



EUROPEAN CENTRAL BANK

EUROSYSTEM

Programmable payments in digital euro

Market Advisory Group



09 November 2022

Digital euro project team

Where do we stand?

Tentative - timing subject to change

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



July 2021
Governing Council
decision to launch
investigation phase

Q4-2021

Q1-2022

Q2-2022

Q3-2022

Q4-2022

Q1-2023

Q2-2023

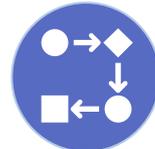
Q3-2023



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

autumn 2023
Governing Council
decision to possibly launch
realisation phase

Objective of today's exchange



Present the Eurosystem's analysis on options available for the provision of programmable payment services in digital euro.



Invite your feedback on the analysis of options for programmable payment services identified by the Eurosystem (**followed by written procedure until 5 December**) as input for Eurosystem preparations of final decisions on these functionalities by Governing Council in Q1 2023.

Background: what is this dossier about?



Digital euro shall support strategic autonomy and economic efficiency of the euro retail payments market, largely by fostering digital innovation, including **programmability of payments**.



Against the background of **increasing presence of non-European firms** in payment services and accelerating stablecoin development.



Programmable payments are a way to **improve the users' experience** and meet the service level of existing and future payments solutions.

Programmable payments

Definitions

Programmability of payments: the ability to initiate a payment automatically when predefined conditions are met (see Digital Euro [glossary](#))

Programmable money ≠ programmability of payments:

Designing a digital euro as programmable money, intended as units of digital euro that can only be used for buying specific types of goods and/or services or only within a certain period/geography, **is not in line with the guiding principles of the digital euro** endorsed by the Governing Council

“A digital euro should [...] be convertible at par with other forms of the euro, such as banknotes, central bank reserves and commercial bank deposits.” (Eurosysteem, 2020)

High-level steps in programmable payments

1. Definition of business logic

Conditions to be met before a payment shall be initiated – specific to use case

2. Payment authorisation

Payer authorises supervised intermediary to initiate payment of 'x' to 'payee' when conditions are met

3. Execution of business logic

Continuous/regular check of whether the conditions for payment initiation are met

4. Payment initiation / settlement instruction

Payer's intermediary initiates the payment, which is settled in digital euro

Provision of programmable payments in digital euro

Market-led innovation and trust relationship

- Programmable payments refer to an **innovative space** in payment services



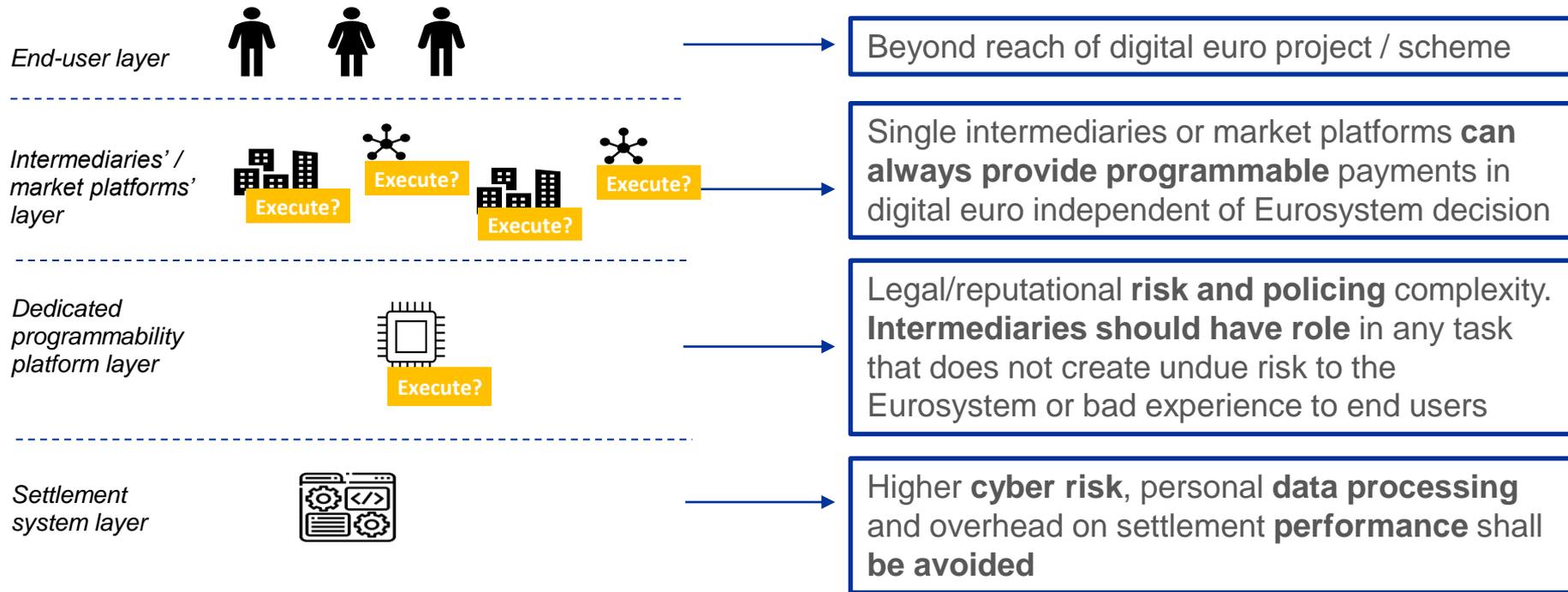
Definition of business logic is best provided by relying on market initiative(s)

