EUROPEAN CENTRAL BANK

EUROSYSTEM

VERSION 2.0

PSP Participation Agreement

Appendix 2.C Pilot Business Architecture

IMPORTANT NOTICE

This is version 2.0 of the document, initially published on 14 April 2026 and republished with **editorial amendments** on 12 May 2026.

Overview

The purpose of this appendix is to introduce the high-level business architecture of the Beta Digital Euro during the Pilot, the services supported by Pilot PSPs and the Eurosystem, and the performance and reliability requirements for Pilot PSPs.

Unless separated per role (Acquiring PSP or Distributing PSP), all Pilot PSPs are required to meet the obligations as laid out in this appendix. The appendix is structured as follows:

Section 1: Pilot – business architecture

This section describes the high-level business architecture of the Pilot and visualises the key services relevant for the various stakeholders within the Pilot ecosystem. Furthermore, this section details the components needed to run the instruments for offline payments.

Section 2: End-User payment and acceptance solutions

This section outlines the distributing and acceptance solutions and the general principles for Pilot PSPs to adhere to in order to support End-Users in the Pilot to accept and facilitate payment transactions with Beta Digital Euro.

Section 3: Pilot PSP domain services

This section includes requirements for Pilot Payment Services following the functional domain logic of Access Management, Transaction Management and Liquidity Management Services, specified for facilitating either online or offline payment transactions. Furthermore, this section details the Offline Distribution Service.

Section 4: Eurosystem services

This section outlines the services that the Eurosystem will provide, including the Digital Euro Service Platform (DESP) services as well as describe the liquidity management mechanism. Furthermore it explains the connectivity and DESP Access Gateway Pilot PSPs can leverage to invoke the described Eurosystem services.

Section 5: Applicable standards

This section outlines the reuse of open standards for payment interfaces and corresponding technologies in the Pilot.

Section 6: Reliability and performance requirements

This section outlines reliability and performance requirements for Pilot PSPs during the Pilot.

1. Pilot Business Architecture

Figure 1 provides a high-level visualisation of how Beta Digital Euro will be provisioned and used during the Pilot. It reflects the payment and acceptance instruments to be used by the End-User, the services to be supported by the Pilot PSP and the Eurosystem-provided services. The remainder of this appendix is structured along the stakeholder domains (End-Users, Pilot PSPs and the Eurosystem) and details the requirements for Pilot PSPs and the support the Eurosystem will provide to Pilot PSPs for implementation.

