EUROPEAN CENTRAL BANK

EUROSYSTEM

Digital Euro Scheme Rulebook – Annex D1 Front-end implementation specification #3 End-user domain

IMPORTANT NOTICE:

This rulebook is an interim draft of the digital euro rulebook developed by RDG

A separate set of pilot documentation has been developed that can be found here.

Although the pilot documentation is based on the draft rulebook, the draft rulebook should not be used for pilot or implementation purposes.

Rulebook version:	0.91
Status:	DRAFT
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DISCLAIMERS FOR DRAFT RULEBOOK v0.91

Preliminary and non-binding nature of version 0.91

This document represents a preliminary draft version (version 0.91) of the digital euro scheme rulebook and reflects the ECB's continuous effort to develop a draft rulebook in close cooperation with the Rulebook Development Group (RDG)[1], comprising senior representatives from European associations representing both the supply and demand side of the retail payments market. Version 0.91 is non-binding and does not necessarily reflect the final views of the ECB, the Eurosystem, the RDG, or any of its members or their constituencies.

No reliance for implementation

Due to its preliminary nature, the draft rulebook version 0.91 is not intended for use as a basis for implementing any systems, processes, or policies related to the digital euro or to the beta digital euro in a Digital Euro Pilot contex*t.* Any such actions, prior to the publication of the officially approved rulebook, are under actors' own responsibility.

[1] For more information on the RDG, refer to:
https://www.ecb.europa.eu/euro/digital_euro/timeline/rulebook/html/index.en.html

PREAMBLE

The draft digital euro scheme rulebook is being developed by the Eurosystem together with the support from the digital euro scheme rulebook development group (RDG). The current draft rulebook (v0.91) has been further developed compared to the last version 0.9 of the draft rulebook, which was commented by the RDG and its constituencies. The current draft has been advanced in both structure and content based on the RDG comments received, further elaborations and discussions, and benefited from the various RDG workstreams.

The current version of the rulebook is based on the European Commission's 2023 proposal for a regulation on the establishment of the digital euro (2023/0212/COD) and the Regulation on the provision of digital euro services by payment services providers incorporated in Member States whose currency is not the euro (2023/0211/COD). Given both proposals are currently progressing through the legislative process, and subject to amendments from the EU co-legislators, the rulebook will require updates once both regulations have been finalised for adoption. Additionally, other areas of the rulebook will be further developed in line with ongoing elaborations on subject matters and decisions by the Governing Council of the ECB or are dependent on the work of service providers.

As a result, all along this draft rulebook, text highlighted in yellow refers to placeholders to be updated at later stage when associated decisions or developments are made. It is worth noting that the draft rulebook assumes a single-account set-up for individual digital euro end-users, which deviates from the possibility of having multiple digital euro payment accounts as implied by the European Commission's 2023 proposal for a regulation on the establishment of the digital euro.

The Eurosystem is also cognisant that political agreement has been achieved on the Payment Services Regulation (PSR) and the Third Payment Services Directive (PSD3). The agreed measures must be formally adopted by the European Parliament and the Council of the European Union before they enter into force. The rulebook will be updated accordingly.

The purpose of the current draft is to update the RDG and its constituencies on the progress made following the market consultation, coordinated by the RDG and concluded on 31 October 2025, and to serve as a basis for the further development of the draft rulebook. This document represents a preliminary draft version which has not yet been subject to a general language and editorial review.

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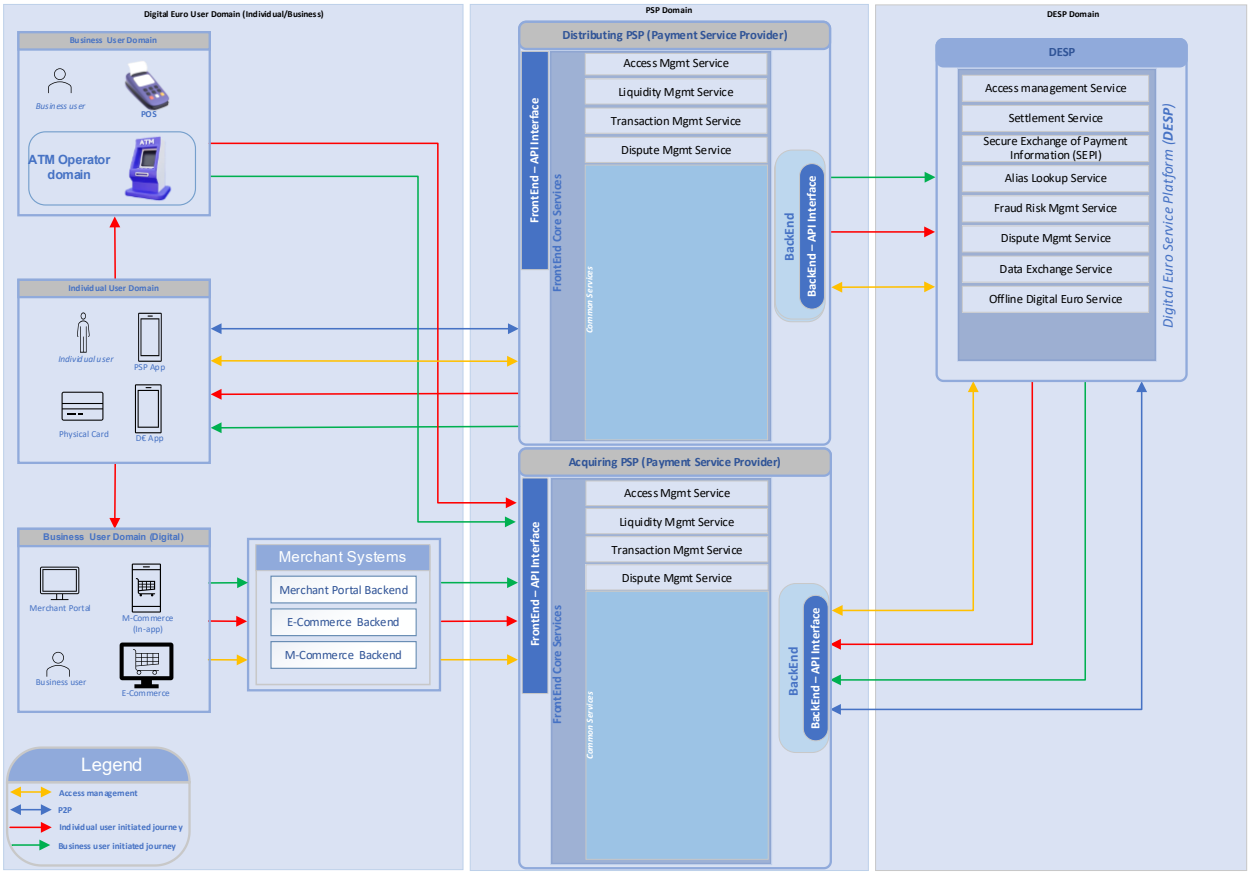
1. Document information

1.1. Change history

number	Date	Reason for revision
V1.0	17/05/2024	• Initiation of the document
V1.1	03/06/2024	• First iteration of requirement details
V1.2	12/06/2024	• Second iteration of requirement details • Modification to consider the comments provided by participants and internal team members
V1.3	21/06/2024	• Reformatting, consistency checks, integration of comments after review
V1.4	26/08/2024	• Update to consider comments after RDG review
V1.5	13/01/2025	• Update to ensure consistency with G2 workstream
V1.6	27/05/2025	• Update to ensure consistency with G1-2-3 holistic approach sprint
V1.7	13/10/2025	• Design update for: - Manual funding/defunding - Balance inquiry - Transaction history - Individual user onboarding (including NFC management)
V1.8	24/11/2025	• Design update for - Offboarding of individual user - Onboarding of business user - Offboarding of business user • Update of reference to other specifications
Version renumbering to ensure strict alignment with the rulebook's versioning		
V0.91	26/03/2025	March release

2. Introduction

Annex D to the rulebook will provide detailed implementation specifications for the different domains and interactions between actors as presented in the diagram below.



The current document, corresponding to specification#3, is dedicated to the end-user domain and is aimed at describing what must be implemented in the end-user devices to offer digital euro dedicated functions.

3. Structure of the document

The individual user domain covers several types of end-user devices:

- PSP application
- Digital euro application
- PSP website (e-banking)
- Physical card

Digital euro application is out of scope of the specification#3.

4. PSP application requirements

This section is aimed at providing detailed implementation specifications for the **PSP app** through which PSPs may offer digital euro dedicated functions.

Any functions that PSPs offer through their proprietary applications are not necessarily modified.

The document is organised as follows:

- General requirements that are not “process specific“, that frame the application and define its characteristics (functional or not).
- Processes requirements that describe the specificities of the digital euro functions that the application must satisfy. Three processes are specified:
    - **Access management** related to the onboarding, offboarding of end users by intermediaries and the processing of end user data. The initiation of end-users data is described by the onboarding process while maintenance of such data is described in the user lifecycle management process.
    - **Liquidity management** dedicated to the funding and defunding of digital euro payment accounts, from and to non-digital euro payment accounts.
    - **Transaction management** specifying the rules applicable when paying or receiving a digital euro payment via different information exchange methods and technologies (QR code, NFC, pay-by-link, alias).

The current document version considers only online digital euro payment transactions.

Offline transactions will be integrated later according to the offline solution, which is not finalised yet as well as the functions involving online and offline holdings.

4.1. General requirements

This section provides general functional and non-functional requirements for mobile application implementation. General requirements are related to the characteristics of the application, applicable independently of the processes.

4.1.1. Functional requirements

4.1.1.1. Supported form factor

The PSP app shall be usable on smartphones and shall support different screen sizes and resolutions.

The PSP app shall offer functionalities based on the capabilities of the form factor.

The PSP app shall support seamless integration with hardware and software features of the form factor, such as the device's camera, while also allowing operation with minimum required permissions (e.g., location, camera).

4.1.1.2. QR code service

The PSP app shall provide a functionality whereby the user can scan a QR code. The PSP app shall use the inbuilt camera in the mobile device on which it is installed.

4.1.1.3. Mobile payment solutions – NFC functional requirements

4.1.1.3.1. NFC communication capabilities

The payer application must utilise the mobile device's integrated NFC module to support the following modes:

- Host card amulation mode: Enables the device to function as a contactless payment card.
- Peer-to-peer (P2P) mode: Facilitates direct data exchange between NFC-enabled devices.
- Reader/writer mode (active): Allows reading from or writing to NFC tags or compatible devices, where applicable.

4.1.1.3.2. NFC data exchange

The PSP app must ensure secure NFC-based payment sessions by implementing:

- Encryption and tokenisation to protect sensitive transaction data.
- Support for user-initiated and merchant-initiated payment sessions.
- Visual and/or haptic feedback to confirm successful data transmission.

4.1.1.3.3. Device compatibility and NFC availability

The PSP app must:

- Detect NFC capability and prompt the user to enable it if disabled.
- Handle gracefully any scenarios where NFC is unsupported or unavailable, providing appropriate guidance or fallback options.

4.1.1.4. User activation

The PSP app shall provide a functionality whereby the users, after being onboarded by the PSP shall be able to identify themself and use the app service

4.1.1.5. User experience

The app shall comply with minimum UX requirements as defined in rulebook Section 7.

4.1.2. Non-functional requirements

4.1.2.1. Download rules

A user shall be able to download the up-to-date version of the application from the official application stores of the Android and IOS platforms and install it.

4.1.2.2. Supported operating systems

PSP must ensure that mobile apps, web interfaces, and hardware are compatible with operating systems and browsers that remain within the official support lifecycle of their respective vendors. For security and compliance reasons, platforms that no longer receive vendor-issued security updates must not be supported. Compatibility must be limited to devices such as smartphones and tablets that receive ongoing security updates, support secure communication protocols, are not rooted or jailbroken, and include necessary hardware-level security features where applicable. This is to ensure data integrity, protection of sensitive information, and alignment with prevalent industry regulations and certifications

4.1.2.3. Security

Placeholder for a future version of the rulebook

4.1.2.4. Deployment

Placeholder for a future version of the rulebook

4.1.2.5. Performance

Placeholder for a future version of the rulebook

4.1.2.6. Compliance

Placeholder for a future version of the rulebook

4.1.2.7. Availability

Placeholder for a future version of the rulebook

4.1.2.8. Data integrity

Placeholder for a future version of the rulebook

4.1.2.9. Disaster recovery

Placeholder for a future version of the rulebook

4.1.2.10. Integration of ECB NFC Payment SDK

The PSP application shall integrate the SDK provided by the ECB, which offers the complete set of services required for NFC-based payment functionalities.

4.2. Access management requirements

This section describes the requirements dedicated to registration and management of digital euro users and accounts. It covers the following functions for individual and business users:

- Onboarding of an end-user
- Offboarding of an end-user
- User lifecycle management

4.2.1. Individual user

4.2.1.1. Individual user onboarding

During the onboarding process, the new user is created in the system along with the account and permissions necessary to use the digital euro. The user provides all required information to facilitate the onboarding which may include multiple settings:

1. If the end-user is known by the PSP and already has a digital euro payment account, the PSP app shall freeze the creation of a digital euro payment account process and inform the end-user that a digital euro payment account already exists and would need account switching in the case that the digital euro payment account is held with a different PSP.
2. If the end-user is not known by the PSP, the PSP app shall first trigger the registration of the end-user as a new customer. As soon as the end-user is registered, the PSP shall trigger a digital euro payment account existence check:
    - If the end-user already has a digital euro payment account, the PSP shall inform the end-user she/he has already a digital euro payment account and must request an account switching. [see section 4.2.4]
    - If the end-user does not have a digital euro payment account, the onboarding process starts.

This section details the rules applicable to the creation of a new digital euro user and the corresponding settings.

4.2.1.1.1. Overview of onboarding process

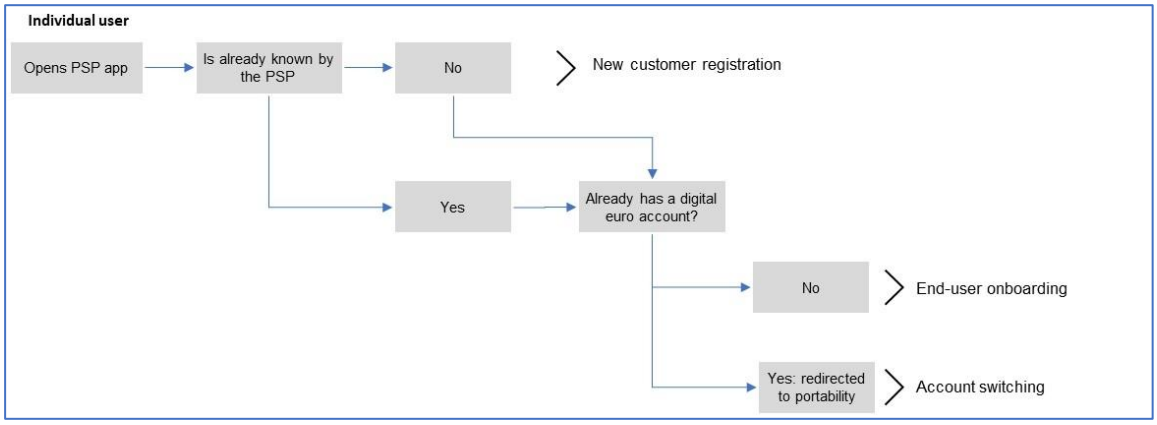


Figure 1 - Overview of individual user onboarding process

4.2.1.1.2. New customer registration

The PSP application must support the registration of an end-user as a new customer prior to initiating their onboarding as a digital euro user.

Pre-requisites:

1. The end-user is not registered, and the PSP provides a PSP app, which supports the registration.

E2E flow reference: AM1.1 Onboarding of an individual user (first steps of the flow)

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The end-user must be able to enter the mandatory information required by the PSP to be registered as a new customer
2	Mandatory	- The PSP app must send a new customer registration request to the distributing PSP ***[Refer to specifications#1 – Individual user access management service]*** - ***KYC registration*** - ***New customer registration***
3	Mandatory	- The final status must be displayed to the user in case of completion and rejection. - In case of failure, the reason for the rejection must be provided to the end-user.

4.2.1.1.3. End-user onboarding

The PSP app must allow registration and onboarding of end-users who want access to the digital euro services and the ability to pay and be paid in digital euro.

Pre-requisites:

1. Once the application is installed the end-user is identified according to the PSP mobile identification rules
2. If the end-user doesn't already have the PSP app installed and the application registration procedure completed, the end-user must download the PSP app, open it and perform the PSP app onboarding process.

E2E flow reference: AM1.1 & sAM26 Onboarding of an individual user

Business rules

It is not required to configure all parameters during the onboarding. The end-user may choose to perform some settings at a later stage.
The parameters concerned are explicitly detailed in the section dedicated to User lifecycle management.

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The end-user must be able to request a digital euro payment account through the PSP app.
2	Mandatory	- The PSP app must be able to send an onboarding request to the distributing PSP ***[Refer to specifications#1 – Individual user access management service]*** - ***New digital euro individual user registration request validation*** - ***New digital euro individual user registration***
2	Optional	- The end-user must be able to register an alias at onboarding, to enter an alias type and the corresponding alias value. - The alias registration is not mandatory for onboarding. The end-user must have the choice to skip this step. **[see section 4.2.1.3.4 for alias management]**
3	Optional	- The end-user must be able to link a non-digital euro payment account at onboarding and enter a payment account. - The link between a non-digital euro payment account and the digital euro payment account is not mandatory at onboarding. The user must have the choice to skip this step. **[see section 4.2.1.3.5 for linked account management]**
4	Optional	- The end-user must be able to define liquidity settings at onboarding and the corresponding parameters - The liquidity management setting is not mandatory at onboarding. The user must have the choice to skip this step. **[see section 4.2.1.3.2 for liquidity settings management]**
5	Optional	- The end-user must be able to configure notifications at onboarding and enter the corresponding parameters

#	Mandatory Optional Conditional	Business rules
		- The notification setting is not mandatory at onboarding. The user must have the choice to skip this step. **[see section 4.2.1.3.3 for online notification settings management]**
6	Optional	- The end-user must be able to request an enrolment to the NFC mobile payment service - The notification setting is not mandatory at onboarding. The user must have the choice to skip this step. **[see section 4.2.1.3.9 for NFC service enrolment]**
7	Optional	- The terms and conditions must be communicated to the end-user - The end-user must be able to accept or reject the terms and conditions - The onboarding cannot be successful if the end-user does not accept the terms and conditions - The PSP can propose other communication channels to manage digital euro terms and conditions
8	Conditional	- If the onboarding is successful, the PSP app must display the digital euro payment account number and provide the technical proof.
9	Mandatory	- The technical proof must be communicated to the end-user for potential further emergency account switching. The existing procedures for providing information to the customer are reused.
10	Mandatory	- The final status must be displayed to the user in case of completion and rejection. - In case of failure, the reason for the rejection must be provided to the end-user.

4.2.1.2. Individual user offboarding

An individual user wishing to close their digital euro payment account can submit a request via the PSP app.

The distributing PSP servicing the digital euro payment account receives the request, checks whether the prerequisites are fulfilled, and verifies the account balance.

If the balance is zero, the offboarding process can begin.

If the balance is not zero, the user has two options:

- Defund the remaining funds at a branch or ATM,
- Transfer the balance to his/her non-digital euro payment account

In the first case, the end user will need to restart the process once the balance reaches zero.

In the second case, the offboarding process continues

4.2.1.2.1. Overview of offboarding process

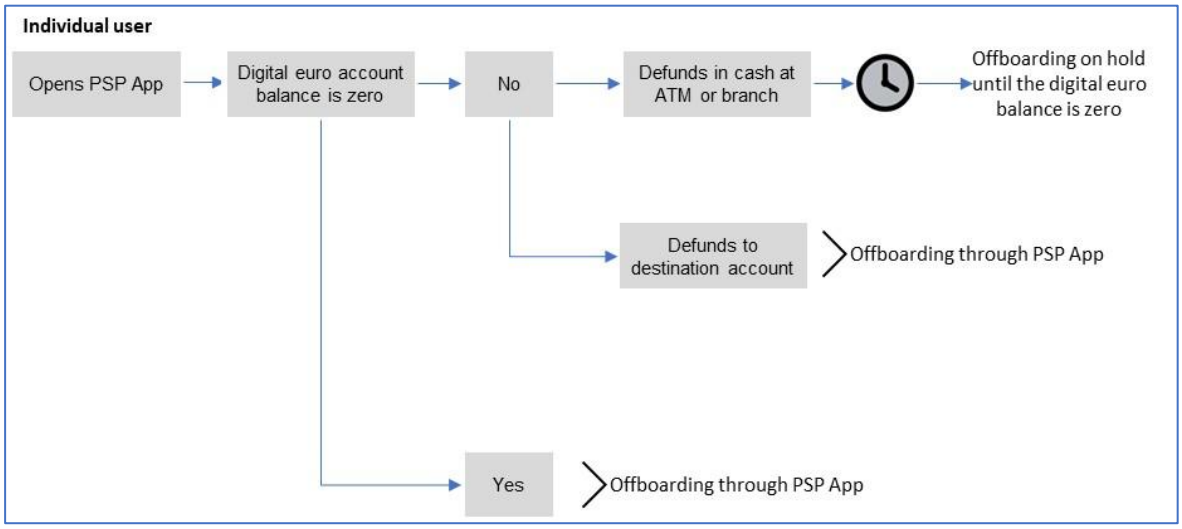


Figure 2 - Overview of individual user offboarding process

4.2.1.2.2. End-user Offboarding through PSP app

The offboarding process supports the end-user who might decide to stop using digital euro at any point.

The end-user follows specific steps to perform the offboarding.

This section details the rules applicable to terminate the digital euro service, close the digital euro payment account and deactivate the digital euro user.

Pre-requisites:

1. The end-user has activated the digital euro services, is registered as a digital euro user and has a digital euro payment account.
2. The end-user has opened the PSP app and is authenticated

E2E flow reference: AM-3.1 offboarding of an individual user

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The end-user must be able to request an offboarding through the PSP app.
2	Mandatory	- The offboarding request option is available only if the end-user has already activated the digital euro services and has a digital euro payment account.
3	Optional	- From a user experience perspective, the distributing PSP can decide to display digital euro payment account holdings ***[refer to specifications#1 – Balance and holding limits service – Digital euro balance look-up]***
4	Conditional	- If standing orders or recurring payments are still active, the message could be displayed to inform the end-user. The presence of active standing orders or recurring payments does not constitute an obstacle to the offboarding process.
5	Conditional	- If the digital euro balance is not zero, the end-user shall be able to choose the defunding mode. - If the end-user chooses defunding in cash at ATM or at branch, the offboarding process is stopped until the end-user restarts the process one the balance is zero.
6	Conditional	- if the end-user chooses to defund the remaining funds to a destination account and doesn't link a non-digital euro payment account to the digital euro payment account, the end-user shall be able to enter the destination account. - If the non-digital euro payment account identifier entered by the end-user is invalid, the end-user must be informed and be able to retry - The distributing PSP must verify the end user has full access to the destination account **[refer Specifications#5 Linked account settings service]** **- Linked non-digital euro payment account ownership validation**
7	Mandatory	- The PSP app must be able to send an offboarding request to the distributing PSP ***[Refer to specifications#1 – Individual user access management service]*** - ***Digital euro individual user offboarding request validation*** - If the request is not valid, the process must be discontinued
8	Mandatory	- The final status must be displayed to the user in case of completion and rejection. - In case of failure, the reason for the rejection must be provided to the end-user.

