



EUROPEAN CENTRAL BANK

EUROSYSTEM

High Level Product Description

8th ERPB technical session
on digital euro

12 May 2023

Digital euro project team



What is the digital euro?

The digital euro is **central bank money** for **digital retail payments** by **citizens, businesses and governments** in the **entire euro area**

A digital euro is a complement to cash and always a liability of the central bank



Liability of central bank

- i. **Cash:** physical form, to general public
- ii. **Central bank deposits:** digital form, limited access
- iii. **CBDC/Digital Euro:** Complement to cash and Central Bank deposits



Liability of a private entity

- i. Commercial bank money
- ii. E-money
- iii. Some 'stablecoins' that entail a claim/liability on an identifiable entity



Not a liability

- i. Crypto-assets

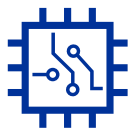
Why would we need a digital euro?



A payment option allowing **everyone** to pay digitally **everywhere** in the euro area



The **evolution of cash** in the digital age. Maintaining the role of central bank money as a **monetary anchor** for the financial system



A **European platform for innovation**, allowing intermediaries to build services for their customers that are instantly available across Europe



Increasing **resilience and economic efficiency** of European payments and contributing to (open) **strategic autonomy**

The digital euro benefits many

Citizens



Merchants



Intermediaries



Zooming in on design decisions that shape a digital euro

1

User experience for individuals and businesses

A digital euro should be widely available and usable across the euro area

Availability for everyone

“It should be simple for people to start using the digital euro, and **there should be no need to change bank in order to do so**”

Usability everywhere for everyday payments

“Legislators assigned the legal tender status to euro banknotes. **The digital euro could also be given legal tender status**”

Key objectives



European legislator



Monetary anchor



**(Open) strategic
autonomy**

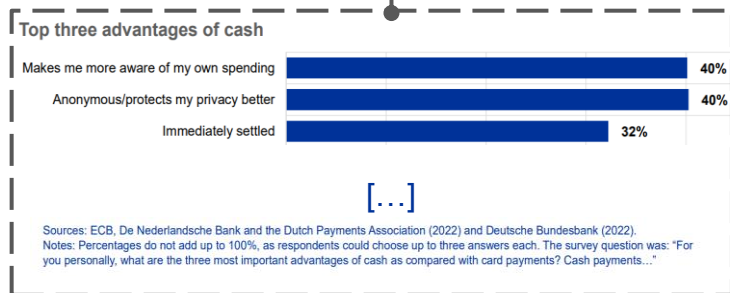
A digital euro would complement cash and uphold freedom of choice

The digital euro would **complement** cash, **serve different needs**, and bring **most-liked features of cash** to the digital age:

Institutional features:



- Central bank liability serving as monetary anchor
- Ability to pay anywhere & broad availability (subject to legislation)



Instrument features:



- Immediately settled
- Seeks high level of privacy allowed by legislation
- Offline digital euro with bearer instrument features
- Make aware of own spending with digital version of wallet

The digital euro could be used in every day (digital) life



* Including online and offline functionality

A digital euro could first be used by euro area residents and businesses



	Individuals	Businesses	Governments
Access (First releases)	<ul style="list-style-type: none"> Euro area residents Non-resident euro area citizens via euro area PSP 	<ul style="list-style-type: none"> Euro area businesses Non-Euro area businesses via Euro area PSP 	<ul style="list-style-type: none"> Euro area governments
Holdings (Euro area)	<ul style="list-style-type: none"> Euro area residents & citizens same holding limit (decided close to launch) 	<ul style="list-style-type: none"> Zero daily holding limit 	<ul style="list-style-type: none"> Zero daily holding limit

Digital euro will first be available throughout euro area. Availability in other countries (outside euro area) may be possible in subsequent releases and would **always be subject to agreement by the authorities of that country.**

Accessibility rules will be set out in the legislative framework for a digital euro.

