIQUIDITY TRANSFERS¹⁹

Figure 5.3
Intra service Liquidity Transfer Process Diagram



¹⁹ Tables and diagrams included in this User Requirements Document (URD) are intended to illustrate possible functional flows. Concrete technical implementation choices remain subject to further technical assessment and they will be elaborated as part User Detailed Functional Specification (UDFS) document.

Table 5.5: List of requests and responses for intra service liquidity transfers processing

Message	Request / Response	Description
Liquidity Transfer	Request	Received by Pontes, contains information about the wallets to be credited and debited and the amount.
	Response	Originated in Pontes, can entail a negative receipt message in case an error occurred (e.g. unsuccessful validation in Pontes) or a positive receipt otherwise. This message is covered in section 9.3.5

Table 5.6: List of tasks for intra service liquidity transfers processing workflow

Task	Description
PONTES.TR.05.250	Execution of technical and business validations; the intra service liquidity transfer is rejected as soon as one validation fails. This task is covered in section 5.6.3.
PONTES.TR.05.260	Settle the funds with finality, i.e. debits the wallet to be debited and credits the wallet to be credited. This task is covered in section 5.6.4

5.5 RULE-BASED AND STANDING ORDERS LIQUIDITY TRANSFERS

ID	PONTES.UR.05.080
Name	Rule-based liquidity transfers
Requirement	Pontes shall enable rule-based liquidity transfers to adjust the balance of Dedicated Cash Wallets in the event of breach of the specified floor or ceiling thresholds. If the floor threshold is breached, a rule-based liquidity transfer shall pull liquidity from the Main Cash Account in T2 CLM of the owner of the Dedicated Cash Wallet. If the ceiling threshold is breached, a rule-based liquidity transfer shall push liquidity to the Main Cash Account in T2 CLM of the owner of the Dedicated Cash Wallet.

These rule-based liquidity transfers are configured in the Common Reference Data Management (CRDM) component of the TARGET Services.

ID	PONTES.UR.05.090
Name	Standing orders liquidity transfers
Requirement	Pontes shall enable standing orders liquidity transfers to transfer Central Bank Money from: • a debited account (Main Cash Account or CLM Central Bank Account in T2 CLM) to a credited wallet (Dedicated Cash Wallet or Central Bank wallet in Pontes) • a debited wallet (Dedicated Cash Wallet or Central Bank wallet in Pontes) to a credited account (Main Cash Account or CLM Central Bank Account in T2 CLM)

These standing orders liquidity transfers are configured in the Common Reference Data Management (CRDM) component of the TARGET Services.

5.6 LIQUIDITY TRANSFER PROCESSING

5.6.1 Validation of Inbound Liquidity Transfers

ID	PONTES.UR.05.100
Name	Validation of an inbound liquidity transfer
Requirement	Pontes shall validate that the information contained in the inbound liquidity transfer message is consistent with the data available in PONTES

Pontes shall validate the information included in the liquidity transfer message (camt.050). Pontes shall check at least:

- the identifier of the wallet to credit in Pontes;
- the currency denomination of the wallet to credit in Pontes;
- the status of the wallet to credit in Pontes;
- the type of the wallet to credit in Pontes.

Pontes shall check that (i) the wallet to credit is a valid wallet in Pontes (e.g., it exists and is open), (ii) it is denominated in the same currency used in the inbound liquidity transfer and (iii) the wallet to credit is not blocked.

In case a validation error occurs, Pontes shall reject the liquidity transfer and notify T2 CLM (e.g. using a camt.025).

ID	PONTES.UR.05.110
Name	Validation of wallet type for inbound liquidity transfers
Requirement	The service shall allow for inbound liquidity transfers from T2 CLM crediting Dedicated Cash Wallets or Central Bank Wallets.

5.6.2 Validation of Outbound Liquidity Transfers

ID	PONTES.UR.05.120
Name	Authorisation to send outbound liquidity transfer
Requirement	Pontes shall validate that the requestor of a liquidity transfer is authorised to send an outbound liquidity transfer request. If not, Pontes shall reject the liquidity transfer and reflect the rejection in the response provided to the requestor.

Table 5.7: Outbound liquidity transfers authorisation

Actor	U2A (2-eyes)	U2A (4-eyes)	A2A
Central Banks	✓	✓	✓
Participants	✓	✓	✓
Market DLT Operators			
Addressable Entities			

ID	PONTES.UR.05.130
Name	Mandatory fields for an outbound liquidity transfer request
Requirement	Pontes shall validate the mandatory attributes of an outbound liquidity transfer request. In case of a mandatory attributes error, Pontes shall reject the liquidity transfer and reflect the rejection in the response provided to the requestor.

Pontes shall validate that the received Liquidity Transfer request is in line with PONTES.UR.09.380.

ID	PONTES.UR.05.140
Name	Validation of an outbound liquidity transfer
Requirement	Pontes shall validate that information contained in the outbound liquidity transfer request is consistent with the data available in PONTES.

Pontes shall validate the information included in the liquidity transfer request. Pontes shall check at least:

- the identifier of the wallet to debit in Pontes;
- the currency denomination of the wallet to debit in Pontes;
- the status of the wallet to debit in Pontes;
- the type of the wallet to debit in Pontes.

Pontes shall check that (i) the wallet to debit is a valid wallet in Pontes (e.g., it exists and is open), (ii) it is denominated in the same currency used in the outbound liquidity transfer and (iii) the wallet to debit is not blocked.

In case a validation error occurs, Pontes shall reject the liquidity transfer and reflect the rejection in the response provided to the requestor.

ID	PONTES.UR.05.150
Name	Rejection of an outbound liquidity transfer due to insufficient funds
Requirement	Pontes shall reject an outbound liquidity transfer whose amount would decrease the balance of the wallet to debit below zero.

Pontes shall settle liquidity transfers on wallets for the full amount. If the DCW to debit does not have sufficient funds, the liquidity transfer is rejected and not settled partially.

ID	PONTES.UR.05.160
Name	Rejection of outbound liquidity transfers during T2 CLM closing hours
Requirement	Pontes shall reject an outbound liquidity transfer in case: (i) T2 CLM is closed; or (ii) the processing of liquidity transfers is not allowed in T2 CLM

T2 CLM sends appropriate triggers which Pontes uses to maintain the status of T2 CLM (open or closed). Pontes rejects liquidity transfers in the following two cases: (i) in case T2 CLM does not respond to liquidity transfers at all (e.g., during maintenance windows), (ii) in case T2 CLM rejects all liquidity transfers.

ID	PONTES.UR.05.170
Name	Outbound liquidity transfers initiated in Pontes
Requirement	Pontes shall allow to initiate outbound liquidity transfers (via U2A and A2A) debiting Dedicated Cash Wallets (or Central Bank Wallets) in Pontes and crediting accounts in: • T2 CLM • T2 RTGS • T2S • TIPS Outbound liquidity transfers are forwarded from T2 CLM to the other TARGET Services.

5.6.3 Validation of Intra service Liquidity Transfer

ID	PONTES.UR.05.180
Name	Authorisation to send intra service liquidity transfer
Requirement	Pontes shall validate that the requestor of a liquidity transfer is authorised to send an intra service liquidity transfer request. If not, Pontes shall reject the liquidity transfer and reflect the rejection in the response provided to the requestor.

Table 5.8: Intra service liquidity transfers authorisation

Actor	U2A (2-eyes)	U2A (4-eyes)	A2A
Central Banks	✓	✓	✓
Participants	✓	✓	✓
Market DLT Operators			
Addressable Entities			

ID	PONTES.UR.05.190
Name	Mandatory fields for an intra service liquidity transfer request
Requirement	Pontes shall validate the mandatory attributes of an intra service liquidity transfer request. In case of a mandatory attributes error, Pontes shall reject the liquidity transfer and reflect the rejection in the response provided to the requestor.

Pontes shall validate that the received Liquidity Transfer request is in line with PONTES.UR.09.380.

ID	PONTES.UR.05.200
Name	Validation of an intra service liquidity transfer
Requirement	Pontes shall validate that information contained in the intra service liquidity transfer request is consistent with the data available in PONTES.

Pontes shall validate the information included in the liquidity transfer request. Pontes shall check at least:

- the identifier of the wallet to debit in Pontes;
- the currency denomination of the wallet to debit in Pontes;
- the status of the wallet to debit in Pontes;
- the type of the wallet to debit in Pontes;
- the identifier of the wallet to credit in Pontes;
- the currency denomination of the wallet to credit in Pontes;
- the status of the wallet to credit in Pontes;

- the type of the wallet to credit in Pontes;

Pontes shall check that (i) the wallet to debit and the wallet to credit are valid wallets in Pontes (e.g., they exist and are open), (ii) the two wallets are denominated in the same currency used in the intra service liquidity transfer and (iii) the wallet to debit and the wallet to credit are not blocked.

In case a validation error occurs, Pontes shall reject the liquidity transfer and reflect the rejection in the response provided to the requestor.

ID	PONTES.UR.05.210
Name	Rejection of an intra service liquidity transfer due to insufficient funds
Requirement	Pontes shall reject an intra service liquidity transfer whose amount would decrease the balance of the wallet to debit below zero.

Pontes shall settle liquidity transfers on wallets for the full amount. If the DCW to debit does not have sufficient funds, the liquidity transfer is rejected and not settled partially.

ID	PONTES.UR.05.220
Name	Intra service liquidity transfers initiated in Pontes
Requirement	Pontes shall allow to initiate intra service liquidity transfers (via U2A and A2A): • debiting and crediting two DCWs owned by the same Participant • debiting a Central Bank wallet and crediting a DCW • debiting a DCW and crediting a Central Bank wallet.

5.6.4 Settlement of Liquidity Transfers

ID	PONTES.UR.05.230
Name	Processing of an inbound/outbound liquidity transfer
Requirement	Pontes shall process inbound and outbound liquidity transfers by debiting and crediting the relevant wallets for the full amount. If the DCW to debit does not have sufficient funds, the liquidity transfer is rejected and not settled partially.

ID	PONTES.UR.05.240
Name	Processing of an intra-service liquidity transfer
Requirement	Pontes shall process an intra service liquidity transfer by debiting and crediting the relevant wallets for the full amount. If the DCW to debit does not have sufficient funds, the liquidity transfer is rejected and not settled partially.

5.6.5 Forwarding of Outbound Liquidity Transfers

ID	PONTES.UR.05.250
Name	Routing of an outbound liquidity transfer
Requirement	Upon successful settlement in Pontes, Pontes shall route the outbound liquidity transfer message to T2-CLM.

Received the message from Pontes, T2 CLM moves the liquidity from the relevant Pontes transit account (depending on the currency of the liquidity transfer) to the account to be credited (as specified in the liquidity transfer message).

5.6.6 T2-CLM Confirmation

ID	PONTES.UR.05.260
Name	Wait for settlement confirmation from T2-CLM
Requirement	Pontes shall wait until T2-CLM replies with a confirmation.

Upon successful validation and routing of the outbound liquidity transfer message, Pontes shall wait until a confirmation from T2-CLM is received (i.e., successful or unsuccessful settlement of the liquidity transfer in T2-CLM) before providing a response to the requestor of the outbound liquidity transfer.

ID	PONTES.UR.05.270
Name	Alert in case of missing response from T2-CLM
Requirement	Pontes shall trigger an alert if no response to an outbound liquidity transfer is received from T2-CLM within a configurable timeframe.

In order to avoid liquidity traps, Pontes shall be able to raise an alert if no answer is received from T2-CLM within a configurable timeframe; this timeframe is set to 5 minutes initially. The alert is notified to the Pontes operator. The alert is used as a trigger aiming at resolving the issue through operational procedures which are outside the scope of the current document.

5.6.7 Settlement Receipts

ID	PONTES.UR.05.280
Name	Successful confirmation of a liquidity transfer
Requirement	Pontes shall notify the successful transfer of funds to the requestor of a liquidity transfer upon successful settlement.

In case of an inbound liquidity transfer, Pontes provides to T2 CLM a positive receipt message (e.g., using a camt.025) upon successful settlement of a liquidity transfer.

In case of an outbound liquidity transfer, Pontes, Pontes provides to the requestor a Liquidity Transfer Response that is in line with PONTES.UR.09.390 after T2-CLM positive settlement confirmation is received.

In case of an intra-service liquidity transfer, Pontes provides to the requestor a Liquidity Transfer Response that is in line with PONTES.UR.09.390 upon successful settlement of a liquidity transfer.

5.6.8 Automatic Reverse of Liquidity

ID	PONTES.UR.05.290
Name	Automatic reverse of an outbound liquidity transfer in case of T2-CLM rejection
Requirement	Pontes shall automatically reverse the outbound liquidity transfer upon receiving a negative receipt from T2-CLM.

In case of settlement rejection in T2-CLM, Pontes has to automatically reverse the outbound liquidity transfer by debiting the Transit Wallet in Pontes (for the given currency) and crediting the initially debited wallet in pontes for the full amount settled with the original liquidity transfer message.

ID	PONTES.UR.05.300
Name	Notification to the outbound liquidity transfer initiator in case of T2-CLM rejection
Requirement	Upon receiving a negative confirmation from T2-CLM, Pontes shall provide a response to the requestor of the outbound liquidity transfer, after the execution of the automatic reverse.

After the settlement of the automatic reverse for an outbound liquidity transfer which has been rejected by T2-CLM, Pontes provides to the requestor of the outbound liquidity transfer a Liquidity Transfer Response that is in line with PONTES.UR.09.390.

5.6.9 Interaction with T2-CLM

ID	PONTES.UR.05.310
Name	Check on pending liquidity transfers
Requirement	Pontes shall ensure that there are no liquidity transfers in status pending between Pontes and T2-CLM when the snapshot of the wallet balances is taken. Only after all the liquidity transfers in the given currency have reached their final status, i.e., settled or rejected, the snapshot of the wallet balances denominated in that currency can be taken.

During the start of End-of-Day procedures in T2-CLM liquidity transfers between Pontes and T2-CLM (or vice versa) could still have not reached the final status in both systems. In order to avoid double counting or loss of liquidity in the calculation of the snapshot for the End-of-Day balances, Pontes waits until all the liquidity transfers have reached their final status (i.e., settled or rejected).

This implies that for outbound liquidity transfers settled in Pontes, Pontes shall wait until either a positive or negative receipt is received from T2-CLM. In case of a negative receipt, Pontes shall make sure that the automatic reverse of the outbound liquidity is settled before taking the snapshot of the wallet balance.

In case of inbound liquidity transfers settled in T2-CLM, Pontes shall wait until settlement occurs in Pontes and either a positive or negative receipt is sent back to T2-CLM.

6 MANAGEMENT OF WALLETS AND REFERENCE DATA

This chapter covers Pontes actors, wallets and the functionality of Credit Memorandum Balance (CMB), which can be utilised for managing limits. This chapter covers also other reference data requirements for the configuration and operation of the service, including the reference data of market DLT platforms.

6.1 OVERVIEW

The Pontes service differentiates between different actors which play different roles and have different access rights.

Pontes relies on the Common Reference Data Management (CRDM) component of the TARGET Services for the management of reference data.

These actors are Central Banks, Participants, Market DLT operators, Addressable entities, T2 System and the Pontes Operator. Furthermore, three different objects which are addressable by tokenised transactions are also described:

- Pontes Dedicated Cash Wallets (DCWs), which contain the actual tokenised liquidity,
- Credit Memorandum Balances (CMBs), which provide limits linked to a wallet, and
- Central Bank Wallets, which can be owned by Central Banks only.

Furthermore, Pontes keeps track of the list of Market DLT platforms configured and the links among Participants and Market DLT platforms and among Market DLT Operators and Market DLT platforms.

Upon configuration, Pontes shall authorise a:

- Participant to instruct on behalf of Addressable entities
- Participant to instruct on behalf of other Participants – only for Wallet-to-Wallet payments
- Market DLT operators to instruct on behalf of Participants
- Market DLT operators to instruct on behalf of Addressable entities

Actors

Participants are entities which have a BIC and own DCWs and (optionally) CMBs linked to their DCWs. These wallets cannot have a negative balance. Participants are responsible for the configuration of CMBs linked to their wallets.

Market DLT Operators are entities that offer DLT-based services on one or more market DLT platforms (outside the perimeter of the Pontes service). Market DLT operators can instruct on behalf of Participants (or Addressable entities) and communicate with Pontes directly. Responsibility for all actions done by Market DLT Operators remains with the Participant.

Addressable entities are financial institutions without own technical access to Pontes, that can settle transactions via a Participant's DCW. Transactions will be sent to Pontes (i) by the Participant owning the DCW, (ii) by a market DLT operator configured to instruct transactions on behalf of the Participant owning the DCW or (iii) another Participant configured to instruct transactions on behalf of the Participant owning the DCW (limited to the wallet-to-wallet payments). Even if an addressable entity

has no technical access to Pontes, a minimum set of reference data (e.g. its BIC) is configured in Pontes.

Central Banks maintain all reference data associated with an entity of their national community and are responsible for, e.g., the setup and maintenance of a Participant and its wallets. Addressable Entities' data are considered to be reference data of the responsible Participant. Central Banks can act as Participants and own accounts which they can use for their tokenised transactions-related business.

T2 System is a technical actor which Pontes uses to allow T2 to access all wallets held, in the various currencies available in T2 CLM.

The **Pontes Operator** is the entity that operates the Pontes service.

Pontes service desk model is defined as follows²⁰:

- (i) Central Banks act as first contact point to support their national community (including Participants and Market DLT Operators).
- (ii) Pontes service desk acts as single, central point of contact for the Central Banks. This central point of contact is in charge of providing direct support to Central Banks, Participants and Market DLT Operators for managing connectivity issues.

Market DLT platforms

A Market DLT platform is a DLT service platform used by one (or more) Market DLT Operator(s) where eligible assets or financial instruments are cleared and/or settled and/or delivered.

The list of Market DLT platforms configured is maintained by the Pontes Operator. The list is available to all the Pontes Actors.

Central Banks configure links:

- Among Participants and Market DLT platforms – if a Participant participates in a Market DLT platform (or has eligible assets or financial instruments cleared and/or settled and/or delivered on a Market DLT platform), and
- Among Market DLT Operators and Market DLT platforms – if a Market DLT Operator uses a Market DLT platform.

Wallets and Credit Memorandum Balances

In general, Participants or Central Banks (acting as Participants) own **DCW**, which Pontes debits and credits during processing of tokenised transactions or liquidity transfers from/to the TARGET Services or between DCWs. These wallets cannot have a negative balance.

Central Banks can also own **Central Bank wallets** which can have a negative balance.

²⁰ Additional details will be provided as part of the operational-related documents.

A **Credit Memorandum Balance (CMB)** provides a limit linked to one wallet. This is a way of managing Addressable Entities' credit lines outside Pontes and using the resulting limits in Pontes. CMBs have identifiers similar to wallet; transactions can address CMBs via the contained BICs. Whenever a transaction addresses a CMB instead of an account Pontes adjusts the available headroom (i.e., the limit minus the limit utilisation) of the CMB in addition to the balance of the underlying wallet. If the debtor side use a CMB, Pontes decreases the headroom and debits the linked wallet. On the creditor side Pontes increases the headroom and credits the linked wallet. A DCW can be linked more than one CMB.