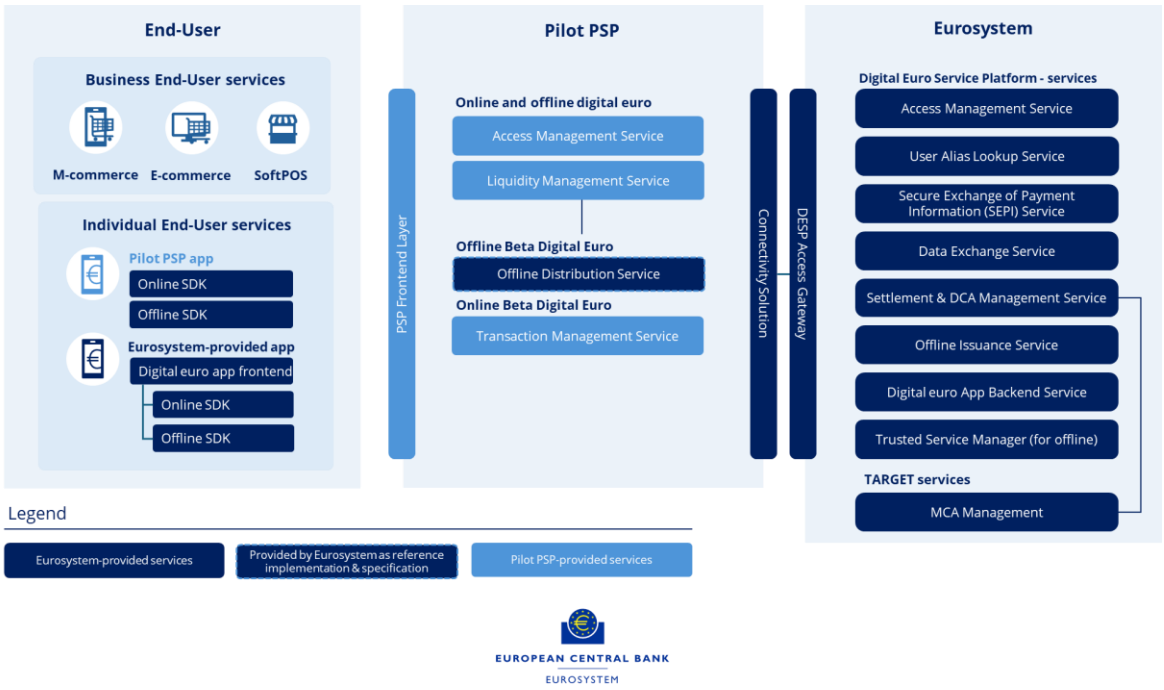

Figure 1 Pilot Business Architecture

To clarify the functionality of the offline mode, the key components required to run the solution are detailed below (**section** Error! Not a valid bookmark self-reference.**)**.

1.1 Offline mode

The Beta Digital Euro offline mode enables person-to-person payments between two mobile devices. It is a real-time settlement directly between two Individual End-User's mobile devices, with no third-party involvement in the settlement of payment transaction. While Pilot PSPs are not involved in the settlement of offline payment transactions, they are involved for other functionalities such as funding and defunding the Individual End-User's Offline Wallet.

To use the offline mode, the Individual End-User must fund their Offline Wallet, which is stored locally on the mobile device. Funding and defunding of the Offline Wallet are operations involving internet

connectivity. In addition, transparent periodic online integrity checks are performed to ensure that the funds stored in the secure element of device remain genuine and have not been tampered with.

These online operations (funding, defunding, and online integrity checks) must be facilitated by the Pilot PSPs through the integration of the Offline Distribution Service, as detailed in **3.1.4 Offline Distribution Service.** To facilitate offline payment transactions, the offline mode requires the components described in **Table 1**.

Component	Role	Provider
Offline Wallet	The Offline Wallet is an applet running on the secure element of the smartphones of both the Payer and the Payee. The Eurosystem fully manages the Offline Wallet deployment within the Offline SDK, eliminating the need for the Pilot PSP to handle it or possess specialised expertise in developing or provisioning applets.	Eurosystem-provided
Eurosystem-provided app	The Eurosystem-provided app is an application running on the Individual End-User's smartphone (iOS, Android) that uses the Offline SDK. It provides the user interface and transports wallet requests (funding, defunding, online integrity check) to the Pilot PSP backend infrastructure. If the Pilot PSP uses the Eurosystem-provided app, the Pilot PSP needs to establish the interfaces with its backend infrastructure so that the Eurosystem-provided app can reach the Offline Distribution Service.	Eurosystem-provided
Offline SDK	The Offline Software Development Kit (SDK) is a library for mobile application (iOS, Android). If the Pilot PSP leverages its own proprietary application, it must integrate the Offline (SDK) into its app to communicate with the Offline Wallet (to carry out P2P offline payments with NFC and funding/defunding/integrity checks) and establish the interfaces with the Pilot PSP backend infrastructure so that requests reach the Offline Distribution Service. The Offline SDK reduces difficulties for the Pilot PSPs such as the security of the offline payment protocol, the NFC protocol and the interface to provision the Offline Wallet. The Eurosystem will support the access to the secure element for the Offline SDK integrated in the Eurosystem-provided app/Pilot PSP proprietary app on a selected set of smartphone brands/versions.	Eurosystem-provided

	In **Appendix 2F – End-to-End Process Flows**, the Offline Secure Application refers to the combination of both the offline SDK and the Offline Wallet.	
PSP backend infrastructure	This is the existing Pilot PSP backend infrastructure that bridges the Offline Distribution Service with the Eurosystem-provided app or the Pilot PSP proprietary app. That is, the Pilot PSP backend infrastructure is expected to receive Eurosystem-provided app or Pilot PSP app messages, interact with the Offline Distribution Service and supplement a funding/defunding request with business logic (update of commercial bank money account).	Pilot PSP-provided
Offline Distribution Service	This service is to be integrated in the Pilot PSP backend infrastructure. It exposes the Inbound API to the Pilot PSP backend infrastructure and relays messages to the Offline Issuance Service; It returns Offline Issuance Service responses to the Pilot PSP backend infrastructure. It deals with most of the security features for funding/defunding.	Eurosystem-provided as sample, Pilot PSP integrated and hosted
Offline Issuance Service	This service is hosted by the Eurosystem. It issues/redeems offline Beta Digital Euro, performs online integrity checks, and communicates with the Settlement and DCA Management Service to debit/credit Pilot PSP dedicated cash accounts (DCA). The Offline Issuance Service interacts with the Offline Distribution Service.	Eurosystem-provided
Trusted Service Manager	This service is hosted by the Eurosystem. It enables remote provisioning and lifecycle management of the Offline Wallet on the secure element of the device. It is transparent for the Pilot PSP.	Eurosystem-provided

