



EUROPEAN CENTRAL BANK

EUROSYSTEM

Roles in the processing of digital euro payments

Euro Retail Payments Board

01/09/2022

Digital euro project team



Where do we stand?

Tentative - timing subject to change

July 2021
Governing Council
decision to launch
investigation phase

Use case prioritisation
Report on focus groups with
citizens and merchants



Design options to moderate take-up
Distribution model



Compensation model
Access to ecosystem
Value added services
Advanced functionalities

Prototyping results



Selection of service provider(s)
for possible project realisation
phase

Decision making document
including advice on potential
issuance digital euro, its design
and implementation plan



Q4-2021

Q1-2022

Q2-2022

Q3-2022

Q4-2022

Q1-2023

Q2-2023

Q3-2023



Project team on-boarding
Governance set-up



On-line/off-line availability
Data privacy level
Transfer mechanism



Settlement model
Distribution of amount in circulation
Role of intermediaries
Integration and form factor
Funding and defunding
Prototype development



User requirements

Preparation for possible
project realisation phase
decision making

September 2023
Governing Council
decision to possibly launch
realisation phase

Objective of today's exchange



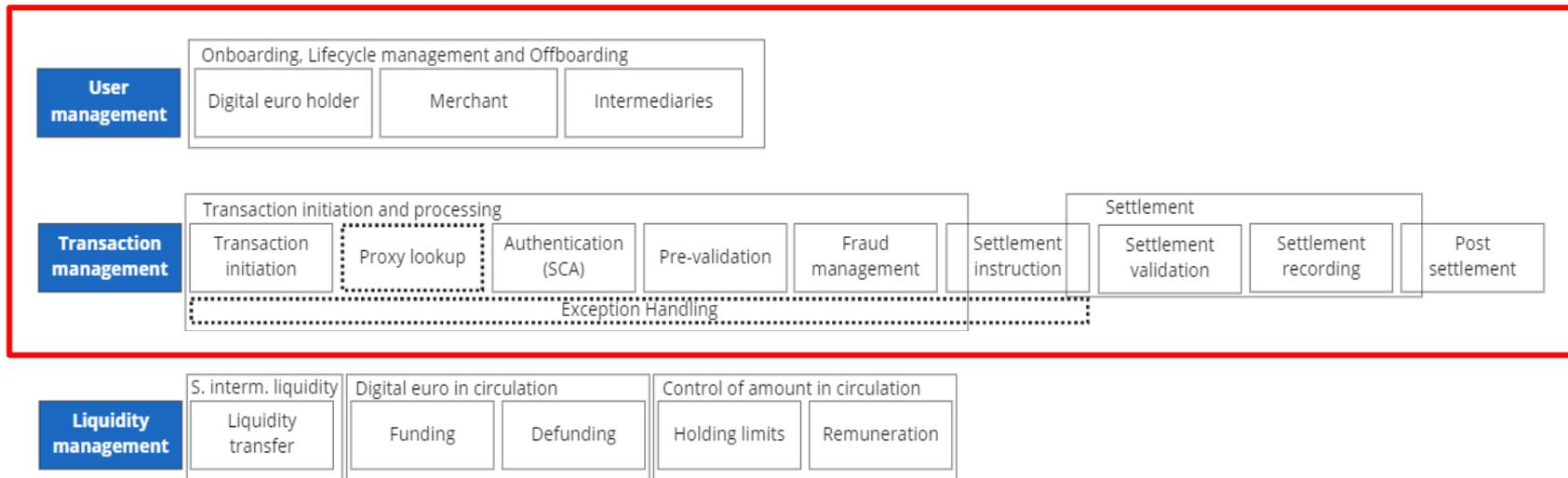
Present Eurosystem's analysis on the roles of supervised intermediaries and the Eurosystem in the processing of digital euro payments



Invite your feedback on the roles in the processing of digital euro payments identified by the Eurosystem (followed by written procedure until 22 September 2022) as input for Eurosystem preparations of final decisions on these options by Governing Council in Q4 2022