The digital euro may work online and offline

The two modalities of digital euro, **online and offline**, complement each other, **enabling the broadest range of features and use cases**



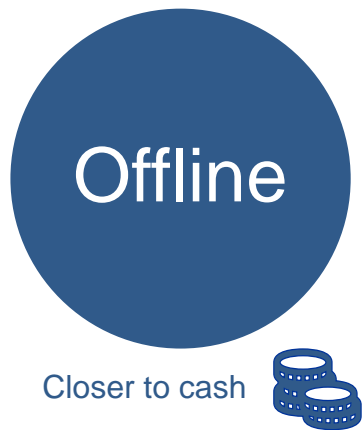
All use cases covered



- Remote and proximity payments using central bank money
- Multiple funding possibilities enabled. No need to prefund.
- Third party validation by a PSP
- Privacy protection comparable to that of existing digital payment means

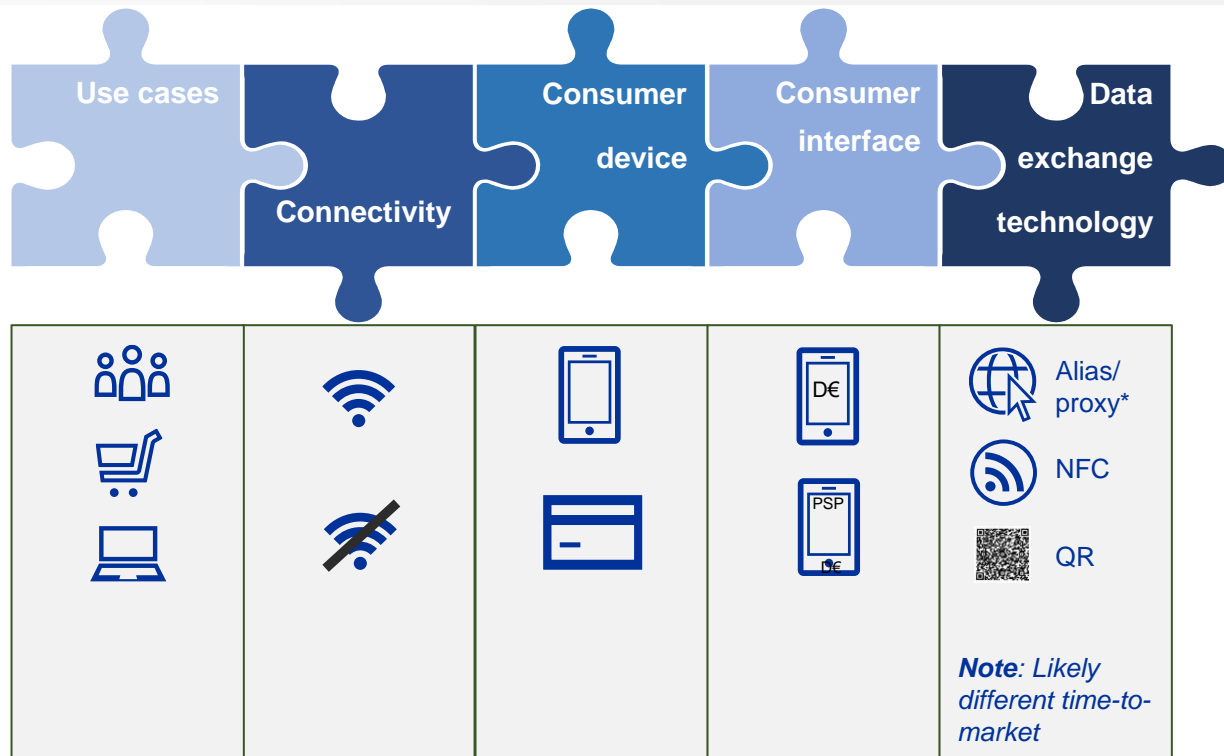
The digital euro may work online and offline

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- Proximity, low value, P2P and POS payments using central bank money
- Holdings are stored in secure device and require prefunding
- No third party validating the transaction
- Higher privacy level, subject to appropriate legislation
- No connectivity required for payments; Connectivity required for funding
- Could increase resilience, if substantially used in normal times
- Risk of losing money if secure device is lost/stolen

A digital euro would support different use cases through a wide range of devices and technologies









*Allows for payment request/pay-by-link. Since the usefulness of alias/proxy functionality depends on user adoption of this feature, ways to ensure sufficient adoption are being investigated.