Table 1: Components involved for offline Beta Digital Euro

2. Payment and acceptance solutions

Figure 2 Payment instruments and acceptance instruments for the Pilot

[*insert if the PSP will provide distributing services*] **2.1 Payment solutions to be supported by Distributing PSPs**

The following table lists the payment solutions made available for the Pilot. A payment solution is a combination between a mode, a communication technology and an interface which can be used by **Individual End-Users** to instruct payment transactions.

Mode	Payment instruments	Communication technology
Online	Mobile Device (P2B e/m commerce)	DEAN/User Alias
	Mobile Device (P2B SoftPOS)	NFC
	Mobile Device (P2P)	DEAN/User Alias
Offline	Mobile Device (P2P)	NFC

Table 2 Payment solutions supported by Distributing PSPs

The Pilot foresees the provision of distributing solutions to Individual End-Users via two payment instruments:

1) in the form of a dedicated mobile application, referred to as the “Eurosystem-provided app”; and
2) as an integrated instrument within existing proprietary applications (i.e. Pilot PSP mobile app).

The Pilot PSP proprietary app as well as the Eurosystem-provided app will support all Pilot Payment Services (both online and offline).

2.1.1 Eurosystem-provided app

The Eurosystem-provided is a mobile application, supporting both iOS and Android, primarily designed to serve as an Individual End-User interface, while the backend operations related to functions supported by the Eurosystem-provided app (such as online payment transaction initiation, funding and defunding, or balance inquiries) will be handled by Pilot PSPs. For the operation of the Eurosystem-provided app, the Pilot PSPs will need to provide a **Digital Euro Mobile Banking Backend:** a backend integration of Pilot Payment Services in the Pilot PSP backend infrastructure to support the Eurosystem-provided app.

The following deliverables will be shared with Pilot PSPs during the Pilot Development Phase to assist Pilot PSPs in seamlessly integrating Pilot Payment Services into the Eurosystem-provided app:

- **Reference implementation:** A reference implementation of the Eurosystem-provided app to support Pilot PSPs in their understanding of how the Eurosystem-provided app may be integrated in their backend infrastructure. This includes inter alia API specifications, sample request and response payloads for each endpoint and standardised error codes and exception handling.
- **Source code** demonstrating how each online and offline functionality is implemented. It shall serve as an interpretation of the detailed implementation specifications.
- **Mock server**: A backend component that can be installed directly in the Pilot PSP's development environment. It provides all Eurosystem-provided app features according to the reference implementation guide, enabling Pilot PSPs to understand how Beta Digital Euro logic works. This mock server also enables Pilot PSPs to begin the integration of the online SDK in case they choose to integrate Pilot Payment Services in their own proprietary payment instrument.
- **End-to-End (E2E) test tool**: Functionally, the E2E test tool is an enhanced version of the mock server and integrates with DESP Services using real test data, enabling complete testing of all user journeys in scope of the Pilot and as described in **Appendix 2E – Illustrative User Journeys & Minimum User Experience (UX) requirements**.

  The E2E test tool also includes:
  - Test web pages for e-commerce user journey testing
  - A sample Business End-User app for in-app payment testing
  - A sample SoftPOS application to simulate in-store online payment transactions

All deliverables listed above will be fully documented with manuals and guides where applicable, enabling Pilot PSPs prepare and reuse parts of the code within their own core banking systems.

2.1.2 Online SDK

In addition to the Eurosystem-provided app, the Eurosystem will provide an Online SDK both for Android and iOS to support Pilot PSPs in integrating online Pilot Payment Services into their proprietary mobile

apps. This Online SDK may be embedded in the Pilot PSP's mobile banking app as a software library, simplifying the integration process by offering functions necessary to facilitate online Pilot Payment Services.

Pilot PSPs offering their own proprietary app must meet the minimum UX requirements as defined in **Appendix 2E – Users Journeys & Minimum UX Requirements**, to ensure a harmonised frontend integration of Pilot Payment Services.