4.2.1.3. Individual user lifecycle management

User lifecycle management processes offer users the ability to add, update, delete digital euro settings that are used by other processes (liquidity management, transaction management) view their balance and transaction history and manage account switching.

4.2.1.3.1. Overview of user lifecycle processes

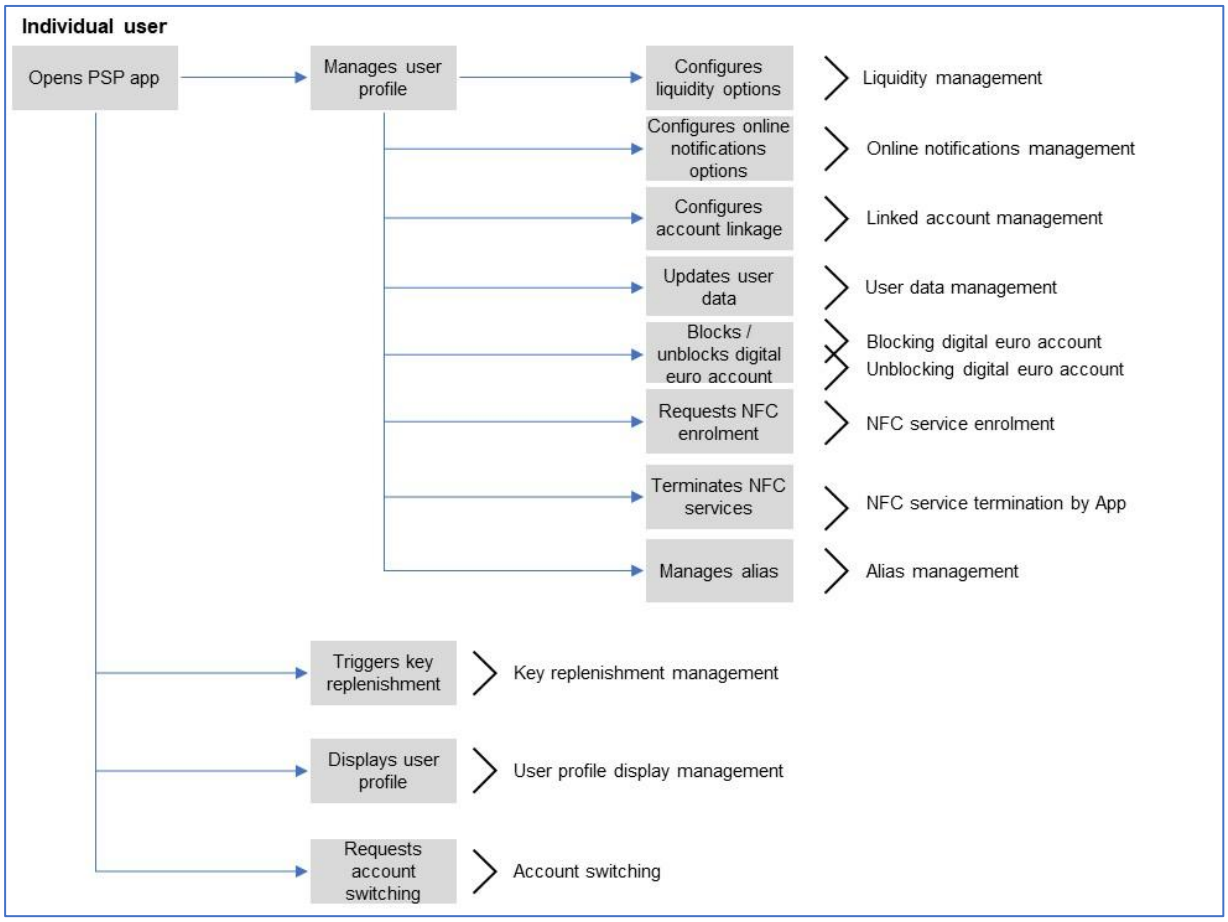


Figure 3 - Overview of individual user lifecycle process

The end-user might decide at any time to manage the digital euro settings: liquidity and notification options, alias, linked non-digital euro payment account, authentication method, NFC services.

This section details the rules applicable to end-user profile management.

Pre-requisites:

1. The end-user is registered as a digital euro user and has a digital euro account number.
2. The PSP app is already connected to the distributing PSP through a strong customer authentication process specific to that PSP.

End-user profile management

The end-user profile covers several settings. The end-user should be offered to select the profile settings to be configured.

4.2.1.3.2. Liquidity settings management

Pre-requisites:

1. Liquidity settings are allowed only if the end-user has defined a linked non-digital euro payment account.

E2E flow reference: AM-4.1.2 End user (individual) amendments (liquidity management settings)

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The end-user must be able to perform an initial set-up, to update some existing settings or to remove all or a subset of the configuration parameters.
2	Conditional	- If liquidity parameters are already defined, they must be displayed to the end-user The mobile app can request the existing settings to the PSP ***[refer to Specifications#1 – Liquidity settings service / Liquidity setting lookup].*** - If liquidity parameters are not yet defined, it is possible to display “per default” settings (at the discretion of the PSP)
3	Optional	- Cross consistency between the different options is defined and checked by the PSP.
4	Optional	Automated scheduled funding conditions - The end-user must be able to define if a scheduled process is performed to fund the digital euro payment account. - If the option is selected, the end-user enters: - the start date - the frequency - the amount credited to the digital euro amount - The amount entered must not exceed the scheme holdings limit. - The frequency is defined by the PSP.
5	Optional	Automated scheduled defunding conditions - The end-user must be able to define if a scheduled process is performed to defund the digital euro payment account. - If the option is selected, the end-user enters: - the start date - the frequency - the amount debited from the digital euro amount - The frequency is defined by the PSP.
6	Optional	Funding threshold based - The end-user must be able to define if a process is performed to automatically fund the digital euro payment account when the floor threshold is reached - If the option is selected, the end-user enters: - the floor threshold - the funding amount - The amount entered must not exceed the scheme holding limit.

#	Mandatory Optional Conditional	Business rules

7	Optional	Defunding threshold based
		- The end-user must be able to define if a process is performed to automatically defund the digital euro payment account when the ceiling threshold is reached
		- If the option is selected, the end-user enters:
		  - the ceiling threshold
		  - the defunding amount

8	Optional	Waterfall indicator - The end-user must be able to define if the automatic waterfall process must be performed
9	Optional	Reverse waterfall indicator - The end-user must be able to define if the automatic reverse waterfall process must be performed
10	Mandatory	Holding limits - The holding limit is displayed to the end-user in accordance with the applicable legislation and with the rules defined by the PSP based on that legislation.
11	Mandatory	- The PSP app must ask the end-user to confirm the settings before generating the liquidity settings request to the PSP
12	Conditional	- If the end-user doesn't confirm the settings, the process must be discontinued.
13	Conditional	- If the end-user confirms the settings The PSP app must be able to send a liquidity settings request to the distributing PSP, with a type of request equal to "DELETE" ***[Refer to specifications#1 – Liquidity settings service - Liquidity settings request validation]***
14	Mandatory	- Proof of consent must be archived, including timestamp, contract version, and other relevant metadata.
15	Mandatory	- The final status must be displayed to the user in case of completion and rejection. - In case of failure, the reason for the rejection must be provided to the end-user.

4.2.1.3.3. Online notification settings management

E2E flow reference: AM-4.1.3 End user (individual) amendments (online notification preferences)

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The end-user must be able to perform an initial set-up, to update some existing settings.
2	Conditional	- If notifications parameters are already defined, they must be displayed to the end-user - If notification parameters are not yet defined, it is possible to display "per default" settings (at the discretion of the PSP)

3	Mandatory	- The user must be able to enter the required settings or keep the default options (if any):
		  - Type of notification
		  - Preferred channel for notification
		- The possible communication channels are defined by the PSP.

4	Mandatory	- The following list of notification types is proposed:
		  - credit to digital euro payment account
		  - debit from digital euro payment account

#	Mandatory Optional Conditional	Business rules
		- execution of a waterfall transaction - execution of a reverse waterfall transaction - execution of any other automated funding transaction - execution of any other automated defunding transaction - account balance threshold breach - The end-user can only select a channel already configured in the end-user data.
5	Mandatory	- The PSP app must ask the end-user to confirm the settings before generating the notification settings request to the PSP
6	Conditional	- If the end-user doesn't confirm the settings, the process must be discontinued.
7	Mandatory	- If the end-user confirms the settings, the PSP app must be able to send a notification settings request to the distributing PSP. ***[Refer to specifications#1 – Notification settings service – Notification settings request validation]***
8	Mandatory	- Proof of consent must be archived, including timestamp, contract version, and other relevant metadata.
9	Mandatory	- The final status must be displayed to the user in case of completion and rejection. - In case of failure, the reason for the rejection must be provided to the end-user.

4.2.1.3.4. Alias management

E2E flow reference: AM-4.1.9 End user (individual) amendments (alias registration)

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The end-user must be able to create, update or remove an alias and to select the corresponding option
2	Conditional	- If an alias is already defined, it must be displayed to the end-user - The alias value must be formatted according to the alias type format.
3	Mandatory	- The possible alias types must comply with the types allowed by the scheme.
4	Mandatory	- If an alias is already defined, only an update or a removal must be possible.
5	Mandatory	- The alias value entered by the end-user must be consistent with the format of the alias type
6	Conditional	- Where a mobile telephone number is used as an alias, it shall be stored and sent in strict E.164 format (MSIDN) with leading + and no other characters. Flexible input features may be offered (allowing leading 00, spaces etc., to be entered) provided the alias is normalised to strict E.164 format (MSIDN).
7	Mandatory	- The PSP app must ask the end-user to confirm the settings before generating the notification settings request to the PSP
8	Conditional	- If the end-user doesn't confirm the settings, the process must be discontinued.
9	Conditional	- If the end-user confirms the settings, the PSP app must be able to send an alias registration request to the distributing PSP. ***[Refer to specifications#1 – Alias registration service – Alias registration request validation]***
10	Mandatory	- Proof of consent must be archived, including timestamp, contract version, and other relevant metadata.

#	Mandatory Optional Conditional	Business rules
11	Mandatory	- The final status must be displayed to the user in case of completion and rejection. - In case of failure, the reason for the rejection must be provided to the end-user.

4.2.1.3.5. Linked account management

E2E flow reference: AM-4.1.1 End user (individual) amendments (account linkage)

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The end-user must be able to create, update or remove a linked account and to select the corresponding option
2	Conditional	- If a non-digital euro payment account is already linked to the digital euro payment account, it must be displayed to the end-user.
3	Mandatory	- The end-user must be able to enter the identifier of the non-digital euro payment account to be linked to the digital euro payment account. - The end-user must have full access to the non-digital euro payment account
4	Conditional	- If the non-digital euro payment account identifier entered by the end-user is invalid, the end-user must be informed and be able to retry
5	Conditional	- If the end-user wants to remove an existing link between a non-digital euro payment account and the digital euro payment account, the selection of the "removal" option must be enough.
6	Mandatory	- The PSP app must ask the end-user to confirm the settings.
7	Conditional	- If the end-user doesn't confirm the settings, the process must be discontinued
8	Mandatory	- If the end-user confirms the settings, the PSP app must be able to send a linked account settings request to the distributing PSP. ***[Refer to specifications#5 – Linked account settings service – Linked account settings request validation]***
9	Conditional	- If the end-user requested to remove the linked account, and if the removal is successful, all the liquidity setting must also be removed. The PSP app must be able to send a liquidity settings request to the distributing PSP with - ***[Refer to specifications#1 – Liquidity settings service - Liquidity settings request validation]***
9	Mandatory	- Proof of consent must be archived, including timestamp, contract version, and other relevant metadata.
10	Mandatory	- The final status must be displayed to the user in case of completion and rejection. - In case of failure, the reason for the rejection must be provided to the end-user.

4.2.1.3.6. User data management

E2E flow reference: AM-4.1.8 End user (individual) amendments (user data)

The user data that can be modified are the same as those currently editable. The existing process is not modified.

4.2.1.3.7. Blocking digital euro payment account

Pre-requisites:

1. Blocking a digital euro payment account is allowed only if the account is not blocked.

E2E flow reference: AM-4.1.6 End user (individual) amendments (unblocking digital euro account)

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The end-user must be able to block his/her digital euro payment account
2	Mandatory	- The end-user must be requested to confirm the request to block the digital euro payment account
3	Conditional	- If the end-user doesn't confirm the blocking request, the process must be discontinued
4	Conditional	- If the end-user confirms the blocking request, the PSP app must be able to send a request to the distributing PSP to block the digital euro payment account ***[Refer to specifications#5 – digital euro payment account service - digital euro payment account (un)blocking request validation]***
5	Mandatory	- Proof of consent must be archived, including timestamp, contract version, and other relevant metadata.
6	Mandatory	- The final status must be displayed to the user in case of completion and rejection. - In case of failure, the reason for the rejection must be provided to the end-user.

4.2.1.3.8. Unblocking digital euro payment account

Pre-requisites:

1. Unblocking a digital euro payment account is allowed only if the account is blocked.

E2E flow reference: AM-4.1.6 End user (individual) amendments (un-blocking digital euro account)

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The end-user must be able to unblock his/her digital euro payment account
2	Mandatory	- The end-user must be requested to confirm the request to unblock the digital euro payment account
3	Conditional	- If the end-user doesn't confirm the unblocking request, the process must be discontinued
4	Conditional	- If the end-user confirms the unblocking request, the PSP app must be able to send a request to the distributing PSP to unblock the digital euro payment account ***[Refer to specifications#5 – digital euro payment account service - digital euro payment account (un)blocking request validation]***

#	Mandatory Optional Conditional	Business rules
5	Mandatory	- Proof of consent must be archived, including timestamp, contract version, and other relevant metadata.
6	Mandatory	- The final status must be displayed to the user in case of completion and rejection. - In case of failure, the reason for the rejection must be provided to the end-user.

4.2.1.3.9. NFC service enrolment

Since the end-to-end flows related to NFC services are defined in a generic manner and do not account for the integration of the two ECB components — the HCE SDK within the PSP app and the HCE SDK back end in the PSP distribution environment — flow diagrams have been introduced to improve visualisation and understanding

4.2.1.3.9.1. Overview of Enrolment service

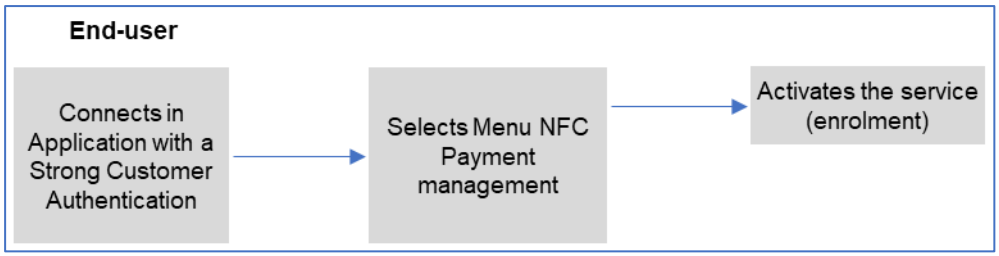
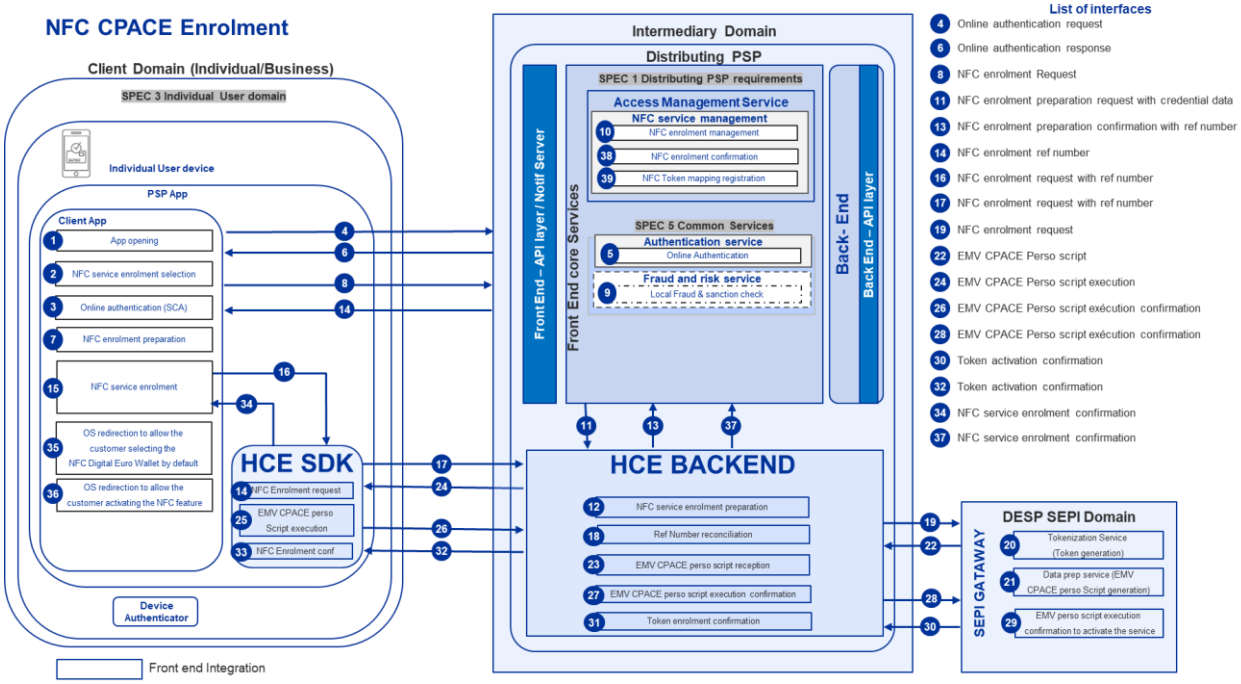


Figure 4 - Overview of NFC enrolment service

4.2.1.3.9.2. Full integration diagram overview

This diagram provides a detailed view of the enrolment process for NFC mobile payments using a digital euro payment account.

[Placeholder for E2E flow reference: Enrolment to NFC mobile payment with digital euro account]



This section covers the following topics:

- 1 – App opening
- 2 – NFC service enrolment selection
- 3 – Online authentication
- 4 – Online authentication request
- 6 – Online authentication response
- 7 – NFC service enrolment preparation
- 8 - NFC enrolment request
- 14 – NFC enrolment with ref.number
- 15 – NFC service enrolment
- 16 - NFC enrolment request with ref.number
- 34 – NFC service enrolment confirmation
- 35 – OS redirection to allow the customer selecting the NCF digital euro wallet by default
- 36 - OS redirection to allow the customer activating the NFC feature

4.2.1.3.9.3. User enrolment flow for digital euro NFC payment (via HCE)

Prerequisites

Before starting the enrolment process, the following conditions must be met:

- The user has already enrolled a digital euro payment account, and the account is currently active.
- The user has already accepted the terms and conditions related to the digital euro payment service, either:
    - As part of the general terms of the digital euro payment account service, or
    - Through contractual agreement with their bank.
    - As part of the enrolment process, the individual digital euro end user logs into the PSP application using strong customer authentication (SCA).

Enrolment process overview

- Initiation of enrolment request

The client application (PSP app) sends a request to the distributing PSP to initiate enrolment in the NFC service.

- Eligibility verification

The distributing PSP verifies the customer's eligibility for the NFC service (e.g., digital euro payment account status). A fraud check may be performed if required.

- NFC service enrolment service request by the distributing PSP to the HCE back end with provision of enrolment data

An NFC service enrolment request is sent to the HCE back end, including the last four digits of the DEAN (digital euro account number) and the PSP ID (distributing PSP identifier).
These data are passed to the HCE SDK back end, which initiates the NFC enrolment process.
The HCE SDK back end returns a reference for the NFC service enrolment initiation to the distributing PSP.

- NFC service enrolment

Once the distributing PSP receives the reference for the NFC service enrolment initiation from the HCE SDK back end, it forwards this reference to the PSP app. This enables the app to trigger the NFC service enrolment request via the HCE SDK.

The HCE SDK then orchestrates the enrolment process in coordination with the HCE SDK back end and SEPI. This process includes the personalisation of the HCE SDK.

Upon completion, the HCE SDK returns a confirmation of enrolment to the PSP app. The app can then finalise the process by configuring the default NFC wallet (“NFC digital euro”) in the OS settings and activating NFC, if it is not already enabled.

Finally, the HCE SDK back end confirms the successful NFC enrolment to the distributing PSP and provides the NFC token generated by SEPI.

- Token mapping

The distributing PSP associates the EMV token with both the DEAN (digital euro account number) and the PSP app ID. This link enables the distributing PSP to perform detokenisation during subsequent transactions.

Business rules

#	**Mandatory** **Optional** **Conditional**	**Business rules**
1	Mandatory	The distributing PSP must implement change management initiatives to support the successful adoption of NFC payments using a digital euro payment account. This requirement also applies to the enrolment process within the PSP app implementation.
2	Mandatory	Enrolling in the "NFC payment with a digital euro payment account" service is not mandatory to open a digital euro payment account.
3	Mandatory	A user can enrol and unenrol from the NFC payment service at any time using the "Termination" operation, without limitation on the number of times
4	Mandatory	Enrolment in the digital euro menu of the PSP app is only available to users who have opted to hold their digital euro payment account with their bank
5	Mandatory	The NFC enrolment menu should only be displayed by the PSP app if the user has already opened a digital euro payment account with that PSP.
6	Mandatory	The PSP app enables customers to enrol in the NFC service through a dedicated digital euro NFC service enrolment menu, accessible when they open the app.
7	Mandatory	Explicit consent to enrol must be collected (e.g., via a checkbox or electronic signature).
8	Mandatory	Proof of consent must be archived, including timestamp, contract version, and other relevant metadata.
9	Mandatory	The PSP app requests the NFC enrolment service from the distributing PSP, which manages the initiation of the process with the HCE SDK back end. The back end returns an NFC enrolment reference, which is forwarded by the distributing PSP to the PSP app. The PSP app requests the NFC enrolment service preparation ***[Refer to Specifications#1 - NFC service management/ NFC enrolment service preparation]***

#	Mandatory Optional Conditional	Business rules
10	Mandatory	The PSP app uses an HCE SDK API to request the NFC enrolment service. The PSP app sends the NFC enrolment request to the HCE SDK as specified in ECB **[Placeholder for HCE SDK and HCE SDK back end ECB implementation guidelines]**
11	Conditional	If enrolment fails, the PSP app must display a clear message indicating the reason for the rejection, based either on the core reason returned by the SDK or the response from the distributing PSP's server.
12	Mandatory	The service discovery phase is mandatory and must be completed before the user can proceed with enrolment in the service via the PSP app.
13	Mandatory	The PSP app enables the user to set it as the default NFC payment method for the digital euro by redirecting them to the device's operating system NFC settings menu.
14	Conditional	If NFC is not enabled, the PSP app prompts the user to activate it by redirecting them in the device's operating system NFC settings menu.