Visualising digital euro end user experience







What does the end user experience look like?



What?	How?	Where?
		Physical stores Person-to-person
		Physical stores
	 	Physical stores Person-to-person E-commerce







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(De-)funding with (reverse) waterfall would offer payment convenience



Manual funding and defunding options (in both the **online and offline solution**) and **automated funding and defunding** options (including waterfall and reverse waterfall functionalities **for the online solution**)



Event-driven functionalities should be activated upon the **end users' choice**



Funding and defunding functionalities should be available on a **24/7/365 basis** and take place **instantly**



Funding should be possible from accounts held at **PSP other than the digital euro servicing PSP**

The **(reverse) waterfall** can make the digital euro a convenient payment instrument mitigating the user experience impact of holding limits

Waterfall



Reverse Waterfall



Stand-alone app or integration into intermediary wallets can deliver the end-user interface

Integrated
end-user
interfaces

Supervised intermediaries would integrate the digital euro into their end-user interfaces/wallets

- Each supervised intermediary could **upgrade their existing channels** (e.g. mobile banking applications, online banking, dedicated payment wallets) to offer digital euro services and functionalities for all use cases.

In addition, a ‘digital euro app’ would be provided to access the digital euro services of the supervised intermediaries

- A ‘**digital euro app**’ with a **homogeneous ‘look and feel’** where basic functionalities would be accessible but performed by supervised intermediaries.
- It would increase the choice for end-users and intermediaries (e.g. smaller ones) and contribute to ensuring **financial inclusion**.

Digital
euro app

Digital euro services can be obtained through payment service providers

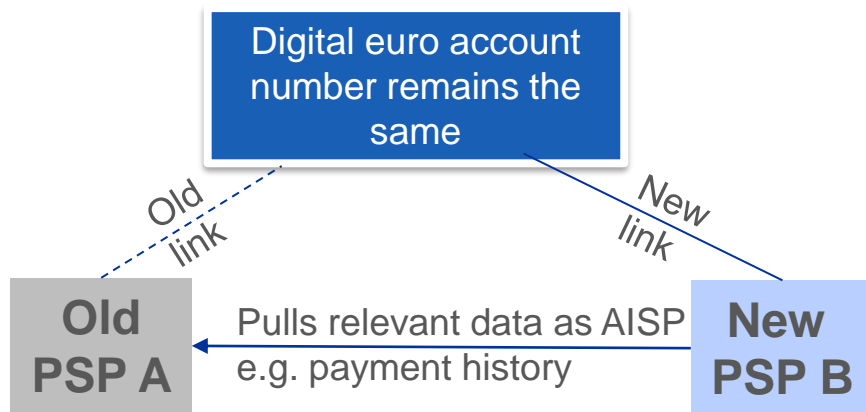
- I Onboarding according to access rights
- II Simple as possible from an end-user perspective
- III On PSP side existing onboarding procedures should be re-used
 - A User is **known** to the PSP → **Re-use** available data, nearly no data requirement
 - B User is **unknown** to the PSP → Use existing **default onboarding** process
- IV **One account/wallet per citizen**
 - Imposing **holding limits requires identification**
 - How to implement (unique) personal identifier still needs to be investigated

Digital euro would allow easy portability to facilitate freedom of choice and increase resilience

Easily porting the digital euro holdings from one PSP to another guarantees **freedom of choice** and increases **resilience**.

Eurosystem and scheme will offer support and set common rules for market participants.

Standard portability procedure



Exceptional cases where the old PSP would not be accessible will be further analysed.

