



EUROPEAN CENTRAL BANK

EUROSYSTEM

PSP Participation Agreement

Appendix 2.E – User Journeys &
Minimum UX Requirements



IMPORTANT NOTICE

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

A tracked-changes version showing the amendments is published alongside this document.

Disclaimer

This appendix contains **binding Minimum User Experience (UX) Requirements** and supporting, illustrative User Journeys.

The binding obligations applicable to Pilot PSPs are set out exclusively in the normative text on the UX Requirements-pages. Exceptions to these binding obligations are indicated with the label **[optional]**. These reflect suggestions to further optimise the user experience. Visual representations and examples of User Journeys and wireframes are included for illustrative and explanatory purposes to support consistent interpretation and implementation.



1 Content overview

2 Generic UX Requirements

3 Access Management User Journeys

4 Transaction Management User Journeys

5 Liquidity Management User Journeys



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Content overview

**Document outline and overview
of User Journeys**

Content overview

User Journeys

User Journeys

A User Journey is a structured, End-to-End representation of the steps an End-User takes to achieve a specific goal when interacting with the Pilot Payment Services. Only “happy flows” are described in this appendix, unhappy flows or error handling guidelines are not included unless deemed crucial.

The User Journeys in this appendix are illustrative and do not inform any decision on core and optional services foreseen to be offered by Pilot PSPs for the distribution of the Beta Digital Euro.

Wireframes

Where User Journeys and Minimum UX Requirements are frontend agnostic, the wireframes only showcase one example of the User Journey on a mobile device.

The wireframes are included for illustrative purposes only to support a better understanding of the Minimum UX Requirements.

Minimum UX Requirements

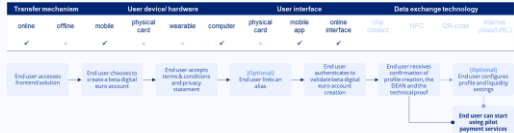
Minimum UX Requirements are considered necessary for Pilot PSPs offering Pilot Payment Services and are thus mandatory for implementation, unless they are marked as **[optional]**. Optional UX Requirements are suggestions to further enhance the UX and not mandatory for implementation. Minimum UX Requirements include both specific UX Requirements, listed together with the relevant User Journeys, and generic UX Requirements, applicable to all User Journeys and included as a separate chapter in this document.

Visualisation

Each User Journey is supported by a wireframe and Minimum UX Requirements

User Journey

- **Title**, including numbering
- **Table** highlighting transfer mechanisms, End-User devices and interfaces and data exchange technologies
- **Step-by-step** description of the User Journey
- **Example** of how this User Journey would be applied
- **Reference of End-to-End Process Flows** linked to this User Journey



Example
The individual end user starts directly from the pilot PSP's app. She sees the option to start using pilot payment services and clicks on it. She accepts the terms and conditions and privacy statement, optionally allows her phone number to be used as alias and authenticates to confirm the onboarding in the beta digital euro environment. Upon confirmation of onboarding, she receives her QR code together with a pilot PSP identifier and technical proof. The individual can optionally configure additional profile and security settings such as linking a (defunding) commercial bank money account, activating (reverse) wallet in the onboarding process. When configuring additional settings, she may be requested to authenticate again.

End-to-end process flow
AM-11: Onboarding of an individual end user (Part 1 - online)

Wireframes

- For illustrative purposes to support a better understanding of the UX Requirements.
- Unless stated otherwise, User Journeys and Minimum UX Requirements are frontend agnostic.
- For illustrative purposes only, wireframes depict one specific frontend implementation.
- Each row represents a separate device.



Setup & validation	Consent & authentication	Confirmation
<ul style="list-style-type: none"> • Payment checkout page shall present the beta digital euro as an equivalent coin to other means of payment. • Payment checkout page shall display the amount and payer name. • Payers shall be informed why offers beta digital euro is not available for this transaction if other functionalities are inside in the front-end solution. 	<ul style="list-style-type: none"> • [Optional] If the participant's front-end solution is not the default connection app, the participant may present an overlay (wallet credits) that allows cover the action screen to facilitate the payment. • Pilot Rights shall ensure that the consent screen within the overlay displays the amount, payer, and the means of payment (beta digital euro), if supported by the operating system. • [Optional] Pilot Rights may ensure that the beta digital euro branding is visible in the overlay, if supported by the operating system. 	<ul style="list-style-type: none"> • Both payer and account front-end solutions shall display the transaction result as either successful or unsuccessful. • The transaction result shall prompt payers to return to the payer's front-end solution if they are not redirected automatically and it is supported by the operating system. • Payers shall be able to review the transaction result, including the amount, details, any message or signature, either on the confirmation screen or via the transaction history in their beta digital euro front-end solution.

Minimum UX Requirements

Detailing the minimum requirements necessary for Pilot PSPs to be able to offer harmonised Pilot Payment Services.

Content overview

User Journeys

Domain		Code	User Journey
Access Management	Onboarding	AM 1.A	Onboarding
		AM 3.A	Offboarding by End-User
	Offboarding	AM 3.B	Offboarding by Pilot PSP
		Lifecycle management	AM 4.A
	AM 4.B		User Alias linking
	AM 4.C		User Alias unlinking
	AM 4.D		IBAN linking
	AM 4.E		IBAN unlinking
	AM 4.F	Account blocking	
AM 4.G	Account unblocking		
Transaction Management	(Soft)POS	TM 1.A	SoftPOS payment via NFC (online, mobile)
		E-/m-commerce	TM 2.A
	TM 2.B		M-commerce app to app (online, mobile)
	TM 2.C		E-commerce via User Alias or DEAN (online, web/mobile)
	P2P	TM 3.B	P2P payment via NFC (offline, mobile)
		TM 3.C	P2P payment via User Alias or DEAN (online, mobile)
	Other	TM 7.A	Refund on e-/m-commerce (online, mobile)
		TM 8.A	Display of balance and transactions (online/offline, mobile)
Liquidity Management	Liquidity	LM 1.A	Manual funding and defunding between accounts or with IBAN (mobile)



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Generic UX Requirements

Generic UX Requirements

Authentication

- Pilot PSPs shall ensure that authentication methods for Pilot Payment Services are equivalent to those made available for other means of payment.
- Pilot PSPs shall ensure that authentication can be completed in no more steps than required for other means of payment.
- Pilot PSPs shall provide multi-modal authentication methods, including at least one option that does not require a smartphone unless the Beta Digital Euro payment instrument is itself a smartphone.
- Pilot PSPs shall ensure End-Users are able to use their European Digital Identity Wallet to authenticate if supported by the Beta Digital Euro payment instrument.
- Pilot PSPs shall offer End-Users the option to retry authentication or select an alternative authentication method if the initial attempt fails.
- Pilot PSPs shall provide a secure fallback authentication method when the primary authentication method is unavailable.
- Pilot PSPs shall ensure that active user sessions are not terminated while the End-User is interacting with the frontend solution.
- If authentication times out, Pilot PSPs shall notify End-Users and provide them with the opportunity to reauthenticate.
- If authentication is about to time out, Pilot PSPs shall notify End-Users and indicate the action required to maintain the session.
- Pilot PSPs shall provide End-Users with the choice to be redirected to their default Beta-Digital-Euro-frontend solution when redirection is required.
- Pilot PSPs shall require renewed authentication if the transaction amount or Payee is changed.
- Pilot PSPs shall require successful End-User authentication before displaying any personal data, including account balances, transaction history, or identifiers.
- Pilot PSPs shall indicate to End-Users that identity verification is required before accessing Pilot Payment Services.
- When a session is resumed on a different device, Pilot PSPs shall prompt the End-Users to reauthenticate before granting access and inform the End-User that the previous session will be logged out automatically for security reasons.
- Pilot PSPs shall display the result of the authentication process as successful or unsuccessful.

Generic UX Requirements

Accessibility, branding and controllability

Accessibility

- All frontend solutions and Pilot Payment Services offered shall comply with the requirements outlined in the European Accessibility Act.

Branding

- All frontend solutions and Pilot Payment Services offered shall comply with the branding requirements outlined in the Style Guide.

Controllability

- Pilot PSPs shall provide functionality for End-Users to select a default Beta-Digital-Euro-frontend solution.
- Pilot PSPs shall provide functionality allowing Payers to cancel a transaction before authentication starts.
- Pilot PSPs shall ensure that Payers can return to the previous step at any time before authentication starts.
- **[Optional]** Payees may be able to refuse incoming payment requests by blocking Payers based on their DEAN or User Alias.
- Pilot PSPs shall ensure that End-Users can log out of Pilot Payment Services at any time. Logging out shall terminate the active session and require reauthentication before further access.
- Pilot PSPs shall ensure that each button or link in the frontend solution is labelled with a descriptive action name (e.g., “Confirm Payment”, “Cancel”) and leads to a screen or outcome that matches the label’s intent.

Generic UX Requirements

Error handling

- Pilot PSPs shall, where the user interface allows it, inform End-Users of the high-level functional reason for an error (e.g., “Insufficient funds”).
- Pilot PSPs shall provide actionable guidance or inform End-Users of the steps to resolve an error such as retrying an action, correcting input, or contacting support.
- Pilot PSPs shall not expose internal system details or technical diagnostics to End-Users.
- Pilot PSPs shall use neutral, non-specific language for errors related to fraud, risk, or security.
- Pilot PSPs shall use plain, everyday language and avoid technical jargon.
- Pilot PSPs shall display critical errors prominently, ensuring they cannot be missed by End-Users.
- Pilot PSPs shall allow End-Users to retry failed actions without re-entering all data, where technically feasible.
- Pilot PSPs shall display error messages as soon as the issue is detected.
- **[Optional]** Error messages may follow this structure: [What went wrong.] [Why it happened, if known.] [What End-Users can do next.]
- **[Optional]** Pilot PSPs may use visual indicators (e.g., red text, icons) alongside text to help End-Users quickly identify errors.
- **[Optional]** Pilot PSPs may keep messages under 200 characters.
- **[Optional]** Pilot PSPs may avoid including error codes unless required for End-User support.
- **[Optional]** Pilot PSPs may use sentence case and proper punctuation.
- **[Optional]** Pilot PSPs may acknowledge the inconvenience caused by the error and reassure End-Users.

Generic UX Requirements

Feedback, information and positioning

Feedback and information

- Pilot PSPs shall inform End-Users when they are being redirected to another frontend solution.
- If field validation is performed, Pilot PSPs shall ensure it occurs before allowing the End-User to proceed to the next screen.
- Pilot PSPs shall specify which field has failed validation.
- **[Optional]** Pilot PSPs may perform field validation immediately after End-Users complete the corresponding field.
- Pilot PSPs shall present all information required to complete the current step within the same screen, avoiding the need for End-Users to recall details from previous steps.
- Information provided by Pilot PSPs shall be understandable and shall not exceed the B2 (upper intermediate) complexity level of the Council of Europe's Common European Framework of Reference for Languages.
- **[Optional]** Pilot PSPs may display a progress indicator in multi-step flows.
- Pilot PSPs shall provide tactile feedback when appropriate to reinforce End-User actions, such as during NFC interactions or other relevant use cases.
- Pilot PSPs shall provide functionality enabling End-Users to set a user-defined nickname (account identifier) for each account, which shall be displayed alongside the account or the offline device identifier to support user recognition.
- Whenever an amount is displayed in the frontend solution, Pilot PSPs shall display the corresponding currency.

Generic UX Requirements

Transactions and End-User support

Transactions

- Pilot PSPs shall provide functionality enabling End-Users to select a default mode for using either online or offline Beta Digital Euro to initiate a payment.
- Pilot PSPs shall display, before authentication of the transaction, whether the transaction is being conducted using online or offline Beta Digital Euro and shall, if applicable, offer Payers the option to switch.
- **[Optional]** Pilot PSPs may provide End-Users with access to a shortcut (e.g. via a button or link) for funding if a payment fails due to insufficient funds.
- For transactions made using reverse waterfall, the transaction amount using reverse waterfall shall be made available for the Payer.
- Pilot PSPs shall display the origin account before authentication starts.
- Pilot PSPs shall inform End-Users when a transaction would cause their balance to exceed the holding limit by displaying the limit and explaining the consequences (e.g., failed incoming payments, automated defunding).

End-User support

- Pilot PSPs shall ensure that End-Users can access accurate help and documentation in an easily accessible manner, equivalent to other means of payment.
- Pilot PSPs shall provide customer support for Pilot Payment Services equivalent to that offered for other means of payment.
- Pilot PSPs shall provide customer support in an inclusive and accessible manner, using different methods of communication (e.g., visual and auditory) to support End-Users during the Pilot.
- Pilot PSPs shall provide contextual help, such as tooltips or information icons, for concepts that are specific to the Beta Digital Euro.