4.2.1.3.10. Key replenishment management

The key replenishment process may be carried out using different methods, depending on whether the individual user has an active internet connection. This section provides a detailed presentation of both options:

- NFC CPACE key replenishment enabled by active internet connection
- NFC CPACE key replenishment alert when internet is unavailable

4.2.1.3.10.1. NFC CPACE Key replenishment Enabled by Active Internet Connection Capability

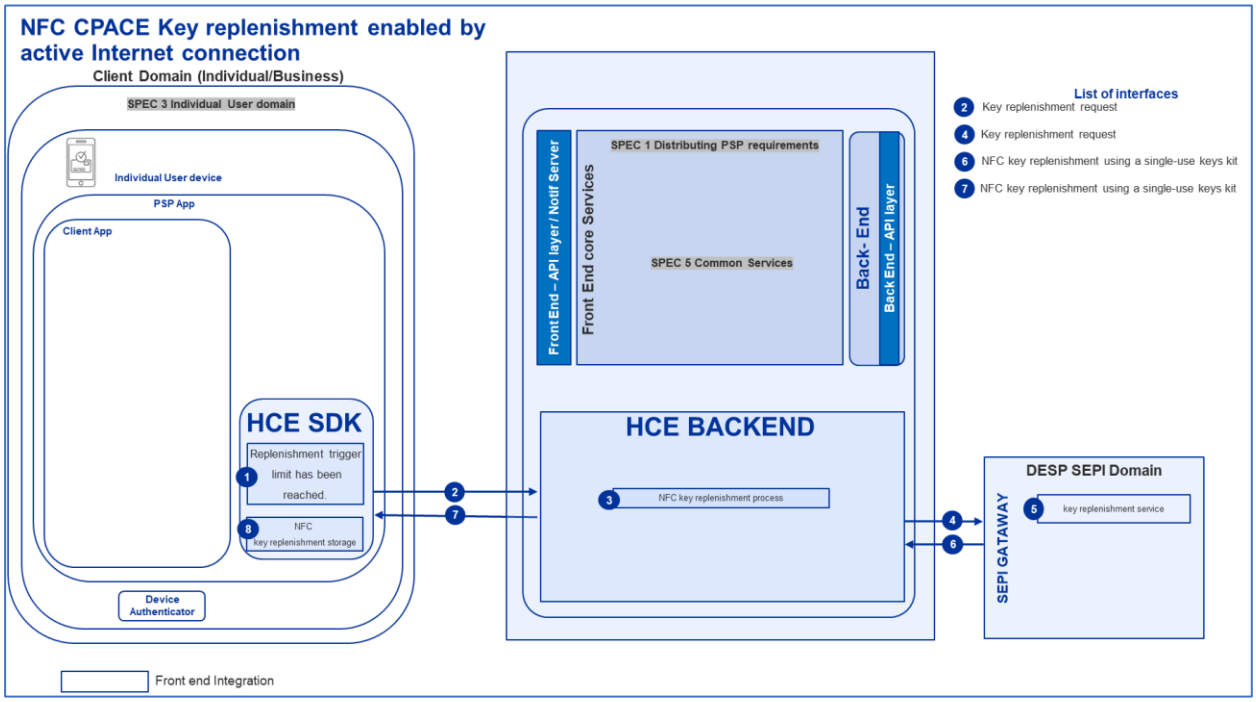
This feature is provided for illustrative purposes only and does not require any specific integration with either the PSP app or the distributing PSP. It is therefore included solely to help understand the key replenishment concept, which is limited to the following entities:

- HCE SDK
- HCE Back end
- SEPI

As the end-to-end flows related to NFC services are not yet defined, flow diagrams are introduced to enhance visualisation and understanding.

This diagram provides a detailed view of the key replenishment process for NFC mobile payments using a digital euro payment account.

[Placeholder for E2E flow reference: Key replenishment for NFC mobile payment]



4.2.1.3.10.2. NFC CPACE Key replenishment alert when internet is unavailable – capability

4.2.1.3.10.2.1. Overview of key replenishment management

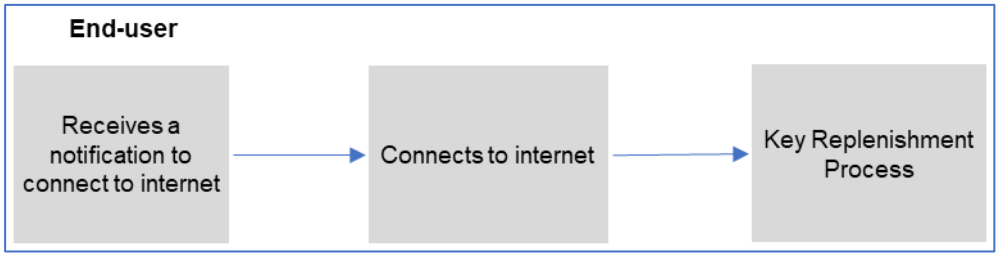
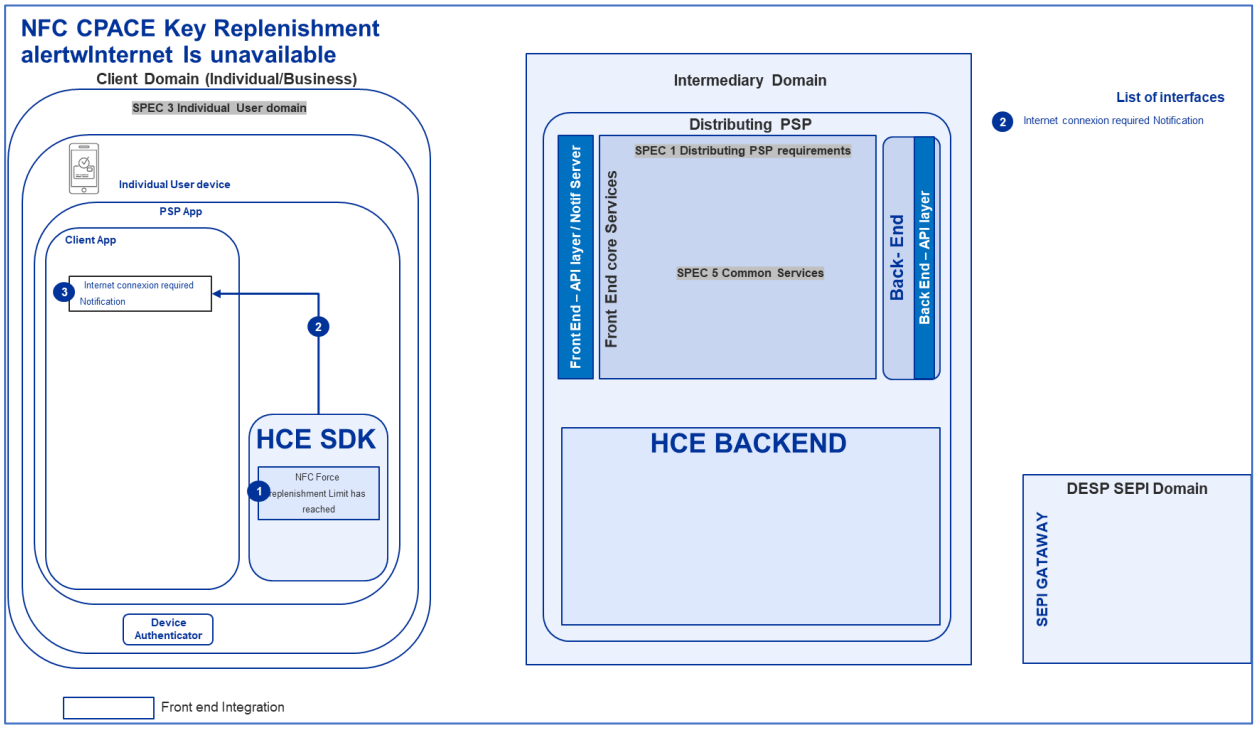


Figure 5 - Overview of key replenishment management

This diagram illustrates the key replenishment process for NFC mobile payments using a digital euro payment account in scenarios where no internet connection is available.

[Placeholder for E2E flow reference: Key replenishment for NFC mobile payment]



This section covers the following topics:

- 1 – NFC force replenishment limit
- 2 – Internet connection required notification
- 3 – Internet connection required notification

4.2.1.3.10.3. Connectivity enforcement for secure NFC transactions with digital euro

risk of NFC transaction rejection

If a user performs too many NFC HCE transactions without an internet connection, the available session keys may be exhausted, resulting in transaction rejections.

4.2.1.3.10.4. HCE key replenishment process overview (counter based)

The key replenishment flow involves only:

- the **HCE SDK**
- the **HCE SDK back end** (or **token requestor**)
- and **SEPI**.

However, if there is no internet connection, the PSP app can still display a notification prompting the user to reconnect to the internet.

The key replenishment is always triggered by the HCE SDK when its remaining key counter reaches a defined threshold, and the device is connected to the internet.

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	The key replenishment process can only be performed if the customer is enrolled in the NFC service.
2	Mandatory	The PSP app manages a potential notification received by the HCE SDK to prompt the individual user to connect to internet

4.2.1.3.11. NFC service termination by app

4.2.1.3.11.1. Overview of NFC termination by app service

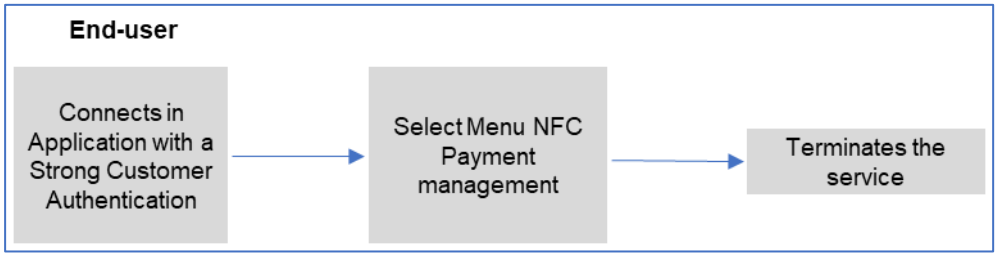


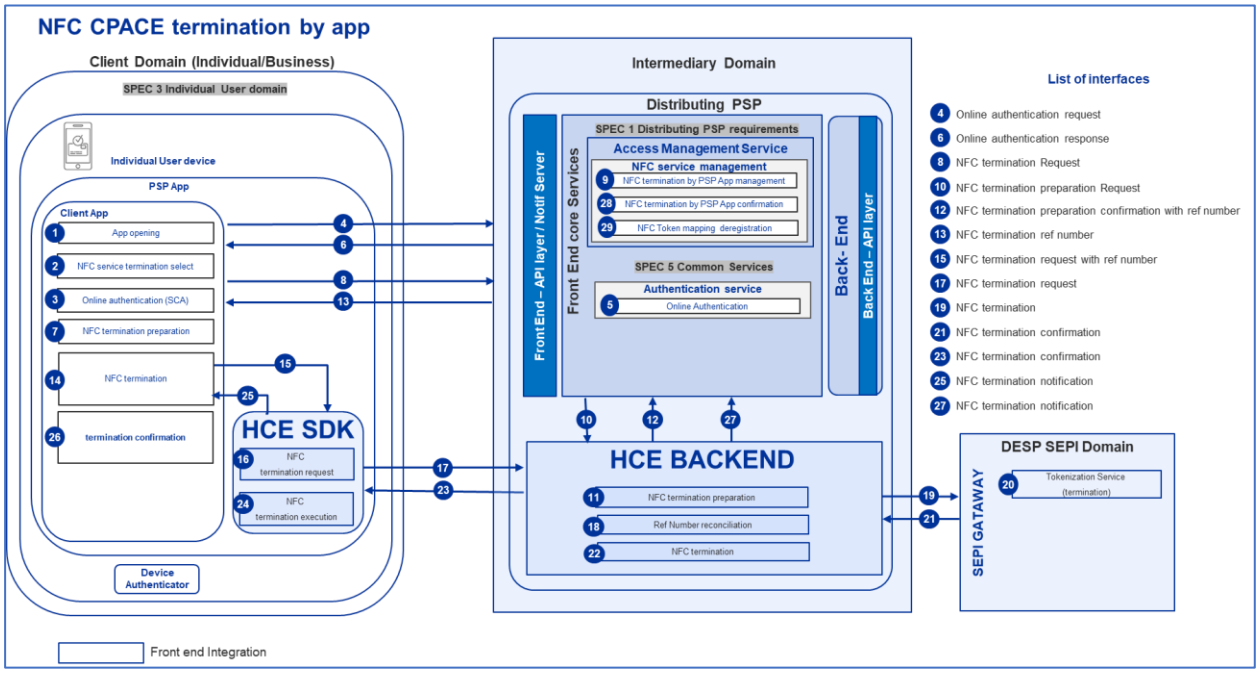
Figure 6 - Overview of NFC termination by app

4.2.1.3.11.2. Full integration diagram overview

Since the end-to-end flows related to NFC services are defined in a generic manner and do not account for the integration of the two ECB components—the HCE SDK within the PSP app and the HCE SDK back end in the PSP distribution environment—flow diagrams have been introduced to improve visualisation and understanding

This diagram provides a detailed view of the termination process by PSP for NFC mobile payments using a digital euro payment account.

[Placeholder for E2E flow reference: NFC service termination by app]



This section covers the following topics:

- 1 – App opening
- 2 – NFC service termination (select)
- 3 – Online authentication
- 4 – Online authentication request
- 6 – Online authentication response
- 7 – NFC termination preparation
- 8 - NFC termination request
- 13 - NFC termination ref.number
- 14 – NFC termination
- 15 – NFC termination request with ref.number
- 25 – NFC termination notification
- 26 – NFC termination confirmation

4.2.1.3.11.3. User NFC termination flow for digital euro NFC payment (via HCE)

Prerequisites

Before initiating the termination process, the NFC service must be active.

NFC termination process overview

- Initiation of termination request

The client application (PSP app) sends a request to the distributing PSP to initiate a termination in the NFC service.

- NFC service termination request to the HCE Back end with provision of termination data

An NFC termination request is sent to the HCE back end, including the EMV token.
These data are passed to the HCE SDK Back end, which initiates the NFC termination process.
The HCE SDK back end then returns a reference for the NFC termination initiation to the distributing PSP.

- NFC termination

Once the distributing PSP receives the reference for the NFC termination initiation from the HCE SDK back end, it forwards this reference to the PSP app. This enables the app to trigger the NFC termination request via the HCE SDK.

The HCE SDK then orchestrates the termination process in coordination with the HCE SDK back end and SEPI.

Upon completion, the HCE SDK returns a confirmation of termination to the PSP app. The app can then finalise the process by notifying the end user.

Finally, the HCE SDK back end confirms the successful NFC termination to the distributing PSP.

- Token mapping

The distributing PSP deletes the association from the EMV token with both the DEAN (digital euro account number) and the PSP app ID.

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	Terminating the NFC payment with a digital euro payment account service must not affect the lifecycle or status of the digital euro payment account itself.
2	Mandatory	The PSP app enables customers to terminate the NFC service through a dedicated digital euro NFC service termination menu, accessible when they open the PSP app.
3	Mandatory	Explicit consent to terminate the NFC service must be collected (e.g., via a checkbox or electronic signature).
4	Mandatory	Proof of consent must be archived, including timestamp, contract version, and other relevant metadata.
5	Mandatory	The PSP app requests the NFC termination from the distributing PSP, which manages the initiation of the process with the HCE SDK back end. The back end then returns a reference for the NFC termination preparation to the PSP app. The PSP app requests the termination preparation ***[Refer to specifications#1- NFC termination preparation]***
6	Mandatory	The PSP app uses an HCE SDK API to request the NFC termination. The PSP app sends the NFC termination request to the HCE SDK as specified in ECB **[Placeholder for HCE SDK and HCE SDK back end ECB implementation guidelines]**
7	Conditional	If termination fails, the PSP app must display a clear message indicating the reason for the rejection, based either on the core reason returned by the SDK or the response from the distributing PSP's server.
8	Mandatory	At the end of the termination process, the PSP app must display a clear message informing the end user that NFC payments with their digital euro payment account have been cancelled.

4.2.1.3.12. Display user profile management

Objective: NFC service status-based menu flow

The application must first determine the current status of the device's NFC service—whether it is active or inactive. This status check is essential to dynamically present the appropriate user flow:

- If NFC is inactive:
  The app should guide the user through the enrolment process, which may include enabling NFC and initialising secure elements or tokens required for contactless payments.
- If NFC is active:
  The app should offer the option to terminate the NFC service, which may involve deactivating tokens, removing credentials, or disabling contactless functionality.

4.2.1.3.12.1. Overview of user profile display

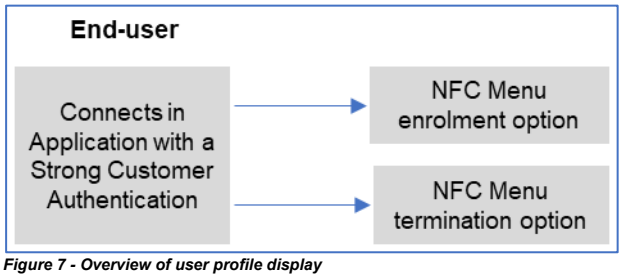


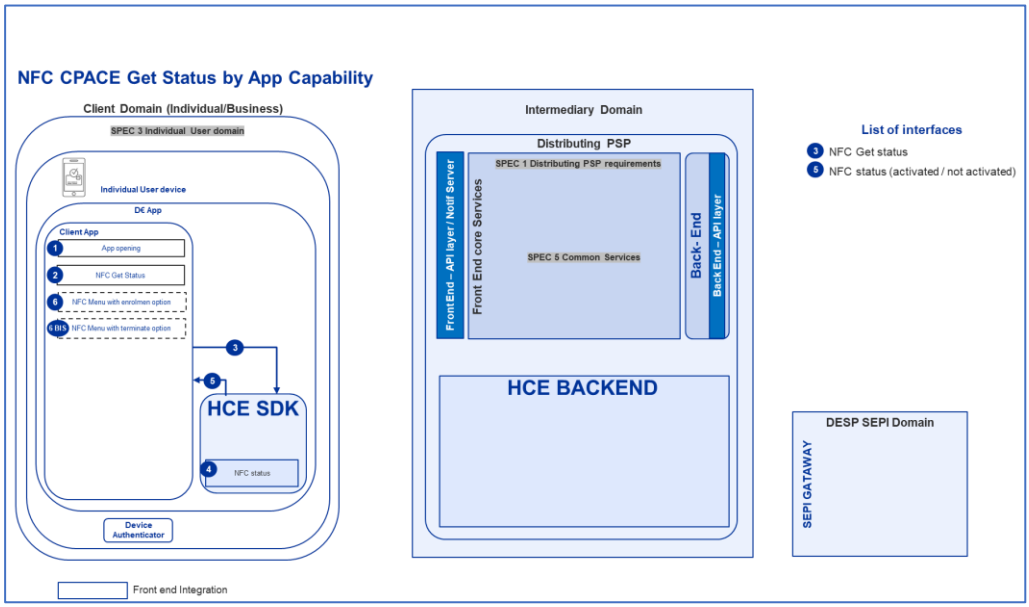
Figure 7 - Overview of user profile display

4.2.1.3.12.2. Full integration diagram overview

Since the end-to-end flows related to NFC services are defined in a generic manner and do not account for the integration of the two ECB components—the HCE SDK within the PSP app and the HCE SDK back end in the PSP distribution environment—flow diagrams have been introduced to improve visualisation and understanding

This diagram illustrates the status retrieval process for NFC mobile payments using a digital euro payment account, along with the corresponding menu display in the PSP app.

[Placeholder for E2E flow reference: NFC user profile management]



This section covers the following topics:

- 1 - App opening
- 2 - NFC get status
- 3 - NFC get status
- 4 - NFC status
- 5 - NFC status (activated/not activated)
- 6 - NFC menu with enrolment option
- 6 BIS - NFC menu with termination option

4.2.1.3.12.3. User NFC get status by app flow for digital euro NFC payment (via HCE)

NFC get status by app process overview

The HCE SDK provides an API that allows the PSP app to retrieve the activation status (activated/not activated) and accordingly manage the NFC menu (NFC enrolment versus NFC termination by app)

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	The SDK HCE to allow getting the status API is detailed in **[Placeholder for HCE SDK and HCE SDK back end ECB implementation guidelines]**
2	Mandatory	Each time the end user connects to the PSP app, this PSP app must retrieve the NFC status (activated/not activated) from the HCE SDK and adjust the menu accordingly.

4.2.1.4. Account switching

There has been no revision or modification on "Account switching" sections written some months ago. The use case will be addressed in a further version of the specifications.

The end-user may request to switch the digital euro payment account from one PSP to another PSP anytime.

There are two types of switching requests:
- Standard requests where old and new PSPs are involved.
- Emergency request where only the new PSP is involved. The old PSP does not support the process.

4.2.1.4.1. Overview of account switching

4.2.1.4.2. Switching account of individual user

Pre-requisites:

1. The end-user digital euro payment account does not present reserved holdings.
2. There is not any (pre)dispute not yet resolved, and no transactions are not yet settled.
3. For emergency switching , the technical proof must be valid.
4.

E2E flow reference: AM-2.1 Individual user account switching (standard procedure)

Business rules

#	Mandatory Optional Conditional	Business rules
1	Conditional	- This request is available only the pre-requisites are confirmed
2	Mandatory	- The end-user must define if the transaction history must be transferred to the new PSP. - If more than one year of transaction history exists, at least, one year of transaction history must be stored and shared with the new PSP.
3	Conditional	- If recurring payments exist, the user must define if the parameters must be transferred to the new PSP.
4	Optional	- The end-user must be able to register an alias during the account switching process, to enter an alias type and the corresponding alias value.

#	Mandatory Optional Conditional	Business rules
		- The alias registration is not mandatory. The end-user must have the choice to skip this step. [see section 4.2.3.2.3 for alias registration]
5	Optional	- The end-user must be able to link a non-digital euro payment account during the account switching process and enter a payment account - The link between a non-digital euro payment account and the digital euro payment account is not mandatory. The user must have the choice to skip this step. - [see section 4.2.3.2.4 for linking non-digital euro payment account]
6	Optional	- The end-user must be able to define liquidity settings during the account switching process and the corresponding parameters. - The liquidity management setting is not mandatory. The user must have the choice to skip this step. - [see section 4.2.3.2.1 for liquidity management option setting]
7	Optional	- The end-user must be able to define notification during the account switching process and the corresponding parameters. - The notification setting is not mandatory. The user must have the choice to skip this step. - [see section 4.2.3.2.2 for notification setting]
8	Mandatory	- The end-user receives a surrogate value generated by DESP on PSP request. - If the surrogate value is not generated, the process must continue and allow the end-user to request a surrogate value later [see section 4.2.3.2.12 for surrogate value setting]
9	Mandatory	- The final status must be displayed to the user in case of completion and rejection. - If the account switching is successful, the PSP app must display the technical proof. - The technical proof must be stored for potential further emergency account switching .

4.2.1.4.3. Switching account of individual user (emergency procedure)

AM-2.2 Individual user account switching (emergency procedure)

(placeholder for a next version)

4.2.2. Business user

4.2.2.1. Business user onboarding

During the onboarding process, the new user is created in the system along with the accounts and permissions necessary to use the digital euro. The user provides all required information to facilitate the onboarding which may include multiple settings.

1. If the end user is already known by the PSP, the onboarding process can begin immediately.
2. If the end user is not known by the PSP, the end user must first be registered as a new customer before the onboarding process can start.