A digital euro would never be programmable money

Conditionality of payments: the ability to initiate a payment automatically when predefined conditions are met

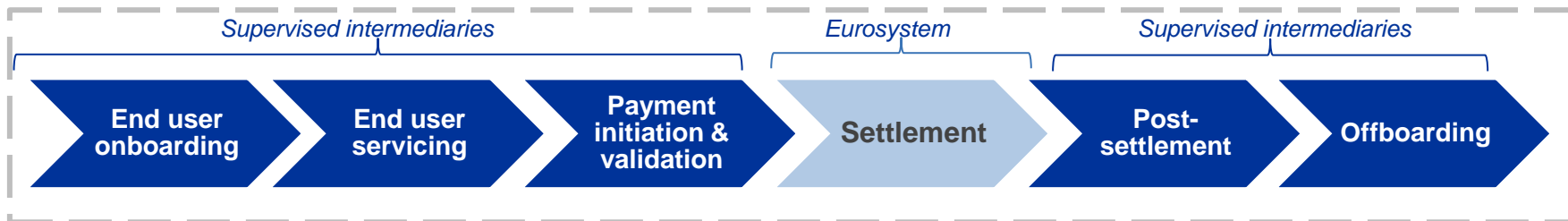
Programmable money \neq conditionality of payments:

- Central banks issue money, not vouchers (F. Panetta, 2023)
- 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.” (Eurosystem, 2020)

2

Making digital euro available: a public- private collaboration

Supervised intermediaries will play a key role in the distribution of digital euro



Supervised **intermediaries will play a key role in the distribution** and making the digital euro as a public good **accessible to citizens** :

- **Managing interaction with digital euro end users**
- **Funding and defunding** of user's digital euro holdings
- **Initiating, processing and managing of digital euro transactions**
- Potentially offering **value added services** to improve user experience

Services the Eurosystem will provide to support the digital euro experience

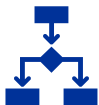


A supervised intermediary cannot deliver a rewarding user experience on an individual basis without **services supporting the safety, performance, and broad acceptance** of the digital euro

Settlement and funding enabler	Eurosystem responsible for recording liabilities. Multi-currency backend availability. Dedicated Cash Account for funding and to support intermediaries' liquidity management
Digital euro application	End-users with option to use uniform entry point, on which their PSP would provide basic digital euro services
Supporting services (e.g., alias lookup, dispute and fraud management)	<ul style="list-style-type: none">• Alias lookup to minimize use of data in settlement component. Not to be operated by Eurosystem• Dispute management to facilitate the swift resolution of disputes involving business transactions paid via digital euro, linking PSPs• On top of fraud prevention and detection done by intermediaries centralized fraud prevention and detection services to increase the effectiveness of fraud prevention and detection for digital euro

A scheme approach will ensure pan-European reach and common payment experience

*If a citizen is provided with a **digital euro payment instrument** by one intermediary in one country, they should be able to use this instrument without barriers to pay **at any merchant in the euro area, independent of the intermediary and the country** of the merchant.*



The Eurosystem pursues a **scheme approach** to distribute digital euro:

