



EUROPEAN CENTRAL BANK

EUROSYSTEM

Digital Euro

The next step in the
advancement of our currency

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01

The case for a digital euro

“A digital euro would provide an anchor of stability for our money in the digital age”

People in the euro area benefit from a generally accepted means of payment – euro cash – which they can use freely across our monetary union. Cash has unique properties: it is widely available and can be used everywhere in the euro area, free of charge; it ensures the highest protection of privacy; it is inclusive and does not require an online connection; it is secure and risk-free; it allows instant settlement of payments and can be used for person-to-person payments as well as at the point of sale.

No digital payment means currently offers all these benefits. A digital euro would fill this gap: It would be a digital form of payment that offers the same benefits as cash. While the Eurosystem would continue to make euro cash available, in line with Europeans’ increasing preference to pay digitally, the digital euro would act as an equivalent for digital payments.

A digital euro would be available to everyone and could be used for all digital payments, both online and offline, throughout the euro area, free of charge.

A digital euro would be designed to provide a superior level of privacy to other digital payment methods. Central banks have no interest in people’s payment patterns or any commercial aspirations. By legal and technical design, the ECB would not be able to determine the identity or payment habits of people using digital euro.

A digital euro would leave no one behind: it would be inclusive and easy to use, ensuring that all of us have access to digital payments, even those of us that do not have an internet connection, bank account or credit card.

Payments are an essential part of our daily lives, and a digital euro would ensure the continued smooth functioning of our payments system. Unlike existing digital payments means, it would increase our resilience against crises such as cyber-attacks and electricity outages. Likewise, it would reduce our dependence on non-European payment providers.

A digital euro would be designed for use in stores and online, as well as for person-to-person transactions.

It also offers some additional benefits compared with cash: it would foster further innovation in the private sector by increasing market competitiveness. Taking European integration a step further, a digital euro would be a standardised means of payment, covering all payment needs across all euro area countries. It would provide an unprecedented pan-European platform for innovative payment services. The legislation to be adopted by the European Union (EU) co-legislators will provide the relevant legal framework.

In an increasingly digital world, the introduction of a digital euro would be a logical next step in the evolution of our currency. It would ensure that we can maintain the same levels of trust and stability that our money and payments enjoy today, while giving us a new, digital option that also addresses the limitations of current payment options.



02

Your euro, your choice

Using a digital euro

The features of the digital euro described here are based on the high-level product design adopted by the Governing Council of the ECB, concluding the investigation phase of the digital euro project (October 2021-October 2023). These features form the basis for further work during the preparatory phase. A decision on whether or when to issue a digital euro will be taken independently by the Governing Council of the ECB at a later stage subject to legislative deliberations running in parallel among EU co-legislators. The ECB stands ready to adjust the digital euro design choices and to provide technical input as needed throughout the legislative process.

A digital euro is not intended to replace cash or to displace existing private providers in electronic payments. Rather, the aim would be to give end-users an additional payment option. It would also ensure that public money is not crowded out in a context of increasing payment digitalisation.

To become a successful payment alternative, it is crucial that a digital euro should bring added value to users and businesses alike. As such, the digital euro's design has been shaped by insights from consumers and merchants and thus incorporates a wide range of features that meet various user requirements.

Consumers indicated that they would value the digital euro for its cash-like features, in particular the fact that it would be always available. The digital euro would combine these cash-like features



A digital euro would allow individuals to make secure payments in real time in shops and online and person-to-person. It could be used fully digitally using a mobile phone or a computer or physically using a card.



A digital euro would complement other payment options while providing greater freedom of choice.



A digital euro would have true pan-European reach by being equally available in all euro area countries. Users would know that they can use digital euro to pay at all merchants that accept digital payments. Users would have the option to pay with digital euro irrespective of the euro area country they are in or of the firm or bank they have an account with.



Users would be able to access their digital euro wallets via either their respective banking apps, with which they are already familiar or a new dedicated digital euro app developed by the Eurosystem.