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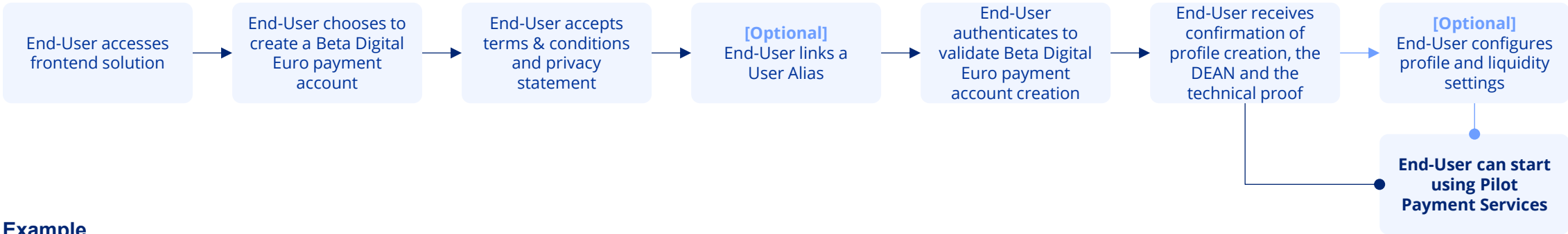
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Access Management

**User Journeys, wireframes and
Minimum UX Requirements**

AM 1.A – Onboarding User Journey

Transfer mechanism			User device/ hardware			User interface			Data exchange technology			
online	offline	mobile	physical card	wearable	computer	physical card	mobile app	online interface	chip contact	NFC	QR-code	Internet (User Alias/URL)
✓	✗	✓	✗	✗	✗	✗	✓	✗				



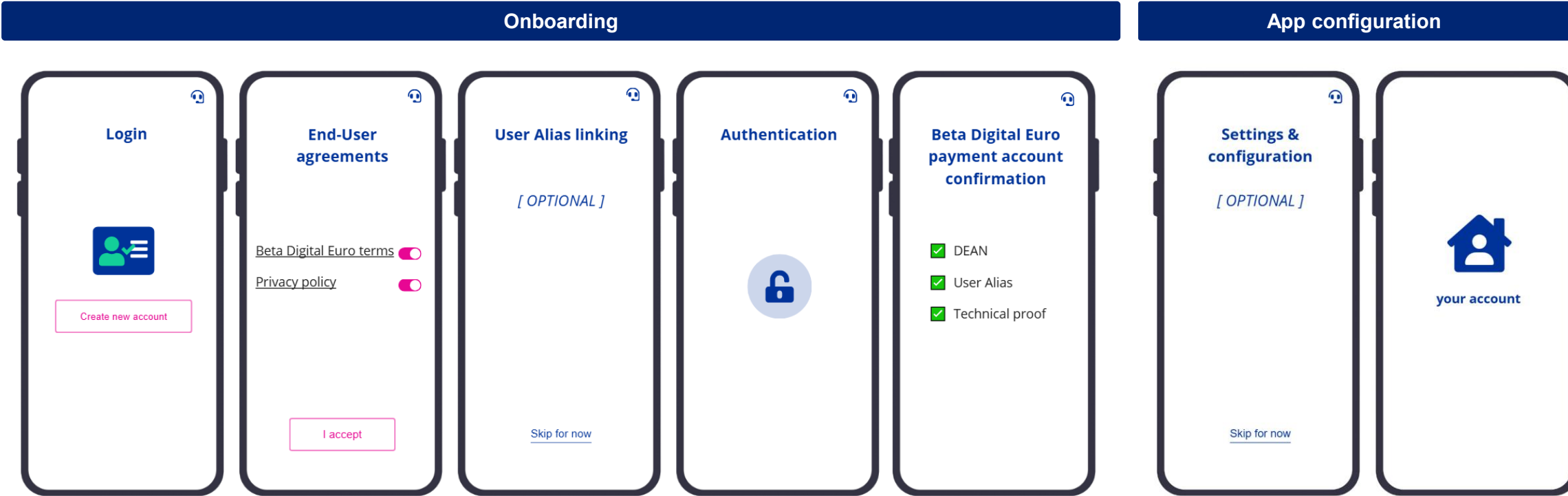
Example

The Individual End-User starts directly from the Pilot PSP’s app. She sees the option to start using Pilot Payment Services and clicks on it. She accepts the terms and conditions and privacy statement, optionally allows her phone number to be used as User Alias, and authenticates to confirm the onboarding in the Beta Digital Euro environment. Upon confirmation of onboarding, she receives her DEAN together with a Pilot PSP identifier and technical proof. The Individual may optionally configure additional profile and liquidity settings such as linking a (de)funding commercial bank money account, activating (reverse) waterfall in the onboarding process. When configuring additional settings, she may be requested to authenticate again.

End-to-End Process Flows

AM-1.1: Onboarding of an Individual End-User (Part I - online)

AM 1.A – Onboarding Wireframe



AM 1.A – Onboarding

Minimum UX Requirements

Onboarding

- If End-Users do not yet have a Beta Digital Euro payment account with the Pilot PSP, Pilot PSPs shall automatically initiate onboarding upon launching the Pilot Payment Services.
- If End-Users already have a Beta Digital Euro payment account, Pilot PSPs shall suggest using the existing account instead of initiating onboarding upon launching the Pilot Payment Services.
- **[Optional]** If End-Users do not yet have a Beta Digital Euro payment account, Pilot PSPs may suggest the use of Pilot Payment Services automatically upon opening the frontend solution.
- During the onboarding flow, Pilot PSPs shall display the Beta Digital Euro Pilot terms & conditions and privacy policy within the frontend solution or provide a direct link to the relevant documents.
- Pilot PSPs shall ensure that End-Users explicitly accept the Beta Digital Euro Pilot terms & conditions and privacy policy through an intentional action presented as a mandatory step in the frontend solution before proceeding.
- Pilot PSPs shall ensure onboarding can be initiated in no more steps than required for other means of payment and in no more than four steps after opening the frontend solution.
- Pilot PSPs shall inform End-Users that onboarding to the Beta Digital Euro is not conditional upon the use of other services.

App configuration

- Pilot PSPs shall require only actions and display only steps relevant to onboarding for Pilot Payment Services during the onboarding flow.
- Pilot PSPs shall require authentication before executing backend processes related to onboarding.
- Pilot PSPs shall provide End-Users with a confirmation of successful onboarding, which shall include account information such as the DEAN.
- Pilot PSPs shall provide “User Alias linking” as an optional step during the onboarding process.
- Pilot PSPs shall explain the technical proof and provide it to End-Users on a durable medium, ensuring it remains accessible after onboarding.
- Pilot PSPs shall offer “Settings” as an optional step during the onboarding process.
- **[Optional]** Pilot PSPs may allow End-Users to start using the Pilot Payment Services upon completing the onboarding.

AM 3.A – Offboarding by End-User User Journey

Transfer mechanism			User device/ hardware			User interface			Data exchange technology			
online	offline	mobile	physical card	wearable	computer	physical card	mobile app	online interface	chip contact	NFC	QR-code	Internet (User Alias/URL)
✓	✗	✓	✗	✗	✗	✗	✓	✗				



Example

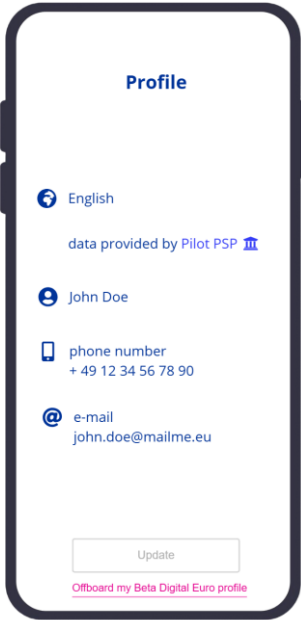
The Individual End-User wants to stop accessing Pilot Payment Services and opens her mobile app. In the settings, she finds the option to terminate Pilot Payment Services. She clicks on it and confirms the start of offboarding. She authenticates and validates the Beta Digital Euro payment account closing. Then she chooses to defund the remaining (online and offline) holdings to her linked commercial bank money account and sets the account closing date. She receives confirmation of access termination and termination of User Alias(es). As a final step, she receives documents certifying that the Pilot Payment Services are terminated (e.g., an extract of last statements and transaction log).

End-to-End Process Flows

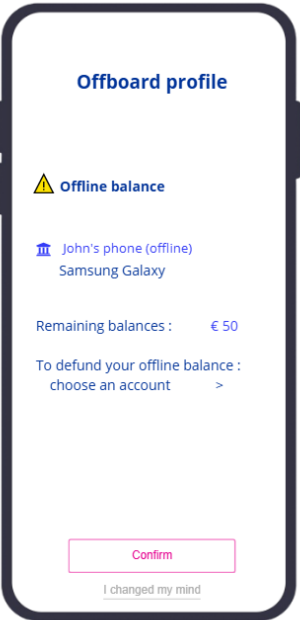
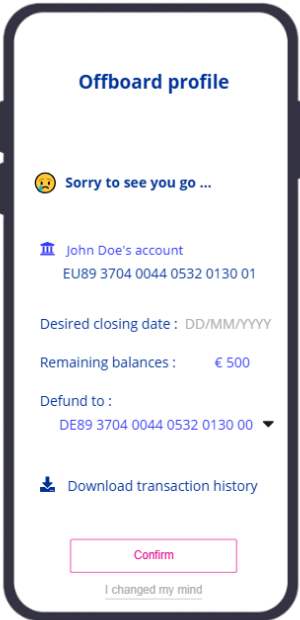
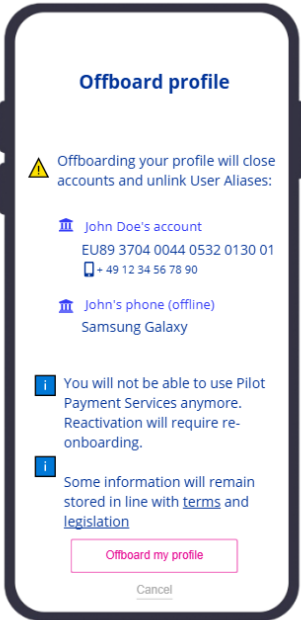
AM-3.1 Offboarding of an Individual End-User (online and offline)

AM 3.A – Offboarding by End-User Wireframe

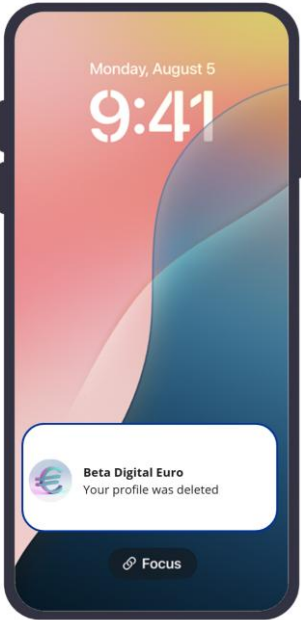
Settings



Offboarding



Confirmation



AM 3.A – Offboarding by End-User

Minimum UX Requirements

Settings

- Pilot PSPs shall provide functionality enabling End-Users to discontinue the use of Pilot Payment Services by offboarding their profile.
- Pilot PSPs shall display the End-User's profile details (e.g., name) at the start of the offboarding process to confirm the profile being offboarded.

Offboarding

- Pilot PSPs shall inform End-Users about the consequences of offboarding, including the closure of Beta Digital Euro payment accounts and the unlinking of User Aliases, the inability to make or receive future payments, the requirement to onboard again to regain access to Pilot Payment Services, the transfer of remaining funds to the selected defunding account, and the retention of certain information in accordance with applicable legislation and the Beta Digital Euro Pilot terms.
- Pilot PSPs shall display the remaining balances of all accounts to be closed.
- For online, Pilot PSPs shall allow End-Users to select a defunding account for the transfer of remaining funds, either by entering an IBAN in free-text format or by selecting one of the linked IBANs.
- For online, Pilot PSPs shall only allow End-Users to offboard after selecting a defunding account.
- For offline devices, End-Users shall be informed by the Pilot PSPs of the available options for transferring any remaining funds before offboarding.
- For offline devices, Pilot PSPs shall inform End-Users to offboard only if the balance on the device is zero.
- Pilot PSPs shall allow End-Users to cancel offboarding before authentication starts.
- **[Optional]** Pilot PSPs may offer End-Users the option to choose the effective date of offboarding

- provided defunding instructions are scheduled to be executed before this date.
- Pilot PSPs shall request explicit confirmation of the offboarding request.
- Pilot PSPs shall offer End-Users the option to retain their transaction history in a standardised open format.
- Pilot PSPs shall require authentication before executing backend processes related to offboarding of the End-User's profile.

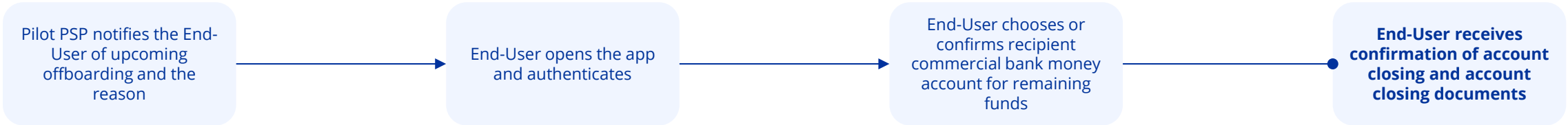
Confirmation

- Pilot PSPs shall provide confirmation of offboarding and defunding.
- Pilot PSPs shall deactivate all frontend solutions and Beta Digital Euro payment instruments linked to the offboarded End-User's profile.
- Pilot PSPs shall make sure End-Users are logged out from all Pilot Payment Services.
- **[Optional]** Pilot PSPs may allow End-Users to undo the offboarding request within a grace period before the effective date.
- **[Optional]** Pilot PSPs may offer a feedback form to understand the reason for offboarding.

AM 3.B – Offboarding by Pilot PSP

User Journey

Transfer mechanism			User device/ hardware			User interface			Data exchange technology			
online	offline	mobile	physical card	wearable	computer	physical card	mobile app	online interface	chip contact	NFC	QR-code	Internet (User Alias/URL)
✓	x	✓	x	x	x	x	✓	x				



Example

An Individual End-User receives a notification and the reason for being offboarded. The Individual End-User opens the mobile app and authenticates herself. She is presented with the account closing date and needs to defund the remaining (online and offline) holdings, for example to her linked commercial bank money account. She receives confirmation of profile offboarding, and the removal of her User Alias from Pilot Payment Services. As a final step, she receives documents certifying that the Pilot Payment Services are terminated (e.g., an extract of last statements and transaction log).