To assist Pilot PSPs in seamlessly integrating online Pilot Payment Services into their proprietary payment instrument, the following deliverables are made available to Pilot PSPs to streamline the process and reduce the time and effort required for successful integration during the Pilot Development Phase:

- The online SDK which comprises different functionalities for online payment transaction initiation and processing (e.g. cryptographic primitives for payment authorisation);
- Detailed functional and technical specifications, including API specifications describing the system's behaviour and the implementation details.

2.1.3 Offline SDK

The Offline Software Development Kit (SDK), supporting both Android/iOS, is integrated into the Eurosystem-provided app or to be integrated in the Pilot PSP proprietary app and provides everything needed for offline Beta Digital Euro. It abstracts complexities for the Pilot PSP; it uses the secure element of the device to perform a payment, handling the necessary security countermeasures (e.g., protection against double-spending). It performs payment over NFC-based P2P communication. It facilitates communication between the Offline Wallet and the Offline Distribution Service, for funding, defunding, and integrity checks.

The Eurosystem will support Pilot PSPs with the implementation of the offline components by providing:

- The Offline SDK that includes libraries with source code. The Offline SDK provides P2P offline payments and NFC communication. It includes the remote provisioning of the Offline Wallet to the secure element, and includes the necessary security countermeasures (e.g., protection against double-spending).
- Documentation such as API references and an integration guide.
- Offline SDK Sample App including source code and executable binaries.
- Test scripts.

[*insert if the PSP will provide acquiring services*] **2.[1/2] Acceptance solutions to be supported by Acquiring PSPs**

The following table lists the acceptance solutions made available for the Pilot. An acceptance solution is a combination between a mode, a communication technology and an End-User interface which can be used by **Business End-Users** to instruct payments.

Mode	Acceptance instruments	Communication Technology
Online	M-commerce	App-to-App
		DEAN/User Alias
	E-commerce	DEAN/User Alias
	(Soft)POS	NFC

Table 3 Acceptance instruments to be supported by Acquiring PSPs

Acquiring PSPs are expected to provision a CPACE standard (see **section 5 Applicable standards**) based SoftPOS instruments to its Business End-User to support the P2B use case as described in **Appendix 1** – **Pilot Payment Services**. It is within the remit of the relationship between the Acquiring PSP and the Business End-User to agree on the provisioning of the device on which the SoftPOS software will operate during the Pilot. Furthermore, if relevant, Acquiring PSPs are expected to provide the relevant e-commerce and/or m-commerce features to facilitate the Business End-User to accept Beta Digital Euro during the Pilot.

3. PSP domain services

Pilot PSPs play a crucial role in providing Pilot Payment Services. Within the PSP domain, a set of services needs to be developed to support the end-to-end process flows for both online and offline payment transactions and other Pilot Payment Services, as per the business scope defined in **PSP Appendix 1 – Pilot Payment Services**.

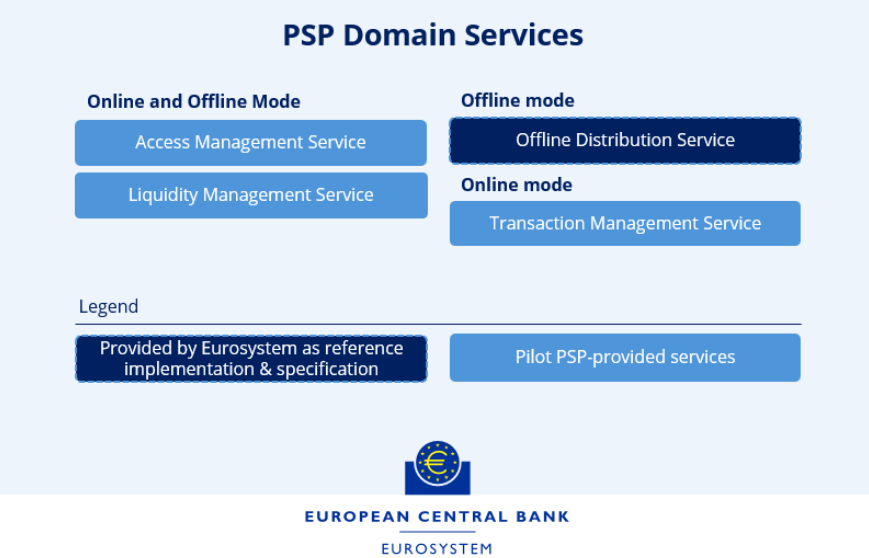

Figure 3 PSP Domain Services for Pilot PSPs

Services to be supported by the Pilot PSPs are described following the functional domain logic that is used across the Pilot PSP documentation package: Access Management, Liquidity Management, Transaction Management, and Offline Distribution. These services are split between Distributing PSPs and Acquiring PSPs. The Eurosystem will provide support on the Offline Distribution Service to alleviate Pilot PSPs development efforts – these are explained in section **Detailed functional requirements to** support the transaction management services are found in **Appendix 2B – Functional requirements**.