Roles at glance

Functional building blocks



 optional or conditional

E2E process flow: user management



End user's request to access digital euro environment

User's manager performs know your customer procedure

Repository operator checks that onboarding would not exceed maximum number of digital euro accounts/wallets per user

Eurosystem and intermediaries complete required tasks giving access to digital euro holdings via relevant account/wallet

Issuer of payment instrument offers it and links it to the relevant digital euro account/wallet

User manager can link digital euro account/wallet with existing commercial bank money account to enhance funding/defunding experience

E2E process flow: liquidity management

(Main focus of the next agenda item)

Funding



A digital euro holder wants to fund digital euro holdings

The funding source is selected among cash or commercial bank money through different payment instruments

The funding amount is deducted from the supervised intermediary's central bank liquidity and added as newly issued digital euro to the end user holdings

The funded digital euro becomes available to the end user

The supervised intermediary makes the new digital euro holdings visible/available to the end user

Defunding



End user wants to defund digital euro holdings

Defunding process is initiated via intermediary

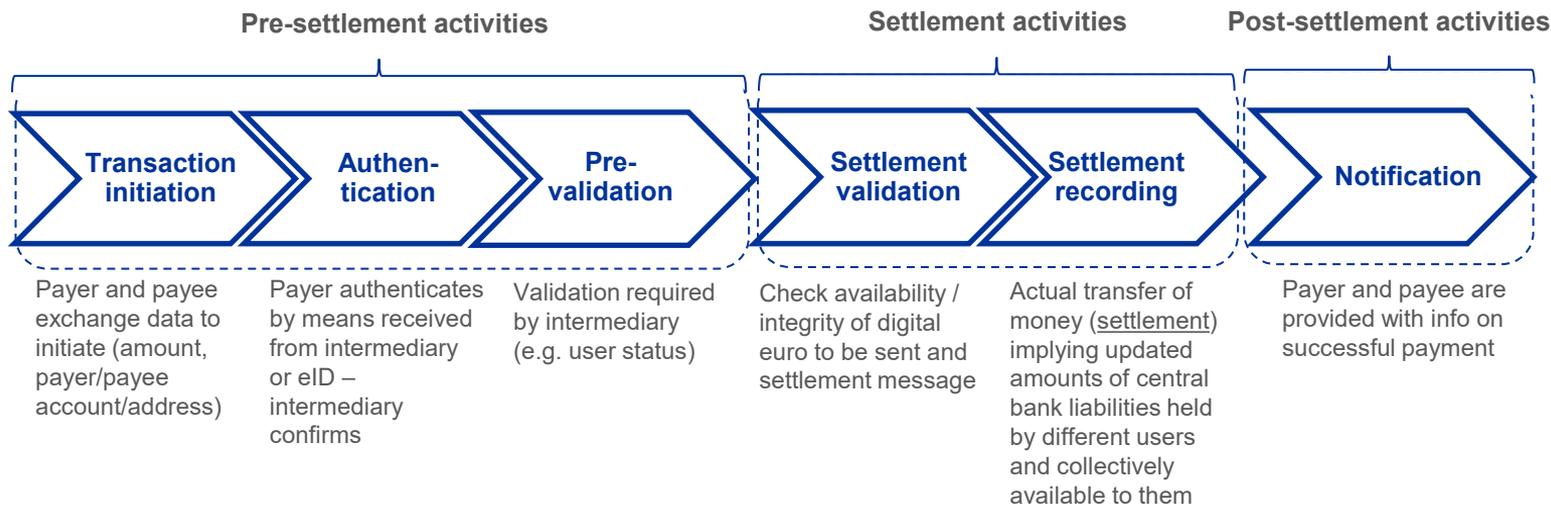
Digital euro holdings of end user are transferred to intermediary's liquidity at the central bank

The intermediary makes the CoBM available in the account of end user

The intermediary presents the new balance on the digital euro holdings and CoBM account to the end user