The **BICs** of the Debtor and Creditor within each transaction request are each linked to exactly one wallet or CMB per currency. Transactions are, therefore, addressing wallet or CMBs via the contained BICs. Whenever a CMB is addressed, the underlying wallet is determined automatically from the reference data. Since Pontes has to be able to uniquely determine the wallet or CMB from the provided BICs, one BIC can only be linked to one wallet or CMB in the same currency at the same time. One CMB can only be linked to exactly one BIC (of the relevant Addressable Entity).

For the management of **reference data** Pontes envisages two different approaches:

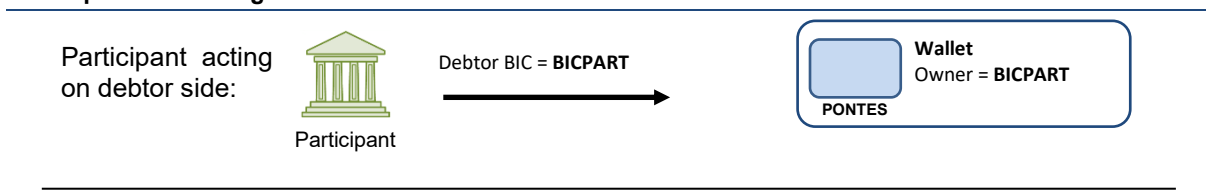
- (i) Reference data which is kept in the Common Reference Data Management (CRDM) component and applied once per business day, e.g., new wallets (effect timeframe: on the next Pontes business day).
- (ii) Reference data which has to be effective immediately, e.g., wallet blockings due to insolvency.

Business cases – wallet configuration examples

The **examples for business cases** following below visualise some potential wallets configuration which can be realised with the provided functionality.

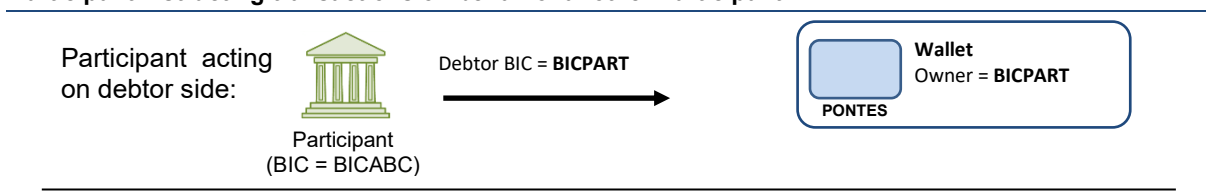
Case 1: Participant instructing transactions for its own business:

Figure 6.1
Participant instructing transactions for its own business



Case 2: Participant instructing transactions on behalf of another Participant:

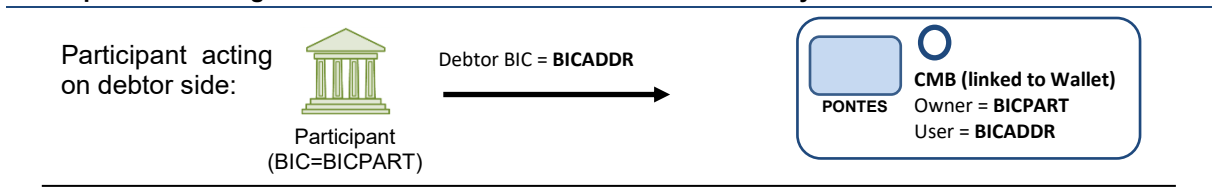
Figure 6.2
Participant instructing transactions on behalf of another Participant



Case 3: Participant instructing transactions on behalf of an Addressable entity:

Figure 6.3

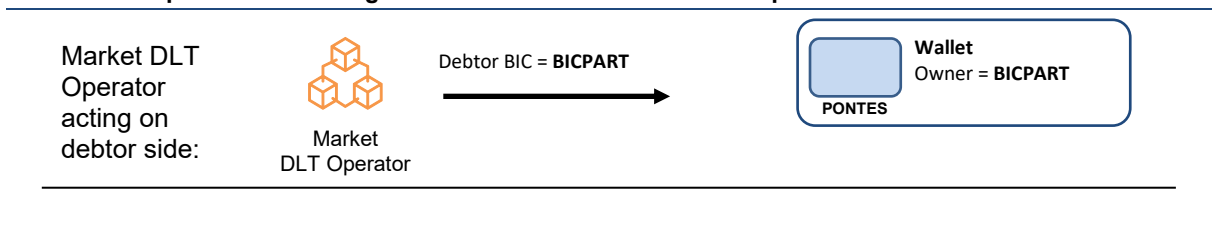
Participant instructing transactions on behalf of an Addressable entity



Case 4: Market DLT Operator instructing transactions on behalf of a Participant:

Figure 6.4

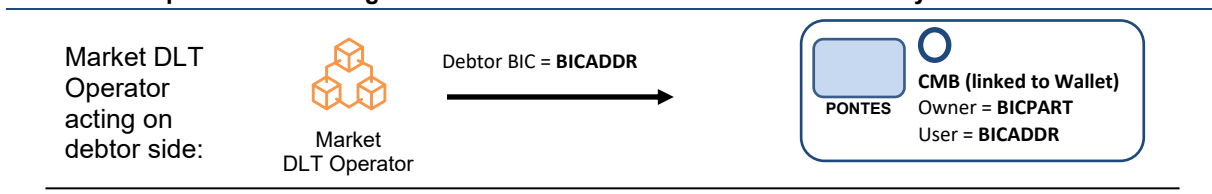
Market DLT Operator instructing transactions on behalf of a Participant



Case 5: Market DLT Operator instructing transactions on behalf of an Addressable entity:

Figure 6.5

Market DLT Operator instructing transactions on behalf of an Addressable entity



6.2 ACTORS

ID	PONTES.UR.06.010
Name	Central Bank actors
Requirement	Pontes shall enable and allow <i>Central Bank</i> actors to: • act as Participants; • in case of contingency, act on behalf of Participants from their national community; • own transit wallets and Central Bank wallets; • in case of contingency, transfer liquidity from Pontes dedicated cash wallets in their books to accounts in TARGET (belonging to the same Participant) Services and between Pontes dedicated cash wallets (belonging to the same Participant); • manage all Participants' (Market DLT Operators' and Addressable Entities') reference data of their national community and all wallets in their books; • restrict the capabilities of Participants from their national community via access rights, in line with the current TARGET Services best practices; • manage links among Participants and Market DLT platforms – if a Participant participates in a Market DLT platform (or has eligible assets or financial instruments cleared and/or settled and/or delivered on a Market DLT platform); • manage links among Market DLT Operators and Market DLT platforms – if a Market DLT Operator uses a Market DLT platform; • manage links among Participants and Market DLT Operators (to authorise a Market DLT Operator to instruct on behalf of a Participant, or to enable the Participant to specify the linked Market DLT Operator as legally responsible for the settlement of the leg on the Market DLT platform); • manage links among Participants (to authorise a Participant A to instruct on behalf of a Participant B for wallet-to-wallet payments).

Dedicated Cash Wallets of Participants of a Central Bank's national community are wallets held in the Central Bank's books.

A Central Bank can also be defined as a Participant in the reference data, so that it can own dedicated cash wallets and operate in Pontes as any other Participant.

Only one single transit wallet for euro is foreseen, which is managed by the ECB. Non-euro currencies transit accounts are managed by the respective non-euro Central Banks.

ID	PONTES.UR.06.020
Name	Participant actors
Requirement	Pontes shall enable and allow <i>Participant</i> actors to: • own Pontes DCWs and CMB linked to their DCWs; • transfer liquidity from their Pontes DCW to their accounts in TARGET Services and between Pontes dedicated cash wallets (belonging to the same Participant); • send transactions to settle with tokenised central bank money for their own DCWs or CMBs linked to their own DCWs; • manage CMBs linked to their own DCWs; • manage links among Addressable Entities and CMBs linked to their own DCWs; • send wallet-to-wallet payments to settle with tokenised central bank money for DCWs on behalf of another Participant (upon configuration);

The management of links encompasses the creation, update and deletion of links between Addressable entities and CMBs as well as wallets and CMBs. Participants are responsible for all actions performed on wallets or CMBs owned by them.

ID	PONTES.UR.06.030
Name	Market DLT operator actors
Requirement	Pontes shall know about <i>Market DLT Operators</i> , which can act on behalf of Participants (or Addressable Entities).

Upon configuration by the relevant Central Bank, market DLT operators can instruct on behalf of Participants (or Addressable Entities). Market DLT Operators communicate with Pontes directly. Responsibility for all actions done by Market DLT Operators on the DCWs (or CMBs) on which they are authorised remains with the Participant.

ID	PONTES.UR.06.040
Name	Addressable Entities actors
Requirement	Pontes shall know about Addressable Entities, which can settle transactions via a Participant's DCW.

Addressable Entities do not perform any actions on their own within Pontes; they are just set up as an entity which has a BIC that can be used in transactions, as long as there is a Participant (or a Market DLT Operator) configured which handles all communication on behalf of the Addressable Entity. The Participant owning the DCW used to settle transactions is still responsible for all actions done by the Addressable Entity.

ID	PONTES.UR.06.050
Name	T2 System actor
Requirement	Pontes shall enable and allow T2 System actor to: • access all data related to all wallets denominated in the T2 currencies; • transfer liquidity from all wallets denominated in the T2 currencies to T2.

The T2 System actor is a technical entity which is assigned to T2 for its currencies. It could be used for, e.g., allowing the T2 to query wallet balances in order to display them within their own GUI.

ID	PONTES.UR.06.060
Name	Pontes Operator actor
Requirement	Pontes shall provide a <i>Pontes Operator</i> actor which has unrestricted access to all system data and functionality.

The Pontes Operator is the entity that operates the Pontes service. It is, e.g., responsible for the setup of transit wallets or configuration of system parameters such as timeout thresholds.

ID	PONTES.UR.06.070
Name	Pontes participation model
Requirement	Pontes shall support participation roles for Pontes Operator, Central Banks and Participants in line with the participation model of other TARGET Services.

All parties are linked to each other according to a hierarchical model, as described in specification documents of Common Reference Data Management (CRDM).

The following Table 1.1 summarises some of the characteristics and capabilities of the different actors (unless restricted by access rights) regarding the following items:

- What does the entity own?
- Where can it transfer liquidity from?
- Which wallets can be used for a specific transaction?
- Which management actions can be executed?

Table 1.1: Pontes participation structure overview

Actor	Owns	Can transfer liquidity	Can send transactions for	Management actions
Central Bank ²¹	Wallets in their book	From wallets in their book ²²	Act on behalf of their Participants (in case of contingency)	• Act on behalf of their Participants (in case of contingency) • Manage²³ Participants' (Market DLT Operators' and Addressable Entities') reference data within their national community and wallets in their books and CMBs linked with these wallets. • Manage Participant's access rights, in line with the current TARGET Services best practices • Manage links among Participants, Market DLT Operators and Market DLT platforms • Manage links among Participants (to authorise a Participant A to instruct on behalf of a Participant B for wallet-to-wallet payments)
Participant	Dedicated cash wallets and CMBs	From own wallets	Own wallets and CMBs linked to own wallets	• Manage CMBs linked to own wallets • Manage links between BICs set as users of CMBs linked to own wallets
Participant acting on behalf of an Addressable Entity	Dedicated cash wallets and CMBs	-	CMBs for which the Addressable Entity's BIC is set as user	-

²¹ A Central Bank in their role as Central Bank; they could also act as a Participant, in which case they can refer to the relevant row of the table.

²² Dedicated Cash Wallets of Participants of a Central Bank's national community are wallets held in the Central Bank's books.

²³ Management of accounts or CMBs encompasses creation, update and deletion. Update refers to changes done to any reference data field on the wallet or CMB level.

Actor	Owns	Can transfer liquidity	Can send transactions for	Management actions
Participant acting on behalf of another Participant ²⁴	-	-	Another Participant's Wallets on which they are authorised (for wallet-to-wallet payments only)	-
Addressable Entity	-	-	-	-
Market DLT Operator acting on behalf of a Participant ²⁵	-	-	Participant's wallets for which they are authorised	-
Market DLT Operator acting on behalf of a Addressable Entity ²⁶	-	-	CMBs for which the Addressable Entity's BIC is set as user	-

²⁴ Actions performed by a Participant A on behalf of a Participant B require configuration granted by the Central Bank of Participant B (who owns the wallet).

²⁵ Actions performed by the Market DLT Operator on behalf of Participants require configuration granted by the Central Bank of the Participant who owns the wallet.

²⁶ Actions performed by the Market DLT Operator on behalf of Addressable Entity require configuration granted by the Central Bank of the Participant who owns the wallet (linked to the CMB).

6.3 WALLET STRUCTURE

6.3.1 Wallet

ID	PONTES.UR.06.080
Name	Wallet types
Requirement	Pontes shall provide wallets which are used for the settlement of transactions with tokenised Central Bank money and liquidity transfers. There shall be three different wallets types: • Transit Wallet(s): One technical wallet per currency²⁷ used solely for the technical provision of liquidity transfers from/to TARGET Services and to/from Pontes. • Dedicated Cash Wallets (also called Pontes DCW or DCW in this document): Participant wallets (which cannot have a negative balance). • Central Bank Wallets: Wallets that can only be held by Central Banks (which can have a negative balance).

ID	PONTES.UR.06.90
Name	Wallet identifiers
Requirement	Pontes wallet identifiers shall be ISO compliant and globally unique.

Participants are able to choose their wallet identifiers in compliance with restrictions to be defined in the Pontes User Detailed Functional Specifications (UDFS) (e.g., 34 characters long and composed of a country code and 32 characters).

ID	PONTES.UR.06.100
Name	Pontes Dedicated Cash Wallets (DCW)
Requirement	Pontes shall provide Dedicated Cash Wallets which are used for the settlement of transactions with tokenised Central Bank money. The Dedicated Cash Wallets are the Participant wallets and cannot have a negative balance.

Participant or Central Banks acting as Participants own Pontes DCW. Multiple entities (i.e., Participants and Addressable Entities) can use a wallet as long as a link between their BIC and the wallet is established.

²⁷ The transit wallet for euro is managed by the ECB. Non-euro currencies transit accounts are managed by the respective non-euro Central Banks.

ID	PONTES.UR.06.110
Name	Pontes Central Bank Wallets
Requirement	Pontes shall provide Central Bank Wallets, i.e. wallets that are owned by a Central Bank and are allowed to have a negative balance.

Central Banks own Central Bank Wallets. The Central Bank wallets are useful in the event of CLM unavailability. In this case, the Central Bank wallet would continue to allow seamless liquidity transfers from participants, even in a degraded service situation.

ID	PONTES.UR.06.120
Name	Wallet-level reference data
Requirement	Pontes shall maintain at least the following data for a wallet: • <i>Type</i>: Transit wallet, Dedicated cash wallet or Central Bank wallet. • <i>Identifier</i>: The ISO compliant wallet identifier. • <i>Currency</i>: The wallet's currency, which is a currency available in Pontes. • <i>Owner</i>: The Participant or Central Bank who owns the wallet. • <i>Opening date</i>: The date as of which a wallet is legally opened. • <i>Closing date</i>: The date as of which a wallet is legally closed. • <i>Status</i>: Current blocking status of the wallet; the four possible statuses are: • unblocked • blocked for debiting • blocked for crediting • blocked for both debiting and crediting • <i>Floor</i>: A lower threshold amount which triggers the sending of a notification message if it is undercut from above. Used for receiving warnings if the wallet balance is running low. • <i>Ceiling</i>: An upper threshold amount which triggers the sending of a notification message if it is exceeded from below. Used for receiving warnings if the wallet traps too much liquidity. • <i>Credit notification</i>: A flag which indicates whether the owner of the wallet wishes to be informed in case a liquidity transfer is settled which credits this wallet. • <i>Debit notification</i>: A flag which indicates whether the owner of the wallet wishes to be informed in case a liquidity transfer is settled which debits this wallet.

ID	PONTES.UR.06.130
Name	Number of dedicated cash wallets per Participant
Requirement	Each Participant shall be able to own one or many dedicated cash wallets.

A Participant can hold one or more Pontes DCW in order to segregate its business.

ID	PONTES.UR.06.140
Name	Wallet removal after closing date (A)
Requirement	Pontes shall close and remove wallets after the end of day of their closing date if their wallet balance is zero.

Pontes DCWs can be removed from the system if (i) their balance is zero and (ii) their closing business day ended. PONTES.UR.06.150 covers the scenario in which the wallet balance is not zero.

ID	PONTES.UR.06.150
Name	Wallet removal after closing date (B)
Requirement	Pontes shall close and remove wallets at the end of day of their closing date if their wallet balance is not zero, after automatically move the remaining liquidity to the relevant Central Bank Wallet.

If a wallet passes its closing date but still holds funds this wallet cannot be deleted immediately. Pontes shall block the wallets with a non-zero balance (which are not accessible by the Participant anymore) and shall automatically move the remaining liquidity to the Central Bank Wallet of the Central Bank of the Participant who owns the DCW. After successful completion of the operation, Pontes can delete the wallet.

6.3.2 Credit Memorandum Balance

ID	PONTES.UR.06.160
Name	Credit Memorandum Balance functionality
Requirement	Pontes shall allow the definition of limits for settlement of transactions using Credit Memorandum Balances (CMBs).

Pontes differentiates between DCWs where settlement takes place and CMBs, which are credit limits that are linked to underlying DCWs. A CMB is linked with a user BIC, i.e., from the BIC (and currency) given in a particular transaction Pontes can uniquely determine either a wallet or CMB to be used for this transaction on the debtor and creditor side (the transaction “addresses” the wallet or CMB). These credit limits provide Participants with a flexible tool for limit management and monitoring regarding access to the funds on the underlying DCW.

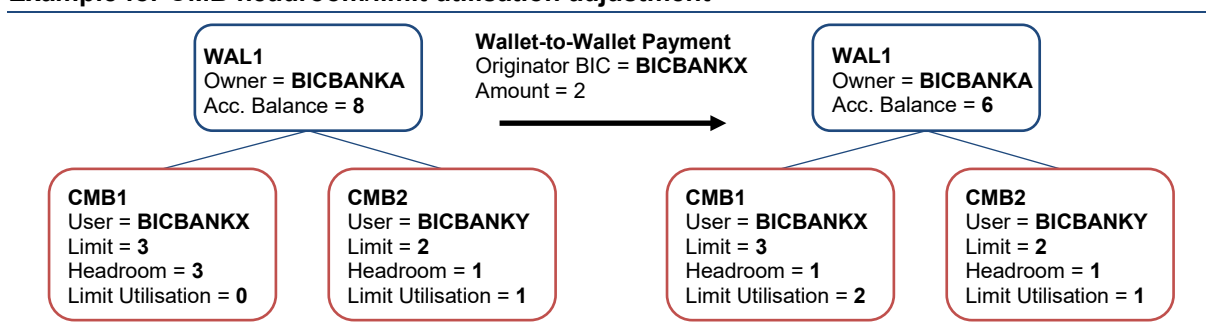
ID	PONTES.UR.06.170
Name	Credit Memorandum Balance processing
Requirement	Pontes shall track the utilisation and remaining headroom of CMB limits in case transactions are addressing CMBs. In case a transaction addresses a CMB on the debtor side the CMB headroom shall be decreased by the transaction amount (the utilisation shall be increased). In case a transaction addresses a CMB on the creditor side the CMB headroom shall be increased (the limit utilisation decreased).

