EUROPEAN CENTRAL BANK

EUROSYSTEM

Digital euro innovation platform

Outcome report: pioneers and visionaries workstreams

September 2025

Contents

1 Executive summary

Europe's payments landscape is undergoing a profound transformation, with digital transactions rapidly becoming the norm. In this context, the Eurosystem is developing a digital euro to ensure that everyone in the euro area continues to have access to a public, trusted, and universally accepted means of payment – both now and in the future. The digital euro is not just a response to technological change; it is a strategic investment in Europe's monetary sovereignty, resilience and capacity to innovate, supporting a competitive payments market and financial inclusion for all.

On 1 November 2023, the Eurosystem launched a two-year preparation phase to lay the groundwork for the potential issuance of a digital euro. An important goal of this phase is to learn through experimentation and gather real-world insights to improve the technical design and user experience of a digital euro for consumers and merchants.

The digital euro is designed to offer an inclusive, harmonised digital payment experience, and to create a strong foundation for innovation across the euro area, making it easier for businesses to develop new services for users.[1] The digital euro could also be seamlessly integrated with private payment solutions, giving people more choice and greater convenience.

In October 2024 the European Central Bank (ECB) launched the digital euro innovation platform to foster collaboration with the market in order to test ideas and explore the innovative potential of the digital euro. As part of this initiative, from February to May 2025 the ECB coordinated two workstreams – "visionaries" and "pioneers".

Visionaries workstream

The visionaries focused on ideas that showed how the digital euro could unlock and foster innovation within the euro area. Meanwhile, the pioneers focused on the technical testing of conditional payments, i.e. payments that are triggered only once specific conditions have been met, such as when a parcel is delivered.

This initiative brought together a diverse group of stakeholders – including merchants, banks, payment service providers (PSPs), fintech companies, IT providers, academics and financial institutions – to provide critical insights into both conceptual and technical considerations of the digital euro.

In the visionaries workstream, a wide range of ideas were presented, highlighting the digital euro's potential to facilitate innovation, for example:

- **Integrated electronic receipts (e-receipts) could give users secure and easy access to their purchase records, all in one place.** A certified archive provider would store the receipts using strong encryption, meaning only the buyer and the seller would be able to see the transaction details, not the

[1] This is also outlined in the European Commission's draft legislative proposal: Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro.

Eurosystem or any other third party. Integrated e-receipts would help merchants with returns, warranties and expense tracking, and could protect the environment by reducing paper waste.

- **Conditional payments, such as "pay-on-delivery", "pay-per-use" or milestone-based payments, were also seen as a possible key driver of innovation.** With conditional payments, funds would be released only after certain conditions have been verified. This would enhance trust and security and facilitate automation.
- **In the transport sector, the digital euro could enhance accessibility and reduce fragmentation of solutions.** For shared mobility services and public transport, it could enable tap-and-go payments and the calculation of the best available fare, while in tolling systems it could support instant, automated settlements across the euro area.
- **In terms of inclusion and accessibility, the digital euro could be designed to offer more than existing digital payment methods**, such as dedicated wallets with integrated digital identity features for children and students, as well as accessible interfaces or artificial intelligence agents to support users with diverse needs.

Pioneers workstream

The pioneers workstream focused on the technical testing of conditional payments in a simulated digital euro environment, with the Eurosystem providing the core technical functionalities, and PSPs defining and managing the conditions that would trigger a specific payment. The materials shared with the participants for the pioneers workstream can be found in the annex.

The workstream tested scenarios that covered different sectors, showing how conditional payments could support innovative new services for example in e-commerce, financial services or transport.

The digital euro's pan-European reach would ensure that these innovative ideas are instantly accessible to all consumers and merchants. This would also bring several advantages:

- reduce market fragmentation,
- align industries across borders,
- unlock new business opportunities that contribute to euro area growth.

Both workstreams emphasised that the digital euro's pan-European infrastructure and harmonised standards would play a key role in ensuring trust, scalability and seamless use of the digital euro throughout the euro area. They also underscored the need to empower market participants to innovate and develop new services that build on the Eurosystem's core infrastructure and standards.

Early technical testing was seen as essential for the success of the digital euro. The pioneers workstream stressed the value of hands-on experimentation in producing

concrete results and identifying areas for improvement, in turn helping the market prepare for a potential launch of the digital euro.

While many innovative ideas were discussed during this exercise, these should only be regarded as an early reference point that may inform the future design and possibilities of the digital euro. The visionaries and pioneers workstreams were crucial in assessing market expectations, fostering cooperation and dialogue among stakeholders.

Both workstreams demonstrated how collaboration with the market can drive innovation and help shape the long-term vision for the digital euro. Participants expressed strong interest and enthusiasm for working together, emphasising that ongoing dialogue is key to ensuring that the digital euro meets real-world needs.

Building on the results and strong participation in this first iteration of the innovation platform, future iterations will continue to foster collaboration among market stakeholders while unlocking the innovative potential of the digital euro.

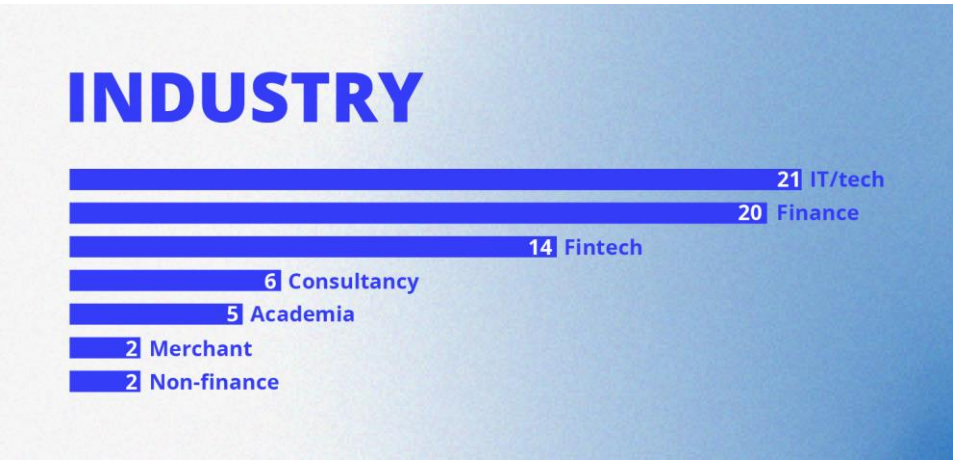
2 Innovation platform structure and workstreams

Collaborating with the market to explore the digital euro's innovative potential

The ECB launched a digital euro innovation platform in October 2024 to explore the digital euro's potential through collaboration with the market. The platform has brought together a wide range of participants, including merchants, fintech companies, start-ups, banks, academics, public sector organisations and PSPs. Following a public call for expressions of interest[2], the ECB received over 100 applications, from which it selected around 70 applicants to take part and contribute their ideas and expertise.

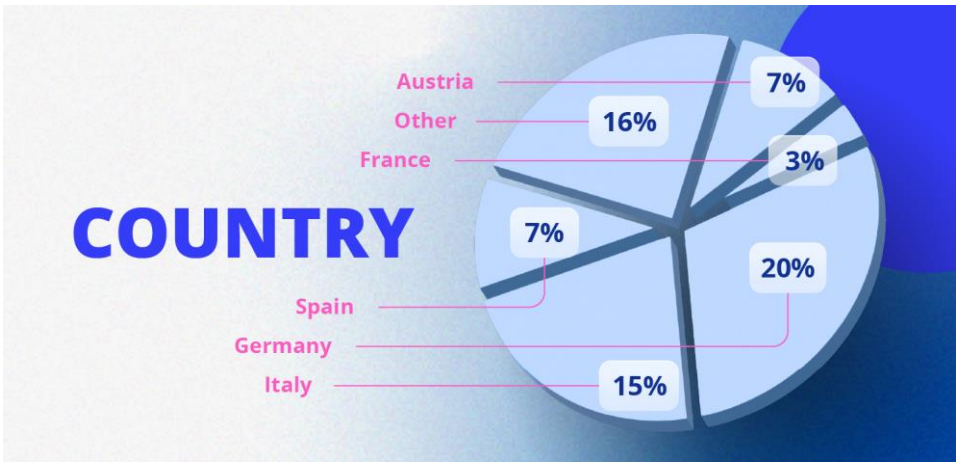
From February to May 2025, the ECB worked with these participants through two dedicated workstreams: the pioneers and the visionaries.