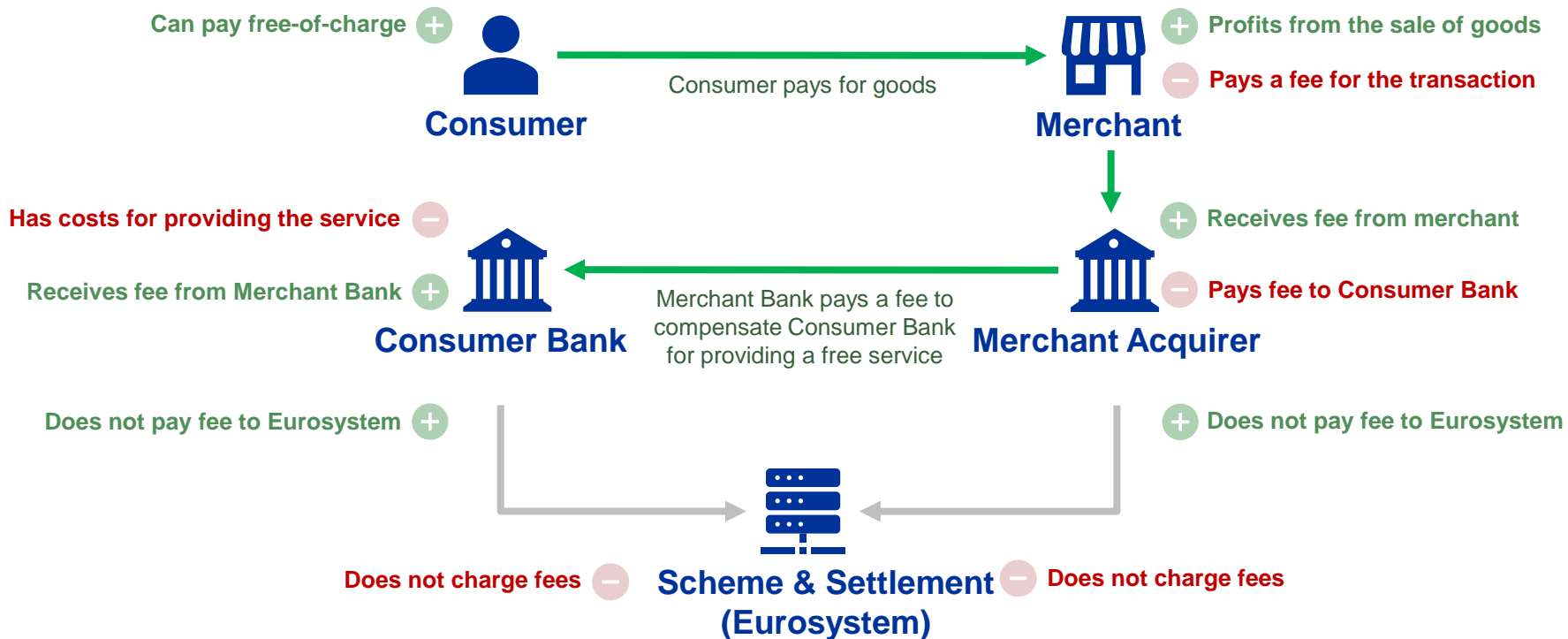
- Digital euro scheme would define a set of **common rules, standards** and **procedures** which would ensure **pan euro area reach**.
- Promote a **harmonised** end-user payment experience.

- Provides the **flexibility** to respond to user preferences and habits.
- Allows for the most degrees of **freedom** for the market to distribute the digital euro and develop **innovative front-end solutions**.

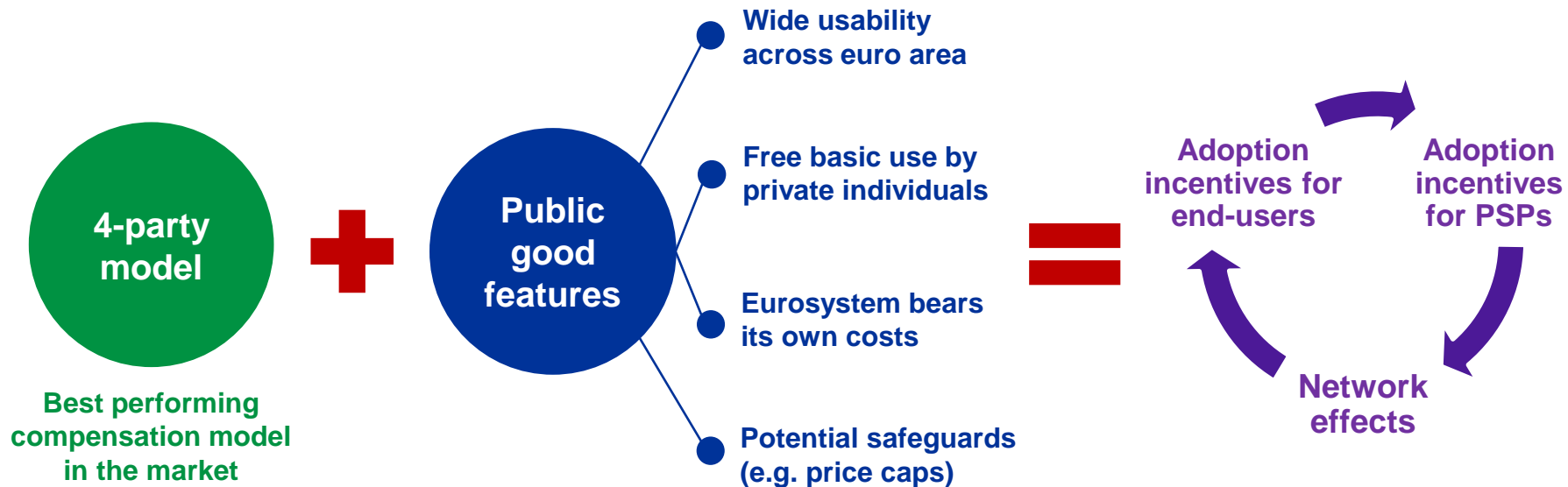
Principles of the compensation model ensure fair and adequate incentivization for distribution