3.1.4 Offline Distribution Service.

[*insert if the PSP will provide distributing services*] **3.1 Services to be supported by Distributing PSPs**

3.1.1 Access Management Service

To facilitate the Pilot Payment Services, Distributing PSPs will be required to support a number of high-level Access Management Services illustrated in **Table 4** below. Details can be found in **Appendix 2B – Functional Requirements** and **Appendix 2F – End-to-End Process Flows**.

Access Management Services	
Online and Offline Pilot services	
• Onboarding and offboarding of an Individual End-User • Provision of Individual End-User settings (notifications, linked commercial bank money account management)	
Online-specific Pilot Payment Services	**Offline-specific Pilot Payment Services**
Provision of additional Individual End-User settings (User Alias management, holding limit management, DEAN management)	N/A

Table 4 Access Management Services to be supported by Distributing PSPs

3.1.2 Liquidity Management Service

To facilitate the Pilot Payment Services, Distributing PSPs will be required to support a number of high-level Liquidity Management Services illustrated in **Table 5** below. Details can be found in **Appendix 2B – Functional Requirements** and **Appendix 2F – End-to-End Process Flows**.

Liquidity Management Services	
Online and Offline Pilot services	
- Conversion between online and offline holdings - Manual funding/defunding from/to commercial bank money account for online or offline holdings (same Pilot PSP)	
Online-specific Pilot Payment Services	**Offline-specific Pilot Payment Services**
(Reverse) Waterfall to commercial bank money account (same Pilot PSP)	N/A

Table 5 Liquidity Management Services to be supported by Distributing PSPs

3.1.3 Transaction Management Service

Transaction management services pertain only to the support of online payments, and include the following high-level services as described in **Table 6**. Details can be found in **Appendix 2B – Functional Requirements** and **Appendix 2F – End-to-End Process Flows**.

Transaction Management Services	
Online-specific Pilot Payment Services	**Offline-specific Pilot Payment Services**
- Payment processing-related Pilot Payment Services (P2B and P2P) - Balance enquiry	While PSPs do not directly provide offline transaction management, they provide one non-physical payment instrument for the execution of

- Transaction history request	offline payment transactions and enable the initiation and reception of offline payment transactions by means of such payment instrument.

Table 6 Transaction Management Services to be supported by Distributing PSPs

Detailed functional requirements to support the transaction management services are found in **Appendix 2B – Functional requirements**.

3.1.4 Offline Distribution Service

To facilitate P2P offline payment transactions during the Pilot, Pilot PSPs need to integrate the Eurosystem-provided Offline Distribution Service responsible for funding and defunding the Offline Wallet. This service must be hosted by the Pilot PSP and channels messages from the Pilot PSP backend infrastructure to the Offline Issuance Service in DESP. It also relays transparently messages for the integrity check operations. **Figure 4** explains the path that always applies for routing an offline payment transaction:

Figure 4 Offline communication path

- (De)funding: The Offline Wallet first contacts the Pilot PSP backend infrastructure, which authenticates the Offline Wallet and applies business logic. The Pilot PSP backend infrastructure then forwards the validated request to the Offline Distribution Service that relays to the Offline Issuance Service and returns the Offline Issuance Service' response to the Offline Wallet.
- Online integrity checks (pass-through): May occur not only with (de)funding and are still routed via the Pilot PSP backend infrastructure, which acts as a transparent relay - not requiring individual - End-User authentication or business logic - forwarding the request to the Offline Distribution Service and returning the Offline Issuance Service' response. *(Transport security, basic schema validation, and logging remain required.)*

The Eurosystem will provide Pilot PSPs with the technical specification and a reference implementation (source code) of the Offline Distribution Service, and the corresponding runnable component as a

Docker image. In addition, Pilot PSPs will receive test vectors. This reference implementation and runnable version are provided to facilitate development and testing but are not a production grade version of the service, e.g., it may contain simplified error management.