The limit of a CMB is reference data and adjustable by the Participant who owns the DCW underlying the CMB. The headroom specifies the current tokenized cash amount available to the user of the CMB for settlement of transactions. The sum of limit utilisation (U) and headroom (H) equals the CMB limit

(L) at all times, $U+H=L$. The limit L is always greater or equal zero; in case payments are received via a CMB the headroom could grow larger than the actual limit, which results in a negative limit utilisation (which just translates to a payment capacity higher than the originally envisaged limit due to received payments).

In order to give an explicit example for the behaviour of CMB limit utilisation and headroom: Suppose the Participant BICBANKA owns the Pontes DCW WAL1 with a balance of 8 as well as the CMBs CMB1 and CMB2 with initial limits of 3 and 2 respectively, linked to the DCW WAL1. Furthermore, BICBANKA provides transaction capacity to the Addressable Entity BICBANKX (via CMB1) and BICBANKY (via CMB2). Suppose further that Pontes receives a transaction from BICBANKX (addressing CMB1) with an amount of 2. The two business level checks that Pontes performs prior settlement are then: (i) Is the available headroom on the addressed CMB greater or equal to the transaction amount (i.e. $2 \leq 3$) and (ii) is the current balance of the underlying DCW greater or equal to the transaction amount (i.e. $2 \leq 8$). If the transaction passes this validation Pontes can settle on DCW WAL1 and decrease the headroom of CMB1 to $3-2=1$ and simultaneously reduce the cash balance of WAL1 to $8-2=6$. CMB2 is not adjusted at all (see Figure 6.6 below).

Figure 6.6
Example for CMB headroom/limit utilisation adjustment



ID	PONTES.UR.06.180
Name	Addressing of CMBs
Requirement	Pontes shall allow Participants or Market DLT Operators to directly address CMBs instead of DCWs.

Pontes determines the DCWs used for debiting and crediting from the request (based on the BICs in the request). Pontes allows the same addressing for CMBs as well, i.e. from the Participant's or Market DLT Operator's point of view there is no difference between addressing a DCW or CMB.

ID	PONTES.UR.06.190
Name	Number of CMBs per DCW
Requirement	Each DCW shall be able to be linked to more than one CMB.

The relation between a DCW and the CMBs is a zero-to-many relation, i.e. each Pontes DCW can be linked to none, one or multiple CMBs. Each CMB, however, is linked to exactly one DCW, in order to allow Pontes to uniquely determine the DCW to debit or credit from the addressed CMB.

It is not possible to link CMBs to a Transit Wallet or a Central Bank wallet.

ID	PONTES.UR.06.200
Name	CMB limits
Requirement	Pontes should allow Participants to set limits greater or equal to zero on their CMBs.

The sum of limits configured via CMBs for a particular DCW does not need to coincide with the currently available tokenised CeBM on this DCW. This allows Participants to dedicate less liquidity to their DCWs than the sum of all limits would imply. However, if the linked DCW does not provide sufficient liquidity Pontes rejects the transaction.

In the previous example (see diagram above), a Participant owns the Pontes DCW WAL1 as well as CMB1 and CMB2, linked to the DCW WAL1. The sum of the limits of CMB1 and CMB2 could be greater than the amount of cash available on DCW WAL1.

ID	PONTES.UR.06.210
Name	CMB identifiers
Requirement	CMB identifiers shall be ISO-like, unique and not coincide with DCW identifiers.

Participants are able to choose their CMB identifiers in compliance with restrictions to be defined in the Pontes User Detailed Functional Specifications (UDFS) (e.g., 34 characters long and composed of a country code and 32 characters). By addressing a CMB via its identifier the linked DCW is automatically addressed as well.

ID	PONTES.UR.06.220
Name	CMB level reference data
Requirement	Pontes shall maintain at least the following data for a CMB: • <i>Identifier</i>: The ISO compliant CMB identifier. • <i>Linked wallet</i>: The DCW to which the CMB is linked to²⁸. • <i>User</i>: Addressable Entity which is allowed to use that CMB for transactions. • <i>Opening date</i>: The date as of which a CMB is legally opened. • <i>Closing date</i>: The date as of which a CMB is legally closed. • <i>Status</i>: Current blocking status of the CMB; the four possible statuses are: • unblocked • blocked for debiting • blocked for crediting • blocked for both debiting and crediting • <i>Limit</i>: The payment capacity amount provided by the CMB.

The currency and the owner of a CMB are derived from the linked wallet; the status could be inherited from the linked DCW. Only one BIC is linked with a CMB as user. The sum of limit utilisation (U) and headroom (H) equals the CMB limit (L) at all times, $U+H=L$.

6.4 REFERENCE DATA

6.4.1 General Requirements

ID	PONTES.UR.06.230
Name	Wallet management actions
Requirement	Pontes shall provide functionalities to create update or delete wallets and CMBs according to the actors' permissions as given in PONTES.UR.06.080.

Not all the reference data changes are in effect immediately. Some data like, e.g., new wallets, have to be created prior their opening date. However, other changes, e.g., wallet blockings, have to be effective immediately.

²⁸ It is not possible to link CMBs to a Transit Wallet or a Central Bank wallet.

6.4.2 Wallet Creation, Update and Deletion

ID	PONTES.UR.06.240
Name	DCW/CMB creation action
Requirement	Pontes shall allow an actor with suitable permissions to create DCWs or CMBs and set up their reference data.

This requirement refers to regular DCWs and CMBs; transit wallets and Central Bank wallets are set up by the Pontes operator. Central Banks can create DCWs for their Participants; Participants can create CMBs linked to their DCWs. In contingency situations, Central Banks can support their Participants by creating CMBs on their behalf.

ID	PONTES.UR.06.250
Name	DCW/CMB update action
Requirement	Pontes shall allow an actor with suitable permissions to update the reference data of DCWs and CMBs.

ID	PONTES.UR.06.260
Name	DCW/CMB deletion action
Requirement	Pontes shall allow an actor with suitable permissions to delete DCWs and CMBs; a DCW can be deleted as long as its closing date has been reached. In case the closing date has been reached but the DCW's balance is not zero, the scenario is described in PONTES.UR.06.150.

This requirement refers to regular Participant DCWs. In order to ensure that DCWs/CMBs to be deleted cannot be used anymore they should be blocked for crediting/increases and debiting/decreases prior deletion.

ID	PONTES.UR.06.270
Name	DCW/CMB creation/update/deletion effect timeframe
Requirement	Pontes shall ensure that newly created DCWs or CMBs are available on their opening date. DCW or CMB updates and deletions shall be effective on the next Pontes business day.

These reference data updates are effective, i.e., usable from a business point of view, on the next Pontes business day; additional reference data changes, which are described in the following subsections, might be effective after a shorter timeframe (e.g., immediately).

ID	PONTES.UR.06.280
Name	Instruct On Behalf Link creation/update/delete action
Requirement	Pontes shall allow Central Banks to create/update/delete Instruct On Behalf Links between Participants for the settlement of wallet-to-wallet payments.

In order to enable a Participant A to act on behalf of another Participant B (only for wallet-to-wallet payments), the Central Bank of Participant B has to configure an Instruct On Behalf Link between Participant A and Participant B.

ID	PONTES.UR.06.290
Name	Instruct On Behalf Link create/update/delete effect timeframe
Requirement	Pontes shall ensure that Instruct On Behalf Link creations, updates and deletions shall be effective on the next Pontes business day.

6.4.3 Wallet, CMB and Participant Blocking and Unblocking

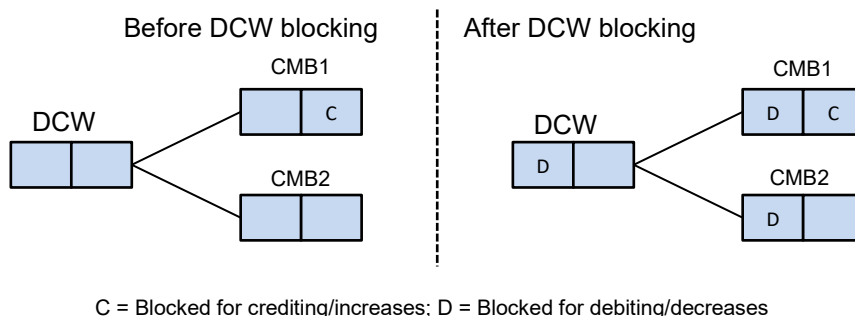
ID	PONTES.UR.06.300
Name	Wallet blocking action
Requirement	Pontes shall allow Central Banks to block a DCW for debiting or crediting (separately) or both. This blocking shall apply down to all linked CMBs and prevents their headroom from being decreased (blocked for debiting) and/or increased (blocked for crediting). This shall be applied to CMBs which have been created after the blocking was in effect as well. The DCW blocking shall override but not overwrite the CMB blocking states.

Blocking of a DCW for debiting, crediting (can be chosen separately) or both entails blocking of the same kind (i.e., decreases, increases or both) of the headroom of all linked CMBs (even those created after the DCW blocking is in effect). Blocking ensures that a DCW cannot be debited and/or credited. Central Banks can override this blocking in, e.g., contingency²⁹ situations or prior closing of a DCW.

However, the individual blocking states of the CMBs should not be overwritten in order to preserve their status. E.g., DCW blocking for debiting results in blocking of all CMBs headroom for decreases; if some CMB is already blocked for headroom increases this CMB is, effectively, blocked for both, decreases and increases (see CMB1 in Figure 6.7 below).

²⁹ Potential contingency scenarios are, e.g., insolvency of a Participant and subsequent repatriation of funds

Figure 6.7
Example for DCW/CMB blocking



ID	PONTES.UR.06.310
Name	Wallet unblocking action
Requirement	Pontes shall allow Central Banks to unblock a DCW which has been previously blocked (separately for debiting and crediting) or both. This unblocking shall be applied down to all linked CMBs and revert their blocking status to whatever was in effect prior to the DCW blocking.

Unblocking of a DCW restores the linked CMB blocking states which were in effect prior DCW blocking. E.g., a CMB which was blocked for crediting prior blocking the underlying DCW for debiting is still blocked for crediting after the wallet has been unblocked.

ID	PONTES.UR.06.320
Name	CMB blocking action
Requirement	Pontes shall allow a Participant to block its CMBs for headroom decreases or increases (separately) or both.

The CMB can be blocked for being decreased (linked wallet would be debited) or increased (linked wallet would be credited) separately.

ID	PONTES.UR.06.330
Name	CMB unblocking action
Requirement	Pontes shall allow a Participant to unblock its CMBs which have been previously blocked (separately for headroom decreases or increases) or both.

Unblocking of a CMB restores the CMB blocking state which was in effect prior blocking of the CMB; it is then again available for headroom decreases or increases or both.

ID	PONTES.UR.06.340
Name	Participant blocking action
Requirement	Pontes shall allow a Central Bank to block a Participant of its national community for crediting, debiting or both. This Participant blocking shall result in blocking of all DCWs and CMBs owned by that Participant. The Participant blocking shall override but not overwrite the DCW blocking states.

Central Banks are allowed to block Participants of their national community in case of, e.g., insolvency. Similar to the DCW blocking which does not overwrite the CMB blocking states Participant blocking does not overwrite the wallet blocking state in order to restore them if the blocking is undone.

ID	PONTES.UR.06.350
Name	Participant unblocking action
Requirement	Pontes shall allow a Central Bank to unblock a Participant of its national community for crediting, debiting or both. This unblocking shall restore the DCW blocking states to whatever they were prior to the Participant blocking.

Unblocking of a Participant restores the DCW blocking states which were in effect prior blocking of the Participant. E.g., a DCW which was blocked for crediting prior blocking the Participant for debiting is still blocked for crediting after the Participant has been unblocked.

ID	PONTES.UR.06.360
Name	Participant/DCW/CMB blocking/unblocking effect timeframe
Requirement	Pontes shall ensure that Participant/DCW/CMB blocking and unblocking are in effect immediately; this shall encompass DCW blocking due to participant blocking.

Blocking and unblocking of Participants, DCWs or CMBs should be effective immediately for, e.g., insolvency. It does not matter how the blocking is triggered (i.e., by blocking a Participant, DCW or CMB directly).

ID	PONTES.UR.06.370
Name	Liquidity transfers for blocked wallets
Requirement	Pontes shall allow Central Banks to transfer liquidity from/to any DCW in their books to/from T2-CLM, regardless of the DCW's blocking status.

After an insolvency or closing of a wallet, Central Banks should be able to transfer liquidity from/to blocked Pontes dedicated cash wallets in their books to/from T2-CLM.

6.4.4 CMB Limits

ID	PONTES.UR.06.380
Name	CMB limit change action
Requirement	Pontes shall allow an actor with suitable permissions to change the limit of a CMB. This limit change shall increase the headroom by the difference between the new limit and the old limit.

CMB limit changes can be done by Participants owning the underlying wallet. Change of a CMB limit results in a change of the headroom (from H_{old} to H_{new}) by the difference between the new (L_{new}) and old limit (L_{old}): $H_{new} = H_{old} + (L_{new} - L_{old})$. In case $L_{new} > L_{old}$ the headroom is increased; in case $L_{new} < L_{old}$ the headroom is decreased. Due to a CMB limit decrease the headroom could become negative (if $L_{old} < L_{new}$), which is similar to blocking of a CMB for headroom decreases (transactions are then rejected).

ID	PONTES.UR.06.390
Name	CMB limit change effect timeframe
Requirement	Pontes shall ensure that changes done to CMB limits are in effect immediately.

Changes done to CMBs should be taken into account immediately.

6.4.5 Market DLT platform-related reference data

ID	PONTES.UR.06.400
Name	Market DLT platform reference data
Requirement	Pontes shall maintain at least the following data for a Market DLT platform: • <i>Identifier</i>: The market DLT platform identifier. • <i>Type</i>: Public permissionless, Public permissioned, Private permissioned • <i>Technology</i>: The underlying market DLT platform technology. • <i>Opening date</i>: The date as of which a market DLT platform has been added to the list of available market DLT platforms. • <i>Closing date</i>: The date as of which a market DLT platform has been deleted from the list of available market DLT platforms.

ID	PONTES.UR.06.410
Name	Market DLT platform create/update/delete action
Requirement	Pontes shall allow Pontes Operator to create/update/delete the reference data of Market DLT platforms.

ID	PONTES.UR.06.420
Name	Market DLT platform create/update/delete effect timeframe
Requirement	Pontes shall ensure that newly created Market DLT platforms are available on their opening date. Market DLT platforms updates and deletions shall be effective on the next Pontes business day.

ID	PONTES.UR.06.430
Name	List of Market DLT platforms in PONTES
Requirement	Pontes shall provide a list of Market DLT platforms.

In order to provide Participants and Central Banks with a list of Market DLT platforms configured in Pontes, a table of all Market DLT platforms, has to be maintained. This list should be made available to Participants and Central Banks via the GUI.

ID	PONTES.UR.06.440
Name	List of Market DLT Operators in PONTES
Requirement	Pontes shall provide a list of Market DLT Operators.

In order to provide Participants and Central Banks with a list of Market DLT Operators configured in Pontes, a table of all Market DLT Operators, has to be maintained. This list should be made available to Participants and Central Banks via the GUI.

ID	PONTES.UR.06.450
Name	Market DLT Operator – Market DLT Platform Link create/update/delete action
Requirement	Pontes shall allow Central Banks to create/update/delete a link between a Market DLT Operator and a Market DLT platform.

Central Banks configure links between a Market DLT Operator and Market DLT platform – if a Market DLT Operator uses a Market DLT platform.

A Market DLT Operator can be linked to more than one Market DLT Platforms.

A Market DLT Platform can be linked to more than one Market DLT Operator.

ID	PONTES.UR.06.460
Name	Market DLT Operator – Market DLT Platform Link create/update/delete effect timeframe
Requirement	Pontes shall ensure that Market DLT Operator – Market DLT Platform Links creations, updates and deletions shall be effective on the next Pontes business day.

The creation of the Market DLT Operator – Market DLT Platform Link (PONTES.UR.06.450), Participant – Market DLT Platform Link (PONTES.UR.06.470) and Participant – Market DLT Operator (PONTES.UR.06.490) may be executed together on the same business day and be effective together on the next Pontes business day.

ID	PONTES.UR.06.470
Name	Participant – Market DLT Platform Link create/update/delete action
Requirement	Pontes shall allow Central Banks to create/update/delete a link between a Participant and a Market DLT platform.

Central Banks configure links between a Participant and Market DLT platform – if a Participant participates in a Market DLT platform (or has eligible assets or financial instruments cleared and/or settled and/or delivered on a Market DLT platform),

A Participant can be linked to more than one Market DLT Platforms.

A Market DLT Platform can be linked to more than one Participant.

ID	PONTES.UR.06.480
Name	Participant – Market DLT Platform Link create/update/delete effect timeframe
Requirement	Pontes shall ensure that Participant – Market DLT Platform Links creations, updates and deletions shall be effective on the next Pontes business day.

The creation of the Market DLT Operator – Market DLT Platform Link (PONTES.UR.06.450), Participant – Market DLT Platform Link (PONTES.UR.06.470) and Participant – Market DLT Operator (PONTES.UR.06.490) may be executed together on the same business day and be effective together on the next Pontes business day.

ID	PONTES.UR.06.490
Name	Participant – Market DLT Operator Link create/update/delete action
Requirement	Pontes shall allow Central Banks to create/update/delete a link between a Participant and a Market DLT Operator.

Central Banks configure links between a Participant and Market DLT Operator.

A Participant – Market DLT Operator Link can be created only if links (i) between the Participant and a Market DLT platform (see PONTES.UR.06.470) and (ii) between the Market DLT Operator and the same Market DLT platform (see PONTES.UR.06.450) exist.

The existence of Participant – Market DLT Operator Link is mandatory:

- (case 1) To enable a Market DLT Operator to instruct on behalf of a Participant (or an Addressable Entity) using a DCW of the Participant,
- (case 2) To enable a Participant to directly instruct Delivery-versus-Payments and Payment-versus-Payments, specifying the linked Market DLT Operator as legally responsible for the settlement of the leg on the Market DLT platform.

As part of the configuration of the link, the Central Bank shall specify whether it refers to (case 1), (case 2) or both, to enable Pontes to perform all the required checks.

A Participant can be linked to more than one Market DLT Operator.

A Market DLT Operator can be linked to more than one Participant.

ID	PONTES.UR.06.500
Name	Participant – Market DLT Operator Link create/update/delete effect timeframe
Requirement	Pontes shall ensure that Participant – Market DLT Operator Links creations, updates and deletions shall be effective on the next Pontes business day.

The creation of the Market DLT Operator – Market DLT Platform Link (PONTES.UR.06.450), Participant – Market DLT Platform Link (PONTES.UR.06.470) and Participant – Market DLT Operator (PONTES.UR.06.490) may be executed together on the same business day and be effective together on the next Pontes business day.