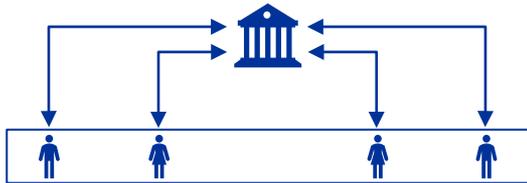
E2E process flow: transaction management

(Main focus of this agenda item)



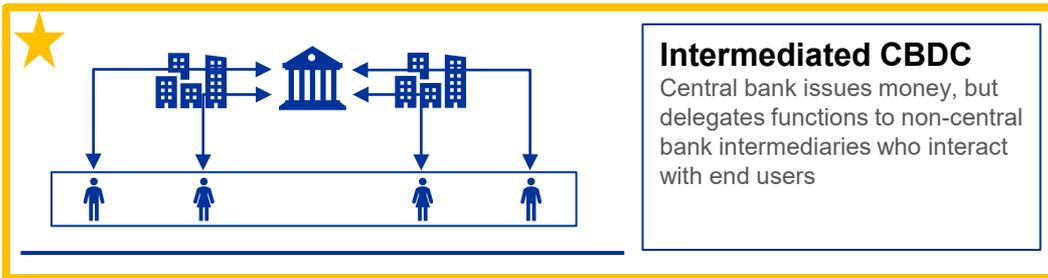
Processing of digital euro payments: focus on settlement activities

Conceptual CBDC operating models



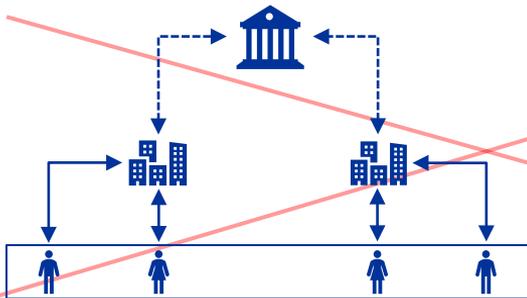
Single-layer CBDC

Central bank issues money, performs main functions and outsources tasks to service providers (e.g. onboarding and KYC check, customer hotline, etc.)



Intermediated CBDC

Central bank issues money, but delegates functions to non-central bank intermediaries who interact with end users



Synthetic CBDC

Non-central bank actors issue money that is backed by central bank assets that they acquire from the central bank (dashed line)

Eurosystem digital euro report, 2020 (executive summary): “While the Eurosystem would always retain control over the issuance of a digital euro, supervised private intermediaries would be best placed to provide ancillary, user-facing services and to build new business models on its core back-end functionality. **A model whereby access to the digital euro is intermediated by the private sector is therefore preferable.**”

*While digital euro will be a direct liability of the Eurosystem, accounts/wallets are to be opened by supervised intermediaries: **no direct contractual relationship shall exist between Eurosystem and citizens***

IMF, 2022 (page 8): “So far, there is a convergence on the intermediated model. **No central bank in this survey has explored the [...] synthetic CBDC models**”

Analysis on who should operate settlement tasks



- Digital euro recorded in main ledger are akin to issued central bank liability, independent of possible cyber incidents or mistakes
- No contractual arrangements vis-à-vis the supervised intermediaries (e.g. if an intermediary ceases to operate) can protect Eurosystem balance sheet from erroneous recording of digital euro holdings

Offline payments pose no doubt on allocation of validation and recording:



Local storage: with physical payments devices certified under rules set by the Eurosystem

For online payments, the two technical tasks could be operated:



By the Eurosystem central banks: checking money availability/integrity and recording digital euro payments



By the Eurosystem central banks and supervised intermediaries: with supervised market participants checking money availability and the Eurosystem central banks recording digital euro payments, or vice-versa



By supervised intermediaries: with supervised market participants checking money availability and recording digital euro payments