In more detail, Pilot PSPs are provided with:

- Offline Distribution Service with live forwarding to the Offline Issuance Service for funding and defunding requests, and online integrity checks (pass-through).
- OpenAPI specification and integration, installation and operations guidelines.
- Offline Distribution Service – Integration Sample App which serves as a runnable reference implementation that Pilot PSPs can build and run, demonstrating correct request construction and expected behaviour.
- Test vectors and a demo script.

Details on connectivity requirements can be found in **section 4.1 Connectivity**, access to the DESP Access Gateway is explained in **section 4.2 DESP Access Gateway**.

Note that the Offline Distribution Service requires the usage of a Hardware Secure Module (HSM) for secure key creation and custody. Pilot PSPs can leverage their proprietary HSM solution.

[*insert if the PSP will provide acquiring services*] **3.[1/2] Services to be supported by Acquiring PSPs**

3.2.1 Access Management Service

To facilitate the Pilot Payment Services, Acquiring PSPs will be required to support a number of Access Management Services illustrated in **Table 7 7** below. During the Pilot, as there is no P2B offline use case, these services only pertain to the provisioning of online acceptance. Details can be found in **Appendix 2B – Functional Requirements** and **Appendix 2F – End-to-End Process Flows**.

Access Management Services
Onboarding / offboarding of a Business End-User (including linking commercial bank money account)

Table 7 7 Access Management Services to be supported by Acquiring PSPs

3.2.2 Liquidity Management Service

To facilitate the Pilot Payment Services, Acquiring PSPs will be required to support a number of Liquidity Management Services illustrated in **Table 8 8** below. Details can be found in **Appendix 2B – Functional Requirements** and **Appendix 2F – End-to-End Process Flows**. During the Pilot, as there is no P2B offline use case, these services only pertain to the provisioning of online acceptance.

Liquidity Management Services
Online-specific Pilot Payment Services
Business End-User waterfall and reverse waterfall~~funding~~

Table 88 Liquidity Management Services to be supported by Acquiring PSPs

3.2.3 Transaction Management Service

To facilitate the Pilot Payment Services, Acquiring PSPs will be required to support a number of high-level Transaction Management Services illustrated in **Table** 88**9** below. Details can be found in **Appendix 2B – Functional Requirements** and **Appendix 2F – End-to-End Process Flows**. During the Pilot, as there is no P2B offline use case, these services only pertain to the provisioning of online acceptance.

Transaction Management Services
Online-specific Pilot Payment Services
- Payment processing-related Pilot Payment Services (P2B and B2P) - Payment initiation service (including Business End-User payment request initiation validation and DEAN validity check).