ID	PONTES.UR.06.510
Name	Market DLT Operator blocking action
Requirement	Pontes shall allow a Central Bank to block a Market DLT Operator of its national community. This Market DLT Operator blocking shall result in blocking of all instructions related to this entity.

ID	PONTES.UR.06.520
Name	Market DLT Operator unblocking action
Requirement	Pontes shall allow a Central Bank to unblock a Market DLT Operator of its national community. This unblocking shall restore the ability to instruct on behalf of Participants by Market DLT Operators, and Market Participants to instruct directly specifying the market DLT Operator as legally responsible for the asset leg.

ID	PONTES.UR.06.530
Name	Market DLT Operator blocking/unblocking effect timeframe
Requirement	Pontes shall ensure that Market DLT Operator blocking and unblocking are in effect immediately.

6.4.6 System Settings

ID	PONTES.UR.06. 540
Name	System settings change actions
Requirement	Pontes shall provide functionalities for the creation, update and deletion of system settings. Included system settings shall be (non-exhaustive list): - configurable parameters explicitly mentioned in user requirements (timeout duration for Delivery-versus-Payment and Payment-versus-Payment) - the transit account for each currency.

ID	PONTES.UR.06.550
Name	System settings change effect timeframe
Requirement	Pontes shall ensure that changes done to system settings are in effect on the next Pontes business day.

System setting changes should be in effect during the next business day.

ID	PONTES.UR.06.560
Name	Maintenance of the T2 CLM status for liquidity management
Requirement	Pontes shall maintain the opening and closing status of T2 CLM.

Pontes uses the information on the T2 CLM status to reject outbound liquidity transfers when the T2 CLM is not available. On the basis of the triggers sent by T2 (e.g., via a camt.019 message), Pontes updates the opening/closing status of T2.

6.4.7 ISO Compliance

ID	PONTES.UR.06.570
Name	Currency codes
Requirement	Pontes shall store currencies as defined by the ISO standard.

Currencies are, e.g., used as a parameter of wallets, which have to match on the debtor and creditor side.

ID	PONTES.UR.06.580
Name	Timestamps
Requirement	Pontes shall use timestamp formats compliant with ISO for reporting and querying.

Pontes shall use a timestamp format which is ISO compliant (see PONTES.UR.07.060 and PONTES.UR.08.060).

7 REPORTS

The chapter describes report requirements in the context of Pontes. A report may contain information on individual wallets or transactions which can be made available to the Pontes actors.

7.1 OVERVIEW

Reporting functionalities are available in Pontes to support the business monitoring and reconciliation of Pontes actors, according to their needs. Taking into account the time, scope and nature of data, several reports are foreseen. The data contained in the reports depends on the actor and its roles.

Pontes actors can subscribe to one or more report. They can select from a pre-defined list of reports, which depends on the actor's roles. The configuration of the report subscription is a precondition to the report generation. Pontes provides reports only to actors for which a report subscription is in place.

7.2 GENERAL REQUIREMENTS

ID	PONTES.UR.07.010
Name	Report generation
Requirement	Pontes shall initiate the generation of reports using the data available at the time scheduled in the report subscription (Table 7.2) or at the end-of-day of T2 CLM

Pontes relies on a trigger provided by T2 CLM to signal the end-of-day, at which point the report generation can be started.

ID	PONTES.UR.07.020
Name	Reports communication via application-to-application mode
Requirement	All reports shall be available via application-to-application mode.

After report generation, if configured, Pontes is able to send them via an application-to-application interface. The reports are aligned to format (i.e. ISO 20022 XML messages) and communication channels of the other TARGET Services.

ID	PONTES.UR.07.030
Name	Reports availability via user-to-application mode
Requirement	All reports shall be available via user-to-application mode for consultation and download, until a new version of the report is available.

After report generation, if configured, Pontes enables the actor to consultation and download the report via the Graphical User Interface. The report is available until a new version is generated. The actor can download the report in a compressed format (see PONTES.UR.07.050).

ID	PONTES.UR.07.040
Name	Report addressee and data scope
Requirement	Pontes shall provide to its actors reports on their accounts based on the permissions listed in the following Table 7.1

If an Addressable entity requests information to fulfil their reconciliation or regulatory needs for a DCW or CMB set up for this Addressable entity, the data has to be provided by the Participant responsible for the DCW or CMB outside of Pontes.

The following Table summarises the data scope that Pontes actors have.

Table 7.1: Report addressee and data scope

Actor	Statement of Wallets Turnover	Statement of Wallets
Central Bank	Own CB wallets	Own CB wallets
Participant	Own DCWs	Own DCWs
Participant (instructing on behalf of another Participant B)	DCWs on which the Participant is authorised on	DCWs on which the Participant is authorised on (limited to the transactions instructed by the Participant)
Market DLT Operator (instructing on behalf of a Participant)	DCWs on which the Market DLT Operator is authorised on	DCWs on which the Market DLT Operator is authorised on (limited to the transactions instructed by the Market DLT Operator)
Market DLT Operator (instructing on behalf of an Addressable Entity)	No	No
Addressable Entity	No	No

ID	PONTES.UR.07.050
Name	Data compression for reports
Requirement	Pontes shall compress reports whenever possible.

The compression is done using industry standard algorithms (e.g., zip).

ID	PONTES.UR.07.060
Name	Report timestamp
Requirement	Pontes shall provide timestamps in an ISO compliant format.

Pontes shall use the timestamp format YYYY-MM-DDThh:mm:ss.sssZ. The date is displayed with a four-digit year and two digits for both month and day. The time is displayed with two digits for each of the hour, minute, second and three digits for millisecond. The letter T is used as a delimiter between date and time. The letter Z is used as a zone designator for the zero UTC offset.

ID	PONTES.UR.07.070
Name	Full mode
Requirement	Pontes shall be able to send in full mode the following reports: • Statement of Wallet Turnover (see PONTES.UR.07.110); • Statement of Wallets (see PONTES.UR.07.120).

Reports in Pontes are only available in “full” mode.

The Statement of Wallets Turnover covers the time since the last T2 end-of-day and the trigger time. Upon configuration, participants will receive reports in full mode at the end of day.

The Statement of Wallets contains either data generated within the last 24 hours or since the last T2 CLM end-of-day, depending on the trigger type:

- Within the last 24 hours in case of *frequency trigger*; and
- Since the last T2 end-of-day in case of *date change trigger*.

ID	PONTES.UR.07.080
Name	Reports communication
Requirement	Pontes shall allow sending the same report to different technical addressees.

Pontes is able to send reports to multiple authorised addressees.

7.3 REPORT SUBSCRIPTION

ID	PONTES.UR.07.090
Name	Report subscription
Requirement	Pontes shall offer its actors the possibility to subscribe to the following reports: • Statement of Wallet Turnover (see PONTES.UR.07.110); • Statement of Wallets (see PONTES.UR.07.120).

Pontes actors are able to configure their report subscription via the GUI, selecting the reports they want to subscribe to from a pre-defined list.

Table 7.2: Report Subscription Attributes

Attribute	Description
Report Subscription Identifier	This attribute shall specify the unique user-defined identifier of a report subscription.
Report	This attribute shall contain the type of report subscribed by the Pontes actor.
Recipient	This attribute shall specify the party identifier of the receiver(s), subscribing to the reports.
Mode	This attribute is always “full mode” for PONTES.
Application-to-Application only	If selected, the report is only sent via Application-to-Application mode. Otherwise, the report (once available) can be consulted and downloaded via the GUI, until a new report is generated.
Scope	If specified, configures the wallets to be included in the report. Otherwise, the report covers all the wallets in accordance with PONTES.UR.07.040.
Scheduled Time	This attribute shall define the time slots, from a predefined list, when the report is provided to the Pontes actor. The trigger could be an T2 business day change.
Subscription Valid From	This attribute shall specify the business day from which the subscription is valid.
Subscription Valid To	This attribute shall specify the business day to which the subscription is valid.

These report subscription attributes allow e.g., sending of the same report to multiple addressees.

ID	PONTES.UR.07.100
Name	Maintenance of the report subscription
Requirement	Pontes shall allow its actors to maintain their report subscription.

Pontes provides authorised Pontes actors with functionalities via the GUI to create, update or delete report subscriptions for wallets they are responsible for. Authorised Pontes actors are able to unsubscribe from a report by setting the Subscription Valid To date of the corresponding report subscription to the last day they want to receive the report. Report subscription changes are in effect as of the next business day.

7.4 TYPE OF REPORTS

ID	PONTES.UR.07.110
Name	Statement of Wallet Turnover
Requirement	Pontes shall generate a Statement of Wallet Turnover report for the wallets configured in the report subscription.

The Statement of Wallet Turnover report should contain at least the following information:

- the Pontes business date (the business day that is about to close);
- Pontes Participant identifier;
- Pontes DCW identifier;
- currency;
- opening balance (since the last report generation);
- closing balance (based on the latest data available);
- sum of debits;
- sum of credits

In case the report is triggered at the end-of-day of Pontes, the opening balance corresponds to the start-of-day balance and the closing balance to the end-of-day balance of the Pontes.

ID	PONTES.UR.07.120
Name	Statement of Wallets
Requirement	Pontes shall generate a Statement of Wallets report for the wallets configured in the report subscription.

The Statement of Wallets report lists all settled transactions related to a DCW; these transactions are transactions in tokenised central bank money or liquidity transfers. The report should contain at least the following information:

- the Pontes business date (the business day that is about to close)
- Pontes Participant identifier;
- Pontes DCW;
- currency;
- amount of each transaction;
- initial balance prior each transaction;
- final balance after each transaction;
- transaction references;
- settlement timestamp.

7.5 NOTIFICATION SUBSCRIPTION

In addition to reports, real-time notifications are also foreseen in case defined trigger events occurred. Possible triggers are:

- the undercut of a floor value,
- the excess of a ceiling value, or
- liquidity transfers (as defined in PONTES.UR.07.210).

ID	PONTES.UR.07.210
Name	Notification Subscription
Requirement	Pontes shall allow Participants to enable and maintain the following notifications for wallets owned by the Participant: • Wallet floor notification • Wallet ceiling notification • Inbound liquidity transfer • Outbound liquidity transfer • Intra-service liquidity transfer

Notifications shall be configured via GUI and they shall be in effect as of the next business day.

ID	PONTES.UR.07.220
Name	Floor and ceiling notification addressees
Requirement	Pontes shall send floor and ceiling notifications to the Participant responsible for the DCW.

All notifications are sent to the owner of the DCW in order to allow it to react accordingly (e.g. trigger further actions such as liquidity transfers).

ID	PONTES.UR.07.230
Name	Notification communication via application-to-application mode
Requirement	All the notification shall be available via application-to-application mode.

Once triggered, Pontes is able to send notification via an application-to-application interface. The reports are aligned to format (i.e. ISO 20022 XML messages) and communication channels of the other TARGET Services.

7.6 NOTIFICATIONS

ID	PONTES.UR.07.240
Name	Wallet floor notification
Requirement	Pontes shall notify the configured entity/entities if the balance of a DCW decreases below the configured floor value.

A notification is sent out every time the DCW balance goes below a floor value. Multiple notifications could be sent out in short order if the DCW balance varies around the floor value.

ID	PONTES.UR.07.250
Name	Wallet ceiling notification
Requirement	Pontes shall notify the configured entity/entities if the balance of a DCW increases above the configured ceiling value.

A notification is sent out every time the DCW balance goes above a ceiling value. Multiple notifications could be sent out in short order if the DCW balance varies around the ceiling value.

ID	PONTES.UR.07.260
Name	Inbound liquidity transfer credit notification
Requirement	Pontes shall notify the configured entity if an inbound liquidity transfer has been settled.

A notification is sent out every time an inbound liquidity transfer has been settled.

ID	PONTES.UR.07.270
Name	Outbound liquidity transfer debit notification
Requirement	Pontes shall notify the configured entity if an outbound liquidity transfer has been settled.

A notification is sent out every time an outbound liquidity transfer has been settled.

ID	PONTES.UR.07.280
Name	Intra-service liquidity transfer credit/debit notification
Requirement	Pontes shall notify the configured entity if an intra-service liquidity transfer has been settled.

A notification is sent out every time an intra-service liquidity transfer has been settled.

8 QUERIES

Pontes provides real time queries which allow Central Banks, Participants and Market DLT Operators to retrieve data based on the most recent situation known to Pontes. This chapter describes the different queries available.

8.1 OVERVIEW

Pontes provides queries to Pontes actors to enable them to monitor the current balance of wallets or settlement states of transactions. These queries are available in application-to-application (A2A) or user-to-application (U2A) mode. The reply to a query is transmitted via the same channel as the query itself.

ID	PONTES.UR.08.010
Name	Queries data scope
Requirement	Pontes shall provide the possibility for Pontes actors to query data in their data scope, according to the role of the actor doing such queries.

Pontes restricts access to data based on the permissions outlined in Table and Table 8.2.

- Central Banks have access to all wallets in their books (and subsequently to all transactions on these wallets),
- Participants can only access their own wallets,
- Access for Market DLT Operators is even further restricted to those wallets which they are permitted to operate on and to transactions in which they are involved ((i) submitted by the Market DLT Operator instructing on behalf of Participants or Addressable Entities or (ii) submitted by Participants specifying the Market DLT Operator as *legally* responsible for the settlement of the asset leg),
- Addressable entities have no access to Pontes.

The technical actors T2 System and Pontes Operator has full access to all data for all currencies (available in Pontes).

8.2 GENERAL REQUIREMENTS

ID	PONTES.UR.08.020
Name	Availability for queries in application-to-application mode
Requirement	Pontes shall process the following queries 24/7/365: - On the wallet / CMB: - o Wallet Balance and Status Query (see PONTES.UR.08.070); - o CMB Limit and Status Query (see PONTES.UR.08.080); - On a specific liquidity transfer / transaction: - o Liquidity Transfer Status Query (see PONTES.UR.08.090); - o Wallet-to-Wallet Payment Status Query (see PONTES.UR.08.100); - o Delivery-versus-Payment Status Query (see PONTES.UR.08.110); - o Payment-versus-Payment Status Query (see PONTES.UR.08.120); - o Initialisation Query (see PONTES.UR.08.130); - o Reveal Key (see PONTES.UR.08.140); - On multiple liquidity transfers / transactions: - o Liquidity Transfers Query (see PONTES.UR.08.150); - o Wallet-to-Wallet Payment Transactions Query (see PONTES.UR.08.160); - o Delivery-versus-Payment Transactions Query (see PONTES.UR.08.170); - o Payment-versus-Payment Transactions Query (see PONTES.UR.08.180);

All queries accessible via A2A are available during the operating hours of the Pontes service, i.e., 24/7/365. Queries requests and responses are based on REST technology.

ID	PONTES.UR.08.030
Name	Availability for queries in user-to-application mode
Requirement	Pontes shall accept the following queries from the Graphical User Interface on a 24/7/365 basis: - On the wallet / CMB: - o Wallet Balance and Status Query (see PONTES.UR.08.070); - o CMB Limit and Status Query (see PONTES.UR.08.080); - On a specific liquidity transfer / transaction: - o Liquidity Transfer Status Query (see PONTES.UR.08.090); - o Wallet-to-Wallet Payment Status Query (see PONTES.UR.08.100); - o Delivery-versus-Payment Status Query (see PONTES.UR.08.110); - o Payment-versus-Payment Status Query (see PONTES.UR.08.120); - o Initialisation Query (see PONTES.UR.08.130); - o Reveal Key (see PONTES.UR.08.140); - On multiple liquidity transfers / transactions: - o Liquidity Transfers Query (see PONTES.UR.08.150); - o Wallet-to-Wallet Payment Transactions Query (see PONTES.UR.08.160); - o Delivery-versus-Payment Transactions Query (see PONTES.UR.08.170); - o Payment-versus-Payment Transactions Query (see PONTES.UR.08.180);

ID	PONTES.UR.08.040
Name	Availability of data
Requirement	Pontes shall process all queries in real time, based on the latest available data

Queries sent in A2A mode or in U2A mode are not queued and processed immediately, using the most recent data available in the system.

ID	PONTES.UR.08.050
Name	Processing of queries
Requirement	Pontes shall take into account all access rights while processing queries and only return results if the querying party has access to the underlying data according to Table 8.1.

The following Table summarises the different access that Pontes actors have.

Table 8.1: Query permissions on wallets and CMBs

Actor	Wallet Balance and Status Query	CMB Limit and Status Query
Central Bank	All DCWs in its books	All CMBs linked to DCWs in its books
Participant	Own DCWs	Own CMBs
Participant A (instructing on behalf of another Participant B)	No	No
Market DLT Operator (instructing on behalf of a Participant)	Participant's DCWs on which the Market DLT Operator is authorised on	Participant's CMBs on which the Market DLT Operator is authorised on
Market DLT Operator (instructing on behalf of an Addressable Entity)	No	Addressable Entity's CMBs on which the Market DLT Operator is authorised on
Addressable Entity	No	No

Table 8.2: Query permissions on liquidity transfers and transactions

Actor	Liquidity Transfer Status Query	Wallet-to-Wallet Payment Status Query	Delivery-versus-Payment and Payment-versus-Payment Status Query	Initialisation Query	Reveal Key
Central Bank	All liquidity transfers affecting the DCWs of its participants	All wallet-to-wallet payments affecting the DCWs of its participants	All delivery-versus-payments and payment-versus-payments affecting the DCWs of its participants	No	No
Participant	All liquidity transfers affecting its DCWs	All wallet-to-wallet payments affecting its DCWs	All delivery-versus-payments and payment-versus-payments affecting its DCWs	All delivery-versus-payments and payment-versus-payments affecting its DCWs	All delivery-versus-payments and payment-versus-payments affecting its DCWs
Participant (instructing on behalf of another Participant)	No	On wallet-to-wallet payments submitted	No	No	No

Actor	Liquidity Transfer Status Query	Wallet-to-Wallet Payment Status Query	Delivery-versus-Payment and Payment-versus-Payment Status Query	Initialisation Query	Reveal Key
Market DLT Operator (instructing on behalf of a Participant)	No	On wallet-to-wallet payments submitted	All delivery-versus-payments and payment-versus-payments in which the Market DLT Operator is involved ³⁰	All delivery-versus-payments and payment-versus-payments in which the Market DLT Operator is involved ³⁰	All delivery-versus-payments and payment-versus-payments in which the Market DLT Operator is involved ³⁰
Market DLT Operator (instructing on behalf of an Addressable Entity)	No	On wallet-to-wallet payments submitted	All delivery-versus-payments and payment-versus-payments in which the Market DLT Operator is involved ³⁰	All delivery-versus-payments and payment-versus-payments in which the Market DLT Operator is involved ³⁰	All delivery-versus-payments and payment-versus-payments in which the Market DLT Operator is involved ³⁰
Addressable Entity	No	No	No	No	No

³⁰ It is intended as (i) submitted by the Market DLT Operator instructing on behalf of Participants or Addressable Entities or (ii) submitted by Participants specifying the Market DLT Operator as *legally* responsible for the settlement of the asset leg.