Figure 1
Overview of workstream participants by industry



2 "Call for expressions of interest in innovation partnerships for the digital euro", *MIP News*, ECB, 31 October 2024.

Figure 2
Overview of workstream participants by country



The visionaries focused on gathering innovative ideas and exploring the long-term potential of the digital euro. Out of more than 65 applicants for the workstream, 18 were selected to take part, based on the creativity, relevance and diversity of their proposals. The participants joined half-day workshops with the ECB and euro area national central banks (NCBs), where they presented their ideas and discussed the benefits and relevance of these ideas, as well as potential implementation opportunities and challenges.

Discussions spanned a wide range of topics, from actionable ideas to broader design and policy considerations. Participants highlighted how the digital euro could drive innovation, unlock business opportunities and support economic growth across the euro area. They also stressed the unique role that the Eurosystem, as a trusted institution, can play in providing harmonised standards, which will be critical for the success of the digital euro.

The pioneers workstream concentrated on technical experimentation with conditional payments. The Eurosystem provided the technical foundation for these tests, onboarding pioneers to a simulated digital euro environment that was developed according to the current draft of the digital euro design[3]. The environment was intentionally simplified to account for practical constraints and was not representative of the final production version of the digital euro. During the exercise, market participants tested different applications of conditional payments, in close collaboration with ECB and NCB experts. The high level of engagement demonstrated the strong interest from market participants in experimenting with conditional payments.

For both workstreams, participation was on a voluntary basis and was not remunerated.

[3] Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro.

The conceptual ideas presented in this report are envisioned solely as potential examples of value-added services suggested by workstream participants and would remain separate from the digital euro's basic payment function. As such, they would be provided by private sector actors such as PSPs, while the Eurosystem would only offer core services. Any additional services offered by third parties would be optional, complementing the core digital euro services provided by the Eurosystem. Users would be able to decide whether or not to use these additional services and, if they were to do so, what data to share. Rigorous privacy protection is fundamental to the digital euro's design: the Eurosystem would not be able to trace payments to individuals, while banks and other PSPs would access personal data only to the extent needed to comply with EU legal requirements, with any additional processing requiring the user's explicit permission. All digital euro services would be subject to the full scope of EU data protection law, including the General Data Protection Regulation (GDPR)[4].

[4] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) (OJ L 199, 4.5.2016, p. 1).

3 Visionaries

3.1 Forward-looking ideas supporting innovation

Exploring innovative digital euro applications with the visionaries

The visionaries workstream was designed to gather forward-looking, conceptual ideas on how the digital euro could support innovation across the euro area economy.

The open and flexible nature of the workstream created space for a wide range of perspectives and ideas – from practical use cases to more conceptual or policy-oriented proposals. Some workshops focused on a single idea, while others considered a portfolio of potential applications. While most workshops looked at innovative ideas that could be integrated with or enabled by the digital euro, one provided insights on features that might drive the adoption of the digital euro.

Although the proposals reflected a wide variety of sectors and priorities, common themes emerged, such as e-receipts, conditional payments, mobility and transport, and financial inclusion. These themes provide important insights into the types of innovation the digital euro could support, and the areas where intra-ecosystem collaboration, technical enablers or policy alignment may be needed to turn these ideas into reality.

The following section describes these proposals in more detail, including the potential benefits identified by workstream participants.

3.2 Innovative ideas and applications discussed in the visionaries workstream

3.2.1 Integrated electronic receipts

Easier and private access to purchase records

The integration of electronic receipts (e-receipts)[5] – digital versions of traditional paper receipts – into the digital euro ecosystem was proposed as a potential value-added feature that could complement existing payment services. Visionaries believed that digital euro e-receipts could significantly improve the end-user experience while also having a positive impact on the environment by reducing paper waste.

For consumers, integrated e-receipts with digital euro purchases could simplify everyday activities by providing users with easy access to purchase records, all in one place. This would make tasks like handling returns, warranty claims, expense

[5] E-receipts are typically sent to the customer via email, SMS, or a digital platform such as a mobile app. Like traditional paper receipts, e-receipts serve as proof of a transaction or purchase and contain details such as the date, time and amount of the transaction and the items purchased.

reporting and personal budgeting much more straightforward. Users would also retain full control over their data, with the ability to opt out or delete receipts.

For merchants, e-receipts could significantly reduce operational costs and lead to more efficient receipt management by eliminating paper-based processes, while also providing a new digital touchpoint through which to engage with customers. Cutting down on printed receipts would also bring clear environmental benefits, such as reduced chemical waste, resource use and emissions.

Figure 3
Integrated e-receipt

Digital receipts could be stored securely without compromising user privacy. A certified archive provider would store the receipts using strong encryption. This means that only the buyer and the seller would be able to see the details, not the Eurosystem or any other third party. The Eurosystem would have no access to individual transaction data. Its role would be limited to putting in place the technical rules and safeguards to make sure that the system is safe, reliable and protects user privacy. A separate provider could handle encrypted data in full compliance with EU data protection law, and without exposing personal information. This approach

reflects the Eurosystem's clear commitment to protecting user privacy, while at the same time supporting secure and innovative digital payment solutions.

Integrated e-receipts would also enable value added digital euro services, for example through loyalty programmes or by allowing consumers to track their expenses more easily and in more detail. A system that preserves privacy and ensures close collaboration between stakeholders will be crucial for the successful implementation of e-receipts. PSPs, certified storage providers and middleware companies will need to work together under clear and harmonised standards to accomplish this goal.

3.2.2 Conditional payments

Increased trust and flexibility with conditional payments

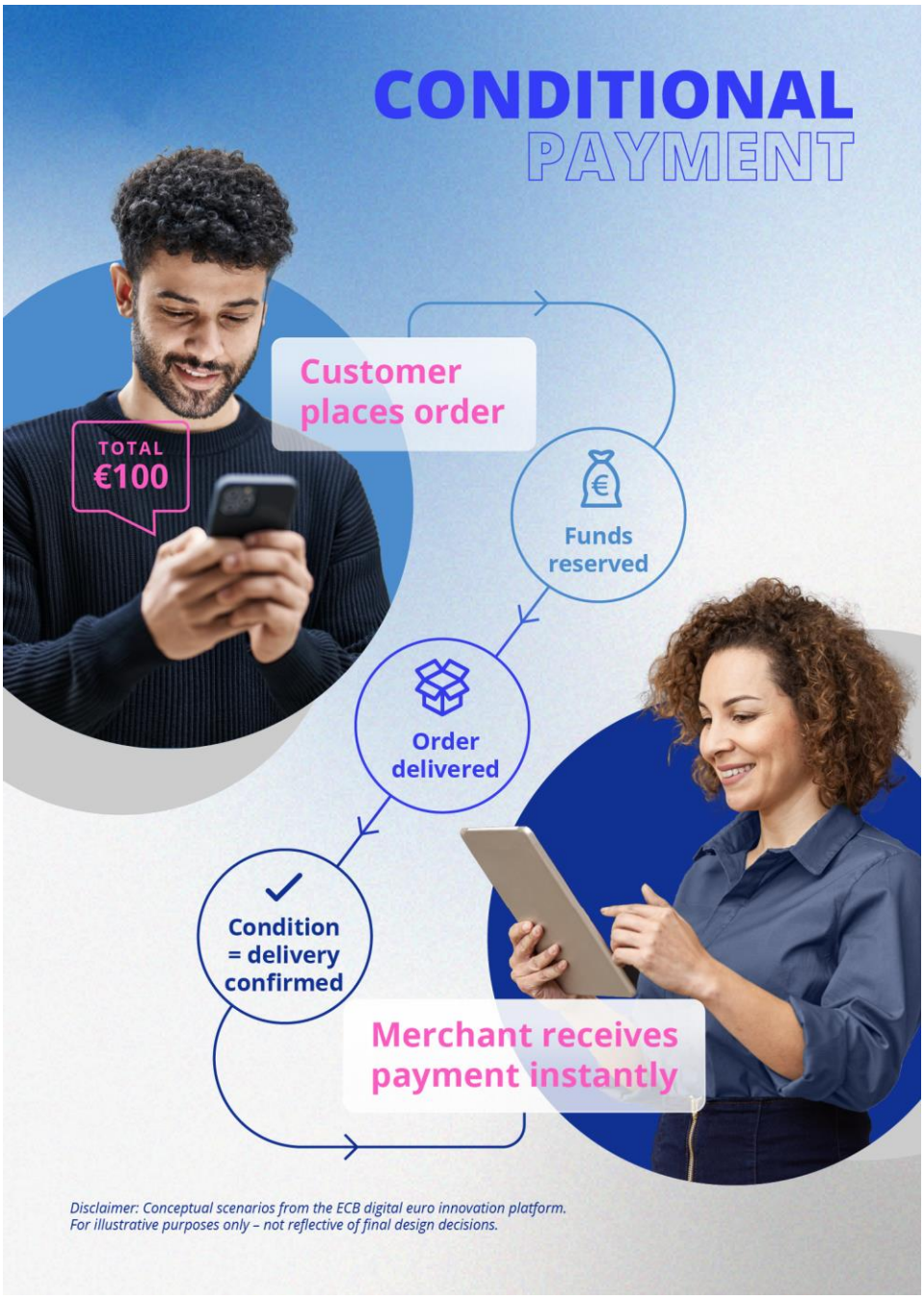
Conditional payments are defined as payments that are made automatically when predefined conditions are met. They were the primary focus of the pioneers workstream and a recurring topic of discussion in the visionaries workstream. Visionaries explored a wide range of scenarios for implementing conditional payments within the digital euro ecosystem, showcasing innovative applications and potential use cases.