Eurosystem assessment: settlement model



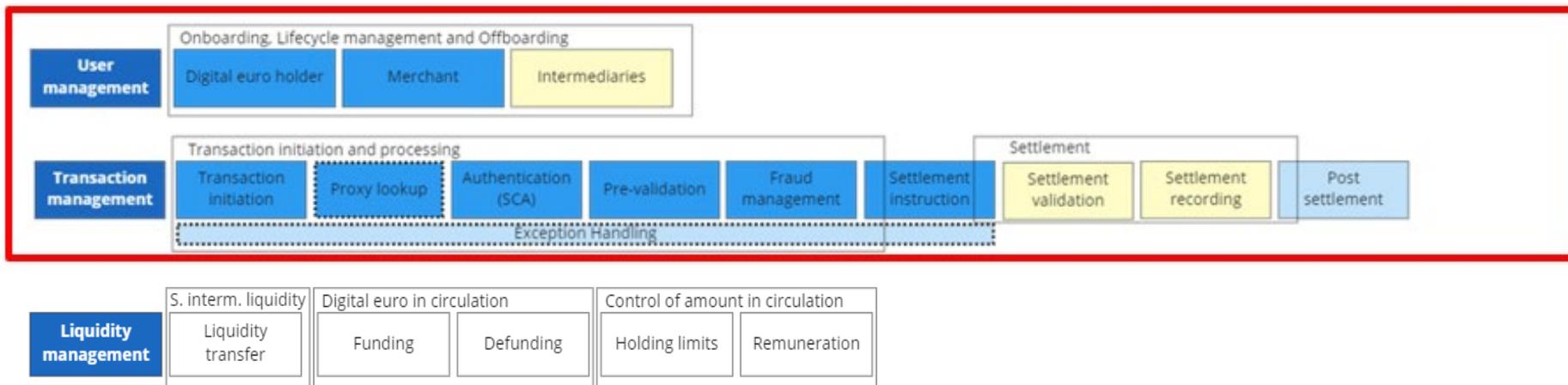
 **Online settlement:** based on the comparative assessment, **settlement validation and recording by the Eurosystem central banks** ranks highest

- Allows the Eurosystem to maintain **control over central bank money settlement**, as opposed to only establishing settlement rules and risk mitigation measures as for the other options
- **Balance sheet risk** under control (in-house risk only)
- **Efficiency** and **level playing field** of Eurosystem operating a shared component, as opposed to individual systems to be set up by intermediaries abiding to Eurosystem's rules and exchanging information
- Lower **project delivery** risk for implementation of back-end, as opposed to external dependencies
- Allows distribution of data and processing among entities (geographically and for privacy)
- Intermediaries provide digital euro accounts/wallets and all user-facing services, leaving only settlement validation/recording of **central bank liabilities** to the Eurosystem central banks

Note: distribution of data and its processing* (geographically and for privacy), structure of the ledger and provision of the digital euro position to end user **depend on the concrete technical implementation and are possible irrespective of the settlement model.**

*: Settlement can be distributed across Eurosystem central banks relying on traditional or distributed ledger technology

Functional building blocks



Way forward and discussion

Way forward



Further investigation on privacy, (cyber-)resilience and contractual relationships



Consultation of Eurosystem committees



Outreach to external stakeholders on the roles of intermediaries and the settlement model options for offline and online digital euro transactions



Finalisation of Eurosystem views on allocation of roles the processing of digital euro payments in Q4 2022 based on the outcome of Eurosystem committees' consultation, discussions with external stakeholders and additional internal analysis



Review of combined design decisions (“bringing it all together”) in Q2 2023 and feedback by stakeholders on overall design prior to Governing Council decision making thereafter

For feedback

We invite **reflections on all aspects of the analysis**, including the following questions:

- What are your views on the digital euro payments processing flows and the roles of supervised intermediaries within them?
- Do you see any issue in the Eurosystem central banks validating and recording transfers of its own liability (digital euro) while supervised intermediaries would take care of access/payment initiation/information and value-added services?
- What would be your views on the Eurosystem's ability to have full reassurance that no mistakes outside its control will happen, during validation and recording, affecting its own balance sheet in case supervised intermediaries were to take care?
- What would be your views on the cost dimension of different settlement model options – i.e. Eurosystem providing a single shared component vs. supervised intermediaries building their own validation and/or recording systems adhering to standards set by the Eurosystem?

Thank you