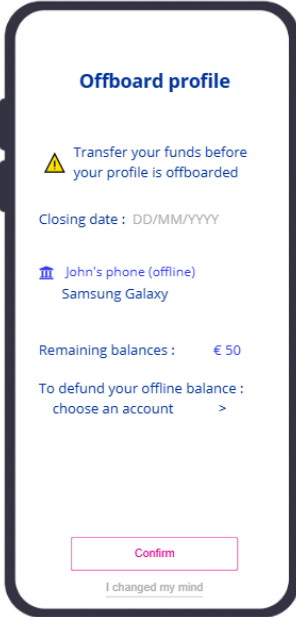
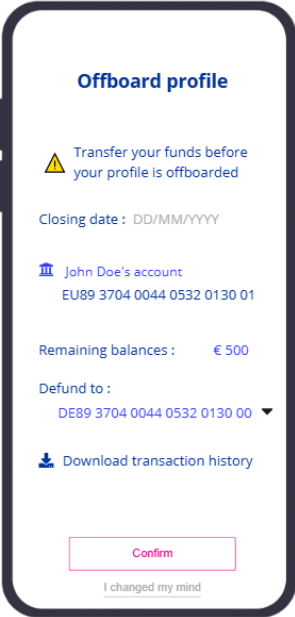
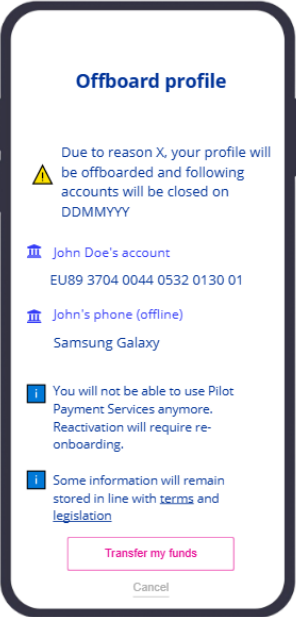
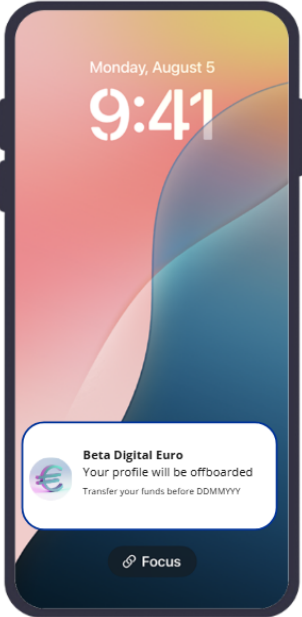
End-to-End Process Flows

AM-3.1 Offboarding of an Individual End-User (online and offline)

AM 3.B – Offboarding by Pilot PSP Wireframe

Offboarding

Confirmation



AM 3.B – Offboarding by Pilot PSP

Minimum UX Requirements

Offboarding

- Pilot PSPs shall notify End-Users of the offboarding initiated by the Pilot PSP.
- The notification shall include a call-to-action prompting End-Users to transfer remaining funds before the offboarding date.
- Pilot PSPs shall display the End-User profile details (e.g., name) when initiating the offboarding process to indicate which End-User profile will be offboarded.
- Pilot PSPs shall provide a reason for the End-User profile offboarding.
- Pilot PSPs shall use neutral, non-specific language for offboarding reasons related to fraud, risk, or security.
- Pilot PSPs shall provide a date for End-User profile offboarding.
- Pilot PSPs shall inform End-Users about the consequences of offboarding, including the closure of Beta Digital Euro payment accounts and the unlinking of User Aliases, the inability to make or receive future payments, the requirement to onboard again to regain access to services, the transfer of remaining funds to the selected defunding account, and the retention of certain information in accordance with applicable legislation and the Beta Digital Euro Pilot terms.
- Pilot PSPs shall display the remaining balances of all accounts to be closed.
- For online, Pilot PSPs shall allow End-Users to select a defunding account for the transfer of remaining funds, either by entering an IBAN in free-text format or by selecting one of the linked IBANs.
- For offline devices, Pilot PSPs shall inform End-Users of the available options for transferring any remaining funds before offboarding.
- Pilot PSPs shall request explicit confirmation of the details set for offboarding of their End-User profile.
- Pilot PSPs shall require authentication to confirm any configurable details before executing backend processes related to offboarding of the End-User profile. If no configurable details are set by the End-User, the offboarding process initiated by the Pilot PSP may proceed without End-User authentication.
- Pilot PSPs shall give End-Users the option to retain their transaction history.

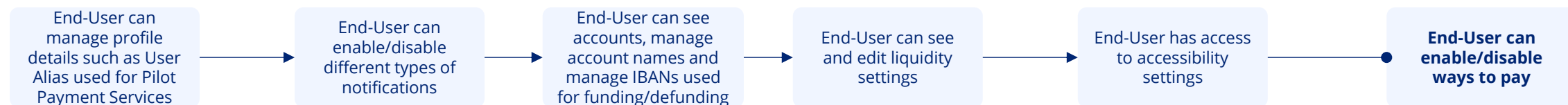
Confirmation

- Pilot PSPs shall provide confirmation of offboarding and defunding.
- Pilot PSPs shall deactivate all frontend solutions and Beta Digital Euro payment instruments linked to the offboarded End-User profile.
- Pilot PSPs shall make sure End-Users are logged out from all Pilot Payment Services.

AM 4.A – Lifecycle management

User Journey

Transfer mechanism		User device/ hardware				User interface			Data exchange technology			
online	offline	mobile	physical card	wearable	computer	physical card	mobile app	online interface	chip contact	NFC	QR-code	Internet (User Alias/URL)
✓	✗	✓	✗	✗	✗	✗	✓	✗				



Example

An Individual End-User wants to update some of the settings related to her Pilot Payment Services. She opens her mobile app and searches for the relevant setting to update. Some updates may require authentication.

End-to-End Process Flows

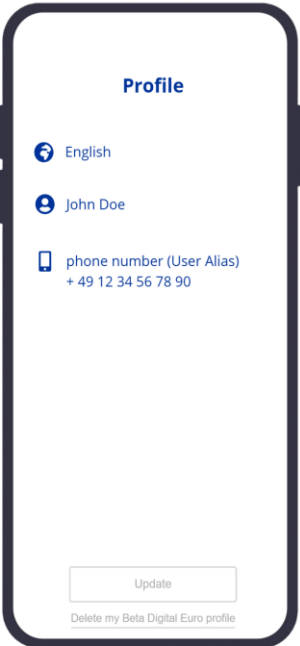
- AM-4.1.2 Individual End-User amendments (Liquidity Management settings)
- AM-4.1.3 Individual End-User amendments (online notification preferences)
- AM-4.1.4 Individual End-User amendments (offline notification preferences)
- AM-4.1.5 Individual End-User amendments (un-blocking Beta Digital Euro payment instrument(s))

- AM-4.1.7 Individual End-User amendments (de-)activate Beta Digital Euro payment instrument(s)
- AM-4.1.8 Individual End-User amendments (user data)
- AM-4.1.9 End-User (Individual) amendments (User Alias registration)

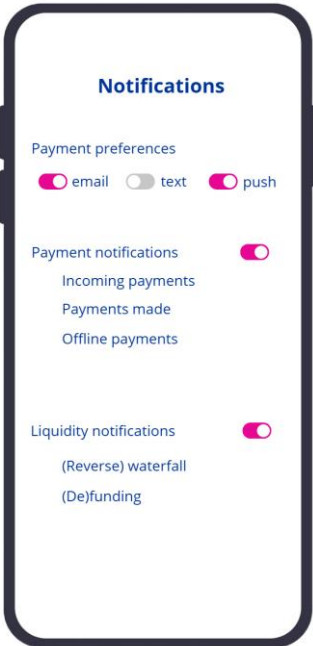
AM 4.A – Lifecycle management (part 1)

Wireframe

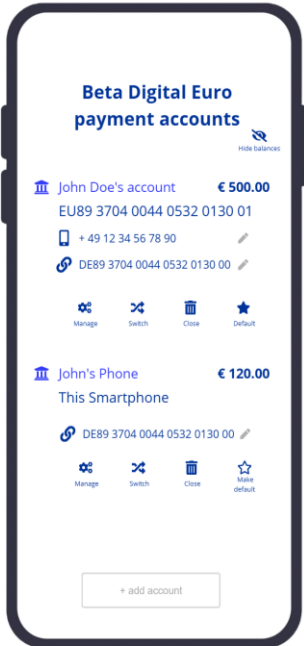
User profile



Notifications



Beta Digital Euro payment accounts



AM 4.A – Lifecycle management (part 1)

Minimum UX Requirements

User profile

- Pilot PSPs shall allow End-Users to select their preferred language equivalent to the language options available for other means of payment.
- **[Optional]** The selected language may be applied after confirmation, without requiring a restart of the app.
- Pilot PSPs shall allow End-Users to manage their personal data linked to the Beta Digital Euro payment account, including their name and any data eligible for use as a User Alias (e.g., phone number).

Notifications

- Pilot PSPs shall allow End-Users to opt for notifications equivalent to those offered for other means of payment.
- Pilot PSPs shall give End-Users the option to receive notifications for payment events (e.g., successful payments, failed payments, scheduled payments, and payment requests).
- Pilot PSPs shall give End-Users the option to receive notifications for liquidity events (e.g., reverse waterfall, waterfall, funding, and defunding).
- Pilot PSPs shall label notifications as related to the Pilot Payment Services.

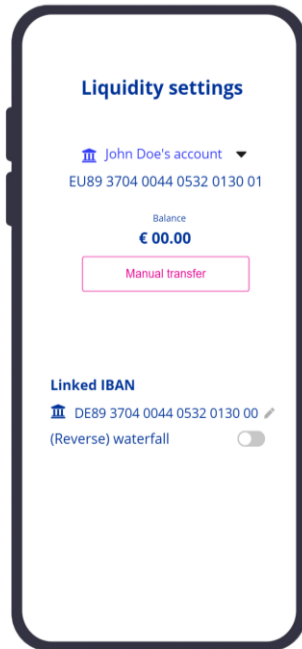
Beta Digital Euro payment accounts

- Pilot PSPs shall display all accounts linked to the frontend solution.
- For online, Pilot PSPs shall display the linked User Alias, which End-Users can change.
- For online, Pilot PSPs shall display the linked IBAN, which End-Users can change.
- For offline devices, Pilot PSPs shall display the linked IBAN or DEAN, which End-Users can change.
- Pilot PSPs shall give End-Users the option to close Beta Digital Euro payment accounts.
- Pilot PSPs shall give End-Users the option to set a user-defined nickname (account identifier), which shall be displayed alongside the DEAN or the offline device identifier to support End-User recognition and clarity.
- Pilot PSPs shall allow End-Users to select a default Beta Digital Euro payment account for initiating payments.

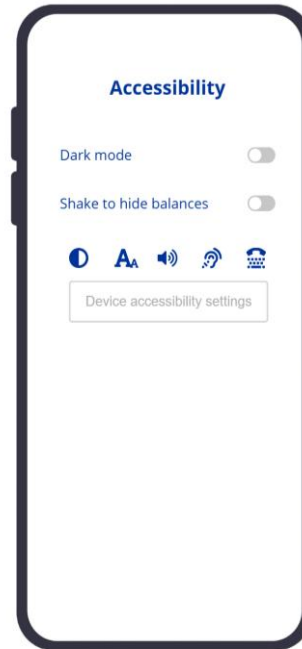
AM 4.A – Lifecycle management (part 2)

Wireframe

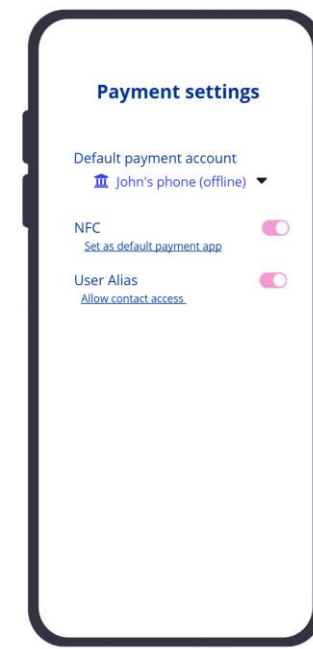
Liquidity



Accessibility



Payment



AM 4.A – Lifecycle management (part 2)

Minimum UX Requirements

Liquidity

- Pilot PSPs shall display for which Beta Digital Euro payment account the liquidity settings apply.
- Pilot PSPs shall indicate the IBAN linked to the Beta Digital Euro payment account in the liquidity settings section.
- If an IBAN is linked, Pilot PSPs shall allow End-Users to enable or disable waterfall and reverse waterfall.
- If no IBAN is linked, Pilot PSPs shall disable waterfall and reverse waterfall and inform End-Users that an IBAN shall be linked before these functionalities can be enabled.
- For offline devices, Pilot PSPs shall disable waterfall and reverse waterfall options and inform End-Users that these functionalities are not available for offline devices.
- Pilot PSPs shall allow End-Users to make a one-off manual top-up or withdrawal.
- **[Optional]** The balance of the Beta Digital Euro payment account may be displayed in the liquidity settings section.

Accessibility

- Pilot PSPs shall provide a link to the accessibility settings of the frontend solution.
- **[Optional]** Pilot PSPs may display which accessibility settings are supported for Pilot Payment Services within the frontend solution.
- **[Optional]** Pilot PSPs may offer a temporary hide option for account balances.
- **[Optional]** Pilot PSPs may offer a dark mode option.

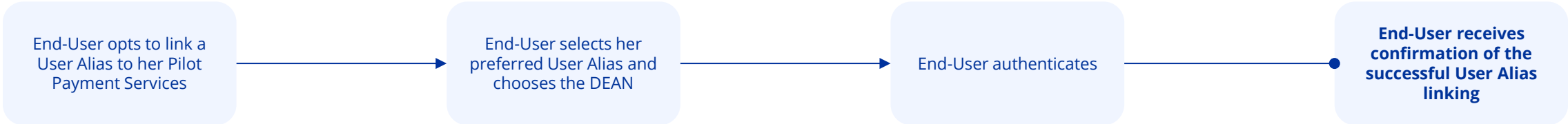
Payment

- Pilot PSPs shall allow End-Users to select a default account for initiating payments.
- Pilot PSPs shall indicate which account is currently set as the default payment account for initiating payments.
- Pilot PSPs shall provide links to the relevant device settings used for specific use cases (e.g., contacts for User Alias, NFC antenna for NFC).
- **[Optional]** Pilot PSPs may request access to device settings used for specific use cases (e.g., contacts for User Alias, NFC antenna for NFC) at the moment End-Users initiate the use case for the first time.
- **[Optional]** Payers may be able to refuse incoming payment requests by blocking Payees based on their DEAN.
- **[Optional]** Pilot PSPs may allow End-Users to enable or disable NFC payments for all Beta Digital Euro payment instruments linked to their End-User profile.