A digital euro would be user-friendly and accessible to everyone throughout the euro area, making it highly inclusive. People without access to a bank account or digital devices would also be able to pay with digital euro using a card they available from public entities, such as



Users would be able to exchange digital euro into cash or vice versa at cash machines.



Businesses would benefit from adopting a digital euro, for example through wide user adoption leading to network effects.

Businesses will benefit from adopting the digital euro, e.g. from wide user adoption and cost-effective acceptance. The accessibility of digital euro mainly relies on payment service providers (PSPs), banks, and merchants, who have to facilitate its usage. Co-legislators will define these aspects in more detail, pivotal for the digital euro's success.

2.1 UNIVERSAL, SIMPLE, SAFE: THE MAIN USE CASES OF A DIGITAL EURO

In an increasingly digitalised society, a digital euro would safeguard the role of central bank money in the payments landscape and preserve trust in the euro currency. To ensure that a digital euro brings added value and becomes a true payment



Person-to-person (P2P) payments

Complementing cash transactions, always instant and available across the entire euro area.



Point-of-sale (POS) payments

Catering for the shift towards digital, fast and convenient payments in physical stores.



E-commerce payments

Accommodating the growing importance of digital shopping and addressing the potential exclusionary impact of closed loop systems.



Government transactions (G2X, X2G)

Strengthening the euro's position as the official currency, including the benefit of lower costs.

These use cases will be prioritised during the preparation phase of the digital euro project, with person-to-person and e-commerce payments likely to be made available before point-of-sale, G2X and X2G transactions. Additional use cases will be explored as the digital euro project matures.

2.2 WHO CAN USE A DIGITAL EURO? EUROPEAN MONEY FOR EUROPEAN CITIZENS

Euro area citizens and businesses would be able to use the digital euro in all euro area countries. Residents would be able to access digital euro-related services. Foreign visitors with an account at a European payment service provider (PSP) would have access to a digital euro, although they would still have to exchange their home currency into euro, just as they do with cash today. People would access digital euro using the apps of their respective PSPs, with which they are already familiar, a dedicated Eurosystem wallet, or a dedicated digital euro app.

Merchants within the euro area would be able to accept digital euro payments, as well as process payment returns, without accumulating digital euro holdings. Other merchants in the European Economic Area or third countries serving euro area residents would be able to accept digital euro payments by acquiring providers within the euro area.

Similarly, the public sector within the euro area would also be able to engage in digital euro payments, without accumulating digital euro holdings.



2.3 PAYING ONLINE AND OFFLINE THE BASIC MODALITIES OF A DIGITAL EURO

The digital euro would combine cash-like features with the convenience of digital payments. It would also cover areas where it is not feasible to use cash, such as online transactions. It would do this via two different modes:

1. **Online mode**
Allows remote payments using central bank money, catering for various use cases and reducing dependence on physical cash.
2. **Offline mode**
Offers cash-like attributes, allowing proximity payments without online connectivity. The offline mode would require pre-funding and peer-to-peer validation.

Users would be able to choose between online and offline digital euro payment modes. The online mode would be suitable for remote payments and budgeting, and would require validation by a PSP. The offline mode supports close-range transactions, enhancing privacy, and would require pre-funding via internet or cash points.

Offline payments would follow a peer-to-peer model, prioritising privacy. However, if you were to lose your device or it was stolen, the funds would be unrecoverable, akin to losing cash.

2.4 WHAT WOULD LOOK & FEEL OF A DIGITAL EURO BE FROM A USER PERSPECTIVE? FORM FACTOR OPTIONS & DELIVERY APPROACH

The success of a digital euro would rely on meeting user expectations for a seamless payment experience. Easy identification of digital euro transactions would be vital. Perceptions of payments are shaped by their reach, use cases and methods. A forward-looking approach is needed to provide a modern experience in the event of possible issuance of digital euro.