Table 8.3: Query permissions on multiple liquidity transfers and transactions

Actor	Liquidity Transfers Query	Wallet-to-Wallet Payments Query	Delivery-versus-Payment and Payment-versus-Payments
Central Bank	All liquidity transfers affecting the DCWs of its participants	All wallet-to-wallet payments affecting the DCWs of its participants	All delivery-versus-payments and payment-versus-payments affecting the DCWs of its participants
Participant	All liquidity transfers affecting its DCWs	All wallet-to-wallet payments affecting its DCWs	All delivery-versus-payments and payment-versus-payments affecting its DCWs
Participant (instructing on behalf of another Participant)	No	On wallet-to-wallet payments submitted	No
Market DLT Operator (instructing on behalf of a Participant)	No	On wallet-to-wallet payments submitted	All delivery-versus-payments and payment-versus-payments in which the Market DLT Operator is involved ³⁰
Market DLT Operator (instructing on behalf of an Addressable Entity)	No	On wallet-to-wallet payments submitted	All delivery-versus-payments and payment-versus-payments in which the Market DLT Operator is involved ³⁰
Addressable Entity	No	No	No

ID	PONTES.UR.08.060
Name	Query timestamp
Requirement	Pontes shall provide timestamps in an ISO compliant format.

Pontes uses the timestamp format YYYY-MM-DDThh:mm:ss.sssZ. This requirement is identical to PONTES.UR.07.060, which covers reports.

8.3 TYPE OF QUERIES

ID	PONTES.UR.08.070
Name	Wallet Balance and Status Query
Requirement	Pontes shall provide a <i>Wallet Balance and Status Query</i> to its actors, which returns the current balance and status of one DCW.

The query should support the following selection criterion:

- Wallet identifier.

The query should return at least the following information for one wallet:

- Pontes Participant identifier;
- Wallet identifier;
- current balance;
- currency;
- wallet status;
- timestamp of the query.

If the Wallet balance and status query is triggered in U2A mode, the authorised actor can retrieve the following information concerning the last transaction (i.e. Wallet-to-Wallet payment, Delivery-versus-Payment, Payment-versus-Payment) or Liquidity Transfer settled on the relevant wallet:

- Transaction Identification;
- Settlement timestamp.

Table 8.1 lists actors' permissions regarding access to the underlying data.

ID	PONTES.UR.08.080
Name	CMB Limit and Status Query
Requirement	Pontes shall provide a CMB Limit and Status Query to its actors, which returns the current limit and status of one CMB.

The query should support the following selection criterion:

- Pontes CMB identifier.

The query should return at least the following information for one CMB:

- Pontes Participant identifier;
- Wallet identifier;
- Pontes CMB identifier;
- CMB limit (original value setup in the system);
- CMB headroom (current value of CMB headroom);
- currency;
- CMB status;
- timestamp of the query.

Table 8.1 lists actors' permissions regarding access to the underlying data.

ID	PONTES.UR.08.090
Name	Liquidity Transfer Status Query
Requirement	Pontes shall provide a Liquidity Transfer Status Query to its actors, which returns the current status of one liquidity transfer.

The query should support Liquidity Transfer Status Query Request (see PONTES.UR.09.410) and Liquidity Transfer Status Query Response (see PONTES.UR.09.420).

Pontes allows actors to query liquidity transfer orders from the current and previous business days. The number of business days for querying liquidity transfer orders shall be configurable, with the initial configuration set to 5 business days.

Table 8.2 lists actors' permissions regarding access to the underlying data.

ID	PONTES.UR.08.100
Name	Wallet-to-Wallet Payment Status Query
Requirement	Pontes shall provide a Wallet-to-Wallet Payment Status Query to its actors, which returns the current status of one Wallet-to-Wallet Payment.

The query should support Wallet-to-Wallet Payment Status Query Request (see PONTES.UR.09.360) and Wallet-to-Wallet Payment Status Query Response (see PONTES.UR.09.370).

Pontes allows actors to query wallet-to-wallet payments from the current and previous business days. The number of business days for querying wallet-to-wallet payments shall be configurable, with the initial configuration set to 5 business days.

Table 8.2 lists actors' permissions regarding access to the underlying data.

ID	PONTES.UR.08.110
Name	Delivery-versus-Payment Status Query
Requirement	Pontes shall provide a Delivery-versus-Payment Status Query to its actors, which returns the current status of one Delivery-versus-Payment.

The query should support Delivery-versus-Payment Status Query Request (see PONTES.UR.09.200) and Delivery-versus-Payment Status Query Response (see PONTES.UR.09.210).

Pontes allows actors to query Delivery-versus-Payments from the current and previous business days. The number of business days for querying Delivery-versus-Payments shall be configurable, with the initial configuration set to 5 business days.

Table 8.2 lists actors' permissions regarding access to the underlying data.

ID	PONTES.UR.08.120
Name	Payment-versus-Payment Status Query
Requirement	Pontes shall provide a Payment-versus-Payment Status Query to its actors, which returns the current status of one Payment-versus-Payment.

The query should support Payment-versus-Payment Status Query Request (see PONTES.UR.09.300) and Payment-versus-Payment Status Query Response (see PONTES.UR.09.310).

Pontes allows actors to query Payment-versus-Payments from the current and previous business days. The number of business days for querying Payment-versus-Payments shall be configurable, with the initial configuration set to 5 business days.

Table 8.2 lists actors' permissions regarding access to the underlying data.

ID	PONTES.UR.08.130
Name	Initialisation Query
Requirement	Pontes shall provide an Initialisation Query to its actors, which returns for Delivery-versus-Payments (or Payment-versus-Payment) the information of the Delivery-versus-Payments (or Payment-versus-Payment) initialised.

The query should support Initialisation Query Request (see PONTES.UR.09.220) and Initialisation Query Response (see PONTES.UR.09.230).

Pontes allows actors to query initialised Delivery-versus-Payments (or Payment-versus-Payments) from the current and previous business days. The number of business days for querying initialised Delivery-versus-Payments (or Payment-versus-Payments) shall be configurable, with the initial configuration set to 5 business days.

Table 8.2 lists actors' permissions regarding access to the underlying data.

In case of a Delivery-versus-Payment (or Payment-versus-Payment) initialised by:

- a Participant, a Market DLT Operator (acting on behalf of the Participant) can send an Initialisation Query Request if the Delivery-versus-Payment (or Payment-versus-Payment) affects a DCW on which the Market DLT Operator is authorised on. This would enable the Market DLT Operator to follow-up in case of unavailability of the Participant.
- a Market DLT Operator (acting on behalf of the Participant), the Participant can send an Initialisation Query Request. This would enable the Participant to follow-up in case of unavailability of the Market DLT Operator.

Initialisation Query Requests can be sent multiple times.

ID	PONTES.UR.08.140
Name	Reveal Key
Requirement	Pontes shall provide a Reveal Key functionality to its actors, which returns for Delivery-versus-Payments (or Payment-versus-Payment) the Execution Key or Cancellation Key. Pontes shall reveal the requested key, based on the provided parameter, only if the actor is entitled to receive it.

The query should support Reveal Key Request (see PONTES.UR.09.260) and Reveal Key Response (see PONTES.UR.09.270).

Pontes allows actors to reveal keys for Delivery-versus-Payments (or Payment-versus-Payments) from the current and previous business days. The number of business days for revealing keys for initialised Delivery-versus-Payments (or Payment-versus-Payments) shall be configurable, with the initial configuration set to 5 business days.

Table 8.2 lists actors' permissions regarding access to the underlying data.

In case of a Delivery-versus-Payment (or Payment-versus-Payment) initialised by:

- a Participant, a Market DLT Operator (acting on behalf of the Participant) can send a Reveal Key Request if the Delivery-versus-Payment (or Payment-versus-Payment) affects a DCW on which the Market DLT Operator is authorised on. This would enable the Market DLT Operator to follow-up in case of unavailability of the Participant.
- a Market DLT Operator (acting on behalf of the Participant), the Participant can send Reveal Key Request. This would enable the Participant to follow-up in case of unavailability of the Market DLT Operator.

Reveal Key Requests can be sent multiple times.

ID	PONTES.UR.08.150
Name	Liquidity Transfers Query
Requirement	Pontes shall provide a Liquidity Transfer Query to its actors, which supports advanced filter criteria on liquidity transfers and returns multiple liquidity transfers matching the provided criteria.

The query should support the following selection criteria:

- Debtor BIC;
- Creditor BIC;
- Wallet identifier;
- Liquidity transfer reference;
- Status;
- Currency;
- Lower bound of the search range for the amount;
- Upper bound of the search range for the amount;
- Lower bound of the search range for the Business date;
- Upper bound of the search range for the Business date;

- Direction (inbound / outbound / intra-service);
- Error code

The query should return at least the following information for each liquidity transfer:

- Liquidity transfer reference;
- Debtor BIC;
- Creditor BIC;
- Debited Cash Account (or Wallet);
- Credited Cash Account (or Wallet);
- Status
- Amount;
- Currency;
- Business Date;
- Settlement Timestamp;
- Error code, where relevant.

Table 8.3 lists actors' permissions regarding access to the underlying data.

ID	PONTES.UR.08.160
Name	Wallet-to-Wallet Payments Query
Requirement	Pontes shall provide a Wallet-to-Wallet Payments Query to its actors, which supports advanced filter criteria on wallet-to-wallet payments and returns multiple wallet-to-wallet payments matching the provided criteria.

The query should support the following selection criteria:

- Debtor BIC;
- Creditor BIC;
- Wallet identifier;
- Wallet-to-Wallet Payment reference;
- Sender reference (i.e. Participant or Market DLT Operator);
- Status;
- Currency;
- Lower bound of the search range for the amount;
- Upper bound of the search range for the amount;
- Lower bound of the search range for the Business date;
- Upper bound of the search range for the Business date;
- Error code.

The query should return at least the following information for each wallet-to-wallet payment:

- Wallet-to-Wallet Payment reference;
- Debtor BIC;
- Creditor BIC;
- Debited Wallet;
- Credited Wallet;
- Sender reference (i.e. Participant or Market DLT Operator);
- Status;

- Amount;
- Currency;
- Business Date;
- Settlement Timestamp;
- Error code, where relevant.

Table 8.3 lists actors' permissions regarding access to the underlying data.

ID	PONTES.UR.08.170
Name	Delivery-versus-Payments Query
Requirement	Pontes shall provide a Delivery-versus-Payments Query to its actors, which supports advanced filter criteria on Delivery-versus-Payments and returns multiple Delivery-versus-Payments matching the provided criteria.

The query should support the following selection criteria:

- Debtor BIC;
- Creditor BIC;
- Wallet identifier;
- Delivery-versus-Payment reference;
- Sender reference (i.e. Participant or Market DLT Operator);
- Status;
- Currency;
- Lower bound of the search range for the amount;
- Upper bound of the search range for the amount;
- Lower bound of the search range for the Business date;
- Upper bound of the search range for the Business date
- Error code;

The query should return at least the following information for each delivery-versus-payment (DvP):

- Delivery-versus-Payment reference;
- Debtor BIC;
- Creditor BIC;
- Debited Wallet;
- Credited Wallet;
- Sender reference (i.e. Participant or Market DLT Operator);
- Status³¹;
- Amount;
- Currency;
- Business Date;
- Settlement Timestamp;
- Error code, where relevant.

³¹ Delivery-versus-Payments Query shall return also the failed payment attempts due to insufficient funds.

Table 8.3 lists actors' permissions regarding access to the underlying data.

ID	PONTES.UR.08.180
Name	Payment-versus-Payments Query
Requirement	Pontes shall provide a Payment-versus-Payments Query to its actors, which supports advanced filter criteria on Payment-versus-Payments and returns multiple Payment-versus-Payments matching the provided criteria.

The query should support the following selection criteria:

- Debtor BIC;
- Creditor BIC;
- Wallet identifier;
- Payment-versus-Payment reference;
- Sender reference (i.e. Participant or Market DLT Operator);
- Status;
- Currency;
- Lower bound of the search range for the amount;
- Upper bound of the search range for the amount;
- Lower bound of the search range for the Business date;
- Upper bound of the search range for the Business date;
- Error code.

The query should return at least the following information for each payment-versus-payment (PvP):

- Payment-versus-Payment reference;
- Debtor BIC;
- Creditor BIC;
- Debited Wallet;
- Credited Wallet;
- Sender reference (i.e. Participant or Market DLT Operator);
- Status³²;
- Amount;
- Currency;
- Business Date;
- Settlement Timestamp;
- Error code, where relevant.

Table 8.3 lists actors' permissions regarding access to the underlying data.

³² Payment-versus-Payments Query shall return also the failed payment attempts due to insufficient funds.

8.4 HISTORICAL DATA

Pontes provides queries to Pontes actors to enable them to retrieve data for transactions from the previous business days. These queries are available in application-to-application (A2A) or user-to-application (U2A) mode. The reply to a historical data-related query is transmitted via the same channel as the query itself.

ID	PONTES.UR.08.200
Name	Historical data queries data scope
Requirement	Pontes shall provide the possibility for Pontes actors to query historical data in their data scope, according to the role of the actor doing such queries.

Pontes restricts access to data based on the permissions outlined in Table .

ID	PONTES.UR.08.210
Name	Historical data information age
Requirement	Pontes shall provide historical data in time to meet the access needs. Data shall be available as of the next business day at the latest.

ID	PONTES.UR.08.220
Name	Historical data retention period
Requirement	Pontes shall keep history data for a retention period according to the business requirements, which preferably should be unlimited, but for at least 10 years. The retention period shall be configurable per data source.

ID	PONTES.UR.08.230
Name	Historical data access
Requirement	Pontes shall make available historical data in application-to-application (A2A) or user-to-application (U2A) mode.

9 INTERFACES

Communication with Pontes is done either via user-to-application (U2A) mode or application-to-application (A2A) mode. U2A requires the provision of a GUI while A2A relies on JSON messages.

9.1 GENERAL REQUIREMENTS

ID	PONTES.UR.09.010
Name	ESMIG integration
Requirement	Pontes shall rely on a technical evolution of the Eurosystem Single Market Infrastructure Gateway (ESMIG) as channel for connectivity and security. The service shall also support protocols for participant access, provided these protocols are expressly approved by the Eurosystem and meet all applicable security and operational standards.

ID	PONTES.UR.09.020
Name	Single Access Point
Requirement	Pontes shall offer a single access point via Application Programming Interface (API) for Application-to-Application communication (see section 9.3) and graphical user interface (GUI) for User-to-Application communication (see section 9.4).

This access point shall be the sole means of secure and efficient access to Pontes functionalities for all Pontes Actors, in line with the Eurosystem's security policies.

ID	PONTES.UR.09.030
Name	Standardised and secure protocols
Requirement	Pontes shall use internationally recognised standard formats for all communications with all Pontes Actors, ensuring interoperability and seamless integration. In addition, the interface shall implement robust technical standards for authentication, authorisation, and non-repudiation, providing strong security, integrity, and legal certainty for all transactions.

ID	PONTES.UR.09.040
Name	Standardised and secure connection
Requirement	Pontes shall provide one standardised interface and process for all Participants and Market DLT Operators to connect and initiate transactions through the envisaged Eurosystem interoperability mechanism (see section 4.2).

ID	PONTES.UR.09.050
Name	User authentication
Requirement	Pontes shall perform authentication of users.

Pontes adopts a strong two-factor authentication technique to guarantee secure identification and authentication in all the interactions between users and Pontes. Strong authentication is adopted also for privileged accounts (administrators, service desk operators, auditors, etc.). All users must have a unique identifier for their personal use only and it cannot be reassigned to a different user neither in a different timeframe.

A strong authentication technique (not necessarily two factors) shall also be applied to connect applications to Pontes in application-to-application mode, ensuring secure integration with external systems.

Formally documented and approved user provisioning procedures are in place to assign and revoke user identifiers.

ID	PONTES.UR.09.060
Name	User authorisation
Requirement	Pontes shall perform authorisation of users.

Pontes ensures that Pontes Actors are allowed to perform only actions on data within the scope of their roles and responsibilities. Access rights must be granted according to the security principles of separation of duties and least privilege. Furthermore, access rights are subject to periodical review by their asset/system owner.

Formally documented and approved user provisioning procedures are in place to assign and revoke access rights to users.

Id	PONTES.UR.09.070
Name	Validation of received input
Description	Pontes shall validate the data provided in input and reject operations for which the provided input is wrong (or missing), in relation to the defined requirements.

9.2 U2A INTERFACE

Pontes Participants granted with the appropriate privileges can communicate with Pontes in U2A mode via a web-based graphical user interface (GUI).

9.2.1 General requirements

ID	PONTES.UR.09.080
Name	User-to-application communication
Requirement	Pontes shall provide to Pontes actors a user-to-application interface with the functionality and availability as given in this document.

Pontes shall provide U2A queries as described in PONTES.UR.09.90 and U2A operations as described in PONTES.UR.09.120.

9.2.2 U2A Queries

Pontes queries available in A2A mode are also available in U2A mode.

ID	PONTES.UR.09.90
Name	Query functions available in user-to-application mode at any point in time
Requirement	Pontes shall provide the following queries in U2A mode: • Wallet Balance and Status Query; • CMB Limits Query and Status Query; • Liquidity Transfer Status Query; • Wallet-to-Wallet Payment Status Query; • Delivery-versus-Payment Status Query; • Payment-versus-Payment Status Query; • Initialisation Query; • Reveal Key; • Liquidity Transfers Query; • Wallet-to-Wallet Payments Query; • Delivery-versus-Payments Query; • Payment-versus-Payments Query;

The detailed requirements related to those queries are documented in chapter 8.

ID	PONTES.UR.09.100
Name	Export U2A Query responses
Requirement	Pontes shall provide Pontes Actors with the possibility to export U2A Query responses from the Graphical User Interface.

The Pontes Graphical User Interface shall foresee the possibility to export the data retrieved by the U2A Queries, e.g. in a file format.

ID	PONTES.UR.09.110
Name	Query requests pending 4-eyes confirmation
Requirement	Pontes shall enable to query the requests that are pending 4-eyes confirmation in user-to-application mode at any point in time.

Once a request pending 4-eyes confirmation has been retrieved, Pontes shall enable the Pontes Actor to confirm it in user-to-application mode.

9.2.3 Availability of U2A Functionalities

The following functionalities, including those depending on reference data maintenance functionalities, are available in U2A mode with two different service levels, i.e. (i) around-the-clock or (ii) during a limited timeframe (i.e. during the opening hours of the Common Reference Data Management (CRDM) component).

ID	PONTES.UR.09.120
Name	U2A functionality around the clock
Requirement	Pontes shall provide the following functionalities in U2A mode around the clock: • Blocking/unblocking of a Participant; • Blocking/unblocking of a Wallet; • Blocking/unblocking of a CMB; • Increase/decrease of a CMB limit; • Wallet-to-Wallet Payment; • Delivery-versus-Payment (DvP) Initialisation; • Delivery-versus-Payment (DvP) Payment; • Payment-versus-Payment (PvP) Initialisation; • Payment-versus-Payment (PvP) Payment; • Liquidity transfers (accepted only during the opening hours of the T2 CLM); • List of Market DLT Operators; • List of Market DLT Platforms.