AM 4.B – User Alias linking

User Journey

Transfer mechanism			User device/ hardware			User interface			Data exchange technology			
online	offline	mobile	physical card	wearable	computer	physical card	mobile app	online interface	chip contact	NFC	QR-code	Internet (User Alias/URL)
✓	✗	✓	✗	✗	✗	✗	✓	✗				



Example

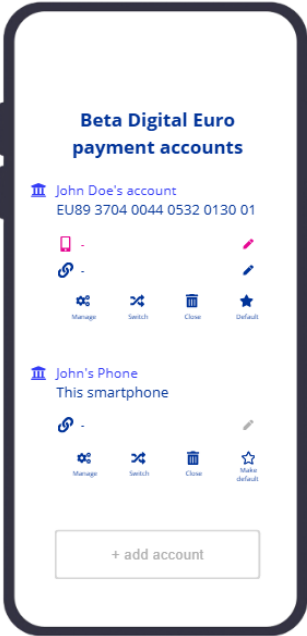
The Individual End-User wishes to start using her User Alias to simplify Beta Digital Euro transactions. She opens the mobile app and selects in the settings to link her User Alias to a DEAN. She can select an existing phone number registered at the Pilot PSP and chooses the desired DEAN to link it to. She confirms and authenticates. Shortly after, she receives a confirmation of successfully linking her User Alias to the Pilot Payment Services.

End-to-End Process Flows

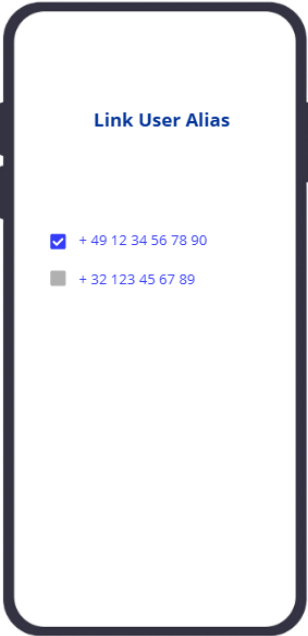
AM-4.1.9 Individual End-User amendments (User Alias registration)

AM 4.B – User Alias linking Wireframe

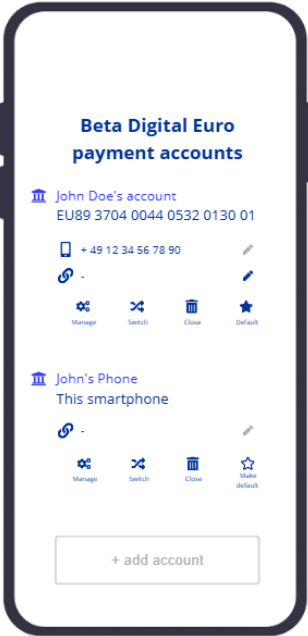
Settings



Linking



Confirmation



AM 4.B – User Alias linking

Minimum UX Requirements

Settings

- Pilot PSPs shall display the Beta Digital Euro payment account for which User Alias linking is being initiated.
- Pilot PSPs shall allow End-Users to link a User Alias to an account.

Linking

- Pilot PSPs shall display as eligible for linking only those User Aliases for which the existence and ownership have been verified.
- **[Optional]** During User Alias linking, the User Alias may be prefilled if the User Alias has already been pre-registered with the Participant, whereby the pre-filled User Alias can be changed.
- In the case of a phone number User Alias, the need for a country code shall be displayed to Payers.
- Pilot PSPs shall require authentication before executing backend processes related to linking of the User Alias.
- Pilot PSPs shall inform End-Users that the User Alias registration for Pilot Payment Services is solely for transaction and authentication purposes and will never be used for commercial purposes.

Confirmation

- Pilot PSPs shall display a confirmation that the User Alias has been successfully linked.

AM 4.C – User Alias unlinking User Journey

Transfer mechanism			User device/ hardware			User interface			Data exchange technology			
online	offline	mobile	physical card	wearable	computer	physical card	mobile app	online interface	chip contact	NFC	QR-code	Internet (User Alias/URL)
✓	✗	✓	✗	✗	✗	✗	✓	✗				



Example

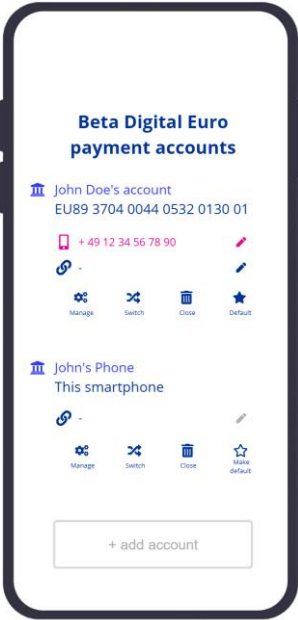
The End-User wishes to delete or unlink an existing User Alias. She opens the mobile app and selects to delete a User Alias. She chooses the User Alias to remove, confirms and authenticates. Thereafter, she receives a confirmation of successful User Alias deletion.

End-to-End Process Flows

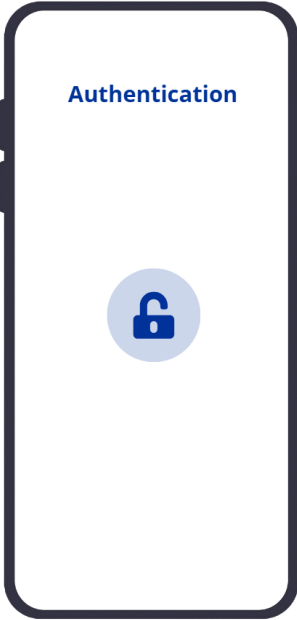
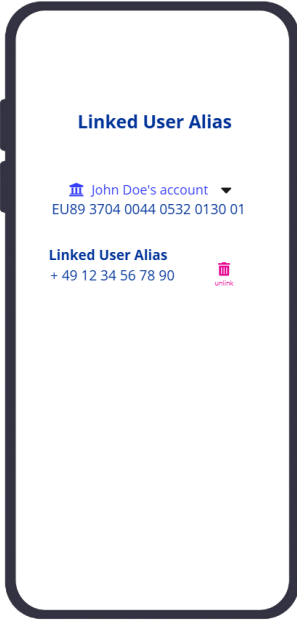
AM-4.1.9 Individual End-User amendments (User Alias registration)

AM 4.C – User Alias unlinking Wireframe

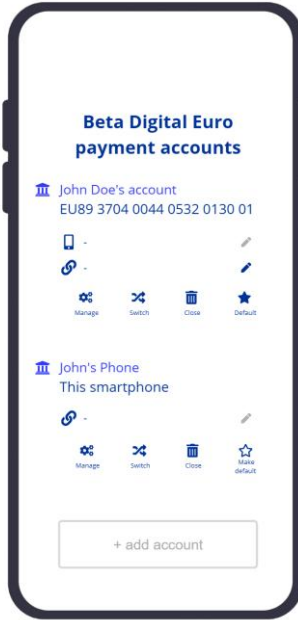
Settings



Unlinking



Confirmation



AM 4.C – User Alias unlinking

Minimum UX Requirements

Settings

- Pilot PSPs shall display the Beta Digital Euro payment account for which the User Alias unlinking is being initiated.

Unlinking

- Pilot PSPs shall allow End-Users to unlink the User Alias from the selected Beta Digital Euro payment account.
- **[Optional]** Pilot PSPs may allow End-Users to link a new User Alias while unlinking the active User Alias in a single action.
- Pilot PSPs shall require authentication before executing backend processes related to unlinking of the User Alias.

Confirmation

- Pilot PSPs shall display a confirmation that the User Alias has been successfully unlinked.

AM 4.D – IBAN linking

User Journey

Transfer mechanism		User device/ hardware				User interface			Data exchange technology			
online	offline	mobile	physical card	wearable	computer	physical card	mobile app	online interface	chip contact	NFC	QR-code	Internet (User Alias/URL)
✓	✗	✓	✗	✗	✗	✗	✓	✗				



Example

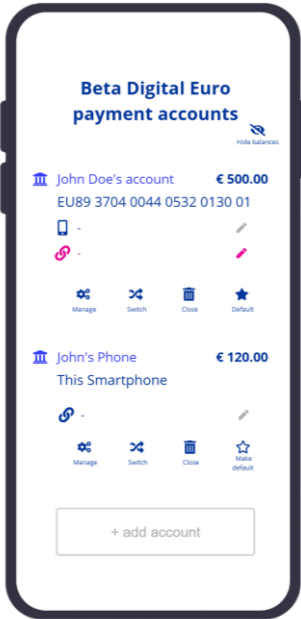
The Individual End-User decides that she would like to link her holdings to a commercial bank money account at her Pilot PSP to conveniently activate automated (de)funding and (reverse) waterfall functionalities. She selects her Beta Digital Euro payment account, chooses an IBAN to link and authenticates to confirm.

End-to-End Process Flows

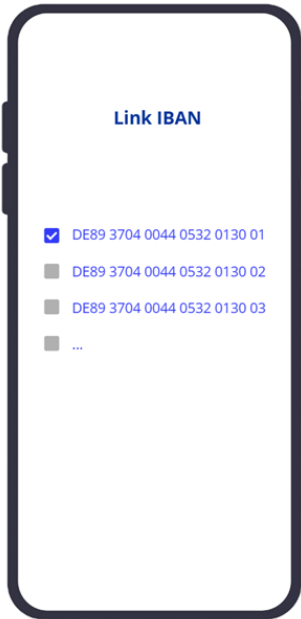
AM-4.1.1 Individual End-User amendments (account linkage)

AM 4.D – IBAN linking Wireframe

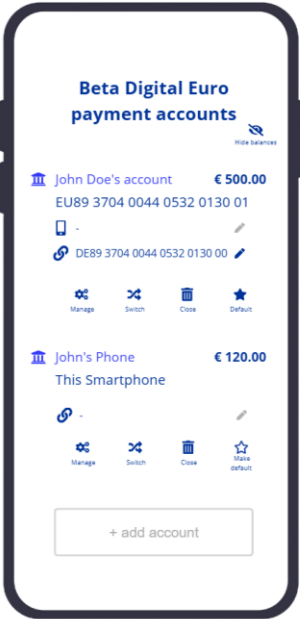
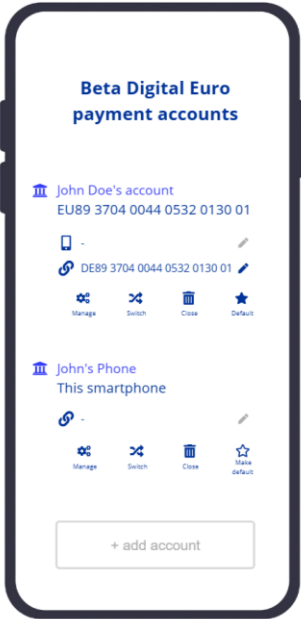
Settings



Linking



Confirmation



AM 4.D – IBAN linking

Minimum UX Requirements

Settings

- Pilot PSPs shall display the Beta Digital Euro payment account for which IBAN linking is being initiated.

Linking

- Pilot PSPs shall display as eligible for linking only those IBANs for which the existence and ownership have been verified.
- Pilot PSPs shall allow End-Users to select only one IBAN to link per Beta Digital Euro payment account.
- Pilot PSPs shall require authentication before executing backend processes related to the linking of the IBAN.
- **[Optional]** Pilot PSPs may allow End-Users to activate waterfall or reverse waterfall for this IBAN in a single action.

Confirmation

- Pilot PSPs shall display a confirmation that the IBAN has been successfully linked.

AM 4.E – IBAN unlinking

User Journey

Transfer mechanism			User device/ hardware			User interface			Data exchange technology			
online	offline	mobile	physical card	wearable	computer	physical card	mobile app	online interface	chip contact	NFC	QR-code	Internet (User Alias/URL)
✓	✗	✓	✗	✗	✗	✗	✓	✗				



Example

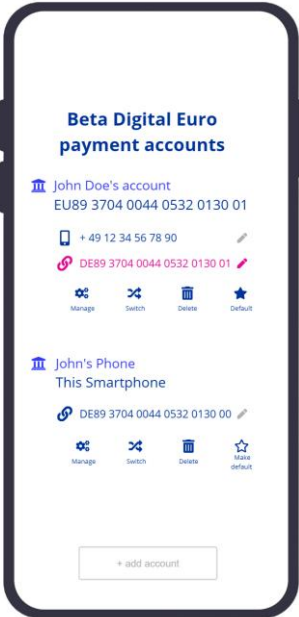
The Individual End-User wants to unlink her IBAN from her Beta Digital Euro payment account. If she unlinks an IBAN that is used to perform automated (de-)funding or (reverse) waterfall functionalities, she gets notified and asked if she wants to link another IBAN to ensure continuation of activated functionalities. She decides in this case to fully unlink and authenticates to confirm. She receives a confirmation notification of successful unlinking.