Digital payments can take different forms. When users are offered multiple options, they are empowered to choose their preferred method. Figure 2 outlines proposed digital euro payment devices and technologies. The need for convenience would be met by supporting various data exchange methods, such as NFC (near-field communication), QR (quick-response) codes and alias-initiated payments. NFC facilitates quick contactless payments via cards, phones or wearables, which are suitable for points-of-sale but not for e-commerce. QR codes offer versatility, enabling simple payments online and in proximity. Alias/proxy payments speed up transactions via identifiers, enhancing person-to-person and e-commerce payments.

The following options are available for initiating digital euro services via mobile phones:

- A uniform digital euro wallet would provide access, backed by a PSP for transaction execution
- PSPs may integrate digital euro into their own wallets.

In addition it would be possible to use cards for payments, which aids financial inclusion as users are familiar with using them and they are can be used without a smartphone.

Figure 2: Proposed digital euro payment devices and technologies





2.5 USABILITY WITH HOLDING LIMITS: FUNDING MODALITIES

If a digital euro is introduced, the aim would be to balance accessibility and convenience for users with the stability of the financial system. To maintain this equilibrium, limits on individual digital euro holdings would be established to avoid excessive outflows of deposits from the banking sector. These thresholds would be calibrated closer to digital euro release so that the levels are tailored to the prevailing economic and financial environment. Moreover, a digital euro would not be interest bearing. Similar to cash, a digital euro would be a retail means of payment and not an investment tool.

Joint analysis by the Eurosystem and central banks of other advanced economies validates the approach of proposing a holding limit per person. It would avoid risks to financial stability but would not prevent transactions in excess of the limit, as such transactions could be settled via a link to a private bank account.

Ensuring strong usability is at the core of digital euro design. A digital euro would offer a smooth user experience, while still accommodating the established holding limits. Users would benefit from linking their digital euro account to a payment account as follows:

- When receiving payments beyond the holding limit, any excess funds would be automatically directed to the linked account.
- There would be no need to pre-fund the digital euro account for payments; any shortfall would be covered instantly from the linked account assuming it contained sufficient funds.

A digital euro would meet the following needs in terms of funding methods:

- **Automated funding for budget management**
Users set a monthly budget, topping up accordingly.
- **Case-by-case funding**
Users fund as needed without a pre-set frequency.
- **No-prefunding**
Payments draw liquidity from the linked account. If a person has multiple payment accounts with different PSPs, any of these accounts could be used to fund the digital euro account, not just the PSP managing the digital euro account.

2.6 GETTING STARTED WITHOUT OBSTACLES: ONBOARDING DIGITAL EURO & PORTABILITY

PSPs would be the main counterparts for users of a digital euro and would take care of onboarding, focusing on ease and convenience. Where pre-existing relationships exist between users and PSPs, already available data would be used, minimising the need for users to go through additional processes and ensuring efficiency. If new relationships between users and PSPs were required, only essential data would have to be provided for the necessary due diligence.

The PSPs involved would use established onboarding processes to manage costs, thereby ensuring a high level of inclusion. The digital euro project prioritises reaching digitally and financially excluded groups across the euro area.

To ensure flexibility and avoid PSP lock-in, quick and smooth portability would also be vital. A universal account identifier across PSPs would enable this process.



The right to privacy and personal data protection are fundamental rights. As such, they are key goals for a digital euro. The ECB's interactions with the public emphasise the importance of protecting privacy and ensuring control over personal data. Trust in the digital euro depends on robust privacy standards, data protection and transparent data usage.

The Eurosystem would not be able to identify users in transactions and would ensure data segregation between PSPs and the Eurosystem, adopting privacy-enhancing techniques to achieve this.

The privacy policy for the distributing intermediaries would aim to balance privacy and data protection needs with other public policy objectives, such as anti-money laundering, counter-terrorism financing, prevention of tax evasion and open banking. The digital euro would adhere to applicable legal frameworks, to be determined by European legislators, in order to maintain this balance.



Onboarding

In line with EU regulations, user identification by their PSP would be required for digital euro payments.



Online and offline digital euro privacy

Offering users a choice between online and offline options empowers them to tailor their use to their individual needs, including privacy.