Pay-on-delivery

One of the most frequently discussed examples of how conditional payments could be used was the pay-on-delivery case, especially in the context of online shopping. With this approach, the payment is not completed immediately after an online order is placed. Instead, the money is reserved at the time of the order and only transferred to the seller after the delivery of the product has been confirmed by the buyer.

For example: a customer buys something online and chooses to pay upon delivery. The seller ships the item, and once it arrives, the customer confirms receipt on the courier's device. Only then is the payment released. This method adds an extra layer of security and trust for both sides.

Figure 4
Conditional payment



Visionaries suggested that using the digital euro for this kind of payment could help

- reduce disputes and failed deliveries,
- simplify refunds,
- build trust between buyers and sellers,

- offer an optional service that merchants could monetise (e. g. for a small fee),
- create more transparency, better protection against fraud and a smoother online shopping experience for consumers.

Automated escrow mechanisms

Several proposals also examined the use of automated escrow mechanisms to enhance the handling of retail payments. Traditionally, when making a purchase – particularly online or in private transactions – the funds are often held by a trusted third party until specific conditions are fulfilled. This process is commonly referred to as escrow. With automated escrow, this process would be handled by smart contracts, i.e. digital agreements that automatically release the payment when predefined conditions are fulfilled. For example, when buying a second-hand smartphone from someone online, the payment would be temporarily held in a secure digital wallet rather than being sent directly to the seller. It would only be released to the seller after the buyer's confirmation that the phone has arrived and is in good condition.

According to the visionaries, this kind of set-up could be especially helpful in online marketplaces, peer-to-peer transactions, or expensive purchases where trust is essential. If these escrow mechanisms are connected to e-receipts or shipping systems, everything could happen automatically, making the process faster, safer and more transparent for both sides.

Milestone-based payments

Milestone-based payments were highlighted as particularly relevant for service contracts[6], freelancers and phased projects. In such cases, conditionality could enable funds to be released when specific deliverables or milestones are completed. For example, a learning course on a digital education platform could be set up in such a way that payment is triggered automatically upon successful completion of each chapter or module. This ensures that users pay progressively and in line with their learning progress, while providers are incentivised to deliver high-quality content at each stage.

Recurring services, micropayments and pay-per-use models

The visionaries also discussed recurring services, micropayments and pay-per-use models, which they thought could benefit from conditionality by triggering small, real-time payments in response to the verified usage of a service.

[6] A service contract is a contract between a service provider and the contracting authority covering all intellectual and non-intellectual services other than those covered by supply contracts and works contracts.

Instead of paying a fixed monthly fee for services, users could authorise conditional payments at the beginning of the month, with charges triggered later based on actual usage. This model would offer more flexibility and keep costs more closely aligned with real consumption. By minimising upfront commitments and subscription barriers, these kinds of conditional payments might support broader participation in services that are traditionally paid for via fixed fees or lengthy, inflexible contracts. For instance:

- media streaming platforms could offer pay-per-use models where consumers are charged only for the actual amount of time they spend watching films or series or listening to music, rather than committing to fixed monthly subscriptions. This would lower entry barriers and offer greater flexibility for occasional users.
- In the energy sector, households could pay for electricity in small increments as consumption data becomes available. This could improve access to energy services, while reducing the financial burden on vulnerable groups such as unbanked or low-income households.

Additional applications of conditional payments

The visionaries envisaged that conditional payments could also facilitate automated reimbursements and streamlined refund processes for insurance claims or delayed services. For example,

- if a train arrives significantly late, the system could automatically trigger a partial refund to passengers without requiring them to file a claim;
- in healthcare or travel insurance, a smart contract could verify claim details and automatically reimburse approved expenses, saving time for both the user and the service provider.
- Web3 and internet of things applications showed how conditional payments could be used for automated transactions between machines, without needing a person to step in. Smart devices like washing machines or parking meters could be set up to interact with the digital euro ecosystem and make payments on their own, based on predefined conditions. For example, a smart coffee machine could automatically order and pay for new coffee pods when supplies are running low. Or a smart parking meter could charge according to how long a car is parked, or whether it is within a certain time window or zone.

The workstream's proposals on how conditional payments could be implemented also included conditional transfers across borders also outside the euro area, where funds are only released when certain conditions in the recipient country are verified.

These proposals demonstrate how conditional payments could make the digital euro more adaptable to the real-time flow of goods and services by enabling immediate, usage-based payments to be made without human intervention.

According to the visionaries, this would enable a more secure, transparent, and efficient payment experience for consumers, while for merchants and PSPs, it would unlock operational gains and create space for new business models that were previously too costly or complex to implement.

3.2.3 Transport

Harmonised pan-European mobility and transport ecosystem

Proposals related to transport focused on how the digital euro could simplify transport payments to enhance the user experience, creating a more seamless and consistent way to pay across the euro area.

In a fragmented shared mobility market, the digital euro could

- help create a harmonised European transport ecosystem
- simplify user access through a standardised onboarding and payment process.

In addition, the digital euro's offline functionality would enable payments to be made even in the absence of an internet connection, ensuring a smooth interaction for both users and providers. This application is particularly relevant for young people, under banked people and tourists, as it could enable them, for example, to rent a shared car, city bike or scooter without the need for a credit card or complex digital onboarding processes. Consumers would have the peace of mind that, when travelling within the euro area, the digital euro would be accepted everywhere.

Visionaries posited that conditional payments could make tap-and-go public transport systems smarter and more user-friendly. Features like dynamic pricing[7] and fare capping[8] would potentially enable users to pay the best fare for their trip, and never more than a set daily limit. In addition, grouping trips into one daily charge would help ensure consumers always get the best deal automatically. This approach could also support offline payments (for example underground or in rural areas) and would be designed to always protect user privacy.

7 Dynamic pricing is the adjustment of prices based on variable factors. In a tap-and-go system, fares could be dynamically calculated based on the length of the journey, with the system automatically charging the appropriate amount.

8 Fare capping sets a maximum limit on the price a passenger pays for travel within a specific time frame (e.g. a day, week or month) regardless of how many journeys they make. Passengers would typically pay for each individual trip until the cumulative cost reaches the set cap for that period, after which any additional journeys are not charged.

Figure 5
Tap & Go functionality

In automated tolling systems, digital euro wallets could be integrated with mobile apps to enable users to pay tolls instantly while driving – no stopping or manual payment needed. A key benefit of this would be interoperability, meaning the system would work across all countries and toll operators in the euro area, eliminating the need to have multiple apps, accounts or payment methods. Combined with features such as offline payments and harmonised rules, the digital euro could help build a modern, seamless tolling system for drivers across the euro area.

These proposals underline the digital euro's potential to support more integrated and efficient payment solutions for euro area transport, even across borders, helping to make transport services more accessible to citizens. While such solutions already exist in certain cities and countries, they are often limited in scope or not interoperable. A digital euro could help these innovations scale across the euro area,

making transport payments seamless and user-friendly for everyone, wherever they travel.