End-to-End Process Flows

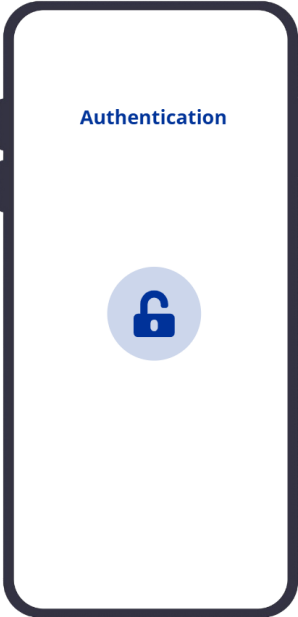
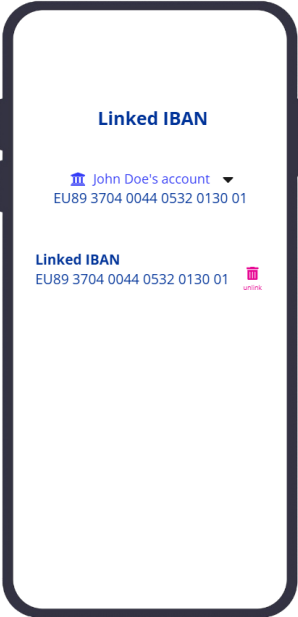
AM-4.1.1 Individual End-User amendments (account linkage)

AM 4.E – IBAN unlinking Wireframe

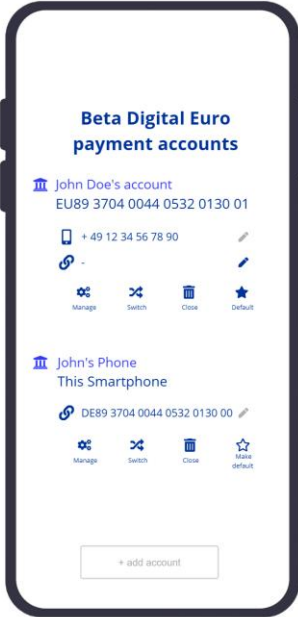
Settings



Unlinking



Confirmation



AM 4.E – IBAN unlinking

Minimum UX Requirements

Settings

- Pilot PSPs shall display the Beta Digital Euro payment account for which the IBAN unlinking is being initiated.

Unlinking

- Pilot PSPs shall allow End-Users to unlink the IBAN from the selected Beta Digital Euro payment account.
- **[Optional]** Pilot PSPs may allow End-Users to link a new IBAN while unlinking the existing one in a single action.
- Pilot PSPs shall require authentication before executing backend processes related to the unlinking of the IBAN.
- Pilot PSPs shall inform End-Users that the waterfall and reverse waterfall will be disabled when an IBAN is unlinked.

Confirmation

- Pilot PSPs shall display a confirmation that the IBAN has been successfully unlinked.

AM 4.F – Account blocking

User Journey

Transfer mechanism		User device/ hardware				User interface			Data exchange technology			
online	offline	Mobile	physical card	wearable	computer	physical card	mobile app	online interface	chip contact	NFC	QR-code	Internet (User Alias/URL)
✓	✓	✓	✗	✗	✗	✗	✓	✗				



Example

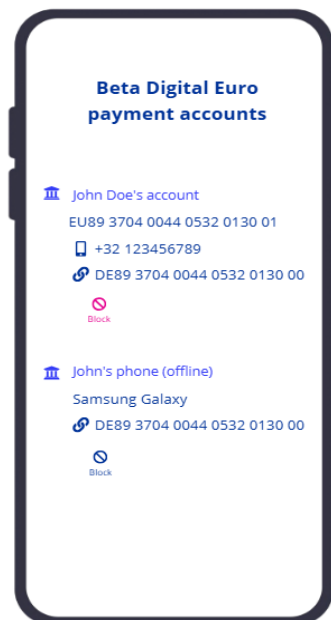
The Individual End-User suspects fraudulent activity and wishes to block Beta Digital Euro payments to avoid potential theft of money. She opens her mobile app and opens her account settings. She selects the account to block and confirms by providing an authentication. She receives a confirmation that account is blocked.

End-to-End Process Flows

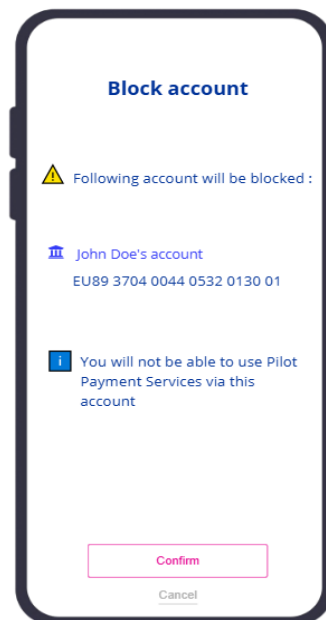
AM-4.1.6 Individual End-User amendments (un)blocking Beta Digital Euro payment account

AM 4.F – Account blocking Wireframe

Settings



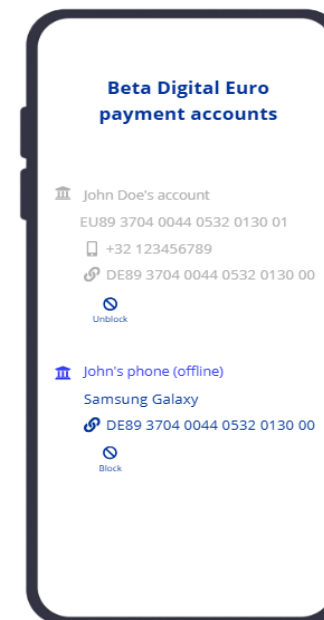
Blocking



Authentication



Confirmation



AM 4.F – Account blocking

Minimum UX Requirements

Settings

- Pilot PSPs shall display the Beta Digital Euro payment account(s) which can be blocked.

Blocking

- Pilot PSPs shall inform End-Users about the consequences of blocking a Beta Digital Euro payment account, including the inability to make or receive future payments and the requirement to unblock again to regain access to the Beta Digital Euro payment account.
- Pilot PSPs shall request explicit confirmation of End-Users before blocking the Beta Digital Euro payment account.
- Pilot PSPs shall require authentication before executing backend processes related to the blocking of an account.

Confirmation

- Pilot PSPs shall display a confirmation that the Beta Digital Euro payment account has been successfully blocked.

AM 4.G – Account unblocking

User Journey

Transfer mechanism		User device/ hardware				User interface			Data exchange technology			
online	offline	Mobile	physical card	wearable	computer	physical card	mobile app	online interface	chip contact	NFC	QR-code	Internet (User Alias/URL)
✓	✓	✓	x	x	x	x	✓	x				



Example

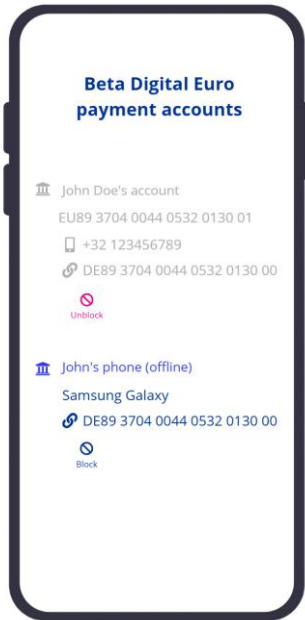
After being reassured no suspicious activity is ongoing, the End-User wishes to unblock her Beta Digital Euro payment account again. She opens her mobile app and chooses her account settings. Here she selects to unblock the account again and confirms it by providing an authentication. She immediately receives a confirmation that she can make payments again.

End-to-End Process Flows

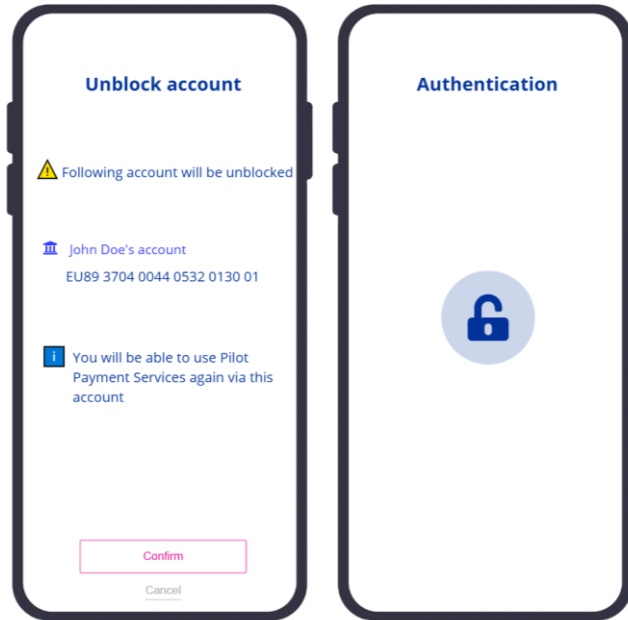
AM-4.1.6 Individual End-User amendments (un-blocking Beta Digital Euro payment account)

AM 4.G – Account unblocking Wireframe

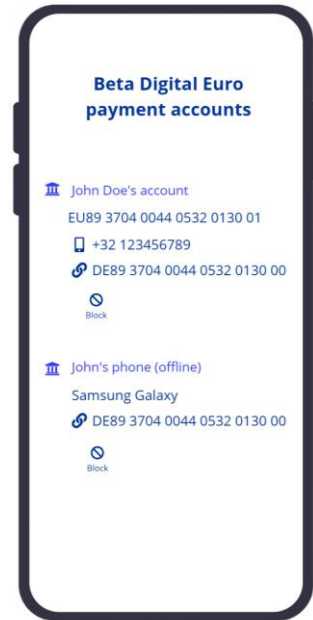
Settings



Unblocking



Confirmation



AM 4.G – Account unblocking

Minimum UX Requirements

Settings

- Pilot PSPs shall display the blocked Beta Digital Euro payment account which can be unblocked.

Unblocking

- Pilot PSPs shall inform End-Users about the consequences of unblocking a Beta Digital Euro payment account, including the ability to make or receive future payments again.
- Pilot PSPs shall request explicit confirmation of End-Users before unblocking the Beta Digital Euro payment account.
- Pilot PSPs shall require authentication before executing backend processes related to the unblocking of an account

Confirmation

- Pilot PSPs shall display a confirmation that the Beta Digital Euro payment account has been successfully unblocked.



EUROPEAN CENTRAL BANK

EUROSYSTEM

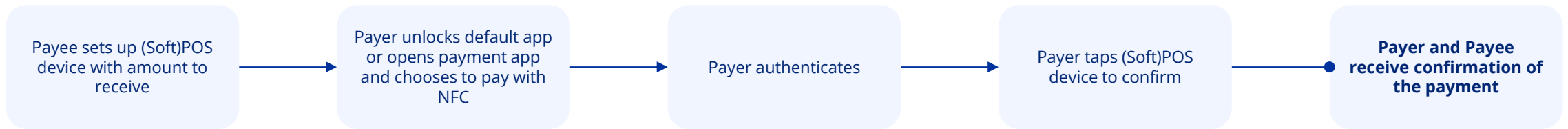
4

Transaction Management

User Journeys, wireframes and
Minimum UX Requirements

TM 1.A – P2B SoftPOS payment via NFC (online, mobile) User Journey

Transfer mechanism			User device/ hardware			User interface			Data exchange technology			
online	offline	mobile	physical card	wearable	computer	physical card	mobile app	online interface	chip contact	NFC	QR-code	Internet (User Alias/URL)
✓	✗	✓	✗	✗	✗	✗	✓	✗	✗	✓	✗	✗



Example

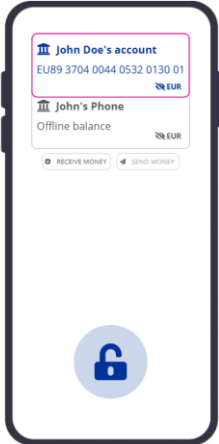
An Individual End-User hires a gardener and wishes to pay them directly via Beta Digital Euro. Since the gardener works on location, he used a mobile phone as (Soft)POS. The gardener sets up the device with the payment amount. The Individual End-User unlocks or opens her payment app and chooses to pay via NFC. She authenticates and confirms the payment by tapping her mobile device on the (Soft)POS. A payment confirmation is shown on both devices. As it is an online payment, the transaction is added to the Individual End-User’s transaction history.

End-to-End Process Flows

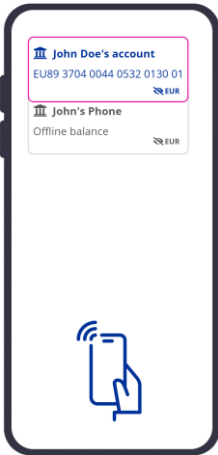
TM-1.6 Online contactless (Soft)POS payment with mobile device - same Pilot PSP

TM 1.A – P2B (Soft)POS payment via NFC (online, mobile) Wireframe

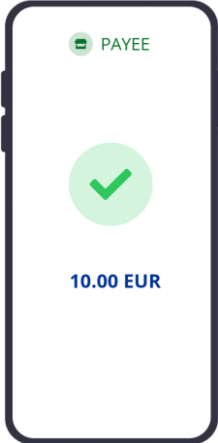
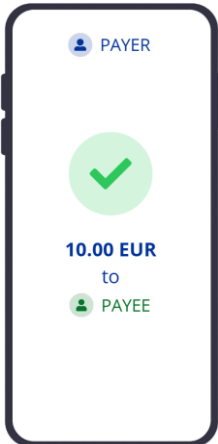
Setup & initiation



Consent & authentication



Confirmation



TM 1.A – P2B (Soft)POS payment via NFC (online, mobile)

Minimum UX Requirements

Setup & initiation

- Pilot PSP shall present the Beta Digital Euro at an equivalent level to other means of payment.
- Pilot PSPs shall make sure Payees' frontend solution indicates that the Beta Digital Euro is accepted equivalent to other means of payment.
- Pilot PSPs shall make sure Payees' frontend solution indicates that NFC payments are accepted.
- Pilot PSPs shall make sure Payees' frontend solution displays the transaction amount before Payers tap their device.
- **[Optional]** Payees' frontend solution may display Payee name.
- Pilot PSPs shall make sure Payees' frontend solution indicates readiness to receive a payment.
- Pilot PSPs shall allow End-Users to respond to a payment request in no more steps than required for other means of payment, with a maximum of two steps after opening the frontend solution.