3.1 PRIVACY MODEL FOR AN ONLINE DIGITAL EURO

The Eurosystem would ensure that it cannot identify individual users behind transactions. Online digital euro payments would be aligned with existing AML/CFT rules and any relevant legislation for electronic payments. Consequently, PSPs would have access to data in accordance with applicable regulations, such as the General Data Protection Regulation. Subject to legislative deliberations, enhanced privacy could be considered for low-value remote online payments.

3.2 PRIVACY MODEL FOR AN OFFLINE DIGITAL EURO

An offline digital euro would provide a higher level of privacy for low-risk, in-person payments. Access to transaction data by PSPs would be minimal, limited to what is required to avoid forgery. An offline digital euro replicates the cash experience, requiring the user to load digital euro to a device, similar to withdrawing cash from a cash machine. Physical proximity and limits on holdings and transactions would reduce the risk of misuse. Exemption from some AML/CFT obligations will depend on the risk-based assessment conducted by the EU co-legislators.

3.3 END-USERS IN CONTROL OF THEIR DATA

The Eurosystem would not have access to personal information. Moreover, digital euro users would retain control over the use of their data by PSPs, with the possibility of opting for PSP data usage for the provision of additional services. PSPs process only limited data to the extent necessary for performance of digital euro basic services within the regulatory framework. Without further user consent, data could not be used by PSPs beyond what is legally required for onboarding and processing of digital euro payment transactions. The Eurosystem emphasises the importance of data usage transparency and choice, rather than monetisation. Users would be able to allow PSPs to process their data for commercial purposes and provision of additional services, without limiting their access to core services.



04

Stronger together

A public-private collaboration to deliver

The digital euro project is a true European initiative that requires close cooperation with all the actors involved, including policymakers, the private sector and the public. Digital euro users would be able to open their wallets via PSPs, which already have the requisite expertise and are responsible for managing relationships with their customers. In turn, an individual's digital euro holdings would be a liability held with the central bank, as is already the case for cash.

In accordance with the Payment Services Directive 2, PSPs have the expertise to offer payment account services, making them the perfect candidates to distribute the digital euro. This includes credit institutions, electronic money institutions and payment institutions. All PSPs would distribute the digital euro to end-users, ensuring access across all euro area countries.

To ensure a seamless and secure user experience, PSPs handling digital euro payments would rely on support services, such as settlement maintenance, a scheme rulebook, onboarding checks, alias look-up, dispute management, fraud prevention, a digital euro application, funding facilitation, and offline provisions. As the issuer, the Eurosystem would be responsible for ensuring that such services allow widespread harmonised usage. The technical architecture of the digital euro would have to adhere to robust principles as well as the requirements to uphold confidentiality, integrity and availability.

For this purpose, the Eurosystem is designing a digital euro scheme to ensure harmonious implementation. This scheme consists of a single set of rules, standards and procedures for the standardisation of digital euro payments across the euro area, ensuring pan-European reach. It is currently being developed by the Rulebook Development Group (RDG) in consultation with market participants, including users, retailers and intermediaries.

A digital euro scheme is necessary to enable pan-euro area reach and ensure a harmonised user experience in terms of how PSPs would provide digital euro services and how these would be perceived by individuals or merchants. The scope of the scheme would be limited to what is needed to achieve this objective, while still enabling market participants to develop further services. The scheme would seek to leverage existing standards and solutions (to the degree possible and subject to regulatory requirements) in order to minimise the need for additional investment by PSPs.

DIGITAL EURO SCHEME RULEBOOK DEVELOPMENT GROUP

A dedicated Rulebook Development Group (RDG) is developing a rulebook for a digital euro scheme. The RDG will develop a set of rules, practices and standards, for example for user management, liquidity management and transaction management. Its work is based on the Governing Council's decisions on the design of a digital euro.

The members of the Group are senior professionals from the private and public sectors with experience in finance and payments. They are nominated by stakeholder associations in the European retail payments market. Each member represents a particular association.

4.1 COMPENSATION MODEL

The Eurosystem has proposed the core principles to underpin the compensation model for a digital euro.

Free basic use for individuals

A digital euro should offer basic services to citizens free of charge, reflecting its status as a public good and in line with users' experience with cash.