- 1 Free basic use by private individuals**
- 2 Network effects generating economic incentives for acquirers and merchants**
- 3 Comparable economic incentives for distributing PSPs**
- 4 Eurosystem bears its own costs, as with production and issuance of banknotes**

What a compensation model could look like subject to legislation



The compensation model would foster network effects necessary to achieve the key objectives



Individuals should be able to make basic use of digital euro for free

1 Free basic use by private individuals

Core services*

- **User management:** On-/Offboarding, payment instrument management, linking to commercial bank account, user lifecycle management processes
- **Liquidity management:** Funding, defunding, and (reverse) waterfall
- **Transaction management:** Transaction initiation, authentication, payment confirmation/rejection notification, refunds, dispute/exception/fraud management, recurring payments

A digital euro would be designed to avoid causing financial instability

People can **convert** as many **deposits into cash** as fits their **storage-risk appetite**. The **digital euro seeks to maintain this healthy equilibrium** between deposits and cash.

Tools to limit holdings

Limits on individual holdings (with “waterfall” function as an option)

Respecting deposit outflow limits

Intermediaries’ standard practices for limiting deposit outflows will remain unaffected to aid liquidity planning*

Price-based tools

Tiered remuneration being reconsidered

Parameterisation and activation




Preference for simplicity and effectiveness.
Parametrisation closer to digital euro issuance

*Transaction limits for specific payments in line with well-established fraud management measures are also considered

3

Privacy and data protection

Privacy is of outmost importance in a digital euro ecosystem

	Online	Offline
 Baseline privacy	Intermediary sees transaction data, as with current digital payments	Even intermediary may <u>not</u> see transactions
 Role of co-legislators	Co-legislators to explore higher privacy for lower-value payments	Subject to co-legislator exempting proximity payments from monitoring
 Settlement	Eurosystem will settle without seeing holdings nor tracking payments to single user	Settlement in the devices of users while reconciling the least amount of anonymized data for security

Digital euro users would have control over the use of their data

User **preference on data sharing may never jeopardize** the usability of digital euro

Minimize use of personal data needed

- Eurosystem will minimize any use of data to what is strictly necessary to perform essential tasks (e.g., settlement)
- PSPs cannot use data for any purposes beyond of what is necessary to perform digital euro core services or required by regulation (such as AML/CFT), unless users consent

Informed decision

Digital euro users should be able to make an informed decision on whether they want to share further data with their PSP

Core services always available

If users decide not to opt-in, they should not bear any limitations in the availability and usability of digital euro core services

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Financial and digital inclusion

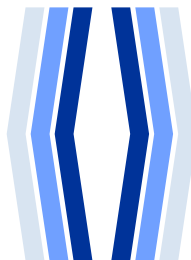
Digital financial inclusion has been a key consideration from the early onset



“It could increase choice, competition and accessibility with regard to digital payments, supporting financial inclusion”
Report on a digital euro, 2020



“These two aspects [accessibility and availability] are also [...] essential to ensure that the digital euro can support financial inclusion”
ECON speech by Fabio Panetta, 2023