Consent & authentication

- Payers may not need to provide consent and authentication after tapping for transactions, depending on the requirements outlined in legislation, as well as its own setups for this means of payment, such as transaction amount, recurrence, and channel.
- Payers shall be allowed to tap their device only once during the NFC transaction.
- Pilot PSPs shall require authentication before executing backend processes related to NFC transaction.
- Payers shall be instructed by the Pilot PSPs to tap their device, and no personal information shall be displayed during this instruction.

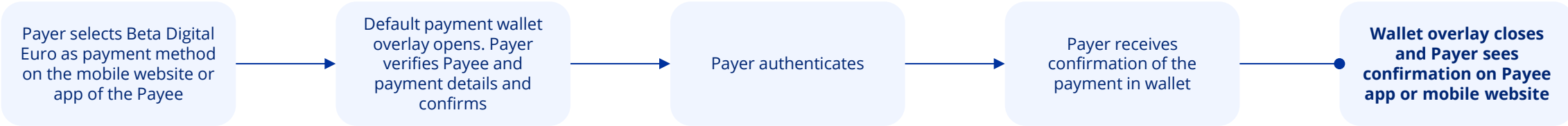
Confirmation

- Both Payers' and Payees' frontend solutions shall display the transaction result as either successful or unsuccessful.
- Pilot PSPs shall allow Payers to review the transaction result, including the amount, Payee, any message if applicable, within a maximum of one additional step after the confirmation screen (e.g., either on the confirmation screen or via a link to the transaction history for online payments).
- Payers' device shall provide an audible and haptic signal when the payment has been successfully completed, equivalent to the confirmation used for other digital means of payment. The signal shall respect the device's accessibility and sound settings.
- The online Beta Digital Euro payment shall be added to the transaction history of the Payer. No details are added for offline payments.

TM 2.A – M-commerce SEAR seamless authentication (online, mobile)

User Journey

Transfer mechanism			User device/ hardware			User interface			Data exchange technology			
online	offline	mobile	physical card	wearable	computer	physical card	mobile app	online interface	chip contact	NFC	QR-code	Internet (User Alias/URL)
✓	x	✓	x	x	x	x	✓	x	x	x	x	✓



Example

An Individual End-User buys a new jacket in the app of her favourite retailer. Since she has a Beta Digital Euro-supporting payment app set as default payment app on her device, she just needs to select Beta Digital Euro as payment method upon checkout. The default payment app overlay screen slides open from the bottom, and the Individual End-User confirms the payment with biometrics. A success checkmark appears and the overlay closes. The Business End-User’s app displays a confirmation message.

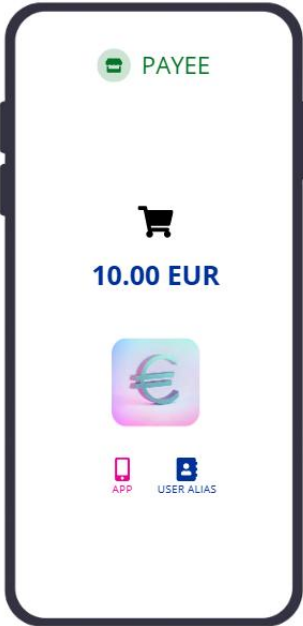
End-to-End Process Flows

TM-2.4 M-Commerce payment (in-app)

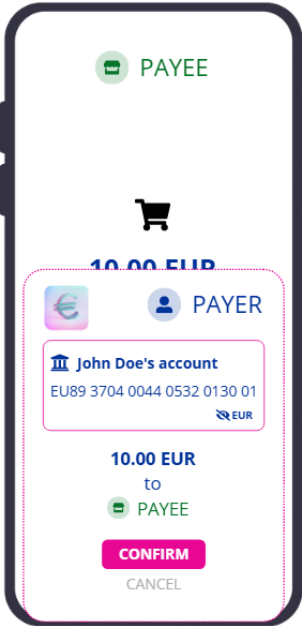
TM 2.A – M-commerce SEAR seamless authentication (online, mobile)

Wireframe

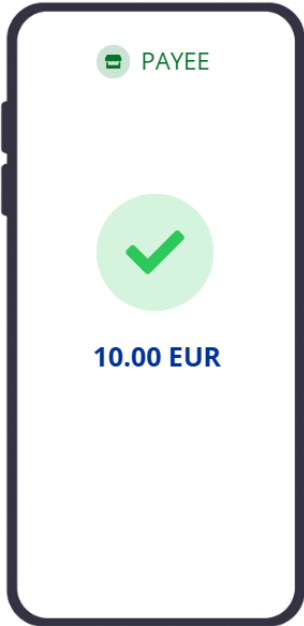
Setup & initiation



Consent & authentication



Confirmation



TM 2.A – M-commerce SEAR seamless authentication (online, mobile)

Minimum UX Requirements

Setup & initiation

- Payees' checkout page shall present the Beta Digital Euro at an equivalent level to other means of payment.
- Payees' checkout page shall display the amount and Payee name.
- Pilot PSPs shall inform Payers why offline Beta Digital Euro is not available for this transaction if offline functionalities are visible in the frontend solution.

Consent & authentication

- **[Optional]** If the Pilot PSPs' frontend solution is set as the default contactless app by the End-User, the Pilot PSP may present an overlay (wallet overlay) that slides over the active screen to facilitate the payment.
- Pilot PSPs shall ensure that the consent screen within the overlay displays the amount, Payee, and the means of payment (Beta Digital Euro), if supported by the operating system.
- **[Optional]** Pilot PSPs may ensure that the Beta Digital Euro branding is visible in the overlay, if supported by the operating system.

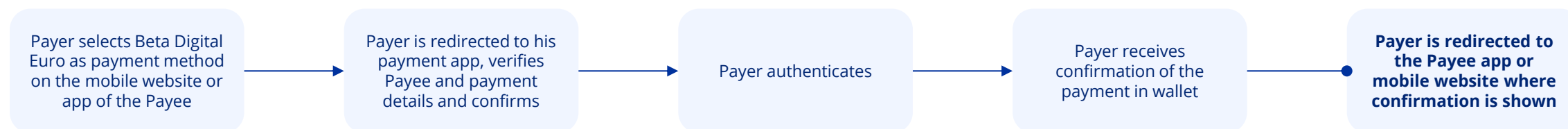
Confirmation

- Both Payers' and Payees' frontend solutions shall display the transaction result as either successful or unsuccessful.
- The transaction result shall prompt Payers to return to the Payees' frontend solution if they are not redirected automatically and if supported by the operating system.
- Pilot PSPs shall allow Payers to review the transaction result, including the amount, Payee, any message if applicable, either on the confirmation screen or via the transaction history in their Beta Digital Euro frontend solution.

TM 2.B – M-commerce app-to-app (online, mobile)

User Journey

Transfer mechanism			User device/ hardware			User interface			Data exchange technology			
online	offline	mobile	physical card	wearable	computer	physical card	mobile app	online interface	chip contact	NFC	QR-code	Internet (User Alias/URL)
✓	✗	✓	✗	✗	✗	✗	✓	✗	✗	✗	✗	✓



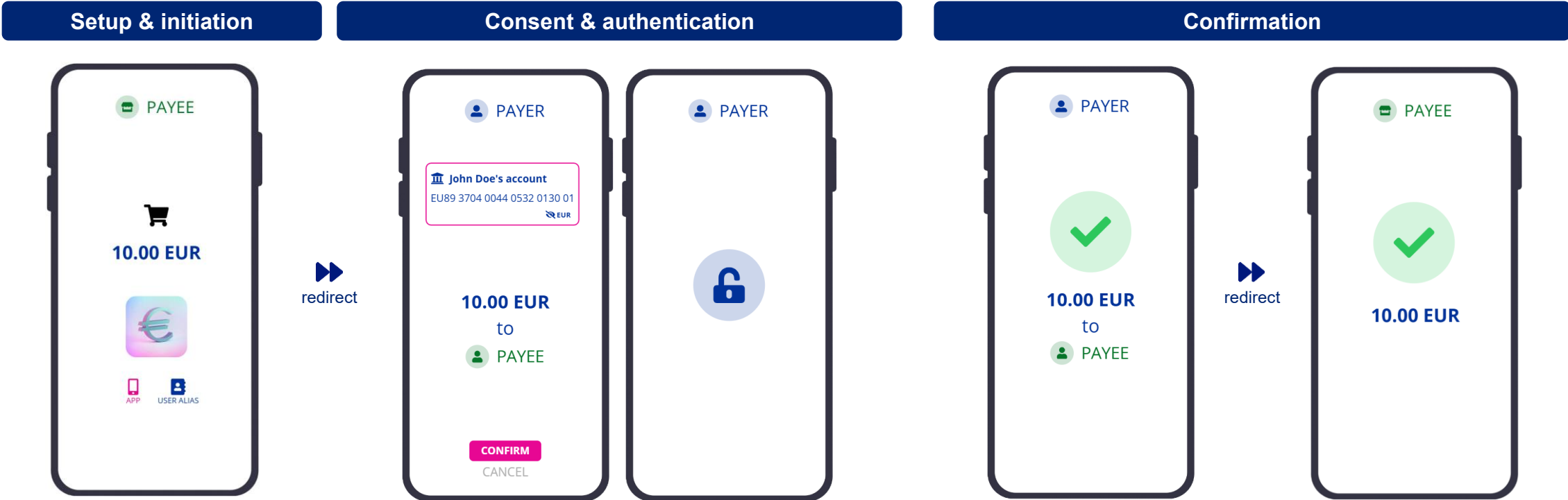
Example

An Individual buys a new sweater in the app of her preferred retailer. On the checkout screen she selects to pay with Beta Digital Euro after which she is redirected to her Beta Digital Euro supporting payment app. In her payment app she reviews the payment details, confirms and authenticates. The payment app confirms the successful payment and the Individual is redirected back to the merchant's page where a confirmation message is displayed.

End-to-End Process Flows

TM-2.4 M-Commerce payment (in-app)

TM 2.B – M-commerce app-to-app (online, mobile) Wireframe



TM 2.B – M-commerce app-to-app (online, mobile)

Minimum UX Requirements

Setup & initiation

- Payees' checkout page shall present the Beta Digital Euro at an equivalent level to other means of payment.
- Payees' checkout page shall display the transaction amount.
- Pilot PSPs shall redirect Payers to their Beta Digital Euro-supporting frontend solution through a button, hyperlink, or push notification.
- If redirection takes place for authentication, End-Users shall have the choice to be redirected to their preferred Beta Digital Euro-supporting app.
- Pilot PSPs shall inform Payers when they are being redirected.
- Pilot PSPs shall inform Payers on why offline Beta Digital Euro is not available for this transaction if offline Beta Digital Euro functionalities are visible on the frontend solution.

Consent & authentication

- Payers' frontend solution shall display the consent screen as the initial step after being redirected to the Beta Digital Euro-supporting frontend solution.
- Pilot PSPs shall display the consent screen in the frontend solution through which End-Users authenticate the transaction.
- The consent screen shall display the transaction amount and Payee name.
- Pilot PSPs shall allow Payers to explicitly confirm or reject a payment pending confirmation.

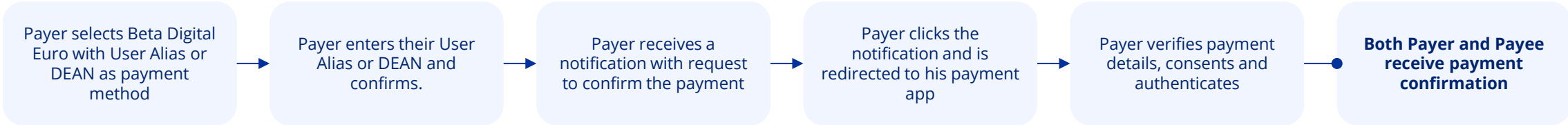
Confirmation

- Both Payers' and Payees' frontend solution shall display the transaction result as (un)successful.
- If automatic redirection to the Payees' environment is not possible, Pilot PSPs shall provide Payers with a clear option (e.g., a button or link) to return to the Payees' environment after the transaction result has been displayed.
- Payers and Payees shall be able to review the transaction result, including the amount, counterparty's name, message if applicable, with a maximum of one step after completing the payment.

TM 2.C – E-commerce via User Alias or DEAN (online, web/mobile)

User Journey

Transfer mechanism			User device/ hardware			User interface			Data exchange technology			
online	offline	mobile	physical card	wearable	computer	physical card	mobile app	online interface	chip contact	NFC	QR-code	Internet (User Alias/URL)
✓	✗	✓	✗	✗	✓	✗	✓	✓	✗	✗	✗	✗



Example

The Individual End-User selects at the checkout page the Beta Digital Euro as payment method and is subsequently required to enter the User Alias or DEAN. She provides her User Alias/DEAN after which she receives a push notification on her smartphone with a request to pay. Optionally, she can provide consent to store her payment details. She clicks on it and the request to pay opens in her payment app. She authenticates the payment and receives a payment confirmation.