This section details the rules applicable to the creation of a new digital euro business user and the corresponding settings.

4.2.2.1.1. Overview of onboarding process

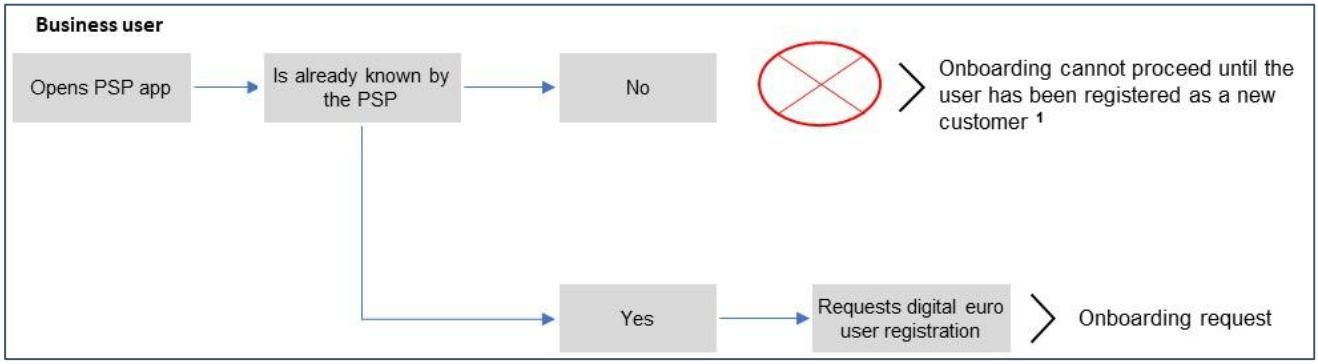


Figure 8 - Overview of business user onboarding process

[1] The creation of a new customer is carried out in compliance with the current regulations and following the established process. This step is not detailed in the current document.

4.2.2.1.2. End user onboarding

The PSP app must allow registration and onboarding of end-users who want access to the digital euro services and the ability to pay and be paid in digital euro.

Pre-requisites:

1. Once the application is installed the end-user is identified according to the PSP mobile identification rules
2. The end-user is already known by the PSP

E2E flow reference: AM1.2 Onboarding of a business user

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The end-user must be able to request a digital euro payment account through the PSP app.
2	Mandatory	- The PSP app must be able to send an onboarding request to the acquiring PSP ***[Refer to specifications#2 – Business user access management service - New digital euro business user registration request validation]***
3	Optional	- The terms and conditions must be communicated to the end-user - The end-user must be able to accept or reject the terms and conditions - The onboarding cannot be successful if the end-user does not accept the terms and conditions - The PSP can propose other communication channels to manage digital euro terms and conditions
4	Mandatory	- The end-user must be able to link a non-digital euro payment account at onboarding and enter a payment account. ***[Refer to specifications#5 Linked account settings management - Linked account settings request validation]***
5	Mandatory	- The end-user must be able to configure notifications at onboarding and enter the corresponding parameters ***[Refer to specifications#2 Notification settings management - Notification settings request validation]***
6	Mandatory	- The end-user must be able to request several digital euro payment accounts.
7	Conditional	- If the end-user wants to open several digital euro payment accounts, he/she should be able to request either to link a commercial bank account that is already associated with another digital euro payment account or to link a another non-digital euro payment account.
8	Conditional	- If the onboarding is successful, the PSP app must display the digital euro payment account numbers and provide the corresponding technical proof.
9	Mandatory	- The technical proof must be communicated through the existing procedures for providing information to the customer.
10	Mandatory	- The final status must be displayed to the user in case of completion and rejection. - In case of failure, the reason for the rejection must be provided to the end-user.

4.2.2.2. Business user offboarding

The business user initiates their offboarding by requesting the closure of contractual relationships. The closure of contractual relationships determines the date from which digital euro transactions will no longer be accepted and the period of time during which the business user must still accept and process refunds and claims.

When this period is over, the deregistration of DEANs is performed and the offboarding process is completed.

4.2.2.2.1. Overview of offboarding process

Figure 9 - Overview of business user offboarding process

4.2.2.2.2. End-user Offboarding through PSP app

The offboarding process supports the end-user who might decide to stop using digital euro at any point.

The end-user follows specific steps to perform the offboarding.

This section details the rules applicable to terminate the digital euro service, close the digital euro payment account and deactivate the digital euro user.

Pre-requisites:

1. The end-user has a valid acceptance contract
2. The end-user has opened the PSP app and is authenticated

E2E flow reference: AM-3.2 offboarding of a business user

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The end-user must be able to request an offboarding through the PSP app.
2	Mandatory	- The offboarding request option is available only if the pre-requisites are met.
3	Mandatory	- The valid acceptance contracts must be displayed to the end user, and the end user must be able to choose the digital euro contract and to confirm its closure - The list of valid acceptance contract must be communicated through the existing process.
4	Mandatory	- After the end-user confirms the closure of the acceptance contract, the PSP app must be able to send an offboarding request to the acquiring PSP ***[Refer to specifications#2 – Business user access management service - Business user offboarding request validation]***

5	Conditional	- If the request is not valid, the process must be discontinued. And the reason for the rejection must be provided to the end-user.
		- If the request is validated, the PSP app must confirm to the business user:
		  - The acceptance contract closing date (depending on the legislation)
		  - The target date for the offboarding final completion (depending on the deadline for receiving refunds and claims)
		[Refer to specifications#5 – Cross functional service - Notification]

6	Mandatory	- The PSP app must be able to manage the confirmation of the completion of the offboarding process. ***[Refer to specifications#5 – Cross functional service - Notification]***

4.3. Liquidity Management Requirements

This section describes the functions provided to an end-user to fund and defund his/her digital euro payment account.

A digital euro individual user shall be able to:

- Fund his/her digital euro payment account from a non-digital euro payment account or with cash through an ATM.
- Defund his/her digital euro payment account to a non-digital euro payment account or to cash through an ATM.

Funding/defunding digital euro could be a manual or an automated process according to following use cases (offline use cases are out of scope):

- Online manual funding from non-digital euro payment account (same and different PSPs)
- Online scheduled/automated funding from non-digital euro payment account (same and different PSPs)
- Online manual funding with cash deposit at ATM via QR code
- Online manual funding with cash deposit at ATM through card or smartphone
- Online manual funding with cash deposit at PSP branch
- Online manual defunding to non-digital euro payment account (same and different PSPs)
- Online scheduled/automated defunding to non-digital euro payment account (same and different PSPs)
- Online manual defunding with cash withdrawal at ATM via QR code
- Online manual defunding with cash withdrawal at ATM through card or smartphone
- Online manual defunding with cash withdrawal at PSP branch

For Funding/defunding at ATM refer to **[Specifications#4_Acceptance Device]**
For Scheduled/automated funding/defunding, refer to **[Specifications#1_Distributing PSP requirements]**

4.3.1. Overview of liquidity management process

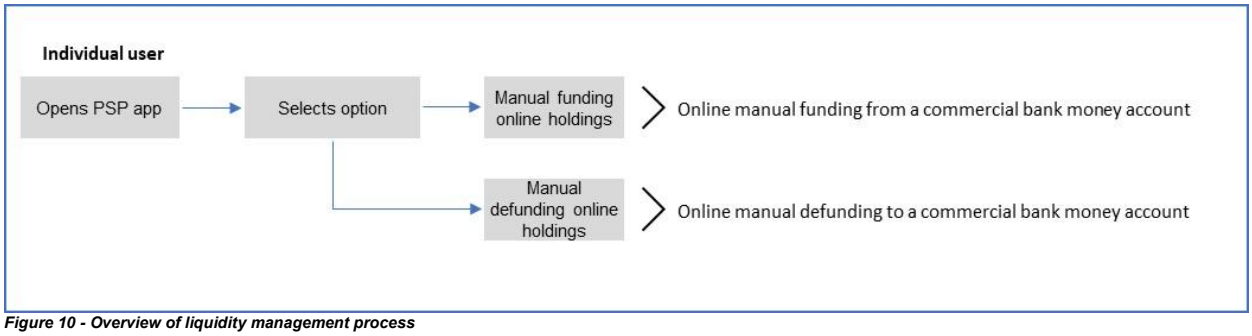


Figure 10 - Overview of liquidity management process

4.3.2. Global pre-requisite

The PSP app is already connected to the distributing PSP through a strong customer authentication process specific to that PSP.

4.3.3. Manual funding online holdings

The individual user can fund the digital euro holdings from the non-digital euro payment account independently of the scheduled funding mechanism.

Pre-requisites:

1. The distributing PSP services the end-user digital euro payment account.

E2E flow reference: LM-1.1 Online manual funding from non-digital euro payment account - same PSP

Business rules

#	Mandatory Optional Conditional	Business rules
1	Conditional	- The request option is available only if the pre-requisites are met.
2	Optional	- From a user experience perspective, the distributing PSP can decide to display digital euro payment account balance and holding limits ***[refer to specifications#1 – Balance and holding limits service – Digital euro balance look-up]***
3	Conditional	- If the individual user has linked a non-digital euro payment account to his/her digital euro payment account, the non-digital euro payment account is displayed and from a user experience perspective, the distributing PSP can decide to display non-digital euro payment account balance (provided that it is serviced by the same PSP) ***[refer to specifications#5 – Linked account service – Non-digital euro payment account look-up]*** to retrieve the linked account ***[refer to specifications#5 – Non-digital euro payment account Service – Non-digital euro payment account balance look-up]*** to retrieve the balance
4	Conditional	- If the individual user didn't link any non-digital euro payment account to his/her digital euro payment account, he/she must be able to enter it or select it (if this CBMA IBAN was already registered in the user app). Note: The non-digital euro payment account IBAN provided may be any IBAN, whether or not it corresponds to an account owned by the holder of the digital euro payment account.
5	Optional	- Even if a non-digital euro payment account is already linked to the digital euro payment account, the individual user should be able to enter another non-digital euro payment account (IBAN) or select a non-digital euro payment account (IBAN) (if this CBMA IBAN was already registered in the user app)
6	Conditional	- If the individual user enters an IBAN, it must be consistent.
7	Mandatory	- The individual user must be able to enter the amount to be funded.
8	Optional	- The individual user should be able to enter a message intended for the owner of the targeted account to be informed about the defunding of the non-digital euro payment account.

#	Mandatory Optional Conditional	Business rules
9	Optional	- The individual user should be able to enter a transaction reference (end-to-end identification)
10	Mandatory	- A manual funding request is sent to the distributing PSP ***[refer to specifications#1 –*** M***anual (de)funding initiation service / Manual funding/defunding request initiation validation]***
11	Mandatory	- The user must receive information regarding the result of the manual funding process
12	Conditional	- In case of rejection, a message must be displayed with the reason for the rejection.

4.3.4. Manual defunding online holdings

An individual user can defund the digital euro holdings from the non-digital euro payment account independently of the scheduled defunding mechanism.

Pre-requisites:

1. The distributing PSP services the end-user digital euro payment account.

E2E flow reference: LM-2.1 Online manual defunding to non-digital euro payment account same PSP

Business rules

#	Mandatory Optional Conditional	Business rules
1	Conditional	- The request option is available only if the pre-requisites are met.
2	Optional	- From a user experience perspective, the distributing PSP can decide to display digital euro payment account balance and holding limits ***[refer to specifications#1 – Balance and holding limits service – Digital euro balance look-up]***
3	Conditional	- If the individual user has linked a non-digital euro payment account to his/her digital euro payment account, the non-digital euro payment account is displayed and from a user experience perspective, the distributing PSP can decide to display non-digital euro payment account balance (provided that it is serviced by the same PSP) ***[refer to specifications#5 – Linked account service – Non-digital euro payment account look-up]*** to retrieve the linked account ***[refer to specifications#5 – Non-digital euro payment account Service – Non-digital euro payment account balance look-up]*** to retrieve the balance
4	Conditional	- If the individual user didn't link any non-digital euro payment account to his/her digital euro payment account, he/she must be able to enter it or select it (if this non-digital euro payment account was already registered in the user app).

#	Mandatory Optional Conditional	Business rules
		Note: The non-digital euro payment account IBAN provided may be any IBAN, whether or not it corresponds to an account owned by the holder of the digital euro payment account.
5	Optional	- Even if a non-digital euro payment account is already linked to the digital euro payment account, the individual user should be able to enter another non-digital euro payment account (IBAN) or select a non-digital euro payment account (IBAN) (if this CBMA IBAN was already registered in the user app)
6	Conditional	- If the individual user enters an IBAN, it must be consistent.
7	Mandatory	- The individual user enters the amount to be defunded.
9	Optional	- The individual user is able to enter a message intended for the owner of the targeted account to be informed about the funding of the non-digital euro payment account.
10	Optional	- The individual user is able to enter a transaction reference (end-to-end identification)
9	Mandatory	- A manual defunding request is sent to the distributing PSP ***[refer to specifications#1 –*** M***anual (de)funding initiation service / Manual funding/defunding request initiation validation]***
11	Mandatory	- The user must receive information regarding the result of the manual funding process
12	Conditional	- In case of rejection, a message must be displayed with the reason for the rejection.

4.4. Transaction management requirements

This section outlines the processes related to digital euro transactions involving a mobile application. It covers the following transaction types:

- Peer-to-peer (P2P) transactions, including standing orders.
- Transactions at POS

Additionally, this section describes:

- Dispute management

4.4.1. Peer-to-peer (P2P) transactions

P2P transactions cover payments between two individual users (a payer and a payee) who use the PSP app to conduct the payment. The payment is initiated by the payer or the payee according to the selected payment instrument.
This section details the rules applied to P2P transactions.

4.4.1.1. Overview of P2P transactions

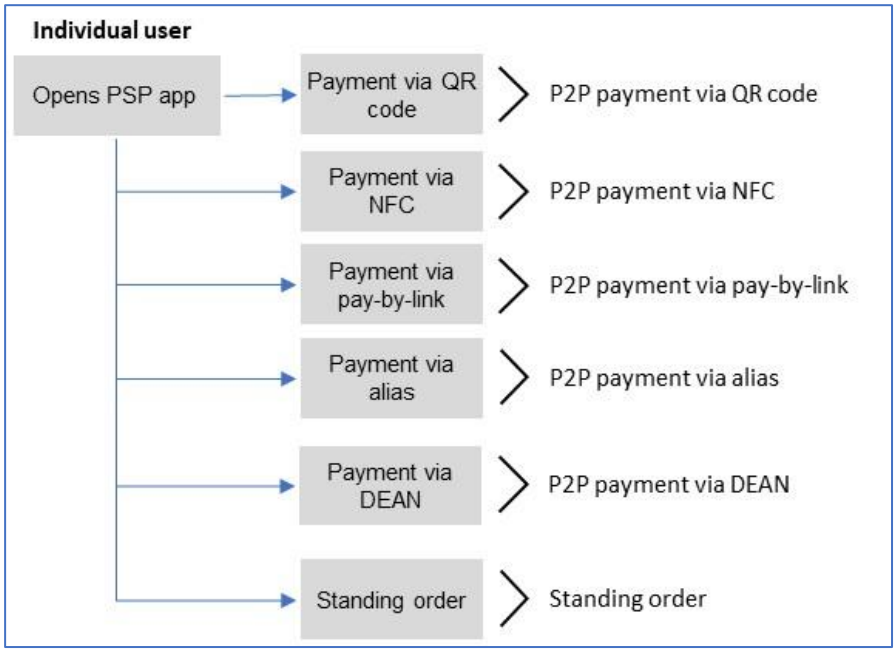


Figure 11 - Overview of P2P transactions

4.4.1.2. P2P payment via QR code

P2P payment via QR code is initiated by the payee. The payer scans the QR code.

Pre-requisites:

1. Both payer and payee must have a digital euro payment account
2. Both payer and payee must be allowed by their intermediaries to process payments by QR code
3. Both payer and payee must have platform/device capable of scanning/generating/displaying transaction-related QR Codes

E2E flow reference:TM3.1 P2P payment via QR code in app - payee initiated.

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The PSP app must allow the end-user acting as a payee to request payment via QR code. - The PSP app must allow the end-user acting as a payee to enter the transaction details required to generate the QR code. - If payment via QR code is selected, the NFC antenna must be disconnected to prevent interference between both payment options.
2	Mandatory	- The PSP app used by the end-user acting as a payee must be able to generate a QR code

3	Mandatory	- The QR code must consist of:
		  - A token
		  - Clear text

4	Mandatory	- QR Code version (to be defined)

#	Mandatory Optional Conditional	Business rules
5	Mandatory	- The token is generated by DESP on payee's PSP request **[refer to specification#5 – QR Code tokenisation request]**

6	Mandatory	- The QR code must include the following data in clear:
		  - Payee name
		  - Type of payment scheme
		  - Transaction currency
		  - Transaction amount

7	Mandatory	- The PSP app used by the end-user acting as a payer must be able to scan a QR code. - When the end-user acting as a payer is about to scan the QR code, the NFC antenna must be disconnected to prevent interference between both payment options. - Placeholder for QR code scan method (via PSP app/directly via inbuilt camera)
8	Mandatory	- The PSP app must display the data included in clear in the QR code
9	Mandatory	- The PSP app must request a confirmation or a rejection from the payer end-user. - The PSP app must transfer the transaction confirmation or declination to the payer PSP.
10	Mandatory	- After payer confirmation, the PSP app must transfer a payment request to the payer's PSP **[refer to specification#1 – Payment initiation service - Individual user Payment Request initiation validation]**
11	Mandatory	- The PSP app must display the final status of the payment.

4.4.1.3. P2P payment via NFC

Placeholder for a future version of the rulebook

4.4.1.4. P2P transaction via alias

4.4.1.4.1. Transaction via alias initiated by a payee.

Pre-requisites:

1. Both payer and payee must have a digital euro payment account
2. Both payer and payee must be allowed by their intermediaries to pay via alias
3. Payee knows the alias of the payer.
4. The end-user authenticates successfully.

E2E flow reference:TM3.6 P2P payment via alias - payee initiated.

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The PSP app must allow the end-user acting as a payee to select a payment request via alias. - The PSP app must allow the end-user acting as a payee to select an alias among the list of aliases already used in a previous payment and to modify it is needed. - The PSP app must allow the end-user acting as a payee to select an alias from their contact list. This data is then imported to the corresponding data fields. - The PSP app must allow the end-user acting as a payee to enter manually an alias. An alias type must be selected (among the list of aliases allowed in digital euro context) and the alias value format must be consistent with the alias type.
2	Mandatory	- The mobile app must allow the user to enter the amount to be requested to the payer.
3	Optional	- The payee should be able to enter a message intended for the payer to be informed about the transaction.
4	Optional	- The payee should be able to enter a transaction reference (end-to-end identification)
5	Mandatory	- The PSP app must be able submit an alias validity check request to the payee PSP ***[refer to specification#1 – Payment initiation service / Alias validity check]***
6	Mandatory	- The PSP app must allow the end-user acting as a payee to confirm the transaction details. - The PSP app must allow the end-user acting as a payee to reject the transaction details.
7	Conditional	- If the transaction is confirmed, the process must continue, and the payment request must be submitted ***[refer to specification#1 – Payment initiation service / Individual user payment request initiation validation]***
8	Conditional	- If the transaction is not confirmed, the process must be discontinued
9	Mandatory	- The PSP app must display the final status of the payment.

4.4.1.4.2. Transaction via alias initiated by a payer

Pre-requisites:

1. Both payer and payee must have a digital euro payment account
2. Both payer and payee must be allowed by their PSPs to pay via alias
3. Payer knows the alias of the payee.
4. The end-user authenticates successfully.

E2E flow reference:TM3.5 P2P payment via alias - payer initiated.

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The PSP app must allow the end-user acting as a payer to select a payment via alias. - The PSP app must allow the end-user acting as a payer to select an alias among the list of aliases already used in a previous payment and to modify it if needed. - The PSP app must allow the end-user acting as a payer to select an alias from their contact list. This data is then imported to the corresponding data fields. - The PSP app must allow the end-user acting as a payer to enter manually an alias. An alias type must be selected (among the list of aliases allowed in digital euro context) and the alias value format must be consistent with the alias type.
2	Mandatory	- The mobile app must be able allow the user to enter the amount to be sent to the payee.
3	Optional	- The payer should be able to enter a message intended for the payee to be informed about the transaction.
4	Optional	- The payer should be able to enter a transaction teference (end-to-end identification)
5	Mandatory	- The PSP app must be able submit an alias validity check request to the payer PSP ***[refer to specification#1 – Payment initiation service / Alias validity check]***
6	Mandatory	- The PSP app must allow the end-user acting as a payer to confirm the transaction details. - The PSP app must allow the end-user acting as a payer to reject the transaction details.
7	Conditional	- If the transaction is confirmed, the payer PSP app must submit a payment request to the payer PSP ***[refer to specification#1 – Payment initiation service / Individual user payment instruction request initiation validation]***
8	Conditional	- If the transaction is not confirmed, the process must be discontinued
9	Mandatory	- The PSP app must display the final status of the payment.

4.4.1.5. P2P transaction with DEAN

The payment with DEAN is an account-to-account (A2A) transfer initiated by the payer. The payer's PSP and the payee's PSP may be the same or not.

Pre-requisites

1. Both payer and payee must have a digital euro payment account.
2. The payer knows the DEAN of the payee.
3. The payer authenticates successfully.

E2E flow reference:TM3.10 & TM3.11 P2P account-to-account payment with DEAN.

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The mobile app must allow the end-user acting as a payer to select a payment with DEAN.
2	Mandatory	- The mobile app must allow the end-user acting as a payer to select a DEAN among the list of DEAN already used in a previous payment and to modify it in needed.

3	Mandatory	- The mobile app must allow the end-user acting as a payer to enter manually a DEAN.
		- An initial format check must be performed. The DEAN must:
		  - Contain 18 characters
		  - Start with "EU"
		  - Include 16 numeric characters
		  - Indicate that the payee is an individual user: the fifth character of the DEAN must be equal to "0".
		- A full DEAN validity must be requested to the PSP.
		[refer to Specification#5 – digital euro payment account service/DEAN validity check]

4	Mandatory	- If the DEAN is not valid, the payer must be informed and must be allowed to retry.
5	Optional	- If the DEAN is valid, the corresponding PSP ID (PSP of the payee) could be displayed.
6	Mandatory	- The mobile app must allow the payer to enter the amount of the transaction.
7	Optional	- The payer should be able to enter a message intended for the payee to be informed about the transaction.
8	Optional	- The payer should be able to enter a transaction teference (end-to-end identification)
9	Mandatory	- The PSP app must allow the end-user acting as a payer to confirm the transaction details. - The PSP app must allow the end-user acting as a payer to reject the transaction details.
10	Conditional	- If the transaction is confirmed, the mobile app must be able to generate a payment request that is transmitted to the payer's PSP. ***[refer to specification#1 – Payment initiation service / Individual user payment instruction initiation validation]***
11	Conditional	- If the transaction is not confirmed, the process must be discontinued

#	Mandatory Optional Conditional	Business rules
12	Mandatory	- The mobile app must be able to receive the final status of the payment request execution.
13	Mandatory	- The mobile app must display the final status of the payment.

4.4.1.6. Standing order

An end-user acting as a payer can set-up and manage standing orders via the PSP app.

4.4.1.6.1. Standing order set-up

A standing order can be set-up with the receiving account's DEAN or alias.