3.2.4 Artificial intelligence and the digital euro

AI-powered wallets for smarter, more efficient transactions

Another topic that was discussed during several workshops was the use of artificial intelligence in the digital euro ecosystem. The following examples illustrate participants' ideas on what this could look like.

With a digital euro, smart wallets could help people manage their money more easily. For example, they could automatically handle payments such as streaming subscriptions or monthly savings, without users having to approve every single transaction. In more specific cases, like charitable donations, payments could be set up to only be released under certain spending conditions that would ensure that funds reach the right beneficiaries or projects, increasing trust and transparency in how funding is used.

With a digital euro, users could manage their finances by simply speaking to their wallet. Voice commands – available in different languages – would let users check their balance, pay bills or quickly confirm payments with a PIN or biometric authentication. Once confirmed, the payment would go through, and the updated balance would appear instantly. This kind of easy, secure interaction would make digital payments more accessible for everyone, including people who are not comfortable with complex apps or digital tools.

One idea explored during a workshop was to create a smart platform, in collaboration with the Eurosystem, to help people quickly resolve issues with digital euro transactions. This service would be secure, consistent and open to everyone across the euro area, as well as being easy to use even, for those who are less familiar with digital tools. Artificial intelligence could play a key role, for example by spotting errors like duplicate charges, speeding up the process of dispute-handling, and suggesting fair solutions based on similar past cases. The goal would be to make resolving payment problems simpler, quicker and less stressful for everyone.

3.2.5 Financial inclusion and accessibility

An inclusive and accessible payment experience

A recurring theme across multiple workshops was the importance of ensuring that the digital euro is not only accessible to all euro area citizens, but also serves as a tool for promoting digital financial inclusion.

Several proposals stressed that financial inclusion covers both access to infrastructure and the ability to participate, particularly for groups who have traditionally been less included in digital financial services, such as children, the elderly, people with accessibility barriers and the under banked.

Financial inclusion of young people was a recurring topic. One proposal suggested creating a special digital euro wallet for children and teenagers to help them learn

how to spend and save responsibly from a young age and improve their financial literacy. The wallet could adapt as the user grows – for example, the app design could change for different age groups and new features could be unlocked gradually over time. It could also include fun, educational content like lessons and quizzes about money. Parents could stay involved by setting spending limits or helping their child set savings goals. This way, young users could safely explore digital money while learning important skills for the future.

Another idea was to give all EU students a free digital euro wallet linked to their digital identity (for example, showing that they are a verified student). This could make it easier for them to access youth benefits, such as student discounts when buying university books or paying for other services. Combining financial access with smart incentives could ensure digital financial inclusion for young people.

The importance of accessibility for less digitally literate groups was also strongly emphasised. Proposed solutions included user interfaces that adapt to cognitive, sensory and physical user needs, for example via voice-controlled transaction flows, assisted onboarding, and large-font display options. One proposal envisioned a payment experience that mimics the physical use of cash, including visual and auditory signals at the point of sale, to build familiarity and reduce friction for first-time digital users.

Figure 6
An inclusive and accessible digital euro

In this context, visionaries also highlighted that the user experience of the digital euro app could be customised to the needs of different users. For instance, digitally inexperienced users could be guided with instructions with additional safety checks to enhance their sense of control while completing their payment processes, whereas digitally experienced users might prefer a process with fewer clicks. One

participant suggested that peer networks play a key role, as users with similar backgrounds can help each other build confidence in digital transactions.

Several participants also highlighted how physical locations like post offices and local bank branches could play an important role in making the digital euro accessible to everyone. These entry points would be especially important in rural areas and for people who do not have a smartphone or bank account, or who feel unsure about using digital tools. At local branches, trained staff would offer in-person help. This could build public trust, improve digital and financial skills and provide vulnerable users with more effective support.[9]

Employees at trusted institutions such as post offices could also help people make secure payments, for example by guiding them through the process in person and helping them use two-factor authentication. In this kind of hybrid model, users stay in control of their payments but get the support they need, ensuring that no one is left behind in the digital age.

3.2.6 Business-to-business (B2B) payments

Simplified and more efficient transactions between businesses

The workshops explored a wide range of B2B use cases where visionaries believed conditional payments could bring greater efficiency, liquidity and even cross-border alignment.

B2B payments are financial transactions where one company pays another for goods or services — for example, when a retailer orders stock from a supplier or a manufacturer pays a logistics provider. These payments typically involve larger amounts, more complex contractual agreements, and longer payment terms than consumer transactions. While it is not currently a priority to explore B2B use cases ahead of the first launch of the digital euro, the Eurosystem remains attentive to emerging trends and evolving industry needs in this area. The proposals discussed in the context of the innovation platform will contribute to the Eurosystem's ongoing reflections on the need and most effective ways to support B2B use cases.

The question of how to automate business payment flows, especially between companies, was also raised. For example, a system could be set up to release money only after a shipment has been delivered or to pay a supplier instantly once the delivery has been confirmed. This would help speed up payments, reduce paperwork and cut costs. It would be especially helpful for small and medium-sized enterprises (SMEs), which often face cash flow problems when payments are delayed or when processes are slow and complicated.

[9] As outlined in the current draft digital euro legislation, in-person support will be an important component of the digital euro ecosystem, helping to foster financial inclusion.

Another proposal envisioned a centralised payment coordinator acting as a "traffic controller"[10] to manage complex payment flows between several companies at once. This would help to synchronise transactions and make trade-related payments across the euro area more efficient and transparent. It could also include the use of escrow models and automated pay-per-use systems. These tools could allow businesses to pay as costs arise rather than having to finance services or goods upfront, which could open the door to new and more flexible business models.

Another idea focused on linking payments directly to trusted documents or certificates, using a shared European system for verification purposes. This could make processes such as invoicing, licensing and customs clearance faster and more reliable. The ECB, as a neutral and trusted institution, was seen as well placed to provide the credibility and common standards needed to streamline business payments across different countries and organisations in the euro area.

These insights indicate that using the digital euro for B2B conditional payments would offer an opportunity for businesses to reduce fragmentation and costs, improve liquidity and build trust across borders, by standardising how payments and data move across European supply chains.

3.2.7 Pan-European reach

Facilitating pan-European payments

Currently, there is no European digital payment option that covers the entire euro area, with 13 out of 20 countries relying on international card payment schemes.[11] With its pan-European reach, the digital euro would facilitate seamless cross-border transactions within the euro area, reducing dependence on non-European providers.

Participants highlighted that national borders, regulatory differences and fragmented infrastructures often introduce frictions, delays and higher costs for businesses and consumers, especially for those engaging in transactions across euro area countries or even outside the euro area.

In the context of payments across different euro area countries, the topic of co-badging was explored with regard to various scenarios. Co-badging means that two different payment schemes – for example, a national card scheme and the digital euro – are available on the same physical card. This gives users more flexibility when making payments.

With the digital euro, co-badging would allow both the digital euro and a national card scheme to be used via the same physical card. The card could be used to authenticate either a card payment in commercial bank money or a digital euro payment. Visionaries believed this would make life easier for the private user, as

[10] A traffic controller for payments would manage and synchronise complex flows between multiple businesses, ensuring that funds are released at the right time and in the right order across supply chains. For example, if a manufacturer receives parts from three suppliers, the coordinator would ensure each supplier is paid only once their delivery has been confirmed, thereby avoiding delays and improving liquidity for all parties involved.

[11] "Report on card schemes and processors", ECB, 28 February 2025.

they would only need to carry one card, which would support both digital euro payments and private payment methods.

The pan-European reach of the digital euro could not only simplify transactions across member states but also provide a platform to scale innovations across the euro area.

Some proposals even looked beyond the euro area and discussed the integration of real-time currency conversion into conditional payment chains. This would allow one party to pay in digital euro, and the other to receive the equivalent amount in their local currency. [12]

3.2.8 Survey on features and adoption of the digital euro

Understanding consumer preferences

While most visionaries focused on innovative ideas that could be integrated with or enabled by the digital euro, one workshop provided insights on features that might drive the adoption of the digital euro, based on a large-scale survey completed by over 17,000 European citizens across the 27 EU Member States. This research was conducted independently by the workstream participant and was not commissioned by the ECB or the Eurosystem.