End-to-End Process Flows

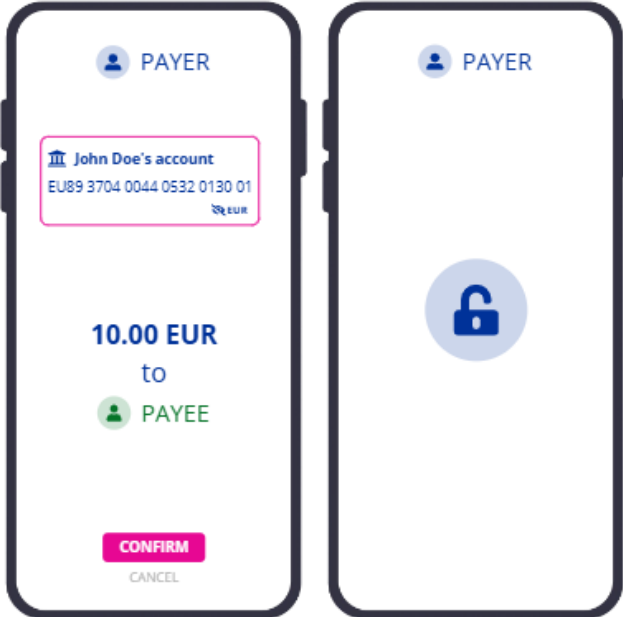
TM-2.2 E-commerce payment with User Alias or DEAN

TM 2.C – E-commerce via User Alias or DEAN (online, mobile) Wireframe

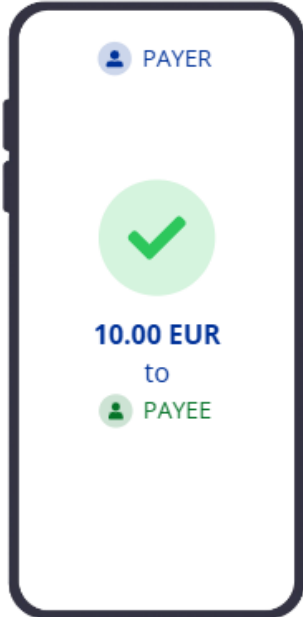
Setup & initiation



Consent & authentication



Confirmation



TM 2.C – E-commerce via User Alias or DEAN (online, web/mobile)

Minimum UX Requirements

Setup & initiation

- Payees' checkout page shall present the Beta Digital Euro at an equivalent level to other means of payment.
- Payees' checkout page shall display the transaction amount and Payee name.
- **[Optional]** User Alias and DEAN may be requested in the same field in the merchant frontend solution.
- The associated DEAN shall not be displayed when User Alias is used for payments.
- A User Alias/DEAN check shall be performed before loading a new screen. For a DEAN, a DEAN structure check shall be performed. For a phone number, a phone structure check shall be conducted.
- In the case of a phone number User Alias, the need for a country code shall be displayed to Payers.
- **[Optional]** Pilot PSPs may allow Payers to request remembering their User Alias/DEAN to facilitate future payments.
- Only the first four and last four characters of the DEAN shall be visible, with the rest masked, when displaying a saved DEAN in the Payees' frontend solution.
- The checkout page shall prompt Payers to open its Beta Digital Euro-supporting frontend solution.
- **[Optional]** Pilot PSPs may allow Payers to return to the previous step while on the redirection page.

Consent & authentication

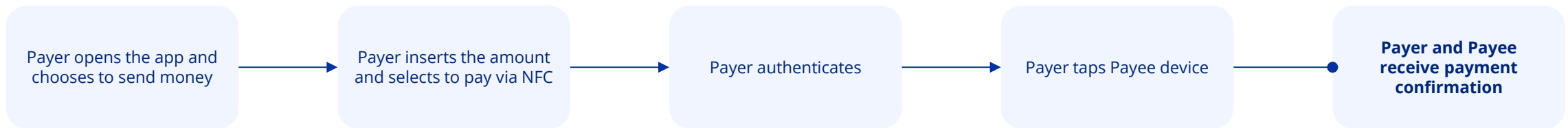
- Pilot PSPs shall notify Payers about a new payment pending confirmation.
- Pilot PSPs shall offer Payers have the option to receive a push notification to confirm a payment pending confirmation.
- Pilot PSPs shall display the consent screen in the frontend solution through which End-Users authenticate the transaction.
- The consent screen shall display the transaction amount, Payee name and origin account.
- Pilot PSPs shall allow Payers to confirm a payment pending confirmation in no more steps than are required for other means of payment, with a maximum of two steps after opening the frontend solution.
- Pilot PSPs shall allow Payers to view and select from all payments pending confirmation.
- Pilot PSPs shall allow Payers to explicitly confirm or reject a payment pending confirmation.
- **[Optional]** Payment pending confirmation may show timer of validity.
- **[Optional]** Only payments pending confirmation that remain valid and actionable may be displayed. Expired or superseded pending requests may not be shown, or Pilot PSPs may offer Payers the option to remove them manually.

Confirmation

- Both Payers' and Payees' frontend solution shall display the transaction result as (un)successful.
- Pilot PSPs shall allow Payers and Payees to review the transaction result, including the amount, counterparty's name, message if applicable, and whether online or offline Beta Digital Euro was used, with a maximum of one step after completing the payment.

TM 3.B – P2P payment via NFC (offline, mobile) User Journey

Transfer mechanism			User device/ hardware			User interface			Data exchange technology			
online	offline	mobile	physical card	wearable	computer	physical card	mobile app	online interface	chip contact	NFC	QR-code	Internet (User Alias/URL)
x	✓	✓	x	x	x	x	✓	x	x	✓	x	x



Example

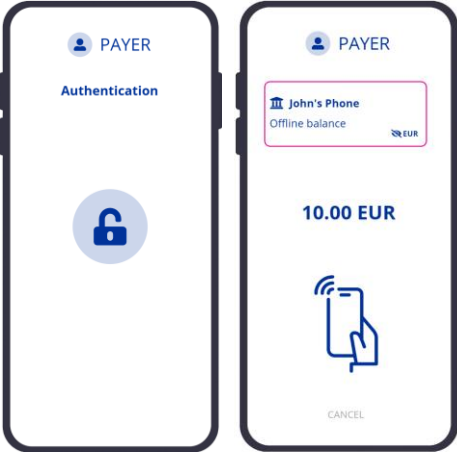
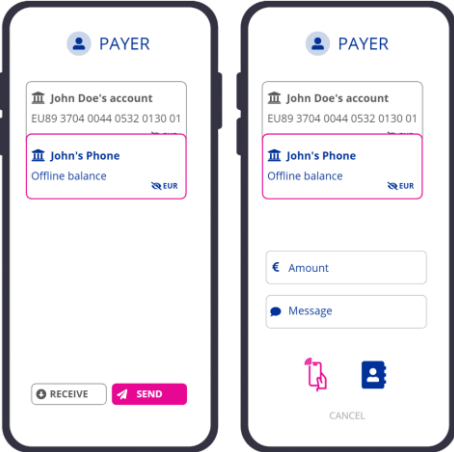
Two friends meet in a train and discuss their friend’s upcoming birthday party. They do not have stable internet connectivity. One of them wants to pay the other one to contribute to their friend’s presents and proposes to pay contactless via the phone. The Payer takes his phone, opens his mobile app and chooses to pay with NFC. After entering the amount, the Payer taps his phone on the Payee’s phone. Both receive a payment confirmation, and the transaction is completed.

End-to-End Process Flows

TM-3.4 Offline contactless P2P payment - mobile device to mobile device

TM 3.B – P2P payment via NFC (offline, mobile) Wireframe

Setup & Initiation Consent & Authentication Confirmation



TM 3.B – P2P payment via NFC (offline, mobile)

Minimum UX Requirements

Setup & Initiation

- Pilot PSPs shall allow Payers to initiate a P2P transaction in no more steps than are required for other means of payment, with a maximum of four steps after opening the frontend solution.
- Pilot PSPs shall allow Payers to select a different payment mode (online or offline) from their default setting for the specific transaction.
- Amount and message are fields that shall be offered to Payers by Pilot PSPs.
- Pilot PSPs shall allow Payers to leave the field message blank.
- **[Optional]** Payers' frontend solution may display the available balance to finalise the payment before confirming the transaction.

Consent & Authentication

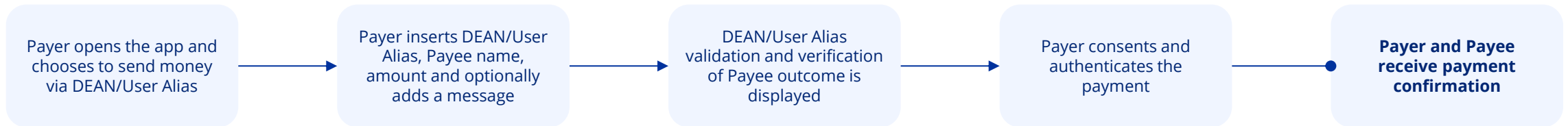
- The consent screen shall display the transaction amount and message if applicable.
- Pilot PSPs shall allow Payers to confirm the transaction details before tapping.
- Pilot PSPs shall instruct Payers to tap their device. No personal information other than the origin account shall be displayed during this instruction.
- Pilot PSPs shall allow Payers to tap their device only once during the transaction.

Confirmation

- Payers' frontend solution after tapping shall not display any personal information.
- Payers' frontend solution shall display the transaction result as (un)successful.
- Pilot PSPs shall allow Payers and Payees to review the transaction result for offline Beta Digital Euro payments, including the amount, message if applicable, with a maximum of one step after completing the payment.
- Pilot PSPs shall not require an additional confirmation step from Payees to accept an offline Beta Digital Euro payment, as acceptance is implied by the act of presenting the device.
- Pilot PSPs shall give Payees the option to receive a notification about the offline Beta Digital Euro transaction result.
- The offline Beta Digital Euro payment is not added to the transaction history.
- Payers' device shall provide an audible and haptic signal when the payment has been successfully completed, equivalent to the confirmation used for other digital means of payment. The signal shall respect the device's accessibility and sound settings.

TM 3.C – P2P payment via User Alias or DEAN (online, mobile) User Journey

Transfer mechanism			User device/ hardware			User interface			Data exchange technology			
online	offline	mobile	physical card	wearable	computer	physical card	mobile app	online interface	chip contact	NFC	QR-code	Internet (User Alias/URL)
✓	✗	✓	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗



Example

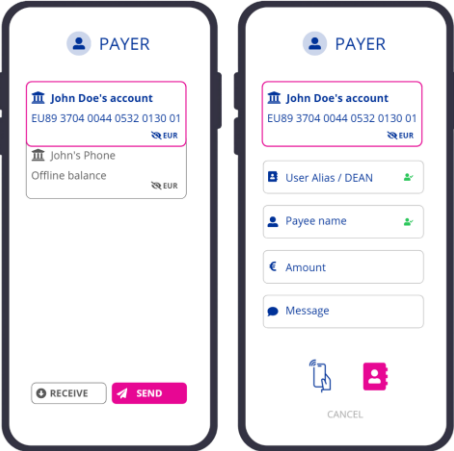
The Individual End-User opens their mobile app and starts a payment to her friend who paid for a gift she wishes to contribute to. She either introduces the User Alias (e.g., phone number) or DEAN of her friend or retrieves it from her contact list and specifies the amount to transfer. She authenticates and confirms the payment. Shortly after, both friends receive payment confirmation.

End-to-End Process Flows

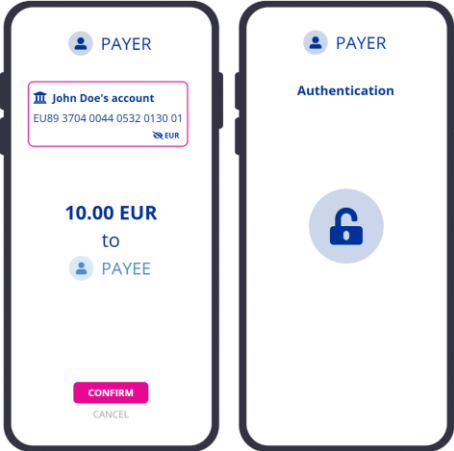
- TM-3.5 P2P payment with User Alias (Payer initiated)
- TM-3.10 P2P Account to account payment with DEAN (Payer initiated) – same PSP

TM 3.C – P2P payment via User Alias or DEAN (online, mobile) Wireframe

Setup & Initiation



Consent & Authentication



Confirmation



TM 3.C – P2P payment via User Alias or DEAN (online, mobile)

Minimum UX Requirements

Setup & Initiation

- Pilot PSPs shall allow Payers to initiate a P2P transaction in no more steps than are required for other means of payment, with a maximum of four steps after opening the frontend solution.
- User Alias/DEAN, amount, Payee name and message are fields that shall be offered to Payers.
- Pilot PSPs shall allow Payers to leave the field message blank.
- **[Optional]** User Alias and DEAN may be requested in the same field in Payers' frontend solution.
- The associated DEAN shall not be displayed when a User Alias is used for payments.
- A User Alias/DEAN check shall be performed before loading a new screen. For a DEAN, a DEAN structure check shall be performed. For a phone number, a phone structure check shall be conducted.
- In the case of a phone number User Alias, the need for a country code shall be displayed to Payers.
- **[Optional]** Payers' frontend solution may display the available balance to finalise the payment before confirming the transaction.
- **[Optional]** Pilot PSPs may allow Payers to use a contact list functionality.
- **[Optional]** Pilot PSPs may allow Payers to clear the contents of a field in a single action.

Consent & Authentication

- Pilot PSPs shall display the consent screen in the frontend solution through which End-Users authenticate the transaction.
- The consent screen shall display the transaction amount, Payee name and message if applicable.

Confirmation

- Payers' frontend solution shall display the transaction result as (un)successful.
- Pilot PSPs shall allow Payers and Payees to review the transaction result, including amount, counterparty's name, message if applicable, and whether online or offline Beta Digital Euro was used, with a maximum of one step after completing the payment.
- Pilot PSPs shall give Payees the option to receive a notification about the transaction result.

TM 7.A – Refund on e/m-commerce (online, mobile) User Journey

Transfer mechanism			User device/ hardware			User interface			Data exchange technology			
online	offline	mobile	physical card	wearable	computer	physical card	mobile app	online interface	chip contact	NFC	QR-code	Internet (User Alias/URL)
✓	✗	✓	✗	✗	✓	✗	✓	✓				



Example

An Individual End-User bought two skirts online and finds out that one does not fit her when she tries it on at home. She sends the one that does not fit back to the shop to receive a partial refund. Shop receives the returned skirt and finds the associated transaction in the system to proceed with the partial refund. Shortly after, she receives a notification on her smartphone confirming her refund.