Crucial actions such as blocking of participants and wallets have to be possible 24/7/365.

ID	PONTES.UR.09.130
Name	U2A functionality during the opening hours of the Common Reference Data Management (CRDM) component

Requirement	Pontes shall provide the following functionalities in U2A mode during the opening hours of the Common Reference Data Management (CRDM) component: • Management (creation/update/deletion) of a DCW or CMB • Management (creation/update/deletion) of a Participant and its reference data (incl. Market DLT Operators and Addressable Entities) • Report subscription; • Floor/Ceiling subscription; • List of Participants subscription; • Management (creation/update/deletion) of Market DLT Operator – Market DLT platform links; • Management (creation/update/deletion) of Participant – Market DLT platform links; • Management (creation/update/deletion) of Participant – Market DLT operator links; • Management (creation/update/deletion) of Instruct On Behalf authorisation; • System settings change;
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Access to less crucial functionality pertaining to reference data setup is limited to the opening hours of the Common Reference Data Management (CRDM) component.

9.3 A2A INTERFACE

This section covers user requirements related A2A messages which have to be processed by Pontes. After some general requirements valid for all messages more detailed requirements for all messages mentioned in the process flow diagrams of preceding chapters are listed.

9.3.1 General requirements

ID	PONTES.UR.09.140
Name	Application-to-application (A2A) communication
Requirement	Pontes shall provide an application-to-application (A2A) interface.

Pontes shall allow connectivity of Pontes Participants by using requests in application-to-application (A2A) mode.

ID	PONTES.UR.09.150
Name	REST API compliance for A2A requests and responses
Requirement	Pontes shall use REST Application Programming Interface (API) for Application-to-Application communication.

Pontes shall implement REST APIs in line with the overall TARGET Services API Strategy.

ID	PONTES.UR.09.160
Name	Technical validation for inbound requests
Requirement	Pontes shall perform technical validations on received requests, which encompass at least checking the compliance with the standards chosen as part of the TARGET Services API Strategy.

Pontes has to execute additional business validations as well; those depend on the actual message type and are listed in separate user requirements in chapters 4 and 5.

ID	PONTES.UR.09.170
Name	Stop of technical validation for inbound requests
Requirement	Pontes shall terminate the technical validation of a request as soon as the first validation error is encountered.

As soon as the first validation error is encountered the validation process shall be stopped and a rejection code generated indicating which validation was erroneous. This rejection code has to be returned to the requestor.

9.3.2 Delivery-versus-Payment-related Messages

ID	PONTES.UR.09.180
Name	Delivery-versus-Payment (DvP) Initialisation Request
Requirement	Pontes shall accept a Delivery-versus-Payment (DvP) Initialisation Request for the purpose of initialising a Delivery-versus-Payment (DvP) transaction.

The Delivery-versus-Payment (DvP) Initialisation Request shall have at least the following mandatory information:

- the Debtor BIC;
- the Creditor BIC;
- the amount;
- the currency;
- the business date;
- the business case;
- the reference of the Market DLT Operator legally responsible for the settlement of the asset leg on the Market DLT platform³³;
- the reference of the Market DLT platform where the asset leg will be settled;
- the asset quantity;
- the ISIN of the asset (where applicable), the DTI (Digital Token Identifier) of the token (where applicable) or other identification code of the asset on the Market DLT platform.

³³ PONTES keeps track of the list of Market DLT platforms configured and the links among Participants and Market DLT platforms and among Market DLT Operators and Market DLT platforms

Examples of possible business cases are:

- a) Primary market activity (e.g. issuance, minting of assets/stablecoins, subscription and allocations)
- b) Secondary market transfer and trading (e.g. secondary trades, OTC transfers, asset swaps)
- c) Post-trade and lifecycle operations (e.g. clearing and netting, corporate actions such as coupons, asset servicing. Including all types of assets such as equities, securities, derivatives)
- d) Collateral and financing (e.g. collateral mobilisation, pledging, repos, margin calls, securities lending)
- e) End-of-life and termination events (maturity, redemption, burning of assets/stablecoins)
- f) Cross system operations (e.g. legacy systems to DLT synchronisation, bridge transfers)
- g) Other

ID	PONTES.UR.09.190
Name	Delivery-versus-Payment (DvP) Initialisation Response
Requirement	Pontes shall reply with an Delivery-versus-Payment (DvP) Initialisation Response for the purpose of confirming Delivery-versus-Payment (DvP) instance initialisation. The timestamp of the message shall be measured in UTC.

Upon successful Delivery-versus-Payment (DvP) Initialisation, the reply sent by Pontes to the requestor will contain at least the following information:

- the Delivery-versus-Payments reference;
- the reference of the sender (i.e. Participant or Market DLT Operator);
- the Debtor BIC and relevant wallet id;
- the Creditor BIC and relevant wallet id;
- the amount;
- the currency;
- the asset quantity;
- the settlement timestamp (if available);
- the business date;
- the timestamp of the Delivery-versus-Payments Initialisation received by Pontes;
- the reference of the Market DLT Operator legally responsible for the settlement of the asset leg on the Market DLT platform;
- the reference of the Market DLT platform where the external asset leg is settled;
- Hash of Execution Key;
- Hash of Cancellation Key;
- the timestamp of the timeout until when the originator can instruct the Delivery-versus-Payment Payment. After the expiration of this timeout, the beneficiary (acting as Seller in the Delivery-versus-Payment) can cancel the Delivery-versus-Payment requesting Pontes to reveal the Cancellation Key (see PONTES.UR.08.120).

ID	PONTES.UR.09.200
Name	Delivery-versus-Payment Status Query Request
Requirement	Pontes shall accept a Delivery-versus-Payment Status Query Request for the purpose of retrieving information related to a Delivery-versus-Payment.

The Delivery-versus-Payment Status Query Request shall have at least the following mandatory information:

- Delivery-versus-Payment reference.

ID	PONTES.UR.09.210
Name	Delivery-versus-Payment Status Query Response
Requirement	Pontes shall reply with a Delivery-versus-Payment Status Query Response for the purpose of providing information related to a Delivery-versus-Payment. The timestamp of the message shall be measured in UTC.

Upon successful retrieval of the requested Delivery-versus-Payment (DvP), the reply sent by Pontes to the requestor will contain at least the following information:

- the Delivery-versus-Payment reference;
- the reference of the sender (i.e. Participant or Market DLT Operator);
- the Debtor BIC and relevant wallet id;
- the Creditor BIC and relevant wallet id;
- the status (e.g., settled or rejected with rejection reason)³⁴;
- the amount;
- the currency;
- the asset quantity;
- the settlement timestamp (if available);
- the business date;
- the timestamp on which the Delivery-versus-Payment has been received by Pontes;
- the business case – as defined in PONTES.UR.09.140;
- the reference of the Market DLT Operator legally responsible for the settlement of the asset leg on the Market DLT platform;
- the reference of the Market DLT platform where the asset leg is settled;
- the ISIN of the asset (where applicable), the DTI (Digital Token Identifier) of the token (where applicable) or other identification code of the asset on the Market DLT platform.

³⁴ The complete list of status will be further detailed as part of the User Detailed Functional Specification (UDFS).

ID	PONTES.UR.09.220
Name	Initialisation Query Request
Requirement	Pontes shall accept a Initialisation Query Request for the purpose of retrieving information related to the initialisation of a Delivery-versus-Payment ³⁵ .

The Initialisation Query Request shall have at least the following mandatory information:

- Delivery-versus-Payment reference.

ID	PONTES.UR.09.230
Name	Initialisation Query Response
Requirement	Pontes shall reply with a Initialisation Query Response for the purpose of providing information related to the initialisation of a Delivery-versus-Payment ³⁶ . The timestamp of the message shall be measured in UTC.

Upon successful retrieval of the requested Delivery-versus-Payment initialisation, the reply sent by Pontes to the requestor will contain at least the following information³⁷:

- the Delivery-versus-Payments reference;
- the reference of the sender (i.e. Participant or Market DLT Operator);
- the Debtor BIC and relevant wallet id;
- the Creditor BIC and relevant wallet id;
- the amount;
- the currency;
- the asset quantity;
- the settlement timestamp (if available);
- the business date;
- the timestamp of the Delivery-versus-Payments Initialisation received by Pontes;
- the reference of the Market DLT Operator legally responsible for the settlement of asset leg on the Market DLT platform;
- the reference of the Market DLT platform where the asset leg is settled;
- the ISIN of the asset (where applicable), the DTI (Digital Token Identifier) of the token (where applicable) or other identification code of the asset on the Market DLT platform;
- Hash of Execution Key;
- Hash of Cancellation Key;
- the timestamp of the timeout until when the originator can instruct the Delivery-versus-Payment Payment. After the expiration of this timeout, the beneficiary can cancel the Delivery-versus-Payment requesting Pontes to reveal the Cancellation Key (see PONTES.UR.08.120).

³⁵ The same Initialisation Query Request applies for Payment-versus-Payment transactions.

³⁶ The same Initialisation Query Response applies for Payment-versus-Payment transactions.

³⁷ The case of a Delivery-versus-Payment is reported.

ID	PONTES.UR.09.240
Name	Delivery-versus-Payment (DvP) Payment Request
Requirement	Pontes shall accept a Delivery-versus-Payment (DvP) Payment Request for the purpose of settling an existing Delivery-versus-Payment (DvP).

The Delivery-versus-Payment Payment Request shall have at least the following mandatory information:

- Delivery-versus-Payment reference;
- the Debtor BIC;
- the Creditor BIC;
- the amount;
- the currency;
- the business date;

ID	PONTES.UR.09.250
Name	Delivery-versus-Payment (DvP) Payment Response
Requirement	Pontes shall reply with a Delivery-versus-Payment (DvP) Payment Response for the purpose of confirming the settlement of a Delivery-versus-Payment (DvP) Payment. The timestamp of the message shall be measured in UTC.

Upon processing the Delivery-versus-Payment (DvP) Payment Request, the reply sent by Pontes to the requestor will contain at least the following information:

- the Delivery-versus-Payment reference;
- the status (e.g., settled or rejected with rejection reason)³⁸;
- the settlement timestamp (if available);
- the business date;
- the Execution Key (revealed only in case of successful settlement)

ID	PONTES.UR.09.260
Name	Reveal Key Request
Requirement	Pontes shall accept a Reveal Key Request for the purpose of disclosing the Execution Key or the Cancellation Key needed to unlock the asset locked in the Hash-Link Contract (HLC) on the Market DLT platform.

The Reveal Key Request shall have at least the following mandatory information:

- Delivery-versus-Payment reference;
- Key type (Execution Key / Cancellation Key).

³⁸ The complete list of status will be further detailed as part of the User Detailed Functional Specification (UDFS).

ID	PONTES.UR.09.270
Name	Reveal Key Response
Requirement	Pontes shall reply with a Reveal Key Response for the purpose of disclosing the Execution Key or the Cancellation Key needed to unlock the asset locked in the Hash-Link Contract (HLC) on the Market DLT platform.

Upon processing the Reveal Key Request, the reply sent by Pontes to the requestor will contain at least the following information:

- the Delivery-versus-Payments reference;
- the requested key. Execution Key is only revealed to the Buyer if the Delivery-versus-Payment Payment is Settled. Cancellation Key is only revealed to the Seller if the Delivery-versus-Payment Payment is Expired.
- (in case the requested key is not revealed) an error status and error reason.

9.3.3 Payment-versus-Payment-related Messages

ID	PONTES.UR.09.280
Name	Payment-versus-Payment (PvP) Initialisation Request
Requirement	Pontes shall accept a Payment-versus-Payment (PvP) Initialisation Request for the purpose of initialising a Payment-versus-Payment (PvP) transaction.

The Payment-versus-Payment (PvP) Initialisation Request shall have at least the following mandatory information:

- the Debtor BIC;
- the Creditor BIC;
- the amount;
- the currency;
- the business date;
- the business case;
- the reference of the Market DLT Operator legally responsible for the settlement of the payment leg on the Market DLT platform;
- the reference of the Market DLT platform where the external payment leg is settled;
- the DTI (Digital Token Identifier) of the token (where applicable) or other identification code of the token on the Market DLT platform.
- the amount of cash on the Market DLT platform;
- the currency denomination of cash on the Market DLT platform.

Examples of possible business cases are:

- a) Payments and cash (e.g. interbank cash transfers, customer payments, merchant settlement, fees)
- b) Cross system operations (e.g. legacy systems to DLT synchronisation, bridge transfers)
- c) Other

ID	PONTES.UR.09.290
Name	Payment-versus-Payment (PvP) Initialisation Response
Requirement	Pontes shall reply with a Payment-versus-Payment (PvP) Initialisation Response for the purpose of confirming Payment-versus-Payment (PvP) instance initialisation. The timestamp of the message shall be measured in UTC.

Upon successful Payment-versus-Payment (PvP) Initialisation, the reply sent by Pontes to the requestor will contain at least the same information described in PONTES.UR.09.190.

ID	PONTES.UR.09.300
Name	Payment-versus-Payment Status Query Request
Requirement	Pontes shall accept a Payment-versus-Payment Status Query Request for the purpose of retrieving information related to a Payment-versus-Payment.

The Payment-versus-Payment Status Query Request shall have at least the following mandatory information:

- Payment-versus-Payment reference.

ID	PONTES.UR.09.310
Name	Payment-versus-Payment Status Query Response
Requirement	Pontes shall reply with a Payment-versus-Payment Status Query Response for the purpose of providing information related to a Payment-versus-Payment. The timestamp of the message shall be measured in UTC.

Upon successful retrieval of the requested Payment-versus-Payment (PvP), the reply sent by Pontes to the requestor will contain at least the same information described in PONTES.UR.09.210.

In this context, possible values for the “business case” are detailed in PONTES.UR.09.280.

ID	PONTES.UR.09.320
Name	Payment-versus-Payment (PvP) Payment Request
Requirement	Pontes shall accept a Payment-versus-Payment (PvP) Payment Request for the purpose of settling an existing Payment-versus-Payment (PvP).

The Payment-versus-Payment (PvP) Payment Request shall contain at least the same information described in PONTES.UR.09.240.

ID	PONTES.UR.09.330
Name	Payment-versus-Payment (PvP) Payment Response
Requirement	Pontes shall reply with a Payment-versus-Payment (PvP) Payment Response for the purpose of confirming the settlement of a Payment-versus-Payment (PvP) Payment. The timestamp of the message shall be measured in UTC.

Upon processing the Payment-versus-Payment (PvP) Payment Request, the reply sent by Pontes to the requestor will contain at least the same information described in PONTES.UR.09.250.

9.3.4 Wallet-to-Wallet Payment-related Messages

ID	PONTES.UR.09.340
Name	Wallet-to-Wallet Payment Request
Requirement	Pontes shall accept a Wallet-to-Wallet Payment Request for the purpose of settling a Wallet-to-Wallet Payment.

The Wallet-to-Wallet Payment Request shall have at least the following mandatory information:

- Wallet-to-Wallet Payment reference;
- the Debtor BIC;
- the Creditor BIC;
- the amount;
- the currency;
- the business date;
- the business case.

The Wallet-to-Wallet Payment Request may have the following optional³⁹ information:

- the ISIN of the asset (where applicable), the DTI (Digital Token Identifier) of the token (where applicable) or other identification code of the asset on the Market DLT platform.

Examples of possible business cases are:

- Post-trade and lifecycle operations (e.g. clearing and netting, corporate actions such as coupons, asset servicing. Including all types of assets such as equities, securities, derivatives)
- Collateral and financing (e.g. collateral mobilisation, pledging, repos, margin calls, securities lending)
- Cross system operations (e.g. legacy systems to DLT synchronisation, bridge transfers)
- Payments and cash (e.g. interbank cash transfers, customer payments, merchant settlement, fees)
- Other

³⁹ In case the Wallet-to-Wallet Payment arises in the context of asset lifecycle management (e.g. coupon payment).

ID	PONTES.UR.09.350
Name	Wallet-to-Wallet Payment Response
Requirement	Pontes shall reply with a Wallet-to-Wallet Payment Response for the purpose of confirming the settlement of a Wallet-to-Wallet Payment. The timestamp of the message shall be measured in UTC.

Upon processing the Wallet-to-Wallet Payment Request, the reply sent by Pontes to the requestor will contain at least the following information:

- the Wallet-to-Wallet Payment reference;
- the status (e.g., settled or rejected with rejection reason)⁴⁰;
- the settlement timestamp (if available);
- the business date.

ID	PONTES.UR.09.360
Name	Wallet-to-Wallet Payment Status Query Request
Requirement	Pontes shall accept a Wallet-to-Wallet Payment Status Query Request for the purpose of retrieving information related to a Wallet-to-Wallet Payment.

The Wallet-to-Wallet Payment Status Query Request shall have at least the following mandatory information:

- Wallet-to-Wallet Payment reference.

ID	PONTES.UR.09.370
Name	Wallet-to-Wallet Payment Status Query Response
Requirement	Pontes shall reply with a Wallet-to-Wallet Payment Status Query Response for the purpose of providing information related to a Wallet-to-Wallet Payment. The timestamp of the message shall be measured in UTC.

Upon successful retrieval of the requested Wallet-to-Wallet Payment, the reply sent by Pontes to the requestor will contain at least the following information:

- the Wallet-to-Wallet Payment reference;
- the reference of the sender (i.e. Participant or Market DLT Operator);
- the Debtor BIC and relevant wallet id;
- the Creditor BIC and relevant wallet id;
- the status (e.g., settled or rejected with rejection reason)⁴¹;
- the amount;
- the currency;
- the settlement timestamp (if available);
- the business date;

⁴⁰ The complete list of status will be further detailed as part of the User Detailed Functional Specification (UDFS).

⁴¹ The complete list of status will be further detailed as part of the User Detailed Functional Specification (UDFS).

- the business case – as defined in PONTES.UR.09.280;
- (if relevant) the ISIN of the asset (where applicable), the DTI (Digital Token Identifier) of the token (where applicable) or other identification code of the asset on the Market DLT platform;
- the timestamp on which the Wallet-to-Wallet Payment has been received by Pontes.

9.3.5 Liquidity Transfer-related Messages

The Pontes service processes incoming requests for liquidity transfers.

The service shall be able to interact with T2 CLM using three different ISO compliant messages which are related to liquidity transfers, camt.025, camt.050 and camt.054.

ID	PONTES.UR.09.380
Name	Liquidity Transfer Request
Requirement	Pontes shall accept a Liquidity Transfer Request for the purpose of settling a Liquidity Transfer.

The Liquidity Transfer Request shall have at least all the mandatory information contained in a camt.050.

ID	PONTES.UR.09.390
Name	Liquidity Transfer Response
Requirement	Pontes shall reply with a Liquidity Transfer Response for the purpose of confirming the settlement of a Liquidity Transfer. The timestamp of the message shall be measured in UTC.

Upon processing the Liquidity Transfer Request, the reply sent by Pontes to the requestor will contain at least all the mandatory information contained in a camt.025.

ID	PONTES.UR.09.400
Name	Liquidity Transfer Status Query Request
Requirement	Pontes shall accept a Liquidity Transfer Status Query Request for the purpose of retrieving information related to a Liquidity Transfer.