4.4.1.6.1.1. Standing order with DEAN - set-up

Pre-requisites:

1. Both payer and payee must have a digital euro payment account.
2. Both payer and payee must be allowed by their intermediaries to pay via DEAN.
3. The payer knows the DEAN of the payee.
4. The payer authenticates successfully.

E2E flow reference:TM-4.3 Standing order

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The PSP app must allow the end-user acting as a payer to select standing orders set-up function.
2	Mandatory	- The PSP app must allow the end-user acting as a payer to initiate a standing order with DEAN and to enter the corresponding parameters: - Frequency - Amount - Starting date
3	Optional	- The PSP app must allow the end-user acting as a payer to enter a standing order reference.
4	Mandatory	- The PSP app must allow the end-user acting as a payer to select a DEAN among the list of DEANs already used. - The management of this list of DEANs is under PSP responsibility.
5	Mandatory	- The mobile app must allow the end-user acting as a payer to manually enter a DEAN. - The DEAN consistency must be checked. DEAN validity check, and the identification of the corresponding PSP ID are performed by the payer's PSP **[refer to Specification#1 - Payment initiation service]**
6	Mandatory	- If the DEAN is not valid, the end-user must be informed and must be allowed to retry.
7	Optional	- If the DEAN is valid, the corresponding PSP ID (PSP of the payee) could be displayed.
8	Mandatory	- The mobile app must be able to generate a standing set-up request transmitted to the payer's PSP. **[refer to specification#1 – Standing order service]**

#	Mandatory Optional Conditional	Business rules
9	Mandatory	- The mobile app must be able to receive the final status of standing order set-up.
10	Mandatory	- The mobile app must display the final status of the standing order set-up request - In case of rejection, the mobile app must provide a reason for the rejection.

4.4.1.6.1.2. Standing order with alias - set-up

Pre-requisites:

1. Both payer and payee must have a digital euro payment account.
2. Both payer and payee must be allowed by their intermediaries to pay via alias.
3. Payee knows the alias of the payer.
4. The payer authenticates successfully.

E2E flow reference:TM-4.3 Standing order

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The PSP app must allow the end-user acting as a payer to select standing orders set-up function.

2	Mandatory	- The mobile app must allow the end-user acting as a payer to initiate a standing order with alias and to enter the standing order parameters:
		  - Frequency
		  - Amount
		  - Starting date

3	Optional	- The PSP app must allow the end-user acting as a payer to enter a standing order reference
4	Mandatory	- The mobile app must allow the end-user acting as a payer to select an alias among the list of alias already used or from the contact list on their device. - The management of this list of alias is under PSP responsibility.
5	Mandatory	- The PSP app must allow the end-user acting as a payer to enter an alias manually. An alias type must be selected (among the list of aliases allowed in digital euro context) and the alias value format must be consistent with the alias type. - The alias must be checked. alias resolution is performed by the payer's PSP **[refer to specification#1 – Payment initiation service]**
6	Mandatory	- The PSP app must allow the end-user acting as a payer to confirm the alias details. - The PSP app must allow the end-user acting as a payer to reject the alias details. - If the alias is confirmed, the process must continue, and the standing order set-up request must be submitted **[refer to specification#1 – Standing order service]** - If the alias is not confirmed, the process must be discontinued.
7	Mandatory	- The PSP app must display the final status of the set-up request.

#	Mandatory Optional Conditional	Business rules
		- In case of rejection, the mobile app must provide a reason for the rejection.

4.4.1.6.2. Standing order management

This section describes the rules applicable to end-user management of standing orders from the PSP app. It is foreseen the end-user can:

- Request an overview of active standing orders.
- Terminate a standing order.
- Update parameters of a standing order.
- View upcoming standing order payments.

E2E flow referenceTM4.6 Standing order management by an individual user.

4.4.1.6.2.1. Overview of standing order management

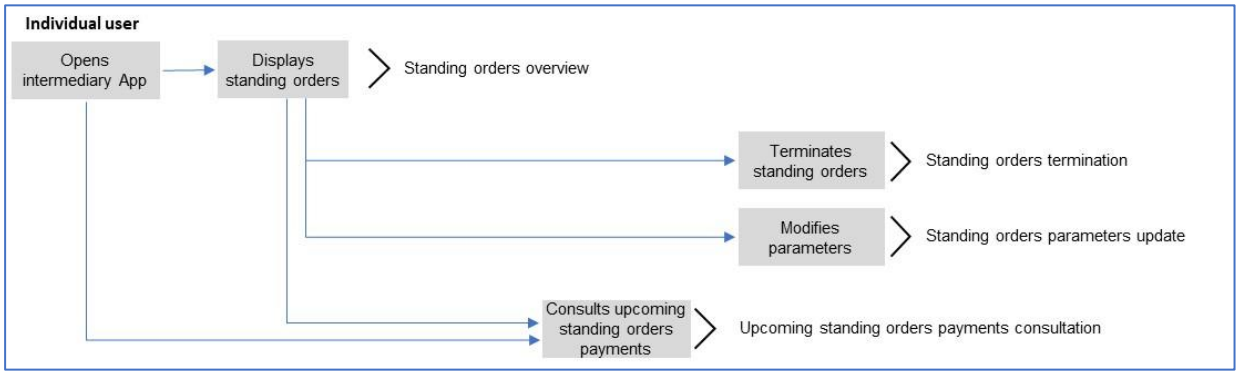


Figure 12 - Overview of standing order management

4.4.1.6.2.2. Standing order overview

Pre-requisites:

1. The payer must have a digital euro payment account.

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The PSP app must allow the user to request an overview of active standing orders.
2	Mandatory	- The end-user must be able to enter following criteria to select active standing orders: - Standing order identification - Standing order amount - Standing order payee DEAN - Standing order payee alias - Standing order start date - Standing order frequency

#	Mandatory Optional Conditional	Business rules
3	Mandatory	- The PSP app must request to the payer's PSP the list of active standing orders **[refer to specification#1 – Standing order service]** and display them.
4	Conditional	- If the standing order overview request is consistent and active standing orders are found, the PSP app must display the corresponding list of active standing orders to the end-user. - If the standing order overview request is inconsistent or active standing orders are not found, the PSP app must inform the end-user who must be allowed to enter new criteria.

4.4.1.6.2.3. Standing order termination

Pre-requisites:

1. The payer must have a digital euro payment account.
2. The payer must have standing orders still active.
3. The payer must select the standing order to terminate.

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The PSP app must allow the user to request a standing order termination and to select a standing order to terminate from a list of active standing orders.
2	Mandatory	- The PSP app must ask the end-user to confirm the termination of the standing order. - If the end-user does not confirm the termination, the process must be discontinued.
3	Conditional	- If the end-user confirms the termination, the PSP app must request the termination of the selected standing order and send the corresponding request to the payer's PSP **[refer to specification#1 – Standing order service]**
4	Mandatory	- The PSP app must display the final status of the request.

4.4.1.6.2.4. Standing order parameters update

Pre-requisites:

1. The payer must have a digital euro payment account.
2. The payer must have standing orders still active.
3. The payer must select the standing order to update.

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The PSP app must allow the end-user to request standing order parameters update and to select a standing order to update from a list of active standing orders.
2	Mandatory	- The PSP app must allow the user to select a standing order to update.
3	Mandatory	- The end-user must be able to update the payee's DEAN or alias, the amount, and the frequency.
4	Mandatory	- The PSP app must ask the end-user to confirm the parameters update. - If the end-user does not confirm the update, the process must be discontinued.
5	Conditional	- If the end-user confirms the parameters update, the PSP app must request the update of the selected standing order and send the corresponding request to the payer's PSP **[refer to specification#1 – Standing order service]**
6	Mandatory	- The PSP app must display the final status of the request.

4.4.1.6.2.5. Upcoming Standing order payment consultation

The end-user shall be able to view upcoming standing order payments. Upcoming payments could correspond to one standing order (after a dedicated request from the end-user) or a list of upcoming payments regardless of the standing order. Posting the list of upcoming payments (e.g., on the home page) in any manner they choose is within the PSP's discretion.

Pre-requisites:

1. The end-user must have a digital euro payment account.
2. The end-user must have standing orders in digital euro still active.

Business rules

#	Mandatory Optional Conditional	Business rules
Full list of upcoming payments		
1	Mandatory	The PSP app must request to the payer's PSP the upcoming payments for active standing orders **[refer to specification#1 – Standing order service]**
2	Mandatory	The PSP app must display the upcoming payments details: - Payee name - Amount - Date
3	Mandatory	The end-user must not be able to modify the details of the displayed upcoming payments.
Upcoming payment for a selected standing order		
1	Mandatory	The PSP app must allow the end-user to consult an upcoming payment for one standing order to select a standing order to update from a list of active standing orders **[refer to specification#1 – Standing order service]**

#	Mandatory Optional Conditional	Business rules
2	Mandatory	The PSP app must display the upcoming payment for the standing order selected by the end-user: - Payee name - Amount - Date
3	Mandatory	The end-user must not be able to modify the details of the displayed upcoming payment.

4.4.2. Transactions at POS

As part of the ECBs digital euro payment initiative, mobile applications play a pivotal role in enabling secure, user-friendly, and interoperable payment experiences. This section focuses exclusively on the mobile app component of the payment journey, detailing the mechanisms that allow end-users to initiate digital euro transactions using their smartphones.

The section covers two key mobile payment modalities:

- HCE NFC Payments (host card emulation – near field communication): A contactless payment method where the mobile device emulates a payment card, enabling tap-to-pay functionality at compatible POS terminals.
- Merchant-presented QR code payments: A method where the merchant displays a QR code that the user scans with his/her mobile app to initiate the transaction.

These mobile-initiated payment methods are designed to align with the broader objectives of the digital euro ecosystem, ensuring consistency, security, and ease of use across various retail environments.

It is important to note that this section addresses only the mobile application side of the transaction. The corresponding acceptance mechanisms on the POS side are described separately in **the [Specifications #4 - Acceptance Device]**.

4.4.2.1. Scope of applicability – Payment terminal types

This specification applies equally to both types of payment terminal implementations used for digital euro proximity payments:

- **Option 1: Hardware-based terminals**
  Traditional, certified physical payment terminals that support secure contactless, chip, and magnetic stripe transactions.
- **Option 2: Software-based terminals (SoftPOS)**
  Software-only solutions installed on commercial off-the-shelf (COTS) devices such as smartphones or tablets, enabling contactless payments without additional hardware.

In this specification, the term 'POS' refers to both hardware-based terminals and software-based terminals (SoftPOS).

4.4.2.2. NFC payment transactions

4.4.2.2.1.1. Protocol for digital euro payment account payment

The mobile payment application for digital euro transactions via NFC is designed to support the CPACE kernel 2E protocol when interacting with POS terminals.

4.4.2.2.1.2. Distributing PSP onboarding precondition

The distributing PSP has integrated the ECB SDK, which includes the HCE SDK, into its end-user application, as well as the SDK back end, which includes the HCE SDK back end, into its back end environment. **[Placeholder for HCE SDK and HCE SDK back end ECB implementation guidelines]**

4.4.2.2.1.3. NFC payment transaction

4.4.2.2.1.3.1. Overview of NFC payment with a digital euro payment account

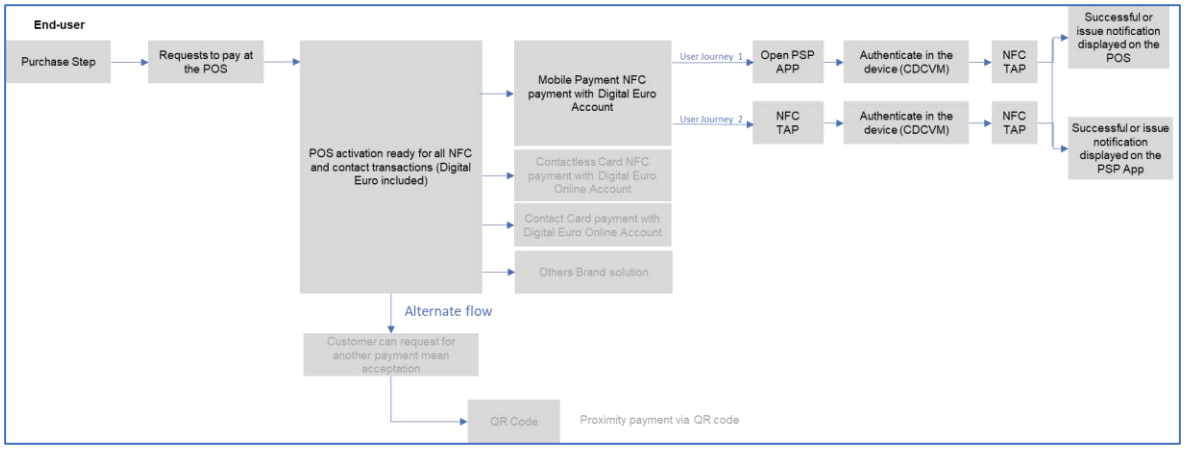


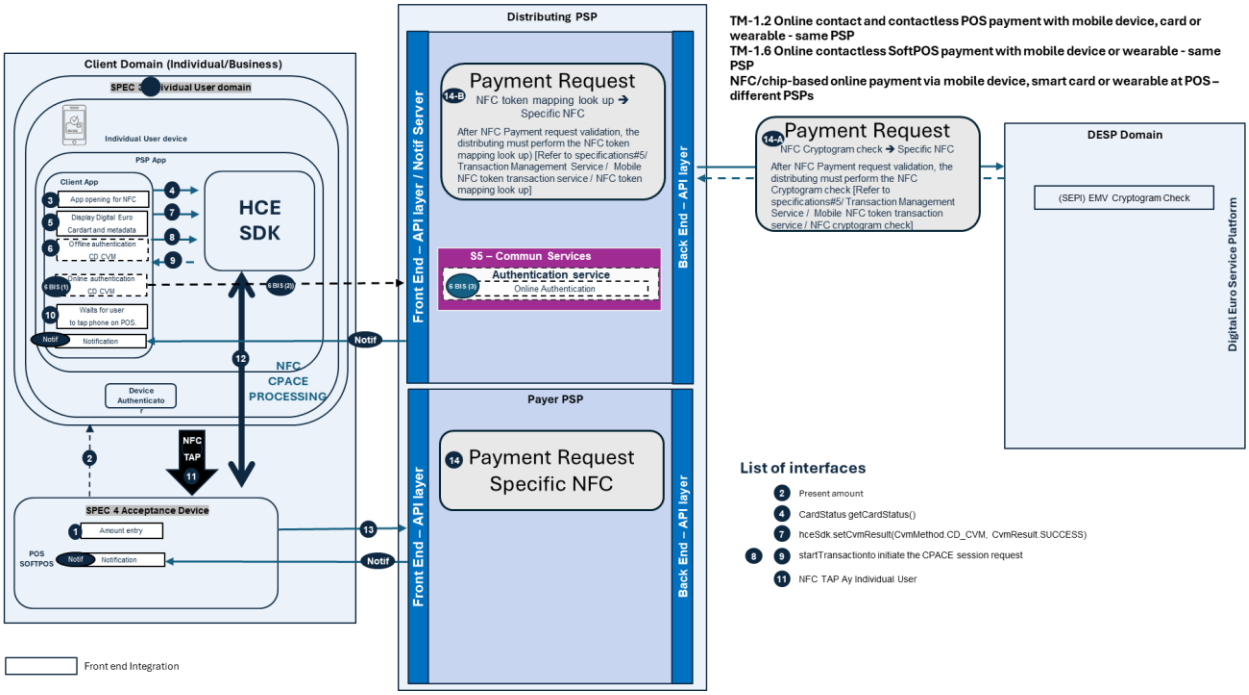
Figure 13 - Overview of NFC payment with a digital euro payment account

4.4.2.2.1.3.2. Digital Euro NFC Transaction Flow (via HCE)

As the end-to-end flows related to NFC services are not yet updated, sequence diagrams are introduced to enhance visualisation and understanding. These diagrams are temporary and will be removed from the specifications once the corresponding end-to-end flows are provided.

This diagram provides a detailed view of the NFC mobile payments process using a digital euro payment account.

[E2E flow reference: TM-1.6 Online contactless SoftPOS payment with mobile device or wearable - same PSP]



4.4.2.2.1.3.3. Prerequisites

Before initiating an NFC transaction, the following conditions must be met:

- The user is already enrolled in the NFC payment service with a digital euro payment account.
- The device has completed HCE session key provisioning (via enrolment or replenishment).
- The PSP app supporting NFC payments must be registered in the device's operating system NFC settings, either as the default payment application or as an available option.
- NFC must be enabled on the device

4.4.2.2.1.3.4. Transaction process overview

User journey 1: Digital euro NFC transaction flow (via HCE) – Open app/Authenticate/Tap

- **Customer opens its NFC payment app menu**

The customer accesses the NFC payment menu either automatically (by double-clicking if the digital euro wallet in the PSP app is set as the default in the NFC OS menu) or manually by selecting the NFC payment option within the PSP app.

- **Customer authenticates**

The customer perform strong customer authentication (SCA) using biometrics or passcode either on-device authentication or device-based remote authentication.

- **Customer performs NFC Tap on the POS terminal**

The customer initiates the payment by directly tapping his/her consumer device on the POS terminal.

- **POS and HCE SDK interaction**

Upon Tap, the POS communicates with the HCE SDK via standard APDU (application protocol data unit) commands:

  - SELECT PPSE
  - SELECT AID digital euro
  - GET PROCESSING OPTION
  - READ RECORDS

Then, the POS requests an EMV cryptogram via the APDU command first generate AC, which the HCE SDK generates using a previous replenishment key.

- **Sending the payment request**

The POS sends the payment request to the acquiring PSP, which forwards it to the DESP scheme.

- **Routing to the distributing PSP**

The DESP scheme identifies the distributing PSP using the distributing PSP ID provided by the HCE SDK during the SELECT AID digital euro APDU and routes the request accordingly.

- **Transaction detokenisation**

The distributing PSP performs detokenisation by retrieving the DEAN and the PSP app ID from the token.

Reminder: During the enrolment process, the distributor receives the token generated by the token service provider (SEPI) via the HCE SDK back end. It records the association between the token, the DEAN, and the PSP app ID.

- **EMV cryptogram check**

The distributing PSP requests SEPI to check the EMV cryptogram.

- **Fraud risk evaluation**

The distributing PSP queries the DESP fraud scoring engine, although the score does not directly influence the authorisation decision.

- **Checks and authorisation**

The distributing PSP performs:

  - Protocol checks
  - Internal fraud control
  - Financial validations
  - Optionally, a reverse waterfall mechanism for liquidity management

- **Settlement and notification**

The distributing PSP initiates a settlement request to the DESP, which:

  - Debits the individual end user's digital euro payment account
  - Credits the payee's digital euro payment account

- **Result notifications**

DESP sends a notification both to the acquiring and distributing PSP who then send a notification respectively to the POS and the PSP app. But the distributing PSP can't alert the PSP app until settlement is not confirmed.

User journey 2: Digital euro NFC transaction flow (via HCE) – First Tap/Authenticate/Second Tap

- **Conditions for applicability:**
  - The PSP app must be configured as the default wallet in the NFC operating system settings.
  - With a POS capable of directly sending an APDU command 'SELECT PPSE', this user journey 2 does not work when the customer pays using their PSP app on a SoftPOS, which must initiate a connection through a tag of type 'isodep' (for Android) or 'card session' (for iOS) emulated by the PSP app.

- **First Tap – Initial POS to prompt the customer authentication**

The customer initiates the payment by performing a first NFC Tap on the POS terminal.

The POS communicates with the smartphone's NFC component using standard APDU commands:

- SELECT PPSE

Upon receiving a 'SELECT PPSE' command, the smartphone's NFC component launches the PSP application (configured as the default wallet in the NFC OS settings) to prompt the customer to authenticate on the device, either through 'device-based remote authentication' or 'on-device authentication'.

- **Customer authentication on the device**

The customer performs a strong customer authentication (SCA) using either biometrics or passcode (« device-based remote authentication » or « on-device authentication »

- **Second Tap – Final POS and HCE SDK interaction**

Upon the second Tap, the POS communicates with the HCE SDK via standard APDU (application protocol data unit) commands:

- SELECT PPSE
- SELECT AID digital euro
- GET PROCESSING OPTION
- READ RECORDS

Then, the POS requests an EMV cryptogram via the APDU command first generate AC, which the HCE SDK generates using a previous replenishment key.

- **Validation and continuation of payment**

Once authentication is successful, the PSP app confirms the transaction and allows the cryptogram to be used for payment authorisation.

- **Sending the payment request**

The POS sends the payment request to the acquiring PSP, which forwards it to the DESP scheme.

- **Routing to the distributing PSP**

The DESP scheme identifies the distributing PSP using the distributing PSP ID provided by the HCE SDK during the SELECT AID digital euro APDU and routes the request accordingly.

- **Transaction detokenisation**

The distributing PSP performs detokenisation by retrieving the DEAN and the PSP app ID from the token.

- **EMV cryptogram check**

The distributing PSP requests SEPI to check the EMV cryptogram.

- **Fraud risk evaluation**

The distributing PSP queries the DESP fraud scoring engine, although the score does not directly influence the authorisation decision.

- **Checks and authorisation**

The distributing PSP performs:

  - Protocol checks
  - Internal fraud control
  - Financial validations
  - Optionally, a reverse waterfall mechanism for fund management

- **Settlement and notification**

The distributing PSP initiates a settlement request to the DESP, which:

  - Debits the individual end user's digital euro payment account
  - Credits the payee's digital euro payment account

- **Result notifications**

DESP sends a notification both to the acquiring and distributing PSP who then send a notification respectively to the POS and the PSP app. But the distributing PSP can't alert the PSP app until settlement is not confirmed.

4.4.2.2.1.3.5. Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	To perform an NFC payment transaction using their digital euro payment account, the customer must be enrolled in the service, have the service activated, and have at least one remaining replenishment key.
2	Mandatory	NFC must be enabled on the device.
3	Conditional	In the case of a digital euro NFC transaction flow (via HCE) involving a first tap/Authentication/Second tap sequence, the NFC settings must have the digital euro payment application set as the default.
4	Mandatory	The PSP application must not enforce any restrictions on transaction processing, whether related to velocity, geolocation, connectivity, or any other limitations.
5	Conditional	To orchestrate an NFC transaction with a digital euro payment account, the PSP app must integrate the SDK provided by the ECB (DESP SEPI) and fully comply with the associated implementation guidelines **[Placeholder for HCE SDK and HCE SDK back end ECB implementation guidelines]**

#	Mandatory Optional Conditional	Business rules
6	Mandatory	The PSP app must allow the individual end user to select the digital euro payment account to be used by default for NFC payment transactions with the HCE SDK.
7	Conditional	In case of offline authentication, the distributing PSP must be able to retrieve from the PSP app the log proving that authentication was performed by the user's device.
8	Conditional	In case of online authentication, the PSP app must perform an authentication in accordance with the distributing PSP's specifications, as defined in **[Refer to Specifications#5 - Authentication]**
9	Conditional	If the transaction fails, the PSP app must display a clear message indicating the reason for the rejection, based on the core reason provided by the distributing PSP.
10	Mandatory	When the NFC payment menu is launched—whether automatically, manually, or triggered by a first tap —the PSP app must display a clear screen indicating that it is awaiting user authentication before proceeding with the NFC tap (whether it is the first or second one).
11	Mandatory	When the customer authentication has been performed, the PSP app must display a clear message to confirm that the device is ready to perform the NFC transaction.
12	Mandatory	Following user authentication and the NFC tap, the PSP app must display a clear and informative message to provide visual feedback during the transaction—for example, "Transaction is in progress."
14	Mandatory	After performing a tap NFC, the transaction is processed between the HCE SDK and the POS according to the CPACE protocol.
15	Mandatory	Upon receiving a result notification from the distributing PSP app's back end, the PSP app must clearly display a message confirming whether the transaction was successful or failed.