In the study, respondents were randomly assigned to assess one of three hypothetical design scenarios without being informed about the others, to capture individual perceptions and avoid comparison effects.

The study highlighted the importance of understanding consumer preferences, and of carefully assessing the impact that different scenarios and features could have.

[12] Whereas the initial focus of the digital euro is to meet the needs of the euro area market, the Eurosystem is investigating approaches that could support the provision of cross-currency functionalities in the future.

4 Pioneers

4.1 Conditional payments as a catalyst for innovation

The market could develop conditional payments by building on core functionalities provided by the Eurosystem

The pioneers workstream focused on testing how conditional payments could be implemented on a technical level using a simulated digital euro back-end infrastructure. Conditional payments have significant potential as a catalyst for innovation, which the digital euro could help unlock, in collaboration with market participants. As foreseen in the current legislative proposal[13], the Eurosystem would provide the core technical capabilities for conditional payments by enabling the reservation of funds functionality in the settlement layer. PSPs would then be responsible for developing the conditional logic layer, allowing them to define the conditions for releasing reserved funds.

This approach recognises that the market is best placed to lead the development of conditional payment services, as market actors know consumers well and can flexibly respond to their needs. Furthermore, a clear separation between the settlement layer in the back-end infrastructure and the conditionality layer would ensure a secure environment that preserves the privacy of end users and the integrity of the payment process, while also allowing the flexibility for external monitoring that can trigger conditions and facilitate potential arbitration.

The Eurosystem could also play a pivotal role in ensuring the interoperability of conditional payment solutions. The digital euro scheme rulebook aims to establish a harmonised framework of standards and procedures for PSPs distributing the digital euro. By ensuring consistency across providers, it aims to facilitate interoperability, drive scalability, and enable PSPs to deliver value-added services while developing innovative solutions.

As noted previously, the visionaries workstream also covered conditional payments – but at a higher level and as one of many topics. Thus, some of their ideas may overlap with those of the pioneers, who focused on the functional, technical and implementation-related aspects of conditional payments.

Box 1

How do conditional payments work?

Conditional payments are transactions that are automatically executed when predefined conditions are met. For example, when buying a product online, the payment would be completed once the buyer confirms that the package has been delivered.

From a technical perspective, the digital euro back-end infrastructure would allow funds to be reserved via the reservation of funds functionality. In practice, this means that when a user makes a payment, the specified amount is temporarily blocked (i.e. “reserved”) within their account, reducing

[13] Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro.

the available balance, but not transferring the funds immediately. This ensures that the payer has sufficient money available when the payment needs to be completed.

Additionally, conditions need to be defined to establish when the funds should be released. This is done in the so-called conditionality layer. Once the established condition has been verified (e.g. the package has been delivered) the reserved funds are transferred to the recipient (in this case, the merchant). If instead the condition is not met (e.g. the goods are not delivered to the buyer), the reservation is cancelled or expires, and the funds are released back into the payer's available balance, ready to use for a different purchase.

Conditional payments are not the same as programmable money, nor would the digital euro ever be programmable money. Programmable money is money that can only be used to purchase specific goods or services or can only be spent within a certain time frame or geographical area. This concept goes against the core principles of the digital euro, as endorsed by the Governing Council. One of these principles is that the digital euro must always be exchangeable at the same value as other forms of the currency (e.g. cash or bank deposits). Allowing it to be used as programmable money would make it impossible to guarantee this equal value, so the Eurosystem has decided that the digital euro will never function as programmable money.

4.2 Exploring the feasibility of conditional payments in a simulated digital euro back-end environment

Set up of testing of conditional payments

The objective of the pioneers workstream was to understand if market participants would be able to test and explore innovative ideas for conditional payments by building on the core reservation of funds technical functionality provided by the Eurosystem.

To facilitate early testing of the reservation of funds functionality, the Eurosystem developed a simulated digital euro back-end environment based on a simplified version of the current draft design of the digital euro. No actual euros were transferred during the exercise.

However, this environment was intentionally simplified to account for practical constraints and was not representative of the final production version.

To ensure fair access to essential resources and streamline the distribution of key information, a comprehensive onboarding package – the pioneer guide[14] – was provided to the pioneers. This package, available through a dedicated website, included essential details such as the definition of conditional payments, technical details, release notes, roadmaps, workflows, visual charts, and a FAQ section.

The development of APIs for the pioneers workstream followed a phased and iterative approach, introducing new features incrementally to support increasingly complex proposals, while still ensuring compatibility and clarity.

[14] The pioneer guide is publicly available in Annex 1.

The initial release provided basic functionalities aimed at testing the reservation of funds. Once it had been successfully tested, pioneers expressed interest in exploring broader payment scenarios. Therefore, the scope of the exercise was expanded through the introduction of additional key features that enabled participants to engage with more advanced scenarios.

After connecting to the simulated digital euro back-end environment via APIs, the pioneers, acting like PSPs, created and managed two types of holdings (end-user and merchant holdings) to simulate realistic payment scenarios. End-user holdings served as the source of funds, while merchant holdings received payments. Pioneers could retrieve details of holdings, such as total and available balances, to monitor and manage payment and reservation processes effectively.

The total balance referred to the full amount of digital funds in a holding, including both reserved and available funds. The available balance represented the portion of funds not reserved and ready for immediate use. Reserved funds were locked temporarily for conditional payments and excluded from the available balance until released or settled.

Pioneers tested the reservation of funds by securely setting aside specific amounts in end-user holdings for future payments. They could create, retrieve, update and manage reservations using unique IDs. Updates allowed them to adjust reserved amounts or extend expiry dates, with automatic funding triggered to cover shortfalls if necessary. Reservations could be cancelled via a zero-amount payment, otherwise they automatically expired with unused funds returned to the end-user's balance.

Functionalities such as dedicated cash accounts[15] (DCAs) with funding via reverse waterfall[16] and defunding via waterfall[17] mechanisms were incorporated. This adjustment was designed to mimic the envisaged architecture of the digital euro, ensuring consistency with the planned holding limits[18]. With the introduction of the new functionalities, merchants could rely on funding to trigger a payment while adhering to the zero-holding limit and could use defunding to transfer incoming payments out of their digital euro wallets. The waterfall and reverse waterfall functionalities are critical for usability, as they would ensure that end users can send and receive digital euro payments even when funds are reserved for specific payments or conditional transactions, without their user experience being affected by holding limits.

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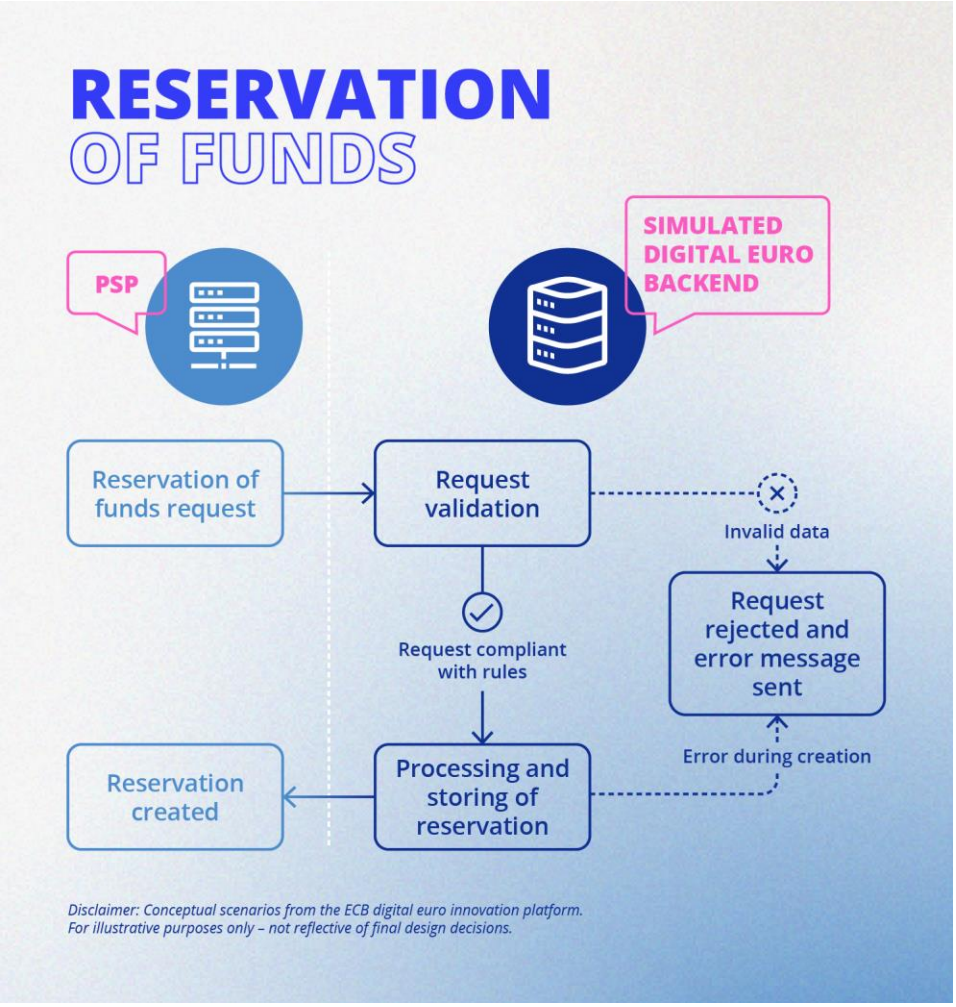
15 An account in central bank money, owned and used by a PSP (i.e. DCA holder) for the purpose of enabling digital euro funding and defunding requests at the request and on behalf of digital euro users (see "Digital euro glossary", ECB, November 2023).