Table 99 Transaction Management Services to be supported by Acquiring PSPs

4. Eurosystem Services *(provided to PSPs in both distributing and acquiring roles)*

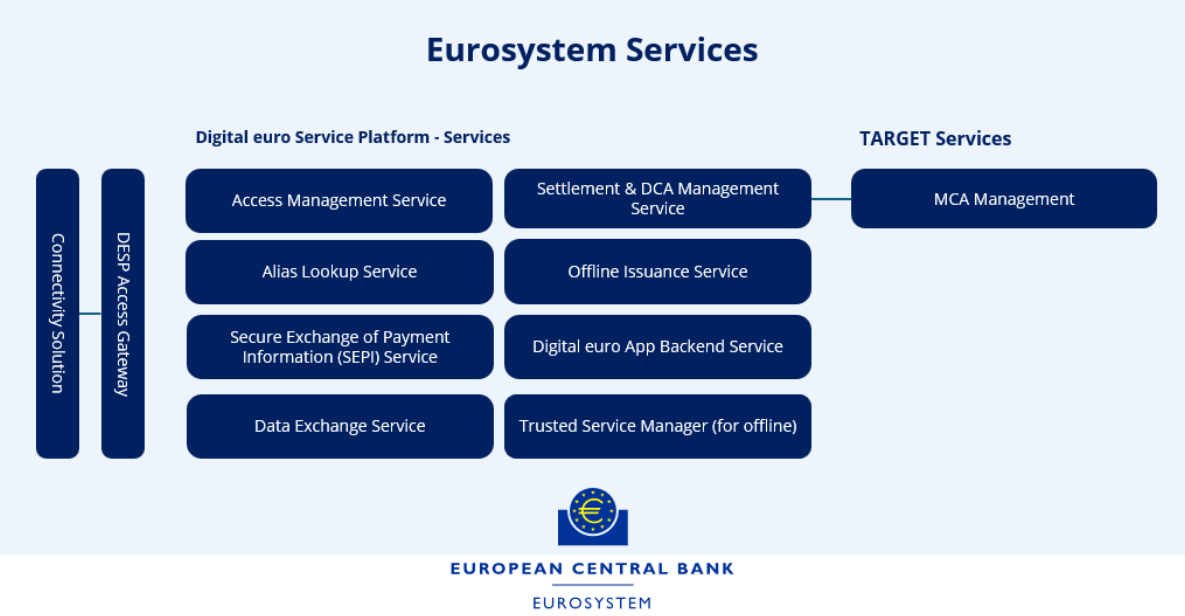

Figure 5 Eurosystem Services for Pilot PSPs

The interfaces facilitating the exchange of messages between Pilot PSPs and DESP utilise the ISO 20022 data dictionary wherever applicable. The specifications within the DESP domain will adhere to the structure of market-standard RESTful APIs as for instance specifications developed by Berlin Group.

4.1 Connectivity

Pilot PSPs (both in a distributing and acquiring role) are required to connect their IT infrastructure to DESP using a Network Service Provider (NSP) with dedicated connectivity lines, public key infrastructure and an API Gateway (**Section 4.2 DESP Access Gateway**) that will route all traffic from Pilot PSPs to DESP. The connection from the Pilot PSP to the NSP would use dedicated lines but could also use VPN for low-volume scenarios. **Appendix 2D – Onboarding Overview** describes the steps to onboard to the DESP, including the connectivity. The Eurosystem will procure connectivity services, Pilot PSPs are required to contract with one of the NSPs contracted by the Eurosystem.

4.2 DESP Access Gateway

While DESP may expose different Access Gateways for different services, each Access Gateway will adhere to the same logic and amount to one interface from a logical perspective (referred to as DESP Access Gateway). The Pilot PSP will need to route the relevant API call to the respective Access Gateway via the connectivity services contracted by the Eurosystem.

4.3 Eurosystem Services

The following table lists the Eurosystem Services which Pilot PSPs can invoke:

Eurosystem Services		
Service	**Function**	**Description**
Digital Euro Service Platform (DESP)		
Access Management Service	End-User registration and management	This function allows End-User registration and lifecycle management.
	DEAN creation and management	This function allows the creation of an End-User DEAN.
	User Alias registration and management	This function allows to register a User Alias which can be used for payment transactions (applicable to Individual End-Users only).
User Alias Lookup Service	Payment with User Alias/DEAN	This function allows to instruct a payment using the User Alias/DEAN of the Payee.
	Payment request	This function allows to request a payment.
Secure Exchange of Payment Information (SEPI) Service	Payment with NFC	This service allows NFC cryptogram validation.
Data Exchange Service	Import data from DESP	This service allows Pilot PSP to retrieve machine-readable data from DESP such as specific pre-defined reports or queries, e.g. for reconciliation or parameter data updates.
Settlement & DCA Management Service	Funding and defunding transaction	This function allows to request: • a funding transaction, enabling an End-User to acquire Beta Digital Euro, in exchange for commercial bank money, creating a direct liability of the Eurosystem towards that End-User. • a defunding transaction, enabling an End-User to acquire commercial bank money, in exchange for Beta Digital Euro, removing a direct liability of the Eurosystem towards that End-User.

	Liquidity management	This function allows the management of dedicated cash accounts (DCA) for the purpose of enabling funding and defunding services at the request and on behalf of End-Users. It also includes monitoring central bank money liquidity in DCAs through dedicated mechanisms facilitating liquidity transfers with TARGET Services T2-CLM.
	Online payment transaction	This function allows to instruct a payment transaction, initiated by either the Payer or Payee PSP, and confirmed by the corresponding Pilot PSP.
	Online combined transaction	This function allows to perform a Beta Digital Euro payment transaction involving a funding (reverse waterfall) or a defunding (waterfall).
	Online refund transaction	This function allows the validation of payment transaction that involves refund from the original Payee to the original Payer.
Offline Issuance Service	Funding and defunding offline transactions	This service allows: • to fund offline holdings from a commercial bank money account or from a Beta Digital Euro payment account • to defunding offline holdings to a commercial bank money account or to a Beta Digital Euro payment account
Eurosystem-provided app Backend Service	Push notification information	This service allows push notifications from the Pilot PSP backend infrastructure. It may be used to retrieve dynamic information (e.g., list of Pilot PSPs, terms and conditions, data protection statement, payment link fallback for invitation to install the Eurosystem-provided app) displayed in the Eurosystem-provided app.
Trusted Service Manager (for offline)	Provisioning and lifecycle management of Offline Wallet	This service enables remote provisioning and lifecycle management of the Offline Wallet on the secure element of the device. It is transparent for the Pilot PSP.
TARGET Services		