4.4.3. Balance enquiry and transaction history

The PSP app shall provide functionalities whereby the end-user shall be able to check their current online holdings and the history of transactions.

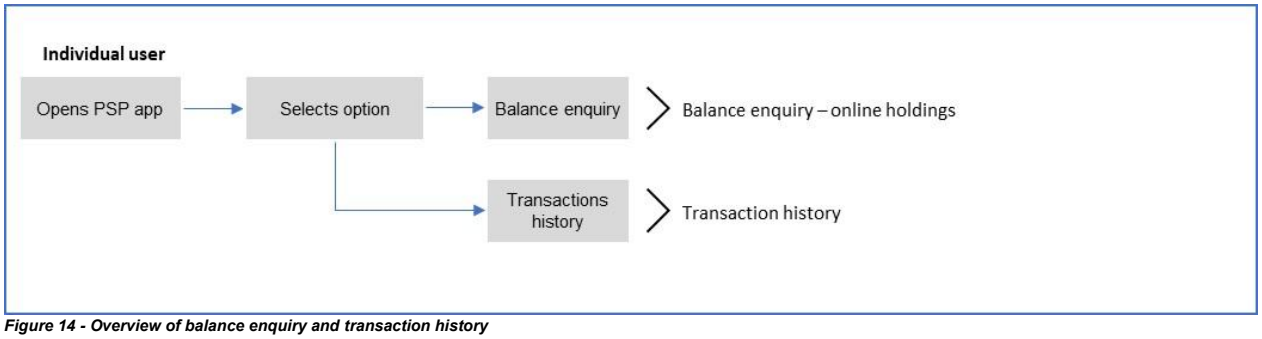


Figure 14 - Overview of balance enquiry and transaction history

4.4.3.1. Global pre-requisite

The PSP app is already connected to the distributing PSP through a strong customer authentication process specific to that PSP.

4.4.3.2. Balance enquiry (online holdings)

Pre-requisites

1. The distributing PSP services the end-user digital euro payment account.

E2E flow reference:TM9.1 Balance enquiry mobile app – online balance

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The end-user must be able to select the corresponding option if the pre-requisites are met. - The PSP must also be able to display the balance after end-user authentication with any prior request
2	Mandatory	- A balance enquiry request is sent to the distributing PSP that must validate it and retrieve the corresponding balance. ***[Refer to specifications#1 – Balance and holding limits service – digital euro payment account balance look-up]***
3	Mandatory	- The digital euro balance provided by the distributing PSP must be shown to the end-user.
4	Optional	- To provide a clearer and more intuitive experience, the mobile app should display the available balance on one line and the upcoming balance on another.
5	Conditional	- If the online holdings balance is null, the balance is still displayed.
6	Conditional	- If the distributing PSP receives an invalid request or is not able to retrieve the balance, the end-user must be informed.

4.4.3.3. Transaction history

Pre-requisites

1. The distributing PSP services the end-user digital euro payment account.

E2E flow reference:TM9.3 Transaction history mobile app

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The end-user must be able to select the corresponding option if the pre-requisites are met.
2	Optional	- The end-user must be able to define selection criteria: - Range of dates: - Type of transaction, - Transaction reference
3	Conditional	- If the end-user enters a range of dates, the following rules must be applied: - If both starting date and end date are entered, they must be consistent: enddate must be greater than starting date. - The starting date and enddate must not be greater than the current date. - It must be possible to enter only a starting date or only an end date. (The PSP has the ability to determine how much history is included)
4	Conditional	- If the end-user selects a type of transaction, the only following types must be chosen: - Purchase - Refund - Reservation - Account-to-account - It must be possible to select many types of transactions. - Selecting all the criteria means not making a choice
5	Conditional	- If the end-user enters a transaction reference, entering other data must not be permitted.
6	Mandatory	- The end-user must be requested to confirm the transaction history request
7	Conditional	- If the end-user does not confirm the transaction history request, the process is discontinued, and the end-user is informed.
8	Conditional	- If the end-user confirms the transaction history request, a transaction history request is sent to the distributing PSP that must validate it and retrieve the corresponding list of transactions. ***[Refer to specifications#1 – Transaction history service – transaction history request validation]***
9	Conditional	- If the distributing PSP receives an invalid request or is not able to retrieve the transaction history according to the criteria, the end-user must be informed.
10	Mandatory	- The end-user must be able to scroll through the list of displayed transactions.

4.4.4. Dispute management

There has been no revision or modification on the dispute requirements written some months ago. Dispute use cases are deprioritised and will be addressed at a later stage.

An end-user can raise a dispute any time in relation to any transaction. The dispute process is managed in two main phases:

- Pre-dispute
- Dispute raised if the pre-dispute outcomes do not satisfy the end-user.

This section details the rules applicable for pre-dispute and dispute requests.

4.4.4.1. Overview of dispute management

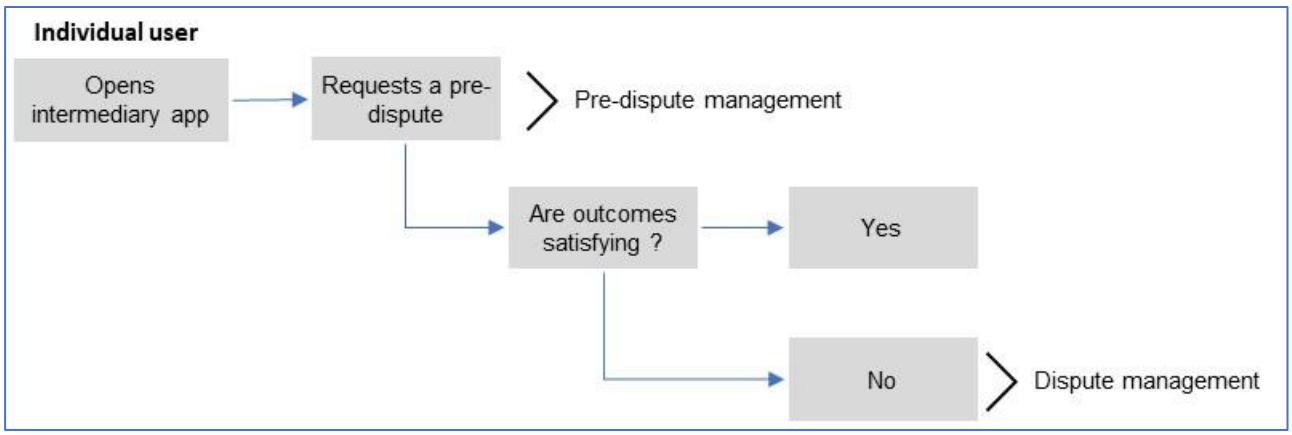


Figure 15 - Overview of dispute management

4.4.4.2. Pre-dispute management

Pre-requisites:

1. The end-user must have a digital euro payment account.
2. Payment must be settled.
3. Other pre-requisites applicable?

E2E flow reference: TM-6.1 Pre-dispute

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The PSP app must display the transactions to allow the end-user to select the relevant one.
2	Mandatory	- The PSP app must propose a list for reasons acceptable to raise a pre-dispute. Placeholder for the list of pre-dispute reasons
3	Mandatory	- The PSP app must ask the end-user to confirm the pre-dispute creation. - The end-user does not confirm the pre-dispute creation; the process must be discontinued.
4	Mandatory	- The PSP app must display the final status of the request.

4.4.4.3. Dispute management

Pre-requisites:

1. The end-user must have a digital euro payment account.
2. A pre-dispute process has been completed for the same transaction.
3. Other pre-requisites applicable?

E2E flow reference: TM-6.2 Dispute

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The PSP app must display only the transactions for which a pre-dispute has been raised. - The pre-dispute must have a final status (pre-disputes still ongoing are not displayed)
2	Mandatory	- The PSP app must propose a list for reasons acceptable to raise dispute. Placeholder for the list of dispute reasons
3	Mandatory	- The PSP app must ask the end-user to confirm the dispute creation. - If the end-user does not confirm the dispute creation, the process must be discontinued.
4	Mandatory	- The PSP app must display the final status of the request.

4.4.4.4. Pre-dispute/dispute follow-up

Pre-requisites:

1. At least a pre-dispute or a dispute has been raised.
2. Other pre-requisites applicable?

Business rules

#	Mandatory Optional Conditional	Business rules
1	Conditional	- The follow-up function must be offered only if at least one pre-dispute or one dispute has been raised and independently of the current status of the pre-dispute of the dispute
2	Mandatory	- The PSP app must propose the list of pre-disputes/disputes and provide the following details: - Pre-dispute/dispute indicator - Pre-dispute/dispute reason - Creation date of the pre-dispute/dispute - Reference of the transaction subject to pre-dispute/dispute - Status of the pre-dispute/dispute - Closing date of the pre-dispute/dispute in case of final status - Additional comments provided to the pre-dispute/dispute request. - Other data?

5. PSP website requirements

No changes have been made compared to the previous version of the specifications. Updates will be included in a future version.

This section aims at providing detailed implementation specifications for **e-banking** to allow the PSPs to offer digital euro dedicated functions via web interfaces.

The section is organised as follows:

- General requirements that are not “process specific“, that frame the website and define its characteristics (functional or not).
- Processing requirements that describe the specificities of the digital euro functions that the PSP website must satisfy. The PSP website is foreseen to be used by individual user s and for some functions by business user s.

Three categories are used to categorise the functions:

- **Access management** related to the onboarding, offboarding of end users by intermediaries and the processing of end users’ data. The initiation of end-users’ data is described by the onboarding process while maintenance of such data is described in user lifecycle management process.
- **Liquidity management** specifying the funding and defunding of digital euro payment accounts, from and to non-digital euro payment accounts.
- **Transaction management** specifying the rules applicable when settling digital euro transactions.

The current section version considers only online digital euro transactions.

Offline transactions will be integrated later, according to the offline solution yet to be chosen as well as the functions involving online and offline holdings.

Assumptions:

- The existing functions of the PSP website are not modified.
- The PSP website is considered in the current document as an entire system without any differentiation between the presentation layer (front end) and the systems performing execution of functions (back end).
- Only the rules applicable to the PSP website are detailed out. Rules related to actions performed outside of the PSP website are out of scope of this section.

5.1. General Requirements

This section provides general functional and non-functional requirements for the implementation of the digital euro for PSP website. The general requirements relate to the characteristics of the application and apply independently of the specific processes.

5.1.1. Functional requirements

5.1.1.1. Seamless navigation

The PSP website allows visitors to easily locate digital euro specific functions.

5.1.1.2. Responsive design

The PSP website shall ensure full responsiveness by automatically adapting its layout and content to the characteristics of the visitor's device and browser. This includes, but is not limited to, adjusting to variations in screen width, resolution, and orientation to provide a consistent and user–friendly experience across all platforms.

5.1.1.3. Visual consistency and branding

The PSP website shall implement a coherent look and feel which is compliant with the digital euro branding guidelines (refer to Rulebook Section 8)

5.1.1.4. Smooth performance

The PSP website shall ensure the new functions dedicated to digital euro operate reliably and with smooth performance. In the event of any issue or delay, the website shall provide clear and timely notifications to inform the user accordingly.

5.1.1.5. Accessibility

The PSP website shall support enhanced accessibility options compliant with the European accessibility act.

Some of the accessibility features to be considered are:

- customisable font sizes.
- reasonable time-out periods to account for varying user abilities and prevent undue pressure.
- ensure compatibility with screen reader software to assist users with visual impairments.

5.1.1.6. Personalised settings

The PSP website allows the user to personalise settings such as language, security settings, and privacy settings.

5.1.1.7. User experience

The PSP website shall comply with minimum UX requirements as defined in Rulebook Section 7.

5.1.2. Non-functional requirements

5.1.2.1. Supported operating systems.

GAP

systems and browsers that remain within the official support lifecycle of their respective vendors. For security and compliance reasons, platforms that no longer receive vendor-issued security updates must not be supported. Compatibility must be limited to devices such as smartphones and tablets that receive ongoing security updates, support secure communication protocols, are not rooted or jailbroken, and include necessary hardware-level security features where applicable. This is to ensure data integrity, protection of sensitive information, and alignment with prevalent industry regulations and certifications.

5.1.2.2. Security

Placeholder for a future version of the rulebook

5.1.2.3. Deployment

Placeholder for a future version of the rulebook

5.1.2.4. Performance

Placeholder for a future version of the rulebook

5.1.2.5. Compliance

Placeholder for a future version of the rulebook

5.1.2.6. Availability

Placeholder for a future version of the rulebook

5.1.2.7. Data integrity

Placeholder for a future version of the rulebook

5.1.2.8. Disaster recovery

Placeholder for a future version of the rulebook

5.2. Access management requirements

There has been no revision or modification to the access management requirements written some months ago. Corresponding use cases will be addressed in the next version of the specifications.

This section describes the requirements dedicated to registration and management of digital euro individual user s and business user s.

5.2.1. Individual user requirements

The PSP website is expected to allow the individual user to access digital euro services.

This section describes the requirements dedicated to registration and management of digital euro users. It covers the following functions:

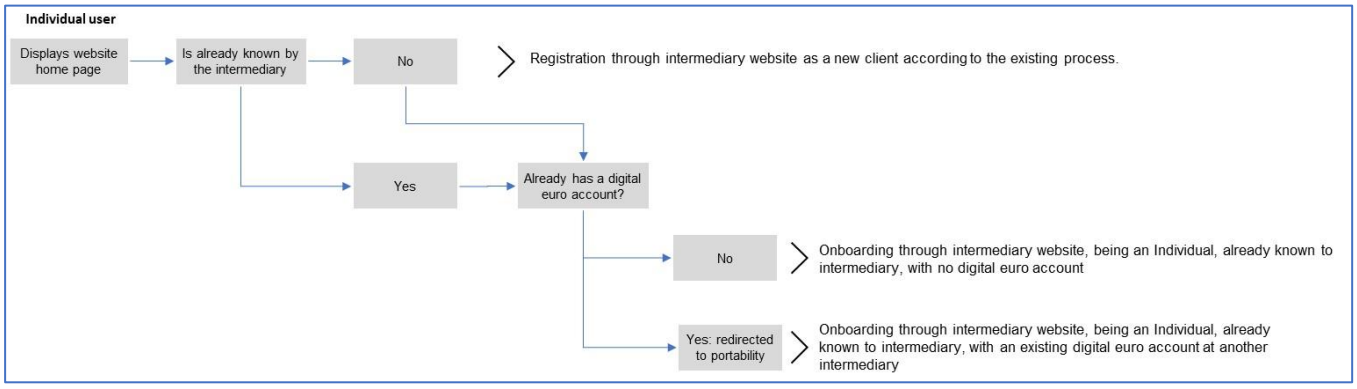
- Onboarding of an individual user
- Offboarding of an individual user
- User lifecycle management

5.2.1.1. Onboarding of an individual user

During the onboarding process, a new user is created in the system and is allowed to use digital euro. The user provides all information to facilitate the onboarding including multiple settings.

This section details the rules applicable to the creation of a new digital euro user and the corresponding settings.

5.2.1.1.1. Overview of onboarding process



5.2.1.1.2. Onboarding request

The end-users who want access to the digital euro services and ability to pay and be paid in digital euro must be registered as a digital euro user. This request must be allowed through the PSP website.

Pre-requisites:

1. The end-user accesses the PSP website.
2. The PSP website provides digital euro onboarding functions.
3. Digital euro existence is checked.

- If the end-user is known by the PSP and already has a digital euro payment account, the PSP website shall freeze the creation of a digital euro payment account process and inform the end-user that she/he already has a digital euro payment account and must request an account switching.
    - If the PSP does not know the end-user, the PSP website shall first trigger the registration of the end-user as a new customer. The registration of a new customer follows the existing process not detailed in this document. As soon as the customer is registered, the PSP website trigger a digital euro payment account existence check
    - If the end-user already has a digital euro payment account, the PSP website shall inform the end-user she/he has already a digital euro payment account and must request an account switch . [see section 5.2.1.5].
    - If the end-user does not have a digital euro payment account, the onboarding process starts.

E2E flow reference: AM1.1 & sAM26 Onboarding of an individual user

Business rules

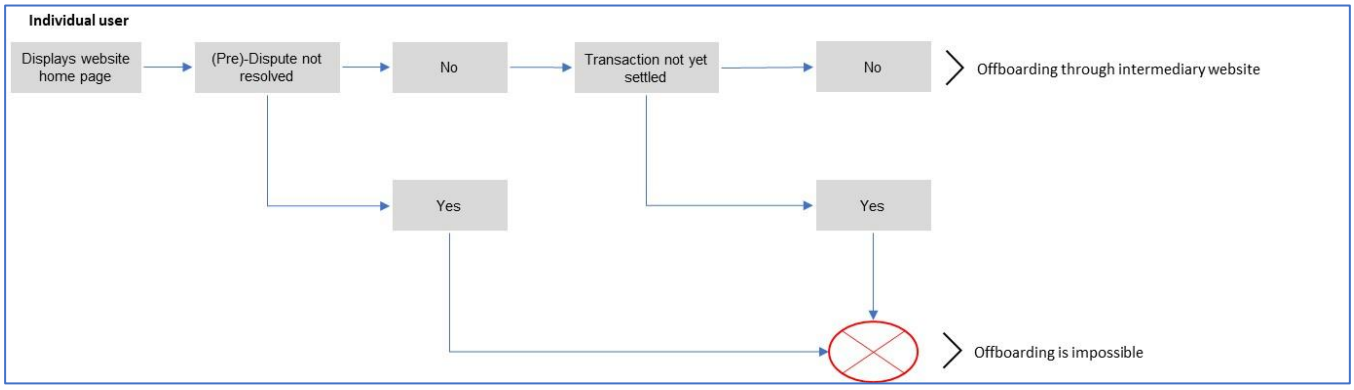
#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The onboarding request option is available only if the end-user is known as an already existing client and does not have a digital euro payment account
2	Optional	- The end-user must be able to register an alias at onboarding, to enter an alias type and the corresponding alias value. - The alias registration is not mandatory at onboarding. The end-user must have the choice to skip this step. [see section 5.2.1.3.2.3 for alias registration]
3	Optional	- The end-user must be able to link a non-digital euro payment account at onboarding and enter a payment account. - The link between a non-digital euro payment account and the digital euro payment account is not mandatory at onboarding. The user must have the choice to skip this step. - [see section 5.2.1.3.2.4 for linking non-digital euro payment account]
4	Optional	- The end-user must be able to define liquidity settings at onboarding and the corresponding parameters. - The liquidity management setting is not mandatory at onboarding. The user must have the choice to skip this step. - [see section 5.2.1.3.2.1 for liquidity management option setting]
5	Optional	- The end-user must be able to configure notifications at onboarding and enter the corresponding parameters. - The notification setting is not mandatory at onboarding. The user must have the choice to skip this step.

#	Mandatory Optional Conditional	Business rules
		- [see section 5.2.1.3.2.2 for notification setting]
6	Conditional	- If the surrogate value is properly generated by DESP, the end-user must store it. - If the surrogate value is not generated, the process must continue, and allow the end-user to request a surrogate value later [see section 5.2.1.3.2.12 for surrogate value request]
7	Mandatory	- The terms and conditions must be communicated to the end-user. - The end-user must be able to accept or reject the terms and conditions. - The onboarding cannot be successful if the end-user does not accept the terms and conditions
8	Mandatory	- The final status must be displayed to the user in case of completion and rejection. - In case of rejection, the reason must be provided to the end-user.
9	Conditional	- If the onboarding is successful, the PSP website must display the digital euro payment account number and the technical proof. - The technical proof must be stored for potential further emergency account switching

5.2.1.2. Offboarding of an end user

Offboarding process supports the end-user who might decide to stop using digital euro at any time.

5.2.1.2.1. Overview of offboarding process



5.2.1.2.2. Offboarding initiated by the end-user.

Offboarding process supports the end-user who might decide to stop using digital euro at any time.

The end-user follows specific steps to perform the offboarding.

This section details the rules applicable to terminate the digital euro service, close the digital euro payment account number and deactivate the digital euro user.

Pre-requisites:

1. The end-user has activated the digital euro services, is registered as a digital euro user and has a digital euro payment account number.
2. There is not any (pre)dispute not yet resolved, and any transactions not yet settled.

E2E flow reference: AM-3.1 individual user offboarding

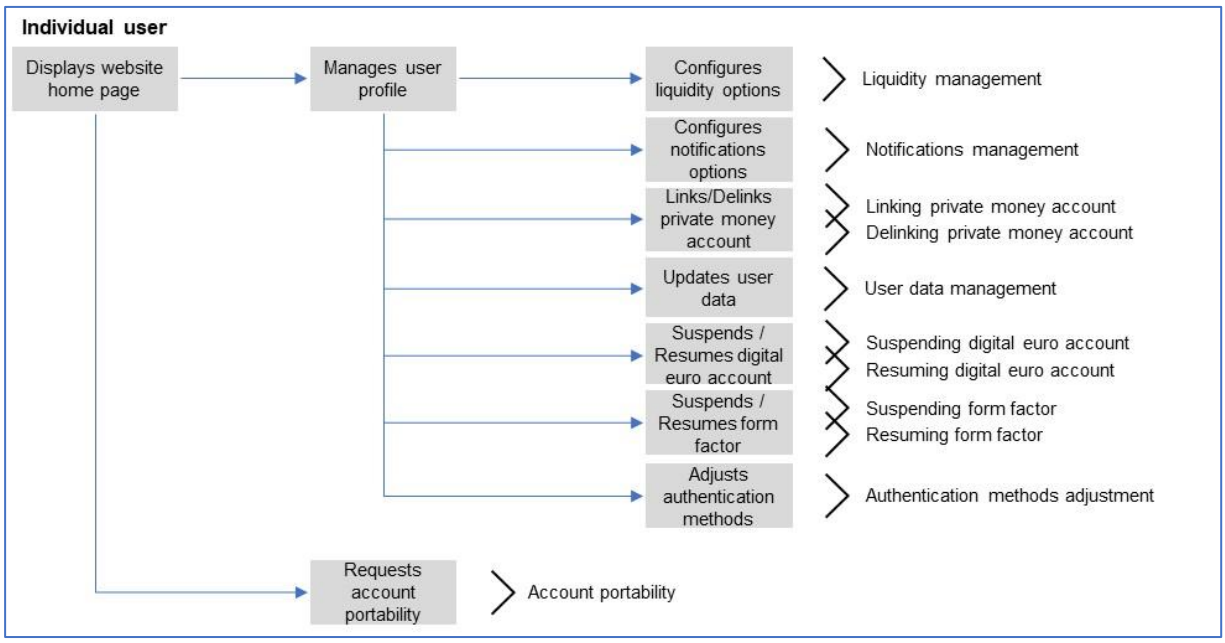
Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The offboarding request option is available only if the end-user has already activated the digital euro services and has a digital euro payment account.
2	Mandatory	- The offboarding request must be valid. - If the request is valid the process continues. - If the request is not valid, the request stops, and the user must be informed that the request is rejected (see pre-requisites) - In case of existing recurring payments, the offboarding request must be validated and the end-user must be informed.
3	Conditional	- If the digital euro payment account balance is not zero, the end-user must perform defunding to a non-digital euro payment account or abort the process, perform defunding into cash and start the process again.
4	Conditional	- If the digital euro payment account balance is not zero, and if the end-user chose defunding to a destination account and did not link a non-digital euro payment account to the digital euro payment account, the destination account must be entered. - The entered destination account must be a payment account, must be valid and accessible by the user [refer to section 5.2.1.3.2.4 for linking account details] - If the account is not valid, a notification message must be displayed with the reason for the rejection.
5	Mandatory	- The final status must be displayed to the user in case of completion and rejection. - In case of rejection, the reason must be provided to the end-user

5.2.1.3. User lifecycle management

User lifecycle management processes offer the user the ability to add, update, delete digital euro settings that are used by other processes (liquidity management, transaction management).