16 A method for facilitating the use of digital euro whereby private money from a linked liquidity source chosen by a digital euro user (e.g. a private money account) is automatically converted into digital euro when the user's digital euro holdings are not sufficient to make a payment (see "Digital euro glossary", ECB, November 2023).

17 A method for facilitating the use of digital euro by automatically converting the amount of digital euro that exceeds a defined holding threshold into private money, in a linked liquidity source, such as a private money account, chosen by the digital euro user such as a private money account (see "Digital euro glossary", ECB, November 2023).

18 Business users would have a zero holding limit, meaning they would not be able to accumulate holdings of digital euro, although they would be able to make specific types of payment. Initially this would involve the processing of payments and refunds (see "A stocktake on the digital euro", ECB, October 2023).

Figure 7
Reservation of funds



To test realistic payment scenarios, pioneers simulated three types of payments.

1. Person-to-business (P2B) payments: settlement of funds from reservations to merchant holdings, with immediate defunding to transfer funds to the merchant's DCA.

2. Person-to-person (P2P) payments: direct transfers between end-user holdings without any prior reservation, with shortfalls and excess funds addressed through funding and defunding mechanisms respectively.

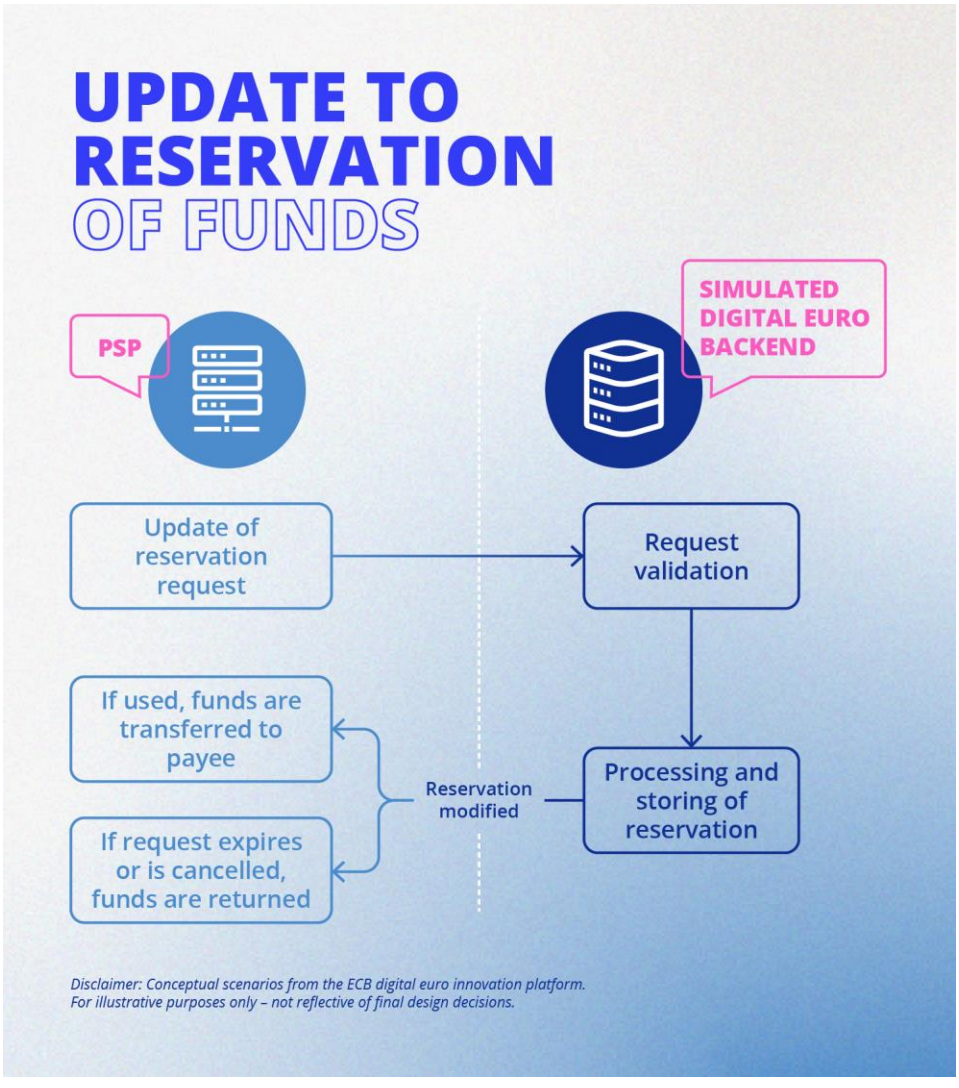
3. Business-to-person (B2P) refunds: payments sent by merchants that refund end-users. Merchants fund their holdings with the refund amount and transfer funds to the end-user.

The adjustments were the result of the continuous dialogue that the ECB maintained with the pioneers throughout the exercise, collecting feedback and insights at every stage. This collaborative and adaptive methodology allowed the workstream to

achieve objectives that went beyond its initial scope, fostering a deeper understanding of how these proposals could align with the envisaged set-up of the digital euro ecosystem and the digital euro's core functionalities. This process proved instrumental in refining the APIs for the exercise, while generating valuable insights for the future development of the digital euro.

The pioneers workstream confirmed that the current design of the digital euro can successfully enable the provision of conditional payments. Pioneers explored innovative ideas to harness the reservation of funds functionality, highlighting its transformative potential and ability to enable cutting-edge services.

Figure 8
Update to reservation of funds



4.3 Innovative ideas and applications tested in the pioneers workstream

Conditional payments as a catalyst for innovation across sectors

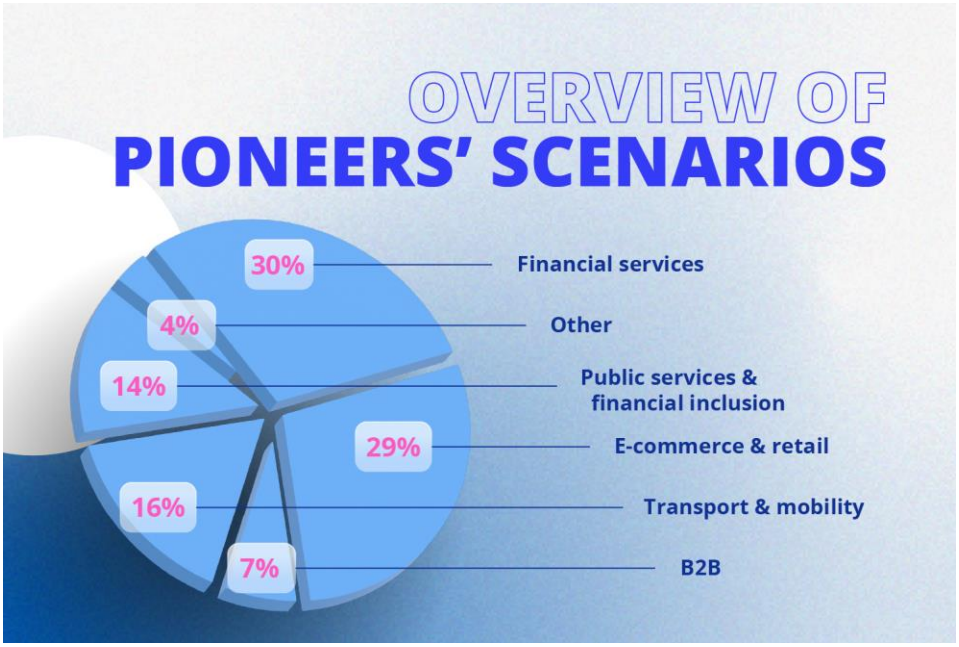
The workstream generated a wide array of insights and ideas, highlighting the digital euro's potential to drive innovation, strengthen European sovereignty and meet evolving payment needs across various sectors. It also highlighted the critical role that market collaboration would play in achieving these objectives.