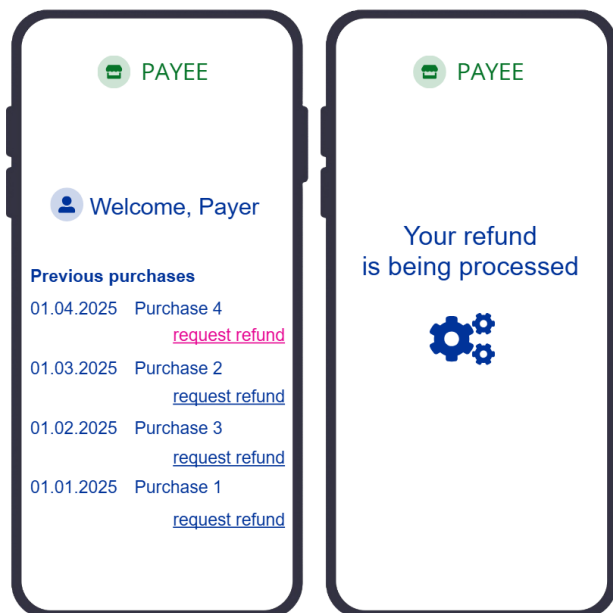
End-to-End Process Flows

TM-7.2 Refund (E-commerce)

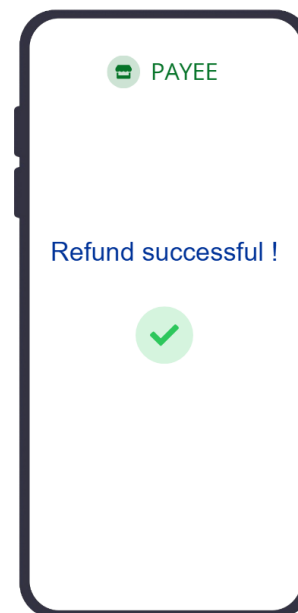
TM 7.A – Refund on e/m-commerce (online, mobile)

Wireframe

Refund request



Confirmation



TM 7.A – Refund on e/m-commerce (online, mobile)

Minimum UX Requirements

Refund request

- Pilot PSPs shall give Payers the option to request a refund to the same Beta Digital Euro payment instrument used for the original payment, where supported by the Business End-User and the Pilot PSP.

Confirmation

- Pilot PSPs shall notify End-Users when a refund has been processed.
- Pilot PSPs shall label notifications as related to the Beta Digital Euro.
- Pilot PSPs shall mark refunds as positive transactions in the transaction history.
- **[Optional]** Pilot PSPs may explicitly label the transaction as “refund” in the notification and transaction history.

TM 8.A – Information display on balance and transactions

User Journey

Transfer mechanism			User device/ hardware			User interface			Data exchange technology			
online	offline	mobile	physical card	wearable	computer	physical card	mobile app	online interface	chip contact	NFC	QR-code	Internet (User Alias/URL)
✓	✓	✓	x	x	x	x	✓	x				

Individual End-Users can see their account balance and transaction log

Example

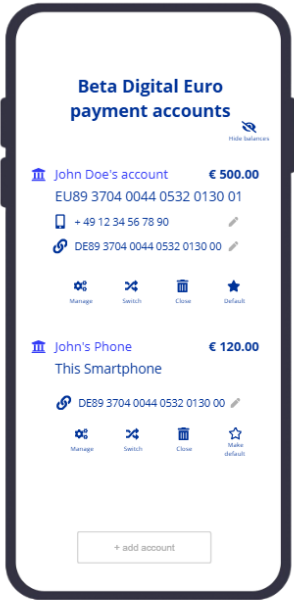
The Individual End-User opens the mobile app to check holdings and transaction history (online only). The transaction history includes funding and defunding activities. In case the Individual End-User has used (reverse) waterfall functionality, both de-/funding to/from the commercial bank money account and the corresponding Beta Digital Euro transaction are listed. The available online holdings, offline holdings and transaction history are displayed in real time. The Individual End-User can scroll through the transaction history, apply filters and may choose to hide balances (e.g. when accessed in public places).

End-to-End Process Flows

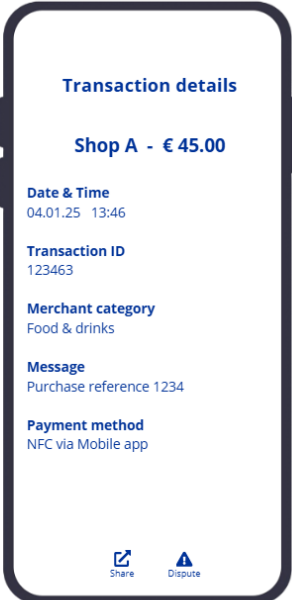
- TM-8.1 Balance enquiry mobile app - online balance
- TM-8.2.2 Offline balance enquiry via app
- TM-8.3 Transaction history mobile app – online only

TM 8.A – Information display on balance and transactions Wireframe

Beta Digital Euro payment accounts



Transaction history



TM 8.A – Information display on balance and transactions

Minimum UX Requirements

Beta Digital Euro payment accounts

- Pilot PSPs shall display the current balance of each account in real time or with the most recent available data.
- **[Optional]** Pilot PSPs may display the available balance, which reflects the current balance minus any reserved amounts.
- If the balance is not up to date, Pilot PSPs shall display a timestamp of the last update.
- Pilot PSPs shall label balances in euros and use a consistent number format (e.g., two decimal places).
- Pilot PSPs shall display an account identifier such as an End-User defined name for Beta Digital Euro payment accounts.
- Pilot PSPs shall indicate whether the displayed balance is online or offline Beta Digital Euro.
- **[Optional]** Pilot PSPs may allow End-Users to hide or mask balances.
- **[Optional]** Pilot PSPs may provide a visual indicator (e.g., colour or icon) when the balance is close to the holding limit.

Transaction history

- Pilot PSPs shall require authentication before displaying the full transaction history.
- Pilot PSPs shall display transaction history for each Beta Digital Euro payment account (identified by its DEAN), equivalent to other means of payment.
- Pilot PSPs shall allow End-Users to filter and search transactions (e.g., by date, amount, Payer, Payee, or type).
- Pilot PSPs shall display future payments (e.g., scheduled or recurring).
- Pilot PSPs shall display reserved payments.
- Pilot PSPs shall include liquidity transactions (e.g., funding, defunding, waterfall) in the transaction history.
- Pilot PSPs shall include, for each transaction the amount, counterparty's name, transaction ID, message if available, date.
- **[Optional]** Pilot PSPs may include the time of day, location, merchant category, Beta Digital Euro payment instrument, transaction type.
- **[Optional]** Pilot PSPs may allow End-Users to share a transaction (e.g., as a PDF).
- Pilot PSPs shall allow End-Users to dispute a transaction from the transaction history.
- Pilot PSPs shall allow End-Users to use the commercial trade name as the Payees' name, if applicable.
- Pilot PSPs shall label Beta Digital Euro payments in the transaction history to distinguish them from other payment methods.
- Offline Beta Digital Euro payments shall not be added to the transaction history.
- Pilot PSPs shall allow End-Users to request an export of the transaction history in an open standardised format.
- **[Optional]** Pilot PSPs may display transactions in reverse chronological order by default.



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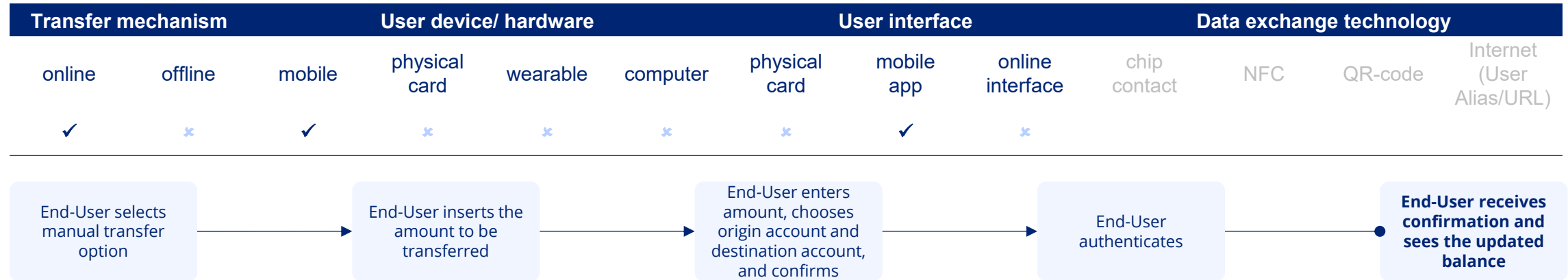
EUROSYSTEM

5

Liquidity Management

User Journeys, wireframes and
Minimum UX Requirements

LM 1.A – Manual funding and defunding between accounts or with IBAN User Journey



Example

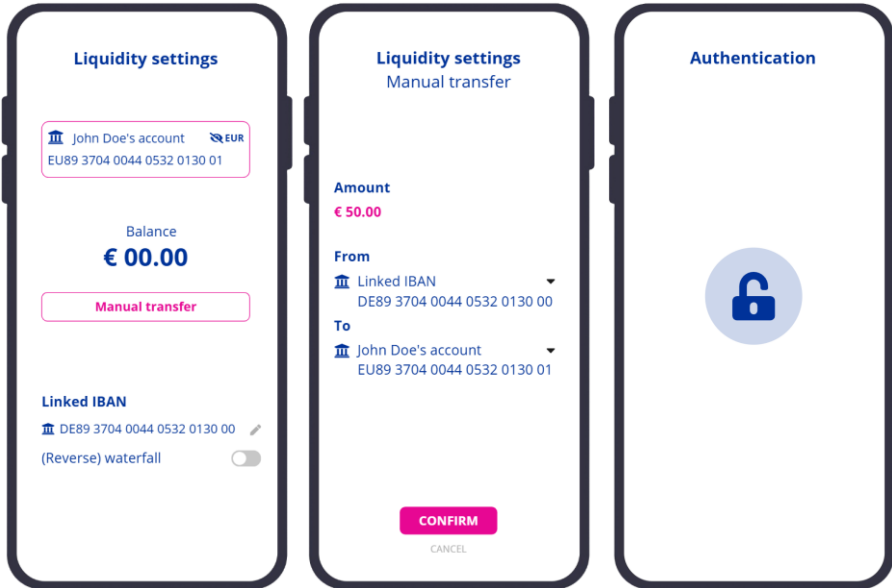
The Individual End-User can fund her online or offline holdings from her (linked) commercial bank money account. She selects the option to fund her holdings directly in the mobile app, chooses origin account/holding, destination account/holding and enters the amount. After authentication she will see the balance of her holdings has been updated.

End-to-End Process Flows

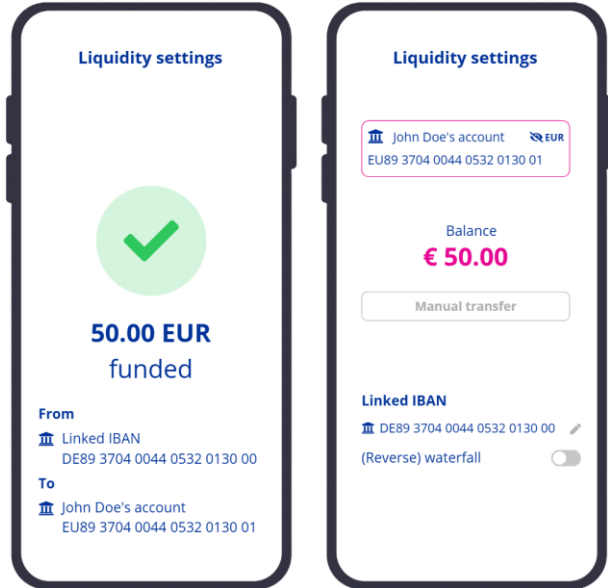
- LM-1.1 Online manual funding from commercial bank money account - same Pilot PSP
- LM-2.1 Online manual defunding to commercial bank money account - same Pilot PSP
- LM-1.8 Offline manual funding from commercial bank money payment account via app - same Pilot PSP
- LM-2.10 Offline manual defunding to commercial bank money payment account via app - same Pilot PSP
- LM-1.9 Offline Beta Digital Euro manual funding from Beta Digital Euro payment account via app
- LM-2.11 Offline Beta Digital Euro manual defunding to Beta Digital Euro payment account via app

LM 1.A – Manual funding and defunding between accounts or with IBAN Wireframe

Setup & initiation



Confirmation



LM 1.A – Manual funding and defunding between accounts or with IBAN

Minimum UX Requirements

Setup & initiation

- Pilot PSPs shall display for which Beta Digital Euro payment account the liquidity settings apply.
- Pilot PSPs shall indicate the IBAN linked to the Beta Digital Euro payment account in the liquidity settings section.
- If an IBAN is linked, Pilot PSPs shall allow Payers to enable or disable waterfall and reverse waterfall.
- If no IBAN is linked, Pilot PSPs shall disable waterfall and reverse waterfall and inform End-Users that an IBAN shall be linked before these functionalities can be enabled.
- For offline devices, Pilot PSPs shall disable waterfall and reverse waterfall options and inform End-Users that these functionalities are not available for offline devices.
- **[Optional]** The balance of the Beta Digital Euro payment account may be displayed in the liquidity settings section.
- Pilot PSPs shall allow End-Users to enter the manual transfer amount.
- Pilot PSPs shall display the origin and destination accounts before authentication starts.
- Pilot PSPs shall allow End-Users to choose the origin account for top-up and the destination account for withdrawal.
- Pilot PSP shall inform End-Users if the transfer would result in exceeding the holding limit.
- Pilot PSPs shall allow End-Users to cancel a manual (de)funding before authentication starts.
- Pilot PSPs shall require authentication before executing backend processes related to manual funding or defunding.

Confirmation

- Pilot PSPs shall provide End-Users with a confirmation of successful manual funding or defunding.
- Pilot PSPs shall display the updated balance in the liquidity settings screen immediately after completion.
- Pilot PSPs shall include liquidity transactions in the transaction history.



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