5.2.1.3.1. Overview of user lifecycle processes



5.2.1.3.2. End-user profile management

The end-user might decide at any time to manage the digital euro settings: liquidity and notification options, alias, linked non-digital euro payment account, authentication method.

This section details the rules applicable to end-user profile management.

E2E flow reference: AM4.1 End user (individual) amendments (including alias registration, account linkage, liquidity management settings and notification preferences)

Pre-requisites:

1. The end-user has activated the digital euro services, is registered as a digital euro user and has a digital euro payment account number.

End-user profile management

The end-user profile covers several settings. The end-user should be offered to select the profile settings to be configured.

5.2.1.3.2.1. Liquidity management

Business rules

#	Mandatory Optional Conditional	Business rules
1	Conditional	- The liquidity settings are allowed only if the user has defined the linked non-digital euro payment account
2	Conditional	- If liquidity parameters are already defined, they must be displayed to the end-user. - If liquidity parameters are not yet defined, it is possible to display “per default” settings. (at the discretion of the PSP)
3	Optional	- The user must be able to enter the parameters or to keep the default options (if any) - Cross consistency between the different options is defined and checked by the PSP.
4	Optional	Scheduled funding conditions - The end-user must be able to define if a scheduled process is performed to fund the digital euro payment account. - If the option is selected, the end-user enters the starting date, the periodicity and the amount credited to the digital euro account. - The amount entered must not exceed the scheme holding limit. - The PSP defines the periodicity.
5	Optional	Scheduled defunding conditions - The end-user must be able to define if a scheduled process is performed to defund the digital euro payment account. - If the option is selected, the end-user enters the starting date, the periodicity and the amount debited from the digital euro amount. - The PSP defines the periodicity.
6	Optional	Threshold based funding - The end-user must be able to define if a process is performed to automatically fund the digital euro payment account when the floor threshold is reached. - If the option is selected, the end-user enters the floor threshold and the funding amount.
7	Optional	Threshold based defunding - The end-user must be able to define if a process is performed to automatically defund the digital euro payment account when the ceiling threshold is reached. - If the option is selected, the end-user enters the ceiling threshold and the defunding amount.
8	Optional	Waterfall indicator - The end-user must be able to define if the automatic waterfall process must be performed
9	Optional	Reverse waterfall indicator - The end-user must be able to define if the automatic reverse waterfall process must be performed
10	Mandatory	- The final status must be displayed to the user.

5.2.1.3.2.2. Notification

Business rules

#	Mandatory Optional Conditional	Business rules
1	Conditional	- If notifications parameters are already defined, they must be displayed to the end-user. - If notification parameters are not yet defined, it is possible to display “per default” settings (at the discretion of the PSP)

2	Mandatory	- The user must be able to enter the required settings or keep the default options (if any):
		  - Type of notification
		  - Preferred channel for notification
		- The following list of notification types is proposed:
		- credit to digital euro payment account
		- debit from digital euro payment account
		- execution of a waterfall transaction
		- execution of a reverse waterfall transaction
		- execution of any other automated funding transaction
		- execution of any other automated defunding transaction
		- The end-user can only select a channel already configured in the end-user data.
		- The possible communication channels are defined by the PSP.

3	Mandatory	- The final status must be displayed to the user.

5.2.1.3.2.3. Alias registration

Business rules

#	Mandatory Optional Conditional	Business rules
1	Conditional	- If alias types and corresponding values are already defined, they must be displayed to the end-user. - The alias value must be formatted according to the alias type format.
2	Mandatory	- The end-user must be able to associate several aliases with a digital euro payment account. - The alias value entered by the end-user must be consistent with the format of the alias type
3	Conditional	- Where a mobile telephone number is used as an alias, it shall be stored and sent in strict E.164 format (MSIDN) with leading “+” and no other characters. Flexible input features may be offered (allowing leading 00, spaces etc., to be entered) provided the alias is normalised to strict E.164 format (MSIDN).
4	Mandatory	- The final status must be displayed to the user.

5.2.1.3.2.4. Linking to a non-digital euro payment account

Business rules

#	Mandatory Optional Conditional	Business rules
1	Conditional	- If a non-digital euro payment account is already linked to the digital euro payment account, it must be displayed to the end-user.
2	Mandatory	- The non-digital euro payment account must be valid and accessible to the user. - The user must have full access to the non-digital euro payment account. - If the account is not valid, a notification message must be displayed with the reason for the rejection.
3	Mandatory	- The PSP website must ask the end-user to confirm the creation of the link between the digital euro payment account and the non-digital euro payment account. - If the end-user does not confirm the creation of the link between digital euro payment account and non-digital euro payment account, the process must be discontinued.
4	Mandatory	- The final status must be displayed to the user.

5.2.1.3.2.5. Delinking non-digital euro payment account

Business rules

#	Mandatory Optional Conditional	Business rules
1	Conditional	- This option is available only if a non-digital euro payment account is linked to the digital euro payment account.
2	Mandatory	- The PSP website must ask the end-user to confirm the removal of the link between the digital euro payment account and the non-digital euro payment account. - If the end-user does not confirm the removal of the link between digital euro payment account and non-digital euro payment account, the process must be discontinued.
3	Mandatory	- The final status must be displayed to the user.

5.2.1.3.2.6. Update user data.

Business rules

#	Mandatory Optional Conditional	Business rules
1	Optional	Placeholder for rules applicable to data update
2	Mandatory	- The PSP website must ask the end-user to confirm the data update. - If the end-user does not confirm the data update, the process must be discontinued.
3	Mandatory	- The final status must be displayed to the user.

5.2.1.3.2.7. Suspending a digital euro payment account

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The PSP website must ask the end-user to confirm the suspension of the digital euro payment account. - If the end-user doesn't confirm the suspension, the process must be discontinued. Placeholder for confirmation message template
2	Mandatory	- The final status must be displayed to the user. Placeholder for notification message template

5.2.1.3.2.8. Resuming a digital euro payment account

Business rules

#	Mandatory Optional Conditional	Business rules
1	Conditional	- This request must be available only if the digital euro payment account is suspended.
2	Mandatory	- The PSP website must ask the end-user to confirm the digital euro payment account resuming - If the end-user doesn't confirm the digital euro payment account resuming, the process must be discontinued. Placeholder for confirmation message
3	Mandatory	- The final status must be displayed to the user. Placeholder for notification message template

5.2.1.3.2.9. Suspending form factors

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The list must display possible form factors among the form factors applicable in digital euro context.
2	Mandatory	- The PSP website must ask the end-user to confirm the suspension of the form factor. If the end-user doesn't confirm the suspension, the process must be discontinued. Placeholder for confirmation message template
3	Mandatory	- The final status must be displayed to the user. Placeholder for notification message template

5.2.1.3.2.10. Resuming form factors

Business rules

#	Mandatory Optional Conditional	Business rules
1	Conditional	- This request is available only if at least one form factor is suspended.
2	Mandatory	- The form factors that are suspended must be displayed.
3	Mandatory	- The PSP website must request the end-user to confirm the form factor resuming - If the end-user doesn't confirm the form factor resuming, the process must be discontinued. Placeholder for confirmation message
4	Mandatory	- The final status is displayed to the user. Placeholder for notification message template

5.2.1.3.2.11. Authentication method adjustment

Business rules

Placeholder for a future version of the rulebook

5.2.1.3.2.12. Surrogate value request

Business rules

Placeholder for a future version of the rulebook

5.2.2. Account switching

The end-user may request to switch the digital euro payment account from one PSP to another PSP anytime.

There are two types of switching requests:

- Standard requests where old and new PSPs are involved.
- Emergency requests where only the new PSP is involved. The old PSP does not support the emergency process.

5.2.2.1. Overview of account switching

5.2.2.2. Switching account of individual user

Pre-requisites:

1. The end-user digital account does not present reserved holdings.
2. There is not any (pre)dispute not yet resolved, and no transactions are not yet settled.
3. For emergency switching , the technical proof must be valid.

E2E flow reference: AM-2.1 Individual user account switching (standard procedure)

Business rules

#	Mandatory Optional Conditional	Business rules
1	Conditional	- This request is available only if the pre-requisites are confirmed
2	Mandatory	- The end-user must define if the transaction history must be transferred to the new PSP. - If more than one year of transaction history exists, at least, one year of transaction history has to be stored and shared with the new PSP.
3	Conditional	- If recurring payments exist, the user must define if the parameters must be transferred to the new PSP.
4	Optional	- The end-user must be able to register an alias during the account switching process, to enter an alias type and the corresponding alias value. - The alias registration is not mandatory. The end-user must have the choice to skip this step. [see section 5.2.1.3.2.3 for alias registration]
5	Optional	- The end-user must be able to link a non-digital euro payment account during the account switching process and enter a payment account. - The link between a non-digital euro payment account and the digital euro payment account is not mandatory. The user must have the choice to skip this step. - [see section 5.2.1.3.2.4 for linking non-digital euro payment account]
6	Optional	- The end-user must be able to define liquidity settings during the account switching process and the corresponding parameters. - The liquidity management setting is not mandatory. The user must have the choice to skip this step. - [see section 5.2.1.3.2.1 for liquidity management option setting]
7	Optional	- The end-user must be able to define notification during the account switching process and the corresponding parameters. - The notification setting is not mandatory. The user must have the choice to skip this step. - [see section 5.2.1.3.2.2 for notification setting]
8	Mandatory	- The end-user receives a surrogate value generated by DESP on PSP request. - If the surrogate value is not generated, the process must continue, and allow the end-user to request a surrogate value later [see section 5.2.1.3.2.12 for surrogate value setting]
9	Mandatory	- The final status must be displayed to the user in case of completion and rejection. - If the account porting is successful, the PSP website must display the technical proof. - The technical proof must be stored for potential further emergency account switching . Placeholder for notification message template

5.2.2.3. Switching account of individual user (emergency procedure)

AM-2.2 Individual user account switching (emergency procedure)

5.2.3. Business end-user requirements

The PSP website is expected to allow the business user access to some digital euro services.

Only a list of limited functions of access management can be accessed by the business user.

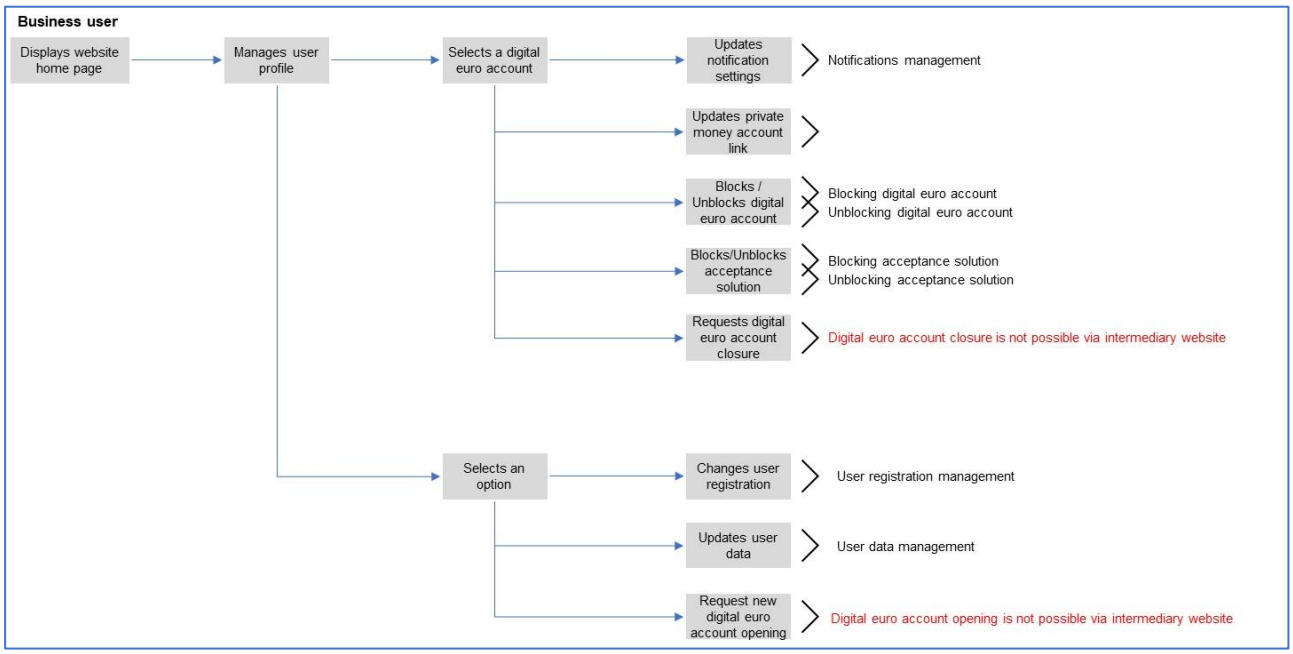
PSP websites are not foreseen to be used by the business user to manage onboarding and offboarding, but only for:

- User profile management
- Transaction history

5.2.3.1. User profile management

User profile management processes offer the user the ability to amend digital euro settings.

5.2.3.1.1. Overview of user profile management processes



5.2.3.1.2. User profile management

The end-user might decide at any time to manage the digital euro payment account and user settings.

This section details the rules applicable to the user profile management. The euser profile covers several settings. The end-user should be offered to select an already existing digital euro payment account or an option.

Pre-requisites:

1. The end-user has activated the digital euro services, is registered as a digital euro user and has at least one digital euro payment account number.

E2E flow reference: AM-4.2.1 End user (business) amendments

5.2.3.1.2.1. Notification management

Business rules

#	Mandatory Optional Conditional	Business rules
1	Conditional	- If notifications parameters are already defined, they must be displayed to the end-user - If notification parameters are not yet defined, it is possible to display “per default” settings (at the discretion of the PSP)

2	Mandatory	- The user must be able to enter the required settings or keep the default options (if any):
		  - Type of notification
		  - Preferred channel for notification
		- The following list of notification types is proposed:
		- Type of notification to be defined or under PSP responsibility?
		- The end-user can only select a channel already configured in the end-user data.
		- The possible communication channels are defined by the PSP.

3	Mandatory	- The final status must be displayed to the user. Placeholder for notification message template

5.2.3.1.2.2. Linking non-digital euro payment account

Business rules

#	Mandatory Optional Conditional	Business rules
1	Conditional	- If a non-digital euro payment account is already linked to the digital euro payment account, it must be displayed to the end-user.
2	Mandatory	- The non-digital euro payment account must be valid and accessible to the user. - The user must have full access to the non-digital euro payment account - If the account is not valid, the notification message must be displayed with the reason for the rejection.
3	Mandatory	- The PSP website must ask the end-user to confirm the creation of the link between the digital euro payment account and the non-digital euro payment account.

#	Mandatory Optional Conditional	Business rules
		- If the end-user doesn't confirm the creation of the link between digital euro payment account and non-digital euro payment account, the process must be discontinued Placeholder for confirmation message template
4	Mandatory	- The final status must be displayed to the user. Placeholder for notification message template

5.2.3.1.2.3. Delinking non-digital euro payment account

Business rules

#	Mandatory Optional Conditional	Business rules
1	Conditional	- This option is available only if a non-digital euro payment account is linked to the digital euro payment account
2	Mandatory	- The PSP website must ask the end-user to confirm the removal of the link between the digital euro payment account and the non-digital euro payment account. - If the end-user doesn't confirm the removal of the link between digital euro payment account and non-digital euro payment account, the process must be discontinued Placeholder for confirmation message template
3	Mandatory	- The final status must be displayed to the user. Placeholder for notification message template

5.2.3.1.2.4. Blocking digital euro payment account

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The PSP website must ask the end-user to confirm the digital euro payment account blocking. - If the end-user doesn't confirm the digital euro payment account blocking, the process must be discontinued Placeholder for confirmation message template
2	Mandatory	- The final status must be displayed to the user. Placeholder for notification message template

5.2.3.1.2.5. Unblocking digital euro payment account

Business rules

#	Mandatory Optional Conditional	Business rules
1	Conditional	- This request must be available only if the digital euro payment account is suspended.
2	Mandatory	- The PSP website must ask the end-user to confirm the digital euro payment account unblocking. - If the end-user doesn't confirm the digital euro payment account unblocking, the process must be discontinued Placeholder for confirmation message template
3	Mandatory	- The final status must be displayed to the user. Placeholder for notification message template

5.2.3.1.2.6. Blocking acceptance solution

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The list must display the acceptance solutions defined for the business user in the digital euro context.
2	Mandatory	- The PSP website must ask the end-user to confirm the acceptance solution blocking. - If the end-user doesn't confirm the acceptance solution blocking, the process must be discontinued Placeholder for confirmation message template
3	Mandatory	- The final status must be displayed to the user. Placeholder for notification message template

5.2.3.1.2.7. Unblocking acceptance solution

Business rules

#	Mandatory Optional Conditional	Business rules
1	Conditional	- This request is available only if at least one acceptance solution defined in the digital euro context is blocked.
2	Mandatory	- The acceptance solutions that are blocked must be displayed.
3	Mandatory	- The PSP website must ask the end-user to confirm the acceptance solution unblocking. - If the end-user doesn't confirm the acceptance solution unblocking, the process must be discontinued Placeholder for confirmation message template
4	Mandatory	- The final status is displayed to the user. Placeholder for notification message template

5.2.3.1.2.8. User registration management

Business rules

#	Mandatory Optional Conditional	Business rules
1	Optional	Placeholder for rules applicable to registration data update
2	Mandatory	- The PSP website must ask the end-user to confirm the user registration update - If the end-user doesn't confirm the user registration update, the process must be discontinued Placeholder for confirmation message template
3	Mandatory	- The final status must be displayed to the user. Placeholder for notification message template

5.2.3.1.2.9. User data management

Business rules

#	Mandatory Optional Conditional	Business rules
1	Optional	Placeholder for rules applicable to data update
2	Mandatory	- The PSP website must ask the end-user to confirm the user data update - If the end-user doesn't confirm the user data update, the process must be discontinued Placeholder for confirmation message template
3	Mandatory	- The final status must be displayed to the user. Placeholder for notification message template

5.2.3.1.3. Transaction history

The business user may be offered the possibility to consult the history of transactions.

E2E flow reference: TM-9.3 Transaction history online

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The end-user must be able to define selection criteria (range of dates, type of transaction, amount, transaction reference)
2	Mandatory	- The list of transactions must be shown to the end-user. - If transactions corresponding to refund to online holdings are in the list of transactions, they must be recognisable - The transactions corresponding to funding/defunding to/from digital euro payment account must be shown
3	Optional	- From a user experience perspective, the PSP can decide to offer the end-user the possibility to export the transaction history.

5.3. Liquidity Management Requirements

This section describes the functions provided to an end-user to fund and defund their digital euro payment account.

A digital euro individual user shall be able to:

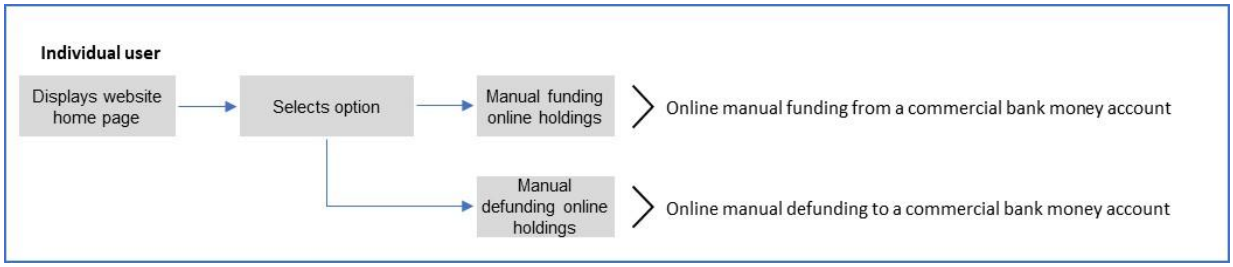
- Fund his/her digital euro payment account from a non-digital euro payment account or with cash through an ATM.
- Defund his/her digital euro payment account to a non-digital euro payment account or to cash through an ATM.

Funding/defunding digital euro could be a manual or an automated process according to following use cases (offline use cases are out of scope):

- Online manual funding from non-digital euro payment account (same and different PSP)
- Online scheduled/automated funding from non-digital euro payment account (same and different PSP)
- Online manual funding with cash deposit at ATM via QR code
- Online manual funding with cash deposit at ATM through card or smartphone
- Online manual funding with cash deposit at PSP branch
- Online manual defunding to non-digital euro payment account (same and different PSP)
- Online scheduled/automated defunding to non-digital euro payment account (same and different PSP)
- Online manual defunding with cash withdrawal at ATM via QR code
- Online manual defunding with cash withdrawal at ATM through card or smartphone
- Online manual defunding with cash withdrawal at PSP branch

For Funding/defunding at ATM refer to **[Specifications#4_Acceptance Device]**
For Scheduled/automated funding/defunding, refer to **[Specifications#1_Distributing PSP requirements]**

5.3.1. Overview of liquidity management process



5.3.2. Manual funding online holdings

The individual user can fund the digital euro holdings from the non-digital euro payment account independently of the scheduled funding mechanism.