Incentives for PSPs and merchants

To foster network effects, intermediaries should be compensated for the services they provide, as they are for comparable electronic payments. Still, legislative safeguards should prevent merchants from being overcharged by intermediaries.

Eurosystem covers own costs

The Eurosystem would bear its own costs, as it does today for banknotes. While PSPs cover their distribution costs, Eurosystem doesn't charge for scheme management and settlement processing.

Overall, a digital euro would also provide PSPs with opportunities to further innovate additional payment solutions and/or added value services. In turn, a digital euro would strengthen Europe's payments

Figure 3: Overview of included core services

USER MANAGEMENT	LIQUIDITY MANAGEMENT	TRANSACTION MANAGEMENT
Onboarding digital euro end-users	Funding <i>(manual & automated)</i>	Transaction initiation <i>(one-off transactions)</i>
Offboarding digital euro end-users	Reverse waterfall	Authentication
Payment instrument management <i>(both provision and maintenance)</i>	Defunding <i>(manual & automated)</i>	Payment confirmation/ Rejection notification
Linking digital euro account to commercial bank money account	Waterfall	Refunds
User lifecycle management processes <i>(identification, data update, information display on balance and transactions, account recovery, account portability and end-user support)</i>		Dispute/exception management
		Recurring payments



Digital financial inclusion

Promoting digital financial inclusion is a key principle underlying the concept of a digital euro. It should address barriers to digital inclusion when using digital euro services. This is particularly important considering the digital euro's status as a public good.

A digital euro would be designed to be inclusive and accessible to people with low digital and financial skills and resources, as well as people with disabilities and the elderly.

A digital euro payment card would be available for those who are vulnerable to digital financial exclusion and who would prefer to use a physical card instead of a digital wallet, while the option to fund and defund the card using cash would offer a simple top-up option without the need for a smartphone.

Users should be able to onboard to a digital euro either remotely or in-person and be able to easily switch intermediaries.

The offline functionality would also support digital euro payments in areas with poor network coverage.

The Eurosystem has proposed that at least one dedicated and licensed public entity could be identified in each euro area country (for example a post office, giro institution or credit union) to facilitate onboarding, even for those without a bank account. This entity would provide access to digital euro services and the necessary support to those vulnerable to digital financial exclusion, without any cost to the customer.



06

Setting the grounds

A digital euro would be a basic, easy-to-use solution that would provide a platform for innovation at the European level, fostering resilience and competition within the payments sector.

It would be based on a European infrastructure that facilitates the scaling of payments innovation by intermediaries throughout the euro area. In turn, a digital euro would give PSPs the chance to operate beyond their national borders and to innovate new pan-European solutions and value-added services for their customers.



07

Rolling out a new payment method is not an easy task. It requires the involvement of multiple stakeholders in implementing their part of the solution. It involves stakeholder engagement, technological development and testing across multiple systems. A roll-out plan is therefore essential.

If and when the decision is taken to issue a digital euro, the Eurosystem would stagger the roll-out in two steps for prioritised use cases. This gradual approach is common for complex payment instruments like the digital euro. It would mitigate risks, allow for issue resolution and enable users to gradually familiarise

themselves with the digital euro.

Following a two-year investigation phase, the Governing Council of the ECB has decided to launch a next phase, the digital euro preparation phase.

During this preparation phase, the Eurosystem will focus on further testing aspects relating to the design, user experience, privacy, financial inclusion and ecological footprint of a digital euro. This will include further work on the digital euro scheme rulebook and defining a selection process for potential service providers.

The preparation phase will run in parallel to the legislative deliberations. The ECB stands ready to continue its regular dialogue with EU legislators on this topic and will consider any adjustments to the digital euro design that may arise from the legislative deliberations.

The preparation phase will start on 1 November 2023 and will last for two years. Based on the outcome of the first step of the preparation phase and developments in the legislative process, the Governing Council will decide whether to move to the next step, which would work towards achieving operational readiness for possible future issuance and roll-out of the digital euro.





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