The Liquidity Transfer Status Query Request shall have at least the following mandatory information:

- Liquidity Transfer reference.

ID	PONTES.UR.09.410
Name	Liquidity Transfer Status Query Response
Requirement	Pontes shall reply with a Liquidity Transfer Status Query Response for the purpose of providing information related to a Liquidity Transfer. The timestamp of the message shall be measured in UTC.

Upon successful retrieval of the requested Liquidity Transfer, the reply sent by Pontes to the requestor will contain at least the following information:

- Liquidity transfer reference;
- Settlement timestamp (if available);
- Amount;
- Currency;
- Status;
- Debtor BIC;
- Creditor BIC;
- Debtor Account (or Wallet);
- Creditor Account (or Wallet);
- Direction (inbound / outbound / intra-service).

ID	PONTES.UR.09.420
Name	Liquidity Transfer message
Requirement	Pontes shall process liquidity transfer messages which are ISO 20022 compliant.

The used ISO message is a camt.050. These messages are used as liquidity transfer orders:

- sent from Pontes to T2 CLM in case of an outbound liquidity transfer
- sent from T2 CLM to Pontes in case of an inbound liquidity transfer

ID	PONTES.UR.09.430
Name	T2-CLM Reply message
Requirement	Pontes shall process T2-CLM Reply messages which are ISO 20022 compliant, accepting or rejecting the liquidity transfer.

The used ISO message is a camt.025. These messages are used as liquidity transfer confirmation messages sent from T2 CLM informing Pontes about successful or failed settlement on the T2 CLM side in case of an outbound liquidity transfer.

10 OTHER FUNCTIONS

10.1 RAW DATA FOR ARCHIVING AND BILLING PURPOSE

Pontes provides raw data on a daily basis for additional services such as archiving or billing.

ID	PONTES.UR.10.010
Name	Application-to-application communication for raw data
Requirement	All raw data files shall be available in application-to-application mode only.

Pontes is able to produce and send raw data only via an A2A interface.

ID	PONTES.UR.10.020
Name	Raw data generation
Requirement	Pontes shall initiate the generation of the raw data after T2 end of day.

Pontes relies on a trigger provided by T2 (e.g., a camt.019.001.07 message) to signal the end of day, after which the raw data generation is started. Raw data could be generated and sent during a period of low system demand, e.g., during night time; however, the underlying raw data has to be as of the time of trigger, i.e., the T2 end of day.

ID	PONTES.UR.10.030
Name	Raw data timestamp
Requirement	Pontes shall use UTC for the raw data timestamp.

Timestamps are provided in an ISO compliant format (see also PONTES.UR.07.060)

ID	PONTES.UR.10.040
Name	Raw data
Requirement	Pontes shall make available raw data on a daily basis (T2 business day) for archiving and billing processes, handled by the relevant TARGET Services Common Components.

Billable items per Participant, which have to be calculable from the raw data, are (non-exhaustive list):

1. Number of settled and rejected Delivery-versus-Payment transactions per business case, where relevant;
2. Number of settled and rejected Payment-versus-Payment transactions per business case, where relevant;
3. Number of settled and rejected wallet-to-wallet payments per business case, where relevant;
4. Number of settled and rejected outbound liquidity transfers;
5. Number of owned wallets;
6. Number and type of queries executed;
7. Number and type of reports received;
8. Number and type of reference data changes executed.

The billable items from 1 to 3, in case the Participant instruct on behalf of an Addressable entity, shall keep track of the relevant Addressable entity.

If the Participant instructs on behalf of an Addressable entity, the billable items are attributed to the Participant itself.

If a Participant A instructs on behalf of another Participant B (only applicable to wallet-to-wallet payments), the billable items are attributed to the Participant B.

Billable items per Market DLT Operator, which have to be calculable from the raw data, are (non-exhaustive list):

1. Number of settled and rejected Delivery-versus-Payment transactions per business case, where relevant;
2. Number of settled and rejected Payment-versus-Payment transactions per business case, where relevant;
3. Number of settled and rejected wallet-to-wallet payments per business case, where relevant;
4. Number and type of queries executed,
5. Number and type of reports received.

The billable items from 1 to 3 shall keep track of the relevant Participant (or Addressable entity) on behalf of which the Market DLT Operator is instructing: the billable items are attributed to the Participant itself (in case the Market DLT Operator is instructing on behalf of the Participant) or to the Participant responsible for the Addressable entity (in case the Market DLT Operator is instructing on behalf of an Addressable entity).

Further details will be specified in the Pontes User Detailed Functional Specifications (UDFS).

ID	PONTES.UR.10.050
Name	Retention period for raw data for billing processes
Requirement	Pontes shall keep raw data for billing processes for a retention period for at least 3 years.

10.2 LIST OF PARTICIPANTS

ID	PONTES.UR.10.060
Name	List of Participants in Pontes
Requirement	Pontes shall provide a list of entities reachable through the service for each currency; this list shall include the BIC of Participants (and Addressable entities), for which one wallet (and CMB) is configured.

In order to provide Participants, Market DLT Operators and Central Banks with a list of entities that can be reached through Pontes, a table of all Participants and Addressable entities, identified via their BIC, has to be maintained. This list should be made available to at least all Participants, Market DLT Operators and Central Banks on a daily basis.

ID	PONTES.UR.10.070
Name	List of Participants subscription
Requirement	Pontes shall offer all Pontes actors the flexibility to receive the list of Participants either as a full or as a delta version.

The subscription can be configured via CRDM.

10.3 GENERAL LEDGER

Pontes support monitoring of accounting requirements vis-à-vis the balance sheets, the calculation of the T2 balances and the calculation of the Minimum Reserve by producing the General Ledger.

ID	PONTES.UR.10.080
Name	General Ledger
Requirement	Received the relevant T2 status message during the T2 end of day process, Pontes shall provide the General Ledger to T2, without subscription.

The General Ledger returns at least the following data:

- the T2 business date (the business day that is about to close);
- Pontes participant identifier;
- Pontes wallet identifier;
- currency;
- opening balance at start-of-day;
- closing balance at end-of-day;
- sum of debits;
- sum of credits.

In case of a DCW which reached its closing date, and the balance has not been reduced to zero, the balance has to be reported in the General Ledger. Subsequently, Pontes shall transfer the balance to the Central Bank Wallet of the relevant Central Bank (i.e. the Central Bank of the Participant owning the DCW).

The change of business date in Pontes is completed immediately after the snapshot of the wallet balances is executed.

To convey such a set of information to T2 the relevant ISO 20022 message (i.e. camt.053.001.08) is used.

ID	PONTES.UR.10.090
Name	Operational contingency measures in case of issues in the change of business date
Requirement	Pontes shall provide proper resilience and contingency measures to trigger any of the T2 status messages in case it does not receive them. This avoids that the Pontes operation in terms of interaction with T2 is blocked in incident situations.

As an operational contingency measure in case the communication between T2 and Pontes is out of service due to an ongoing incident, Pontes is able to simulate the trigger for the production of the General Ledger or for changing in the T2 operational status (i.e., open/closed).

11 NON-FUNCTIONAL REQUIREMENTS

11.1 ACCESS

Id	PONTES.NFR.11.010
Name	Access conditions
Description	Pontes shall ensure access for all Participants (and Market DLT Operators) meeting the eligibility criteria defined by the Eurosystem.

From the technical point of view, access for all Participants (and Market DLT Operators) shall be non-discriminatory. The Central Banks are responsible for checking the eligibility their participants (and Market DLT Operators).

11.2 AVAILABILITY

Id	PONTES.NFR.11.020
Name	Availability
Description	Pontes shall enable settlement of transactions in tokenised CeBM on a 24/7/365 basis.

The requirement only refers to the availability of settlement of transactions in tokenised CeBM: T2 CLM operating hours (for liquidity provisioning) are not affected by this requirement. Pontes is open for settling transactions in tokenised CeBM around-the-clock, without the need for any maintenance window or interruption of the service for upgrades.

Id	PONTES.NFR.11.030
Name	Service availability
Description	Pontes shall achieve a minimum service availability of 99.9%, calculated on a monthly basis, in accordance with the service level agreement.

In case of incidents or failures, Pontes can face temporary and unplanned interruption of service. Regardless of the total number of such unplanned interruptions, the overall amount of service unavailability time calculated on a monthly basis shall not be greater than 43 minutes.

ID	PONTES.NFR.11.040
Name	Real-time monitoring of the service
Requirement	Pontes shall implement real-time monitoring of the service (including the nodes of the Eurosystem DLT) and network health, performance, and connectivity. Automated alerts and escalation procedures shall be established to enable rapid detection and response to anomalies, outages, or security incidents affecting nodes of the network.

Id	PONTES.NFR.11.050
Name	Maintenance and upgrades
Description	Pontes may envisage temporary stop of service in case of exceptional changes only.

Pontes is designed to enable system maintenance, updates, and upgrades without the need of any maintenance window. Anyway, it is not possible to exclude cases that will require stopping the service temporarily, following a pre-agreed unavailability period.

Those cases relate to an exceptional change that cannot be managed without stopping the service or to a business decision of the relevant governance bodies.

A proper operational and governance framework shall define process to minimise service interruptions or downtime for participants. In exceptional cases where a temporary suspension of settlement services is strictly necessary, the process shall foresee that this is announced well in advance (specifying for example the actions to be undertaken, timeframes to be respected for the agreement and the announcement of the service downtime and its maximum duration, the actors involved and their individual responsibilities) and scheduled to have the least possible impact on participants, .

11.3 DISASTER RECOVERY

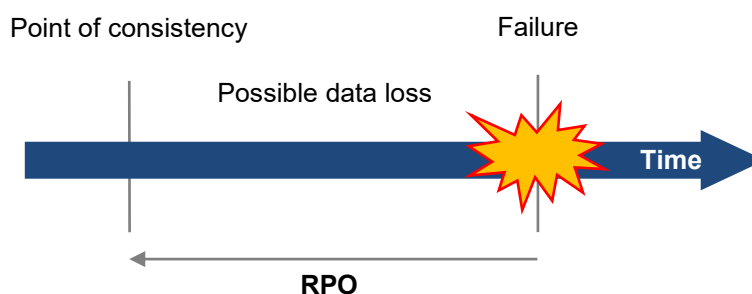
11.3.1 Recovery Point Objective

Id	PONTES.NFR.11.060
Name	Recovery Point Objective (RPO)
Description	Pontes shall ensure a recovery point objective (RPO) of zero minute in the event of a site and/or regional failure, for every component needed to provide the critical service.

The recovery point objective (RPO) is a point of consistency to which a user wants to recover or restart the service. It is measured as the amount of time between the moment when the point of consistency was created and the moment when the failure occurred.

Pontes ensures synchronous point of consistency creations and, as a consequence, no data loss in case of failures.

Figure 11.1
Recovery Point Objective

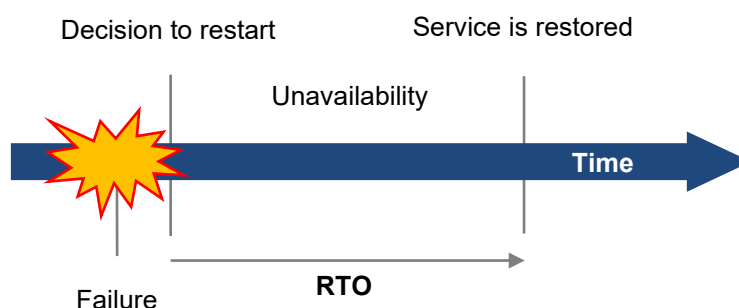


11.3.2 Recovery Time Objective

Id	PONTES.NFR.11.070
Name	Recovery Time Objective (RTO)
Description	The service shall ensure a recovery time objective (RTO) for a site and regional failure of 60 minutes, for every component needed to provide the critical service.

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 case of a major failure or a regional disaster, Pontes shall ensure maximum time of unavailability of 60 minutes starting from the time when the decision to restart the service is made up to the time the service is restored.

Figure 11.2
Recovery Time Objective



11.4 ARCHIVING

Id	PONTES.NFR.11.080
Name	Legal archiving of transactional data
Description	The Pontes operator shall be able to retrieve transactional and status message data not older than ten years, upon request by Participants.

Transactional data include archived transactions (e.g. delivery-versus-payments, payment-versus-payments, wallet-to-wallet payments, liquidity transfers) and related status message data from the offline repository. After the data extraction, the content shall be made available to the requestor, e.g. in a file format.

Id	PONTES.NFR.11.090
Name	Legal archiving of reference data
Description	The Pontes operator shall be able to retrieve reference data not older than ten years, upon request by Participants.

Archived reference data and related status message data shall be extracted from the offline repository. After the data extraction, the content shall be made available to the requestor, e.g. in a file format.

Id	PONTES.NFR.11.100
Name	Legal archiving of authentication and security data
Description	The Pontes operator shall be able to retrieve authentication and security data not older than three months, upon request by Participants.

Archived authentication and security data shall be extracted from the offline repository. After the data extraction, the content shall be made available to the requestor, e.g. in a file format.

11.5 AUDIT TRAIL

Id	PONTES.NFR.11.110
Name	Comprehensive Audit Trail
Description	Pontes shall collect and store in logs immutably and with precise timestamps all relevant actions, actors and events, including but not limited to transaction processing, smart contract deployment and execution, block addition , node configuration (e.g. connection, disconnection...) , and user accesses and activities.

Pontes must collect and store audit logs recording user and node activities, exceptions and information security events to enable the access control monitoring performed by the system owner. Logging facilities and log information is protected against tampering and made accessible for audit, investigation, and regulatory reporting, subject to strict access controls. Activities performed by privileged users (administrators, service desk operators, auditors, etc.) are also logged.

Audit trail information to be collected and stored includes at least the following data:

- transaction and liquidity transfer records;
- release of execution and cancellation keys, in line with the interoperability protocol;
- smart contract deployment and execution, consensus decisions, node operations;
- authentication successes and failures of normal and privileged users;
- security related messages (e.g., changes of access rights, alerts and exceptional events).

Audit trail records must contain registration timestamps and, when relevant, the identifier of the user who performed the recorded action.

11.6 INFORMATION SECURITY

Id	PONTES.NFR.11.120
Name	Information security compliance
Description	Pontes shall comply with the TARGET Services Security Requirements and Controls ⁴² , ensuring the confidentiality, integrity, and availability of all data and services.

⁴² The latest version of the TARGET Services Security Requirements and Controls was approved by the Governing Council on 01 February 2024 (SEC/GovC/X/24/023, SEC/GovC/X/24/023a). The security requirements and controls could be updated to reflect the technical and architectural characteristics of the Pontes Enhanced Product.

Pontes shall be compliant with the TARGET Services Security Requirements and Controls, where applicable, in order to cover all the different aspects related to security, e.g.:

- security policies and procedures.
- users' authentication and authorisation.
- audit trail and access rights review.
- data integrity, confidentiality, and non-repudiation.
- physical security.
- asset identification and classification.
- security incidents management.

11.7 CYBER RESILIENCE

Id	PONTES.NFR.11.130
Name	Cyber resilience compliance
Description	Pontes shall comply with the TARGET Services Cyber Resilience and Information Security (CRIS) Framework ⁴³ , providing robust protection against, and rapid recovery from, cyber threats and incidents.

Pontes shall be compliant with the TARGET Services Cyber Resilience and Information Security (CRIS) Framework, where applicable, in order to cover all the different aspects related to cyber resilience, e.g.:

- Definition and governance of the cyber resilience framework.
- Identification and classification of processes and assets.
- Protection of processes and assets.
- Detection of cyber-attacks.
- Incident response, resumption, and recovery.

11.8 VOLUMETRIC ASSUMPTIONS

11.8.1 Payment leg processing throughput

Id	PONTES.NFR.11.140
Name	Payment leg processing throughput average
Description	Pontes shall be capable of reliably processing an average number of 50 transactions per second (TPS), with a peak of up to 200 transactions per second (TPS).

Assuming that the volume of transactions does not reach its maximum value right from the start of operations, but it would rather increase over the first years of operations and reach its maximum value only at the end of this transition period, Pontes architecture and application shall be able to scale, in order to handle this increasing volume in a cost-effective manner.

⁴³ The TARGET Services Cyber Resilience and Information Security Framework was approved by the Governing Council on 01 February 2024 (SEC/GovC/X/24/023, SEC/GovC/X/24/023b). The framework could be updated to reflect the technical and architectural characteristics of Pontes.

In this context, *transaction* means the processing of the payment leg on the Eurosystem DLT:

- independently of the type of transaction (i.e. it refers to the payment on the Eurosystem DLT in case of delivery-versus-payment, payment-versus-payment and wallet-to-wallet payment),
- independently of the successful outcome of the transaction,
- excluding any initialisation step, where relevant.

On this basis, Pontes transactions processing capacity shall be scalable up to a maximum average number of 50 instant payment incoming transactions per second. This value equals the following hourly, daily and yearly volumes (assuming 24/7/365 settlement availability):

Hourly volume of transactions	180 thousands/hour
Daily volume of transactions	4.32 millions/day
Yearly volume of transactions	1.5 billions/year

11.8.2 Payment leg execution time

Id	PONTES.NFR.11.150
Name	Payment leg execution time
Description	Pontes shall ensure processing the transactions within 5 seconds for 99% of the processed transactions.

In this context, *transaction* means the processing of the payment leg on the Eurosystem DLT:

- independently of the type of transaction (i.e. it refers to the payment on the Eurosystem DLT in case of delivery-versus-payment, payment-versus-payment and wallet-to-wallet payment),
- independently of the successful outcome of the transaction,
- excluding any initialisation step, where relevant.

Such execution time shall be calculated from the time Pontes receives the payment request from the Participant (or Market DLT Operator) to the time Pontes sends the response to the Participant (or Market DLT Operator).

11.8.3 Query response time

Id	PONTES.NFR.11.160
Name	Real-time query response time – A2A
Description	Pontes shall process 95% of the A2A real-time queries within 30 seconds and 100% of the A2A real-time queries within 60 seconds. Whereby the response time is measured as the elapsed time between the moment an A2A query request is received by the interface and the moment the query result is returned to the requestor.

Id	PONTES.NFR.11.170
Name	Real-time query response time – U2A
Description	Pontes shall process 95% of the U2A real-time queries within 30 seconds and 100% of the U2A real-time queries within 60 seconds. Whereby the response time is measured as the elapsed time between the moment an U2A query request is received by the interface and the moment the query result is returned to the requestor.

11.8.4 Scalability

Id	PONTES.NFR.11.180
Name	Scalability
Description	Pontes shall be designed to scale up, with no impact on the (payment leg) execution time and query response time. Pontes shall be able to handle the volumes evaluated in due time from regular data collection all along the Pontes project duration and during the operating life.

Pontes shall be capable to scale up, in order to manage increasing volumes of transactions, while ensuring the same (payment leg) execution time (see PONTES.NFR.11.150) and query response time (see PONTES.NFR.11.160 and PONTES.NFR.11.170). Resource use shall be monitored and tuned, and projections shall be made of future capacity requirements to ensure the required system performance. Pontes shall be able to increase capacity within three months.