The exercise gave participants the flexibility to test different applications within the broader category of conditional payments, harnessing the functionalities provided in the simulated back-end environment. The pioneers identified real-world challenges, outlined high-level solution designs, and formulated hypotheses on how the digital euro could address these issues. The way that participants approached the subsequent testing and implementation phases varied significantly depending on their complexity and focus. Some concentrated on conceptual validation through simulations, using API testing tools to assess functionalities such as reservations, conditional triggers and payments. Others developed more advanced prototypes and minimum viable products, incorporating dashboards, mobile applications and integration with existing distributed ledger technology (DLT) networks to simulate real-world operations.

The pioneers' proposals highlighted the innovative potential of conditional payments, showcasing their ability to facilitate automated, flexible and secure transactions across a wide range of sectors and applications. From e-commerce and public transport to healthcare and "industry 4.0" applications, pioneers proposed ideas for how conditional payments could address real-world inefficiencies, enhance transparency and reduce risks.

The visual below provides an overview of the different sectors and scenarios covered in the proposals tested by the pioneers. Although the ideas originated from diverse sectors and stakeholders, common patterns and thematic priorities emerged.

Figure 9
Overview of pioneers' scenarios



The following sections describe the scenarios tested by the pioneers in more detail, including participants' views on the potential benefits and the benefits confirmed by this testing.

4.3.1 Financial services

Enhancing efficiency and automation in payment processes

Testing conditional payments in financial services, the pioneers found that they could address inefficiencies, enable real-time and usage-based payments and enhance automation.

- For instance, in milestone-based payments, funds would be disbursed upon completion of predefined milestones. One example was that of online courses, where funds could be released incrementally as learners achieve specific objectives within the course. This approach would guarantee timely payments to course providers and support a results-driven learning experience. Crowdfunding platforms could also use conditional payments to allow investors to release funds incrementally based on project progress.
- Split payments scenarios would distribute funds directly to multiple recipients. For example, a customer places an order on an online food marketplace, and the payment is automatically split so that a share goes to the food supplier, to the delivery service, and to the platform operator.
- Industry 4.0 scenarios could use automation in machine-to-machine payments and real-time settlement, reducing delays and the need for manual intervention. For example, a machine could detect that it needs a replacement part, place an

order and trigger an automated process that includes order tracking, milestone-based payments and real-time settlement.

- Secure automated escrow systems for pay-on-delivery models would ensure that funds are automatically released upon confirmation of delivery, without the need for a third party to act as an escrow agent. For example, a customer's funds could be temporarily reserved, and then released to the merchant or back to the customer depending on whether the order is delivered, ensuring secure pay-on-delivery without third-party escrow. Financial tools promoting financial literacy were proposed encouraging responsible spending habits. For instance, supervised wallets for children could offer features such as spending limits and reward-based transfers.

4.3.2 E-commerce and retail

Increasing trust and efficiency and minimising fraud

In the e-commerce and retail sectors, conditional payments could enhance the experiences of both buyers and sellers by building trust, increasing efficiency, and minimising fraud.

- One of the ideas proposed was payment-on-delivery systems that release funds only upon confirmation of a successful delivery, reducing online shopping disputes and fraud risks. For example, in online purchases, the payment would only be completed once the customer confirms that they have received the package and verifies the product's condition.
- Pioneers also tested streamlined refund scenarios. For example, a customer could decide to return a product within a pre-established time frame, triggering an automatic refund once the merchant receives the product. This would reduce disputes and simplify post-purchase resolutions, fostering greater trust in the refund process.
- Loyalty programmes could offer cashback, vouchers and discounts to incentivise customers to reach milestones and engage with services.
- Conditional payments could enable group purchasing models, where multiple buyers pool their money to make a purchase, including collective buying incentives with tiered discounts depending on the number of buyers. For example, payments could be held until all buyers in the group have contributed their share. Or group discounts could be offered, with the price per person decreasing as more buyers opt in, ensuring that everyone pays the same rate. In this context, conditional payments can ensure transparency and fairness in the allocation of prices and discounts.
- Another possible application would be enhanced subscription-based models, whereby funds for renewing a subscription are pre-authorised but only released if certain conditions are met (e.g. account is still active; no cancellation request pending), offering flexibility for upfront or recurring instalments. For example, a subscription service could charge users based on monthly usage: €5 for up to

five uses, €12 for up to 30 uses, and €15 for more than 30. The exact amount due (e.g. €12 for nine uses) is reserved at the end of the period based on actual consumption.

4.3.3 Transport

Facilitating travel across the euro area

Exploring scenarios in the area of transport pioneers show that conditional payments could make fare collection and other transport-related transactions more efficient and transparent.

- For example, in toll collection systems, conditional payments could improve efficiency and reduce transaction time. Payments could be pre-authorised when entering a toll zone, and the final charge would be calculated and paid instantly upon exit, based on real-time data.

Enabling smooth tap-and-go systems

- Public transport could leverage conditional payments in systems like tap-and-go (based on near-field communication technology) for smooth fare collection, through daily fare caps. This would ensure the customer enjoys the best possible experience and always pays the best available price. High-frequency, low-value transactions in public transport could also be improved by introducing end-of-day settlement mechanisms, meaning that many small payments are made throughout the day, but rather than being settled individually right away, they are bundled together and paid once at the end of the day.
- Payments for charging electric vehicles could be tied to the customer's actual usage of the vehicle, with options for anonymous transactions to protect user privacy.
- For vehicle rentals, conditional payments could be used to hold funds for potential damages, ensuring secure and reliable transactions.

4.3.4 Financial inclusion and public services

Ensuring an inclusive and accessible digital euro

In public services conditional payments could support financial inclusion, making it easier for people to access public services and cultural opportunities.

For example:

- digital identity was highlighted as an important future consideration for the digital euro.
- Qualified electronic signatures – highly secure electronic signatures that are legally equivalent to a handwritten signature under the European Union

regulation[19] – could play a role in enhancing the security and legal validity of digital euro transactions.

- Verifiable credentials[20] could be used to enforce multi-stage conditions, such as verifying student eligibility for grants and ensuring vendors adhere to funding conditions.
- Deferred payments could facilitate transactions in environments with limited connectivity, allowing conditions to be enforced later in the settlement process. These solutions were seen as highly relevant in promoting inclusivity and accessibility, particularly in situations where internet connectivity is restricted or unreliable.

4.3.5 Business-to-business (B2B) payments

Improving efficiency, liquidity management and automation for businesses

In B2B scenarios, the pioneers suggested that conditional payments could improve efficiency, liquidity management and automation. It is important to note that the first version of the digital euro will not include use cases for B2B payments. However, interest shown by early innovators in this area will help guide future discussions and decisions by the Eurosystem. The Eurosystem is dedicated to remaining attentive to changing market needs and emerging trends.

Examples of B2B applications included:

- milestone-based and split payments, which could optimise cash flows, remove the need for manual intervention and increase transparency and accountability, with funds being released upon the completion of agreed business milestones and/or to multiple recipients. For example, rather than making multiple payments to different parties, a goods producer could make a single payment that is automatically divided among suppliers, manufacturers and contractors based on predefined rules.
- cross-currency payment, that could enable real-time transactions with counterparts outside the euro area and ensure compliance-driven workflows for multi-party B2B transactions. This means a business could send money in digital euro to a company in a non-euro area country (or vice versa), with the funds automatically exchanged into the new currency at the best rate and only released when both sides fulfil pre-agreed conditions, thus ensuring a fast, secure and trustworthy transaction. It should be noted that the cross-currency functionality will not be included in the initial release of the digital euro, as the first launch will focus on ensuring a pan-European reach.