MCA Management	Provisioning of liquidity into the DCAs	This service enables transfers between DESP DCAs and main cash accounts (MCAs) as central source of liquidity.

Table 10 10 Eurosystem Services for Pilot PSPs

Implemented backend interfaces are subject to validation and testing procedures, which will be shared with Pilot PSPs during the Pilot Development Phase.

5. Applicable standards

The Pilot makes use of existing open market standards where possible to enable a harmonised End-User experience across Pilot PSPs. The envisaged standards in the scope of the Pilot will be:

- CPACE for NFC-connections between the Individual End-User mobile device and a Business End-User SoftPOS device (online mode);
- Pilot PSPs proprietary standards for the communication between Business End-User domain and the Pilot PSPs backend infrastructure;
- ISO20022 for the data dictionary/data model. Incorporating also existing market standards adapting them to the use of APIs such as the Berlin Group's data dictionary.

As the selection process of open, non-proprietary standards for the adoption of the Beta Digital Euro is still ongoing, the following caveats need to be considered:

- The mentioned selected standards are candidate standards and their final adoption by the Eurosystem is conditional;
- Candidate standards may evolve or be added, with the finalised list to be confirmed at a later stage.

6. Reliability and Performance Requirements *(applicable to Pilot PSPs in both distributing and acquiring roles)*

Non-functional requirements are critical to delivering a seamless End-User experience across all Pilot PSPs. These requirements directly impact Pilot PSP's underlying system's resilience, efficiency and usability. The following categories of NFRs are established for the Pilot:

- **Reliability:** Service availability (planned or unplanned downtime) and recoverability capabilities.
- **Performance:** Payment transaction processing latency.

6.1 Reliability

A Pilot PSP shall aim at an availability of 99.85% - 99.95% of all payment transactions, liquidity and access management services throughout the entire Pilot Operational Phase on a 24/7/365 basis. Availability is defined as the period during which Pilot Payment Services offered by Pilot PSPs are fully operational. Service availability applies continuously and throughout each calendar day, excluding planned maintenance and services dependent on (physical branch) service hours.

A Pilot PSP shall aim at recovery time objective (RTO) of four hours for Pilot Payment Services with a critical impact on Pilot operations. RTO is defined as the maximum tolerable amount of time required to restore one or more services to a correct operational state after a failure or disaster event has compromised availability.For general incidents, Pilot PSPs are expected to aim for a recovery time as fast as possible, at best effort basis.

A Pilot PSP shall ensure that planned maintenance and scheduled downtime is communicated *2* days in advance, performed outside of standard business-hours within the Eurosystem, and does not exceed a cumulative maximum of four hours per calendar month. This excludes maintenance and updates required and mandated by the Eurosystem as part of the Pilot Payment Services.

6.2 Performance

An Acquiring PSP shall aim at a maximum processing latency for 99% of online payment transactions below 200ms whereby this duration is measured as the elapsed time between the moment a payment transaction processing request is received by the Acquiring PSP and the moment a response is sent to the DESP, with the Acquiring PSP conducting the following tasks in the meantime:

- Check End-User balance
- Check whether End-User is a Business End-User
- Waterfall checks if required

- Send the response of the payment transaction processing request to the DESP

A Distributing PSP shall aim at a maximum processing latency for 99% of online payment transactions below 300ms whereby this duration is measured as the elapsed time between the moment a payment processing request, sent by the DESP, is received by the Distributing PSP and the moment a response is sent back to the DESP, with the Distributing PSP conducting the following tasks in the meantime:

- Validation whether payment is a (Soft)POS payment
- Accept or reject payment
- Check End-User balance and holding limit.
- Reverse waterfall checks and blocking funds if required
- Decrease holdings
- Send the response of the payment transaction processing request to the DESP