11.9 SERVICE DESK

Id	PONTES.NFR.11.190
Name	Service Desk
Description	A Service Desk shall be available at the Pontes service providers to respond to any operational and technical issue concerning the Pontes service.

The Pontes Service Desk shall be the single point of contact for any kind of operational and technical issues concerning the Pontes service.

The Pontes Service Desk shall be responsible for providing direct support to Central Banks, Pontes Participants and Market DLT Operators for managing the technical connection, also during the non-standard service hours.

Central Banks shall maintain vis-à-vis their own community of Pontes Participants and Market DLT Operators the responsibility of e.g. the reference data setup and liquidity management during the standard service hours.

ID	PONTES.NFR.11.200
Name	Service Desk Availability
Requirement	The Pontes Service Desk shall be available both on-site during standard service hours and on-call during non-standard service hours with different service levels.

The Pontes Service Desk shall be available according to the following service hours:

- from 6:30 to 19:30: standard service hours;
- from 19:30 to 6:30 (and on T2 closing days): non-standard service hours.

ID	PONTES.NFR.11.210
Name	Contacting the Service Desk
Requirement	Pontes Service Desk shall be reachable via telephone and e-mail.

The communication between the Pontes Service Desk and Central Banks responsible for Pontes Participants shall be based on the use of telephone and e-mail.

ID	PONTES.NFR.11.220
Name	Trouble Management System
Requirement	The Pontes Service Desk shall be supported by a Trouble Management System (TMS).

The Pontes Service Desk shall be supported by a Trouble Management System (TMS). All activities of the Pontes service provider related to IT Service Management processes shall be supported by the TMS, which covers the workflow and serves as information base providing, e.g., the status of an incident/problem, the actors involved and details about reasons and solutions.

ID	PONTES.NFR.11.230
Name	Access to the Trouble Management System
Requirement	The Pontes Service Desk shall be supported by a Trouble Management System (TMS).

The Pontes Service Desk shall be supported by a Trouble Management System (TMS). All activities of the Pontes service provider related to IT Service Management processes shall be supported by the TMS, which covers the workflow and serves as information base providing, e.g., the status of an incident and/or problem, the actors involved and details about reasons and solutions.

11.10 CLOCK SYNCHRONISATION

Id	PONTES.NFR.11.240
Name	Clock reference
Description	Pontes shall use atomic clock time as a reference.

Pontes uses a clock synchronised to an atomic clock time (in UTC, Coordinated Universal Time, with a maximum deviation of 100 milliseconds).

11.11 CHANGE AND RELEASE MANAGEMENT

ID	PONTES.NFR.11.250
Name	Technological flexibility and modularity
Requirement	Pontes shall be adaptable and upgradable, based on a modular design, open standards and governance processes enabling its evolution with new technologies, as they emerge, and new industry standards, ensuring viability and compatibility with market developments.

ID	PONTES.NFR.11.260
Name	Scope extension via Change and Release Management (CRM) process
Requirement	Pontes shall support the possibility of future functional scope extension in alignment with evolving Eurosystem and market needs. Such extensions shall be managed through the Change and Release Management (CRM) process of the TARGET Services, ensuring controlled, transparent, and efficient updates to the service offering.

ID	PONTES.NFR.11.270
Name	Transition to future evolution
Requirement	Pontes shall support a smooth transition to a future evolution of the service, covering data, use cases and processes, to ensure continuity for the market.

12 STATISTICAL INFORMATION

Pontes provides a set of statistical indicators. Such statistical indicators are grouped in reports related to the various use cases available in PONTES⁴⁴. These reports shall be created by the Pontes Operator in user-to-application (U2A) mode on a monthly or quarterly basis and then provided to the Central Banks. Additionally, Pontes shall provide daily transactional data for analytical purposes that will support the flexibility for future analytical-related use cases.

Id	PONTES.UR.12.010
Name	Pontes availability for creation of Statistical Information reports in U2A mode
Description	Pontes shall be able to produce the statistical information reports from a Graphical User Interface on a 24/7/365 basis.

The creation of the statistical information reports is available for the Pontes operator and is executed on the basis of the latest available data present in Pontes. Via the Graphical User Interface, shall be possible to select the reference period according to monthly or quarterly basis. The report is produced in a file format containing all the categories of statistical indicators listed in this document.

Id	PONTES.UR.12.020
Name	General Transactions
Description	The reports shall include general information on quantitative volumes of transactions exchanged on PONTES.

The general information contains, at least, the following indicators:

- Number of transactions per amount (per currency);
- Number of transactions per hour (per currency);
- Number of transactions per type⁴⁵ (per currency).

Id	PONTES.UR.12.030
Name	National Transactions – Delivery-versus-Payments
Description	The reports shall include information on Delivery-versus-Payments within the same country of origin.

The national transactions are grouped by the country code of the BIC of the debtor and contain, at least, the following indicators:

- Number of national Delivery-versus-Payments transactions;
- Number of national Delivery-versus-Payments transactions and grouped by business cases (as defined in PONTES.UR.09.180);

⁴⁴ The list of all the statistical indicators for Delivery-versus-Payment transactions, Payment-versus-Payment transactions and wallet-to-wallet payments, with the related descriptions, will be detailed in the Pontes User Detailed Functional Specifications (UDFS).

⁴⁵ In this case transaction type is intended as Delivery-versus-Payment transactions, Payment-versus-Payment transactions or wallet-to-wallet payments.

- Number of national Delivery-versus-Payments transactions and grouped by Market DLT Operator (being this Market DLT Operator the instructing the Delivery-versus-Payment or the one specified by the Participant as legally responsible for the settlement of the asset let on the Market DLT Platform);
- Number of national Delivery-versus-Payments transactions with an unsettled status;
- Number of national Delivery-versus-Payments transactions with an unsettled status and grouped by reason code.

Id	PONTES.UR.12.040
Name	National Transactions – Payment-versus-Payments
Description	The reports shall include information on Payment-versus-Payments within the same country of origin.

The national transactions are grouped by the country code of the BIC of the debtor and contain, at least, the following indicators:

- Number of national Payment-versus-Payments transactions;
- Number of national Payment-versus-Payments transactions and grouped by business cases (as defined in PONTES.UR.09.280);
- Number of national Payment-versus-Payments transactions and grouped by Market DLT Operator (being this Market DLT Operator the instructing the Payment-versus-Payment or the one specified by the Participant as legally responsible for the settlement of the payment let on the Market DLT Platform);
- Number of national Payment-versus-Payments transactions with an unsettled status;
- Number of national Payment-versus-Payments transactions with an unsettled status and grouped by reason code.

Id	PONTES.UR.12.050
Name	National Transactions – Wallet-to-Wallet Payment
Description	The reports shall include information on Wallet-to-Wallet Payments within the same country of origin.

The national transactions are grouped by the country code of the BIC of the debtor and contain, at least, the following indicators:

- Number of national Wallet-to-Wallet Payment transactions;
- Number of national Wallet-to-Wallet Payment transactions and grouped by business cases (as defined in PONTES.UR.09.340);
- Number of national Wallet-to-Wallet Payment transactions with an unsettled status;
- Number of national Wallet-to-Wallet Payment transactions with an unsettled status and grouped by reason code.

Id	PONTES.UR.12.060
Name	Cross-border transactions – Delivery-versus-Payments
Description	The reports shall include information on Delivery-versus-Payments executed between participants belonging to different countries.

The cross-border transactions can include, at least, the following indicators:

- Number of cross-border Delivery-versus-Payments transactions;
 - Sent by a debtor and grouped by his country code of the BIC
 - Received by a creditor and grouped by his country code of the BIC
- Number of cross-border Delivery-versus-Payments transactions and grouped by business cases (as defined in PONTES.UR.09.180);
 - Sent by a debtor and grouped by his country code of the BIC
 - Received by a creditor and grouped by his country code of the BIC
- Number of cross-border Delivery-versus-Payments transactions and grouped by Market DLT Operator (being this Market DLT Operator the instructing the Delivery-versus-Payment or the one specified by the Participant as legally responsible for the settlement of the asset let on the Market DLT Platform);
 - Sent by a debtor and grouped by his country code of the BIC
 - Received by a creditor and grouped by his country code of the BIC
- Number of cross-border Delivery-versus-Payments transactions with an unsettled status;
 - Sent by a debtor and grouped by his country code of the BIC
 - Received by a creditor and grouped by his country code of the BIC
- Number of cross-border Delivery-versus-Payments transactions with an unsettled status and grouped by reason code.
 - Sent by a debtor and grouped by his country code of the BIC
 - Received by a creditor and grouped by his country code of the BIC

Id	PONTES.UR.12.070
Name	Cross-border transactions – Payment-versus-Payments
Description	The reports shall include information on Payment-versus-Payments executed between participants belonging to different countries.

The cross-border transactions can include, at least, the following indicators:

- Number of cross-border Payment-versus-Payments transactions;
 - Sent by a debtor and grouped by his country code of the BIC
 - Received by a creditor and grouped by his country code of the BIC
- Number of cross-border Payment-versus-Payments transactions and grouped by business cases (as defined in PONTES.UR.09.280);
 - Sent by a debtor and grouped by his country code of the BIC
 - Received by a creditor and grouped by his country code of the BIC
- Number of cross-border Payment-versus-Payments transactions and grouped by Market DLT Operator (being this Market DLT Operator the instructing the Payment-versus-Payment or the one specified by the Participant as legally responsible for the settlement of the payment let on the Market DLT Platform);
 - Sent by a debtor and grouped by his country code of the BIC
 - Received by a creditor and grouped by his country code of the BIC
- Number of cross-border Payment-versus-Payments transactions with an unsettled status;
 - Sent by a debtor and grouped by his country code of the BIC
 - Received by a creditor and grouped by his country code of the BIC
- Number of cross-border Payment-versus-Payments transactions with an unsettled status and grouped by reason code.
 - Sent by a debtor and grouped by his country code of the BIC
 - Received by a creditor and grouped by his country code of the BIC

Id	PONTES.UR.12.080
Name	Cross-border transactions – Wallet-to-Wallet Payments
Description	The reports shall include information on Wallet-to-Wallet Payments executed between participants belonging to different countries.

The cross-border transactions can include, at least, the following indicators:

- Number of cross-border Wallet-to-Wallet Payments transactions;
 - Sent by a debtor and grouped by his country code of the BIC
 - Received by a creditor and grouped by his country code of the BIC
- Number of cross-border Wallet-to-Wallet Payments transactions and grouped by business cases (as defined in PONTES.UR.09.340);
 - Sent by a debtor and grouped by his country code of the BIC
 - Received by a creditor and grouped by his country code of the BIC
- Number of cross-border Wallet-to-Wallet Payments transactions with an unsettled status;
 - Sent by a debtor and grouped by his country code of the BIC
 - Received by a creditor and grouped by his country code of the BIC
- Number of cross-border Wallet-to-Wallet Payments transactions with an unsettled status and grouped by reason code.
 - Sent by a debtor and grouped by his country code of the BIC
 - Received by a creditor and grouped by his country code of the BIC

Id	PONTES.UR.12.090
Name	Overall monthly figures on transactions in PONTES
Description	The reports shall include information about volume and value of transactions

The overall monthly figures contain information on volumes and values of transactions settled in Pontes grouped by the country code of the BIC of the debtor. It shall include, at least, the following indicators:

- Volume and value of national transactions (including Delivery-versus-Payment transactions, Payment-versus-Payment transactions and Wallet-to-Wallet Payment transactions) settled
- Volume and value of national Delivery-versus-Payment transactions settled
- Volume and value of national Payment-versus-Payment transactions settled
- Volume and value of national Wallet-to-Wallet Payment transactions settled
- Volume and value of cross-border transactions (including Delivery-versus-Payment transactions, Payment-versus-Payment transactions and Wallet-to-Wallet Payment transactions) settled
- Volume and value of cross-border Delivery-versus-Payment transactions settled
- Volume and value of cross-border Payment-versus-Payment transactions settled
- Volume and value of cross-border Wallet-to-Wallet Payment transactions settled

Id	PONTES.UR.12.100
Name	Data for publication of the traffic settled in the TARGET Services
Description	Pontes shall provide data required for publication of the traffic settled in the TARGET Services.

As part of TARGET Services and in line with Principles for Financial Market Infrastructures (PFMI) and Systemically Important Payment Systems (SIPS) regulation, Pontes shall provide data related to the traffic settled. This shall support the publication on the [ECB website](#).

The creation and publication of these statistics shall follow the structure of data of the existing TARGET Services, e.g. volume and value (daily average and total) figures per each month and each year of operation.

Id	PONTES.UR.12.110
Name	Transactional data from the Pontes component
Description	All transactions within Pontes, including liquidity transfers, and between T2 and Pontes shall be made available for analytical purposes. Information shall include at minimum: • for Delivery-versus-Payment transactions, the fields specified in PONTES.UR.09.210 • for Payment-versus-Payment transactions, the fields specified in PONTES.UR.09.310 • for Wallet-to-Wallet payments, the fields specified in PONTES.UR.09.370 and • for liquidity transfers PONTES.UR.09.380.

ID	PONTES.UR.12.120
Name	Historization of Pontes transactional data for analytical purpose
Description	The Pontes granular data for analytical purpose shall be kept for a retention period of at least two years.

ID	PONTES.UR.12.130
Name	Data loading of Pontes transactional data for analytical purpose
Description	The Pontes granular data for analytical purpose shall be loaded at the latest in the morning of the next business day. Data up to business day D-1 can be made available on the next calendar day D, and not necessarily at the Start-of-Day (SoD) of business day D.

ID	PONTES.UR.12.140
Name	Storage of uploaded data in database format
Description	The Pontes granular data for analytical purpose shall be stored into a structured database format to support the flexibility for future analytical-related use cases.

ID	PONTES.UR.12.150
Name	Possibility for configured users to query Pontes granular data for analytical purpose
Description	A graphical user interface (GUI) shall be configured for users to be able to query the Pontes granular data for analytical purpose.

13 ANNEX

13.1 LIST OF EXTERNAL DOCUMENTS

	Title	Source
[1]	Central Security Depository Regulation	Central Security Depository Regulation
[2]	DLT Pilot Regime Regulation	DLT Pilot Regime Regulation
[3]	European Market Infrastructure Regulation - 648/2012	European Market Infrastructure Regulation - 648/2012
[4]	Markets in financial instruments directive (MiFID)	Markets in financial instruments directive (MiFID)
[5]	Open API Specification	Open API Specification
[6]	Technology Readiness Levels	Technology Readiness Levels
[7]	TARGET Guideline	TARGET Guideline

13.2 GLOSSARY

Item	Description	Source
A2A	See Application-to-Application	ECB
Application-to-Application	A technical mode of communication that permits the exchange of information between different software applications without a graphical user interface.	ECB
Business Identifier Code	An international standard for identification of institutions within the financial services industry. It consists of eight or eleven contiguous characters, comprising a financial institution code (four characters), a country code (two characters), a location code (two characters) and, optionally, a branch code (three characters).	ECB
Camt	See Cash Management message	ECB
Cash Management message	(Camt) ISO 20022 standard for XML messages to be used to manage cash.	ECB
Ceiling	An upper threshold for notifying the wallet owner that a defined wallet balance has been reached.	ECB
Central Bank Money	Liabilities of a central bank, in the form of either banknotes or bank deposits held at a central bank, which can be used for settlement purposes.	ECB
Credit Memorandum Balance	A credit limit that is linked to a Dedicated Cash Wallet.	ECB
Eurosystem	The central banking system of the euro area. It comprises the ECB and the national central banks of those EU Member States whose currency is the euro.	ECB
Extensible Markup Language	(XML) An open standard developed and maintained by World Wide Web Consortium (W3C), for describing and structuring data for the transmission and exchange of information between computer applications and organisations / humans.	ECB

First In/First Out	Processing sequence in which the transactions are treated in the same sequence as they arrived (i.e.: the first payment arrived is treated first, the latest one is treated at the end).	ECB
Floor	A lower threshold for notifying the wallet owner that a defined wallet balance has been reached.	ECB
Headroom	The (remaining) headroom of a CMB specifies the current tokenised cash amount available to the user of the CMB for settlement of transactions. The headroom is the limit minus limit utilisation.	ECB
ISO 20022	The international standard for financial services messaging, maintained by the International Organisation for Standardisation.	ECB
Limit	Quantitative limit on the funds transfer activity of participants in a system; limits may be set by each participant or imposed by the body managing the system.	ECB
Limit utilisation	The limit utilisation of a CMB specifies the amount by which its limit is already reduced by settlement of transactions in Pontes. The limit utilisation is the limit minus headroom.	ECB
Liquidity transfer	An instruction to transfer central bank money from an account in T2-CLM to a wallet in Pontes or from a wallet in Pontes to an account in T2-CLM or between two wallets in Pontes.	ECB
National Central Bank	A Central Bank that provides cash wallet services to Participants for settlement of transactions in tokenised central bank money	ECB
Recovery Point Objective	The recovery point objective (RPO) is a point of consistency to which a user wants to recover or restart the service.	ECB
Recovery Time Objective	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.	ECB
T2S	See Target2-Securities	ECB
T2	The Eurosystem's single shared platform enabling the settlement of payments in central bank money in Europe, supporting the implementation of the Eurosystem's monetary policy.	ECB
Target2-Securities	The Eurosystem's single technical platform enabling central securities depositories (CSDs) and national central banks to provide core, borderless and neutral securities settlement services in central bank money in Europe.	ECB
Timestamp	A timestamp is a sequence of characters, denoting the date and/or time at which a certain event occurred.	ECB
Pontes Operator	The Pontes Operator is the entity that operates the Pontes service.	ECB
U2A	See user-to-application	ECB
User Requirement	A condition or capability needed by a stakeholder to solve a problem or achieve an objective.	ECB
User Requirements Document	The document setting out the user requirements of a service.	ECB
User-to-application	A mode of technical communication that permits the exchange of information between software applications of Pontes and a Pontes system user through a graphical user interface.	ECB
Wallet	An account holding tokenised central bank money in Pontes for the purpose of settling transactions and liquidity transfers.	ECB

13.3 LIST OF ACRONYMS

Item	Description
24/7/365	24-hour and seven-day around the year
A2A	Application-to-Application
API	Application Programming interface
CMB	Credit Memorandum Balance
CSD	Central Securities Depositories
CSDR	Central Securities Depositories Regulation
CCPs	Central Counter Parties
DCA	Dedicated Cash Account
DCW	Dedicated Cash Wallet
DLT	Distributed Ledger Technology
DSS	DLT settlement system
DTSS	DLT Trading and Settlement System
DvP	Delivery-versus-Payment
EEA	European Economic Area
EoD	End of Day
ESMIG	European Single Market Infrastructure Gateway
HLC	Hash Link Contract
HTTP	Hyper Text Transfer Protocol
MiFID	Markets in Financial Instruments Directive
OAS	Open API Specification
Pontes DCW	See DCW
PvP	Payment-versus-Payment
REST	Representational State Transfer
RPO	Recovery Point Objective
RTGS	Real Time Gross Settlement system
RTO	Recovery Time Objective
U2A	User-to-Application
UTC	Coordinated Universal Time
XML	Extensible Markup Language