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19 Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC (eIDAS Regulation) (OJ L 227, 28.8.2014, p. 73).

20 Verifiable credentials are a digital document format that can represent information found in physical credentials, such as a passport or license, as well as intangible concepts, such as ownership of a bank account. Verifiable credentials offer enhanced privacy and increased security compared with physical credentials, while also being tamper-proof and allowing for easy remote or in-person verification (see "EBSI glossary", European Commission).

- The full implementation of conditional payments in B2B use cases could not be tested due to the simplified set-up of the environment. Nonetheless, participants were able to test some P2B scenarios that are also relevant for B2B payments, such as milestone-based payments which release funds incrementally as predefined phases are completed.

4.4 Learning through experimentation

Learning through experimentation and market collaboration

The pioneers workstream affirmed the innovative potential of conditional payments and the strong market appetite for their inclusion in the digital euro ecosystem. The broad variety of innovative applications proposed by the pioneers illustrates how conditional payments could unlock new opportunities across different sectors and industries and support user-focused solutions.

The exercise confirmed

- the efficiency of the tested functionalities, while uncovering areas for improvement and providing critical insights that could guide future refinement of API functionalities within the digital euro infrastructure.
- the feasibility of enabling conditional payments with the proposed set-up. Pioneers reinforced that a set-up whereby the Eurosystem provides core technical functionalities (e.g. the reservation of funds functionality), with conditions stored externally, would enhance security and scalability and provide the market with the flexibility to develop innovative new use cases.
- early testing as essential for the future development of the digital euro.

Participants also emphasised the importance of a flexible architecture that can be adapted according to future regulatory changes, technological developments and evolving market needs, ensuring it remains adaptable. The pioneers envisioned the digital euro as a scalable and versatile tool that integrates seamlessly with existing financial systems, fosters innovation and supports a wide range of use cases.

The exercise provided valuable opportunities for learning and improvement, driven by iterative feedback from pioneers, and recommendations for enhancing the digital euro's capabilities and adaptability.

Market participants viewed the practical experimentation as a valuable opportunity to deepen their understanding of the digital euro and proactively prepare for its potential future issuance. They highlighted how hands-on experimentation helps identify potential risks and opportunities early in the development process and provides practical insights into tangible, real-world scenarios. Furthermore, they reported that the information on the current draft design of the digital euro would be useful in helping them assess future efforts to integrate the digital euro with existing payment systems.

Pioneers expressed support for continued experimentation, indicating that they would apply again if given the opportunity, and expressing interest in participating in future initiatives.[21]

[21] It should be noted that pioneers did not receive compensation for their contributions. The significant investment they made to participate in the workstream shows that their motivations went beyond financial returns and included objectives such as gaining valuable hands-on experience, driving innovation, fostering partnerships and achieving broader strategic or reputational goals.

5 Conclusions

Figure 10
Overview of the key takeaways from the innovation platform

The digital euro can drive innovation across the euro area

The pioneers and visionaries workstreams demonstrated that the digital euro has the potential to drive innovation by introducing new features, fostering collaboration between the public and private sectors and offering practical solutions for real-life payment situations. The platform provided valuable insights into how the digital euro could act as an enabler for payment service providers in their creation of new services, improving user experience and supporting unified solutions that work seamlessly across the euro area.

The visionaries workstream brought together a wide range of perspectives and ideas, discussing how the digital euro could meet people's everyday payment needs and help grow the European economy. The findings highlight the value of the exercise as a means of not only collecting feedback, but also fostering the mutual exchange of knowledge, clarifying open questions and information gaps, and increasing understanding of the digital euro across different stakeholder groups.

Although some of the ideas presented could be implemented with existing payment solutions, the workshops emphasized how a digital euro could lead to greater business opportunities by ensuring that these ideas are harmonised and achieve pan-European reach.

The pioneers workstream confirmed that the Eurosystem can play a crucial role in providing essential tools, such as the ability to reserve funds or create shared standards, while providing a platform for businesses to create innovative services that build on the digital euro infrastructure. The pioneers examined the transformative potential of conditional payments to create solutions that focus on consumers and merchants across various sectors. These contributions provided valuable insights for the ECB's exploration of the digital euro.[22]

The digital euro innovation platform has demonstrated the importance of ongoing dialogue and collaboration with the market in driving innovation and shaping the long-term vision for the digital euro. In future iterations, the innovation platform will continue to promote collaboration among market stakeholders and to unlock the innovative potential of the digital euro.

This ongoing engagement will be essential in ensuring that the digital euro is developed and implemented to align with market needs, adapt, and foster innovation.

[22] To ensure fair access to essential resources and to streamline the distribution of key information, links to the comprehensive onboarding package developed for pioneers (the "pioneer guide"), are available in Annex 1 to this report.

6 List of participants in the digital euro innovation platform

(P) = pioneer, (V) = visionary, (B) = both

ABI Lab (B)

Accenture GmbH (P)

Associazione Prestatori Servizi di Pagamento (APSP) (P)

Atruvia AG (P)

Bank of Cyprus Public Company Ltd. (P)

Beelna d.o.o. (P)

Berenberg Bank / Georg Heibel (P)

Bizum S.L. (B)

bluesource - mobile solutions GmbH (P)

CaixaBank, S.A. (P)

Chain4Travel GmbH (P)

CRMpartners Srl (P)

Crunchfish Digital Cash AB (P)

Diebold Nixdorf Holding Germany (P)

Digiteal (P)

Digi-Trade consortium (Amazon, CargoX, Deutsche Bank, Stripe, Swift) (B)

Dinit d.o.o. (P)

DIUSFRAMI S.A. (B)

DSGV (V)

European Card Payment Association (ECPA) (V)

efsta IT Services GmbH (B)

Efthymios Tzortzis (P)

Emergent (P)

equensWorldline SE (P)

Erste Group Bank AG (V)

ESMT European School of Management and Technology GmbH (P)

euro-Wallet GmbH (P)

Everifin (P)

eXyond S.r.l (V)

Financial Engineering S.p.A. (P)

Finansit as (P)

Fluency (P)

Fraunhofer-Institut für Angewandte Informationstechnik FIT (P)

Funds On Chain GmbH (P)

GFT Italia S.r.l. (P)

Hermes Software GmbH (P)

HYPE S.p.A (P)

Iberpay (Sociedad Española de Sistemas de Pago) (P)

Infineon Technologies AG (P)

INIT GmbH & DPS Innovations GmbH (B)

Kima Foundation Ltd. (P)

Kineox Solutions SL (P)

KPMG AG Wirtschaftsprüfungsgesellschaft (P)

Medical S.r.l.s (P)

MONEI DIGITAL PAYMENTS S.L. (P)

msg for banking ag (P)

Next Digital Platform Srl (P)

OC Payment GmbH “Paymenttools” (P)

Opentech Digital Services S.p.A. (P)

Politecnico di Milano, Digital Innovation Observatory (V)

PoMo Services GmbH (B)

PostePay S.p.A. (V)

Quant Network Europe Limited (P)

Redsys Servicios de Procesamiento S.L. (P)

Rein Network Limited (P)

SAP Fioneer Solutions GmbH (P)

SBS Software Ges.m.b.H. (P)

Schwarz Corporate Solutions KG (B)

SDA Bocconi School of Management (V)

Senacor Technologies AG (P)

Sirma Group Holding (P)

Soda Labs and Nexellence Limited (P)

Swisscom IT Services Finance S.E. (P)

Taikonauten GmbH (V)

Tata Consultancy Services Deutschland GmbH (B)

Tchain LTD, COTI (P)

TechAI Lab S.R.L. (P)

Università Commerciale L. Bocconi, Fintech Lab Baffi Centre (V)

Venturexpert Capital SAS (P)

Xavier Lavayssière (P)

7 Annex 1 – pioneer guide

The pioneer guide is a collection of essential information such as key definitions, assumptions and release notes, designed to provide foundational context for the exercise. This document is intended to complement the information presented in the main report, providing additional clarity on key aspects of the exercise.

Pioneer guide

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For specific terminology please refer to the ECB glossary (available in English only).

PDF ISBN 978-92-899-7440-0, doi:10.2866/5440662, QB-01-25-212-EN-N