“Everyone needs to make payments. [...] In a society which becomes increasingly digital, a digital form of cash will be needed.
BEUC and AGE consumer associations, 2023



Digital financial inclusion is a key principle of the digital euro

Financial inclusion in the context of a digital euro
cannot be decoupled from digital inclusion

Financial inclusion means **access** to useful and affordable financial products and services

Digital financial inclusion refers to **usage** of digital financial services to advance financial inclusion

96% of adults in the EU have access to a payment account (euro area: 98.5%) but only about 60% actually use internet for banking services: **usability** is the key step

A digital euro would employ several tools to enhance (digital) financial inclusion

Form factors

- **app**: easy to use, attentive of needs of low tech savvy and elderly, compatible with European Accessibility Act, translation (at least) in all EU languages
- provision of: **physical digital euro payment card**

Onboarding and portability

- availability of both **fully remote and in person onboarding**
- **easy switching** from a supervised intermediary to another

Functionalities

- **basic services free of charge**
- **customizable account settings** for budgeting and automatic functions
- **simple (de)funding** (also with cash at ATMs), with no need for a smartphone
- **offline** functionality

Advocacy*

- **public approach**
- **legal tender**
- **simplified onboarding**
- support for a **harmonized minimum age** for opening a digital euro account
- targeted **educational campaigns**

**The Eurosystem can champion these causes in the relevant fora, but responsibility to take action would lie with co-legislators and Member States*

The Eurosystem can only advocate for a public approach, which requires coordinated efforts

Public approach

- dedicated **onboarding channel** via **public or private dedicated licenced entity** per member state **providing access to digital euro services and the necessary supports** to those vulnerable to digital financial exclusion
- availability of **human interaction** to guide users throughout all steps
- dedicated **customer services**
- distribution of a **physical digital euro payment card**
- **(de)funding via cash** ensured
- above services provided **free of charge for eligible individuals**

How early-stage feedback informed the holistic design review

Feedback and considerations 1/3

Feedback from participants mainly focused on several key areas:



**Financial stability & holding/
transaction limits**



Offline availability



**Compensation model, and
free provision of basic
services**



Roll-out approach






Privacy & data protection






Financial inclusion

Feedback and considerations 2/3

Characteristic	Feedback	Result
	Concern from credit institutions on financial stability related outflow of liquidity.	Included in the design tools to control the amount in circulation . Parametrization will only happen closer to issuance, allowing for more research in a next phase
	Compensation model should ensure fair and adequate incentives for usage as well as distribution	Compensation model has taken this as for all stakeholders as starting point. Investment cost to be further explored on the basis of the design
	Privacy concerns, related to both visibility of personal data to the Eurosystem and end2end visibility, were raised	Ensuring high privacy for the digital euro has been a guiding principle in the design

Feedback and considerations 3/3

Characteristic	Feedback	Result
	Offline usability may lead to issues in terms of compliance, security & fraud , and could be used very seldomly.	Clarified technical features of offline usability, as well as its strategic role .
	The roll-out strategy may be too complex , both in terms of delivery as well as for end users to understand.	A staggered approach is suggested, reducing complexity and hence reducing delivery risk and allowing for gradual take up by end users
	Financial inclusion should not only target the unbanked but address digital financial inclusion	In all design decisions financial inclusion is considered, advocating on top for adding a public approach for the digital financial excluded

Your feedback is welcomed by 16 June 2023

We invite **feedback on all aspects of the High Level Product Description**. It will feed into the final documentation on which basis the Governing Council will assess the digital euro investigation phase.

The written consultation deadline is **16 June 2023**.

Thank you

Annex: Digital euro fundamentals and Eurosystem role in settlement

Reverse waterfall will not add to the risk of liquidity outflow of a PSP

- Most PSPs currently have **restrictions on the outflow of customer deposits over time**, e.g., to better manage and predict liquidity needs
- Funding a digital euro would fall under the same restrictions that PSPs currently apply; they cannot be stricter than restrictions for cash transfers.