- Digital euro users shall be **free to decide** what conditions apply to their payments and whom to entrust with the **task of initiating** them



The supervised intermediary of the user authorizing a digital euro payment shall ultimately initiate its settlement once predefined conditions are met

Where to program and execute the business logic?



Note: layers can use different tech and data structures, TBD at a later stage based on business requirements

Options to support programmability

Intermediaries flagged a **lack of common standards** for the provision of some programmable payment functionalities across Europe and the possible need to use **ad-hoc settlement functionalities**

In the digital euro **scheme rulebook**

- **Intermediaries empowered** to flag what standards are missing
- Balanced need to leave **highest freedom and initiative to the market** with the possibility to **foster the rollout of programmable payment use cases** across the euro area.

In the **back-end infrastructure**

For instance, **reservation of funds in digital euro**

Potential implementation depends on:

- how far the associated end-user services are perceived as contributing to **success** of the digital euro solution
- level of **complexity** and costs

Way forward and discussion

Conclusions

Supervised intermediaries know best the market dynamics and the needs of end users. They are **best placed to develop programmable payments services**, including dedicated programmability platforms.

Digital euro solution will support programmable payments, **enabling** the provision of such services by supervised intermediaries if necessary.

The **Eurosystem** can support programmable payment services by the market via standards in **the scheme rulebook** and/or adding **functionalities to the settlement layer**, supporting programmable payments use cases identified by the market.

Way forward

 **Further investigation** on options available for the provision of programmable payment services in digital euro

 **Consultation of Eurosystem committees**

 **Outreach to external stakeholders***



 Finalization of Eurosystem views in Q1 2023 based on the outcome of Eurosystem committees' consultation, discussions with external stakeholders and further 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

* : See also dedicated [call for interest](#) on digital euro programmable payments

For feedback

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

- Which **key use cases** do you see for programmable payment services in the area of retail?
- Whether/to what extent do you see a need for **support to the market to provide programmable payment services** (e.g., common standards, back-end settlement functionalities)?
- Which core capabilities could a **back-end IT architecture for settlement of payments** offer to facilitate programmable payment services?

Thank you

Annex

What programmable payments entail

Definition of business logic: the intermediary sets the range of conditions that an end user may require to be met before a payment shall be initiated ((e.g on 1st day of the month, transfer 100€ from A to B)

Payment authorisation: the end user authorises the supervised intermediary to initiate a payment in line with the business logic mentioned above

Execution of business logic: the entity taking care of executing business logic checks whether the conditions to initiate a payment are met and the payment shall be initiated by the supervised intermediary of the payer.

Payment initiation/settlement instruction: the intermediary of the payer initiates the payment, sending a settlement instruction once the conditions set its client are met.