Pre-requisites:

1. The distributing PSP services the end-user digital euro payment account

E2E flow reference: LM-1.1 Online manual funding from non-digital euro payment account - same PSP

Business rules

#	Mandatory Optional Conditional	Business rules
1	Conditional	- The request option is available only if the pre-requisites are met.
2	Optional	- From a user experience perspective, the distributing PSP can decide to display digital euro payment account holdings [refer to specifications#1 – section]
3	Conditional	- If the individual user has linked a non-digital euro payment account to his/her digital euro payment account, the non-digital euro payment account is displayed and from a user experience perspective, the distributing PSP can decide to display non-digital euro payment account balance [refer to specifications#5 – section xxx]
4	Conditional	- If the individual user didn't link any non-digital euro payment account to his/her digital euro payment account, he/she must be able to enter it.
5	Optional	- Even if a non-digital euro payment account is already linked to the digital euro payment account, the individual user should be able to enter another non-digital euro payment account (IBAN)
6	Conditional	- If the individual user enters an IBAN, it must be consistent.
7	Mandatory	- The individual user enters the amount to be funded.
8	Mandatory	- A manual funding request is sent to the distributing PSP that must validate it and orchestrate the mandatory checks: - Manual funding request validation - Digital euro holdings limit check - Non-digital euro payment account status check - Non-digital euro payment account balance check [Refer to specifications#1 – Digital euro funds management service] [Refer to specifications#1 – Balance and holding limits service] [Refer to specifications#5 – Non-digital euro payment account service]
9	Mandatory	- The funding request must be rejected if at least one of the following conditions isn't verified: - The funding amount exceeds the holding limits - The non-digital euro payment account has an invalid status - The non-digital euro payment account balance is insufficient to fund the digital euro payment account The reason for the rejection must be displayed to the end-user. Placeholder for notification message template
10	Conditional	- If the rejection is only due to an exceeded holding limit, the individual user must be allowed to enter another amount.
11	Mandatory	- The funding request must be accepted if: - The sum of the holdings of digital euro payment account and the funding amount is consistent with the limit. - The non-digital euro payment account has a valid status - The non-digital euro payment account balance is sufficient to fund the digital euro payment account The completion of the request must be displayed to the end-user. Placeholder for notification message template

5.3.3. Manual defunding online holdings

An individual user can defund the digital euro holdings to the non-digital euro payment account independently of the scheduled defunding mechanism.

Pre-requisites:

1. The distributing PSP services the end-user digital euro payment account

E2E flow reference: LM-2.1 Online manual defunding to non-digital euro payment account same PSP & LM-2.2 Online manual defunding to non-digital euro payment account different PSP (triggered by digital euro PSP)

Business rules

#	Mandatory Optional Conditional	Business rules
1	Conditional	- The request option is available only if the pre-requisites are met.
2	Optional	- From a user experience perspective, the distributing PSP can decide to display digital euro payment account holdings [refer to specifications#1 – section]
3	Conditional	- If the individual user has linked a non-digital euro payment account to his/her digital euro payment account, the non-digital euro payment account is displayed and from a user experience perspective, the distributing PSP can decide to display non-digital euro payment account balance [refer to specifications#5 – section xxx]
4	Conditional	- If the individual user didn't link any non-digital euro payment account to his/her digital euro payment account, he/she must be able to enter it.
5	Optional	- Even if a non-digital euro payment account is already linked to the digital euro payment account, the individual user should be able to enter another non-digital euro payment account (IBAN)
6	Conditional	- If the individual user enters an IBAN, it must be consistent.
7	Mandatory	- The individual user enters the amount to be defunded.
8	Mandatory	- A manual defunding request is sent to the distributing PSP that must validate it and orchestrate the mandatory checks: - Manual defunding request validation - Digital euro balance check - Non-digital euro payment account status check [Refer to specifications#1 – Digital euro funds management service] [Refer to specifications#1 – Balance and holding limits service] [Refer to specifications#5 – Non-digital euro payment account service]
9	Mandatory	- The defunding request must be rejected if at least one of the following conditions isn't verified: - The digital euro payment account balance is insufficient to defund the account - The non-digital euro payment account has an invalid status The reason of the rejection must be displayed to the end-user. Placeholder for notification message template
10	Mandatory	- The funding request must be accepted if:

#	Mandatory Optional Conditional	Business rules
		- The non-digital euro payment account has a valid status - The digital euro payment account balance is sufficient to proceed with the defunding The completion of the request must be displayed to the end-user. Placeholder for notification message template

5.4. Transaction Management Requirements

This section outlines the processes related to the digital euro transactions foreseen at PSP website. The following transaction types are available:

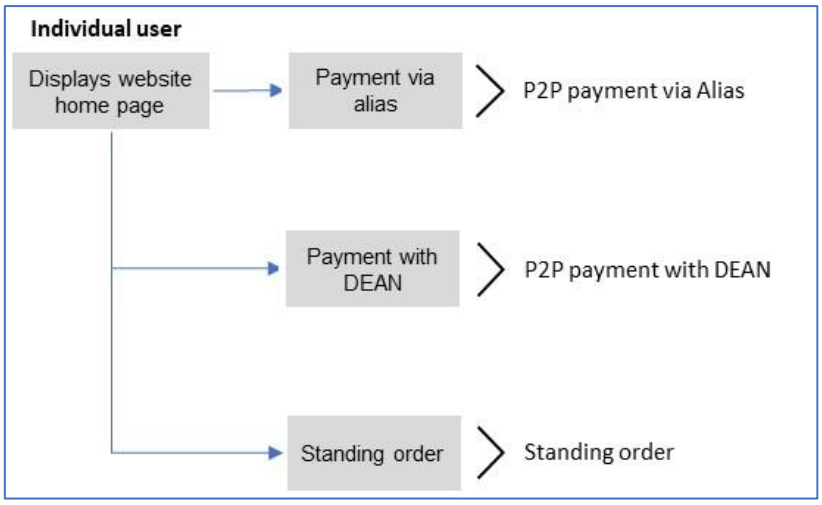
- Peer-to-peer (P2P) transactions
- Standing orders

The end-users shall be able to manage from the PSP website standing orders as well as recurring payments.

5.4.1. Peer-to-peer (P2P) transactions

P2P transactions cover payments between two individual users (a payer and a payee) who use the PSP website to proceed with the payment. The payment is initiated by the payer or the payee.
This section details the rules applied to P2P transactions.

5.4.1.1. Overview of P2P transactions



5.4.1.2. P2P transaction via alias

The payer initiates the P2P payment via alias. The payer's PSP and the payee's PSP may be the same or not.

Pre-requisites:

1. Both payer and payee must have a digital euro payment account.
2. Both payer and payee must be allowed by their intermediaries to pay via alias.
3. The payer knows the alias of the payee.
4. The payer authenticates successfully.

E2E flow reference TM-3.5 P2P transaction via alias – payer initiated.

Business rules

#	Mandatory Optional Conditional	Business rules
1	M	- The PSP website must allow the end-user acting as a payer to select a payment via alias. - The PSP website must allow the end-user acting as a payer to select an alias among the list of aliases already used in a previous payment. - The PSP website must allow the end-user acting as a payer to manually enter an alias. An alias type must be selected (among the list of aliases allowed in digital euro context) and the alias value format must be consistent with the alias type.
2	M	- The PSP website must allow the end-user acting as a payer to confirm the alias details. - The PSP website must allow the end-user acting as a payer to reject the alias details. - If the alias is confirmed, the process must continue, and the payment request must be submitted **[refer to specification#1 – Payment initiation service]** - If the alias is not confirmed, the process must be discontinued.
3	M	- The PSP website must display the final status of the payment.

5.4.1.3. Payment with DEAN

The payment with DEAN is an account-to-account (A2A) transfer. The payer initiates the payment. The payer's PSP and the payee's PSP may be the same or not.

Pre-requisites

1. Both payer and payee must have a digital euro payment account
2. The end-user knows the DEAN of the payee.
3. The end-user authenticates successfully.

E2E flow reference:TM3.10 & TM3.11 P2P account-to-account payment with DEAN

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The PSP website must allow the end-user acting as a payer to select a payment with DEAN.
2	Mandatory	- The PSP website must allow the end-user acting as a payer to select a DEAN among the list of DEANs already used in a previous payment.
3	Mandatory	- The PSP website must allow the end-user acting as a payer to enter a DEAN manually. - The DEAN consistency must be checked. The PSP website must request a DEAN validity check to the payer's PSP. **[refer to Specification#1 - Payment initiation service]**
4	Mandatory	- If the DEAN is not valid, the end-user must be informed and must be allowed to retry.

#	Mandatory Optional Conditional	Business rules
5	Optional	- If the DEAN is valid, the corresponding PSP ID (PSP of the payee) could be displayed.
6	Mandatory	- The PSP website must allow the user to enter the amount of the account-to-account transfer.
7	Mandatory	- The PSP website must be able to generate a payment request that is transmitted to the payer's PSP. **[refer to Specification#1 - Payment initiation service]**
8	Mandatory	- The PSP website must be able to receive the final status of the payment request execution.
9	Mandatory	- The PSP website must display the final status of the payment. - In case of rejection, the PSP website must release the funds that are previously blocked and provide the reason for the rejection.

5.4.1.4. Standing order

It is foreseen that the end-user can set-up and manage standing orders via the PSP website.

5.4.1.4.1. Standing order set-up

A standing order can be set-up with DEAN or alias.

5.4.1.4.1.1. Standing order with DEAN - set-up

Pre-requisites:

1. Both payer and payee must have a digital euro payment account
2. Both payer and payee must be allowed by their intermediaries to pay via DEAN
3. The payer knows the DEAN of the payee.
4. The payer authenticates successfully.

E2E flow reference:TM-4.3 Standing order

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The PSP website must allow the end-user acting as a payer to select standing orders set-up function.

2	Mandatory	- The PSP website must allow the end-user acting as a payer to initiate a standing order with DEAN and to enter the corresponding parameters:
		  - Frequency
		  - Amount
		  - Starting date

3	Optional	- The PSP website must allow the end-user acting as a payer to enter a standing order reference.
4	Mandatory	- The PSP website must allow the end-user acting as a payer to select a DEAN among the list of DEANs already used. - The management of this list of DEANs is under PSP responsibility.
5	Mandatory	- The PSP website must allow the end-user acting as a payer to manually enter a DEAN. - The DEAN consistency must be checked. DEAN validity check, and the identification of the corresponding PSP ID is performed by the payer's PSP **[refer to Specification#1 - Payment initiation service]**
6	Mandatory	- If the DEAN is not valid, the end-user must be informed and must be allowed to retry.
7	Optional	- If the DEAN is valid, the corresponding PSP ID (PSP of the payee) could be displayed
8	Mandatory	- The PSP website must be able to generate a standing set-up request transmitted to the payer's PSP. **[refer to specification#1 – Standing order service]**
9	Mandatory	- The PSP website must be able to receive the final status of standing order set-up
10	Mandatory	- The PSP website must display the final status of the standing order set-up request (placeholder for message template) - In case of rejection, the PSP website must provide the reason for the rejection. (placeholder for message template)

5.4.1.4.1.2. Standing order with alias - set-up

Pre-requisites:

1. Both payer and payee must have a digital euro payment account.
2. Both payer and payee must be allowed by their PSP to pay via alias.
3. The payer knows the alias of the payee.
4. The payer authenticates successfully.

E2E flow reference:TM-4.3 Standing order

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The PSP website must allow the end-user acting as a payer to select standing orders set-up function.
2	Mandatory	- The PSP website must allow the end-user acting as a payer to initiate a standing order with alias and to enter the standing order parameters: - Frequency - Amount - Starting date
3	Optional	- The PSP website must allow the end-user acting as a payer to enter a standing order reference.
4	Mandatory	- The PSP website must allow the end-user acting as a payer to select an alias among the list of aliases already used. - The management of this list of aliases is under PSP responsibility.
5	Mandatory	- The PSP website must allow the end-user acting as a payer to enter manually an alias. An alias type must be selected (among the list of aliases allowed in digital euro context) and the alias value format must be consistent with the alias type. - The alias must be checked. alias resolution is performed by the payer's PSP **[refer to specification#1 – Payment initiation service]**
6	Mandatory	- The PSP website must allow the end-user acting as a payer to confirm the alias details. - The PSP website must allow the end-user acting as a payer to reject the alias details. - If the alias is confirmed, the process must continue, and the standing order set-up request must be submitted **[refer to specification#1 – Standing order service]** - If the alias is not confirmed, the process must be discontinued.
7	Mandatory	- The PSP website must display the final status of the set-up request. Placeholder for notification message - In case of rejection, the mobile app must provide a reason for the rejection. (placeholder for message template)

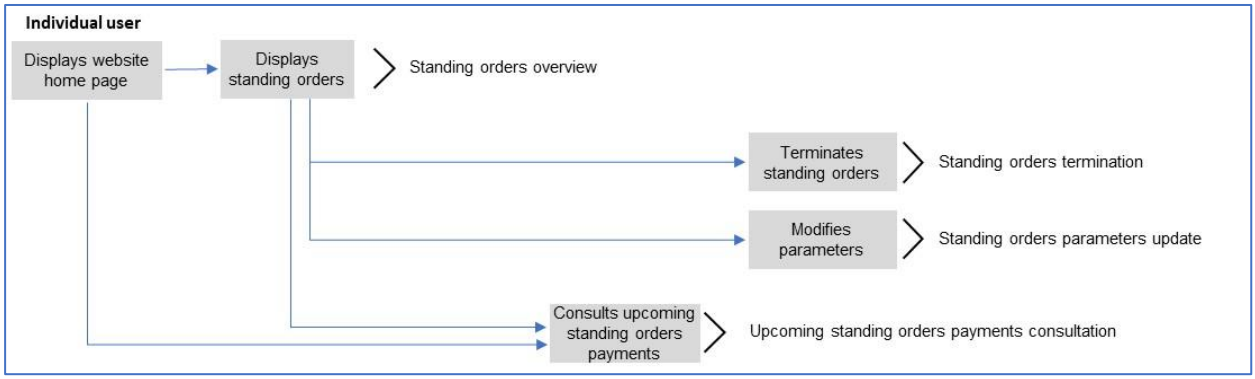
5.4.1.4.2. Standing order Management

This section describes the rules applicable to end-user management of standing orders from the PSP website. It is foreseen the end-user can:

- Request an overview of active standing orders.
- Terminate a standing order.
- Update parameters of a standing order.
- View upcoming standing order payments.

E2E flow reference: TM4.6 Standing order management by an individual user.

5.4.1.4.2.1. Overview of standing order management



5.4.1.4.2.2. Standing order overview

Pre-requisites:

1. The payer must have a digital euro payment account.

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The PSP website must allow the user to request an overview of active standing orders.
2	Mandatory	- The end-user must be able to enter the following criteria to select active standing orders: - Standing order identification - Standing order amount - Standing order payee DEAN - Standing order payee alias - Standing order starting date - Standing order frequency
3	Mandatory	- The PSP website must request to the payer's PSP the list of active standing orders **[refer to specification#1 – Standing order service]** and display them.
4	Conditional	- If the standing order overview request is consistent and active standing orders are found, the PSP website must display the corresponding list of active standing orders to the end-user.

#	Mandatory Optional Conditional	Business rules
		- If the standing order overview request is inconsistent or active standing orders are not found, the PSP website must inform the end-user who must be allowed to enter new criteria.

5.4.1.4.2.3. Standing order termination

Pre-requisites:

1. The payer must have a digital euro payment account.
2. The payer must have standing orders still active.
3. The payer must select the standing order to terminate.

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The PSP website must allow the user to request a standing order termination and to select a standing order to terminate from a list of active standing orders.
2	Mandatory	- The PSP website must ask the end-user to confirm the termination of the standing order. - If the end-user does not confirm the termination, the process must be discontinued. Placeholder for confirmation message template
3	Conditional	- If the end-user confirms the termination, PSP website must request the termination of the selected standing order and send the corresponding request to the payer's PSP **[refer to specification#1 – Standing order service]**
4	Mandatory	- The PSP website must display the final status of the request. - Placeholder for notification message

5.4.1.4.2.4. Standing order parameters update

Pre-requisites:

1. The payer must have a digital euro payment account.
2. The payer must have standing orders still active.
3. The payer must select the standing order to update.

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The PSP website must allow the end-user to request standing order parameters update and to select a standing order to update from a list of active standing orders.
2	Mandatory	- The PSP website must allow the user to select a standing order to update.

#	Mandatory Optional Conditional	Business rules
3	Mandatory	- The end-user must be able to update the payee's DEAN or alias, the amount, and the frequency.
4	Mandatory	- The PSP website must ask the end-user to confirm the parameters update - If the end-user does not confirm the update, the process must be discontinued. Placeholder for confirmation message template
5	Conditional	- If the end-user confirms the parameters update, the PSP website must request the update of the selected standing order and send the corresponding request to the payer's PSP **[refer to specification#1 – Standing order service]**
6	Mandatory	- The PSP website must display the final status of the request. - Placeholder for notification message

5.4.1.4.2.5. Upcoming Standing order payment consultation

The user shall be able to consult upcoming standing order payments. Upcoming payments could correspond to one standing order (after a dedicated request from the end-user) or a list of upcoming payments regardless of the standing order. Posting the list of upcoming payments (e.g., on the home page) in any manner they choose is within the PSP's discretion.

Pre-requisites:

1. The payer must have a digital euro payment account.
2. The payer must have standing orders in digital euro still active.

Business rules

#	Mandatory Optional Conditional	Business rules
Full list of upcoming payments		
1	Mandatory	The PSP website must request to the payer's PSP the upcoming payments for active standing orders **[refer to specification#1 – Standing order service]**
2	Mandatory	The PSP website must display the upcoming payments details: - Payee - Amount - Date
3	Mandatory	The end-user must not be able to modify the details of the displayed upcoming payments.
Upcoming payment for a selected standing order		
1	Mandatory	The PSP website must allow the end-user to consult an upcoming payment for one standing order to select a standing order to update from a list of active standing orders **[refer to specification#1 – Standing order service]**
2	Mandatory	The PSP website must display the upcoming payment for the standing order selected by the end-user: - Payee

#	Mandatory Optional Conditional	Business rules
		- Amount - Date
3	Mandatory	The end-user must not be able to modify the details of the displayed upcoming payment.

5.4.2. Balance inquiry and transaction history

There has been no revision or modification on the balance inquiry and transaction history requirements written some months ago. Those use cases will be addressed at a later stage.

The PSP website shall provide a functionality whereby the user shall be able to check its current online holdings.

5.4.2.1. Balance inquiry (online holdings)

E2E flow reference: TM-9.1 Balance inquiry online

Business rules

#	Mandatory Optional Conditional	Business rules
1	Conditional	- This request is available only if online holdings exist
2	Mandatory	- The digital euro balance must be shown to the end-user.

5.4.2.2. Transaction history

E2E flow reference: TM9.3 Transaction history online

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The end-user must be able to define selection criteria (range of dates, type of transaction, amount, transaction reference, payee name)
2	Mandatory	- The list of transactions must be shown to the end-user. - If transactions corresponding to refund to online holdings are in the list of transactions, they must be recognisable. - The transactions corresponding to funding/defunding to/from digital euro payment account must be shown
3	Optional	- From a user experience perspective, the PSP can decide to offer the end-user the possibility to export the transaction history.

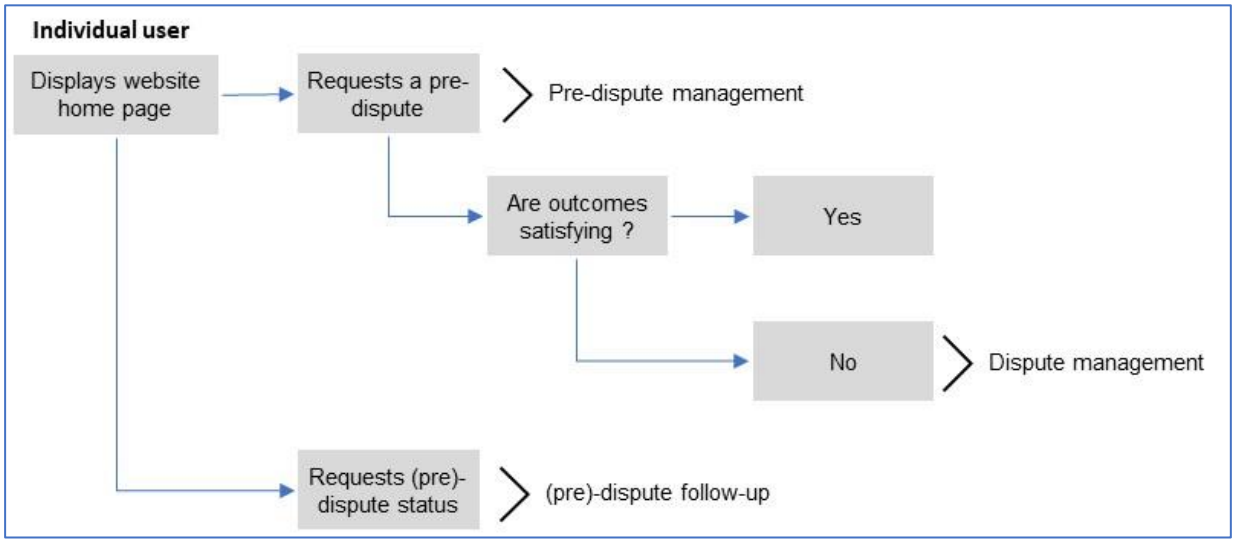
5.4.3. Dispute management

There has been no revision or modification on the dispute requirements written some months ago. Dispute use cases are deprioritised and will be addressed at a later stage.

An end-user can raise a dispute at any time. The dispute process is managed in two main steps:
- Pre-dispute
- Dispute, raised if the pre-dispute outcomes don't satisfy the end-user

The end-user may be offered the ability to know the progress status of the pre-dispute and dispute.
This section details the rules applicable for pre-dispute and dispute requests and the status follow-up.

5.4.3.1. Overview of dispute management



5.4.3.2. Pre-dispute management

Pre-requisites:
1. The end-user must have a digital euro payment account.
2. The payment must be settled.
3. Other pre-requisites applicable?

E2E flow reference: TM-6.1 Pre-dispute

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The PSP website must display the transactions to allow the end-user to select the relevant one.
2	Mandatory	- The PSP website must propose a list of reasons acceptable to raise a pre-dispute. Placeholder for the list of pre-dispute reasons
3	Mandatory	- The PSP website must ask the end-user to confirm the pre-dispute creation.

#	Mandatory Optional Conditional	Business rules
		- The end-user does not confirm the pre-dispute creation; the process must be discontinued. Placeholder for confirmation message
4	Mandatory	- The PSP website must display the final status of the request. - Placeholder for notification message

5.4.3.3. Dispute management

Pre-requisites:

1. The end-user must have a digital euro payment account.
2. A pre-dispute has been already raised for the same transaction.
3. Other pre-requisites applicable?

E2E flow reference: TM-6.2 Dispute

Business rules

#	Mandatory Optional Conditional	Business rules
1	Mandatory	- The PSP website must display only the transactions for which a pre-dispute has been raised. - The pre-dispute must have a final status (pre-dispute still ongoing are not displayed)
2	Mandatory	- The PSP website must propose a list of reasons acceptable to raise dispute. Placeholder for the list of dispute reasons
3	Mandatory	- The PSP website must ask the end-user to confirm the dispute creation. - The end-user does not confirm the dispute creation; the process must be discontinued. Placeholder for confirmation message
4	Mandatory	- The PSP website must display the final status of the request. - Placeholder for notification message

5.4.3.4. Pre-dispute/dispute follow-up

Pre-requisites:

1. At least a pre-dispute or a dispute has been raised
2. Other pre-requisites applicable?

Business rules

#	Mandatory Optional Conditional	Business rules
1	Conditional	- The follow-up function must be offered only if at least one pre-dispute or one dispute has been raised and independently of the current status of the pre-dispute of the dispute
2	Mandatory	- The PSP website must propose the list of pre-disputes/disputes and provide the following details: - Pre-dispute/dispute indicator - Pre-dispute/dispute reason

#	Mandatory Optional Conditional	Business rules
		- Creation date of the pre-dispute/dispute - Reference of the transaction subject to pre-dispute/dispute - Status of the pre-dispute/dispute - Closing date of the pre-dispute/dispute in case of final status - Additional comments provided to the pre-dispute/dispute request - Other data?

6. Physical cards requirements

Placeholder for a future version of the rulebook