EUROPEAN CENTRAL BANK

EUROSYSTEM

Eurosystem report on the public consultation on the Appia Roadmap

Executive summary

The public consultation on the Appia Roadmap, conducted between 11 March and 22 April 2026, confirms broad market support for the development of an integrated, innovative and resilient European tokenised finance ecosystem anchored in central bank money. The consultation sought to gather feedback from a diverse range of private and public stakeholders, to ensure that the strategic direction aligns with both market demand and public policy objectives and to identify opportunities for public-private collaboration. This report summarises the key findings from the market feedback, which will form the basis for strong and continuous engagement in the years to come. It does not reflect any Eurosystem preference on the design or architecture options for Appia, which remain open and will be assessed as part of the work leading to the Appia blueprint in 2028. The Eurosystem will in the meantime communicate on the progress made in Appia.

The consultation received 127 responses from a diverse group of European and international stakeholders. The respondents included financial institutions, market infrastructures, technology providers, industry associations, public authorities, academics, advisers and individual experts. The feedback was largely supportive of the Roadmap, with many respondents making proposals for additional practical work or contributions.

There was broad support for the high-level principles set out in the Appia Roadmap, both those relating to market functioning and those of a more technical and operational nature. Specifically, the role of central bank money as an anchor for the tokenised ecosystem was widely endorsed, including its role in connecting and ensuring convertibility between the different private settlement assets that play a complementary role. Respondents also recognised the importance of central bank involvement in collateral management and liquidity routing. Most respondents supported a public-private collaboration model, acknowledging a significant role for the Eurosystem[1] while also leaving room for private sector development and innovation. Safeguards were proposed to limit market power concentration and prevent vendor lock-in. Respondents also emphasised the challenges of the transition towards tokenised finance, stressing that any expectations placed on new infrastructure providers should be aligned with those placed on existing market infrastructures.

Most respondents supported the strategic autonomy objectives set out in the Appia Roadmap and called for harmonised legal and regulatory frameworks across the European Union. Respondents stressed that autonomy must also be

1 Appia is an initiative of the Eurosystem, comprising the European Central Bank and the national central banks of the euro area, together with Danmarks Nationalbank. For ease of reading, the term "Eurosystem" is used throughout this report to refer collectively to these institutions, including Danmarks Nationalbank.

achieved at an operational level, and that dependencies should be assessed not only from a geographical perspective; dependencies on specific service providers must also be avoided. At the same time, respondents cautioned that European autonomy should not lead to isolation: global interoperability and cross-border connectivity remain essential to Europe's competitiveness and the international role of the euro.

The development of the network layer as a shared utility layer was viewed positively by most respondents, albeit with diverse views on what the layer should cover. Most respondents considered that ledger management, transaction settlement, identity and access management and security should be included within this layer as basic infrastructure features. In keeping with the approach set out in the Appia roadmap, aspects related to commercial activities – e.g. client-facing services, risk transformation, business model or value-added services – were viewed as better managed outside of the network layer. Specific views notwithstanding, it was emphasised that the network layer should not necessarily be limited to a single layer of infrastructure, but rather could comprise a network of layers operated across a set of actors. A strong governance model based on clear and objective criteria would be needed to ensure neutrality.

In terms of architecture, rather than converging on a single preferred model, respondents identified a trade-off. Enabling central bank money settlement on one network was seen by many respondents as the most effective way to reduce fragmentation, concentrate liquidity, simplify governance and standardise processes, albeit at the risk of increasing concentration and technology lock-in risks and weakening incentives to innovate. Conversely, a multi-network ecosystem – which many other respondents considered the more likely market outcome, and the one best able to preserve central bank money's role as the settlement anchor across emerging networks – was seen as more resilient and more accommodating of diverse business models, albeit at the cost of greater interoperability requirements and a higher risk of fragmenting liquidity, collateral and compliance. Many respondents also proposed an alternative approach: enabling central bank money settlement on a limited number of eligible networks, subject to transparent eligibility criteria and common standards. This was described as a realistic medium-term configuration by several respondents and as a credible long-term target by others. The feasibility of central bank money settlement on more than one network, in particular the Eurosystem's ability to retain control over central bank money, is still to be assessed as part of Appia.

Standardisation as a means of supporting the development of a tokenised finance ecosystem was a key topic for the majority of respondents. It was argued that development should start with the foundational layers, before gradually building up to more complex domains. Where possible, the Eurosystem should focus on codifying existing practices within the sector. In other areas, experimentation and research should be promoted to develop new standards. Delays in developing standards could have a significant impact, some respondents suggested, as the sector could evolve into a fragmented landscape. Many respondents also stressed that standards should explicitly address interoperability between DLT-based and

existing legacy infrastructures, so that tokenised and traditional systems can operate in parallel over a lengthy transition period.

There was a high degree of willingness among respondents to contribute actively to Appia. Suggestions included contributions to analytical work, as well as practical work focused on implementation and testing of designs. The central banks working on Appia welcomed this robust engagement. The feedback and proposals for contribution will be used to involve the market in the upcoming design and the planning of the Appia practical work and experimentation. This will take the form of a public-private sector partnership and will evolve over the course of the project.

The consultation provides a strong basis on which to progress Appia as a public-private partnership. As an initial step, market participants will be encouraged to continue developing and testing tokenised assets and services through more complex, cross-cutting public-private experiments. The Eurosystem is advancing foundational work on tokenised central bank money, on-chain collateral mobilisation, DLT network governance and the implications of tokenisation for central banking. Since 21 September 2026 the Eurosystem has been providing tokenised central bank money through Pontes, and it has accepted tokenised securities as collateral in its credit operations since March 2026.[2]

Market engagement will be strengthened through the Appia Contact Group, which started its work in September 2026, alongside a dedicated group on European standards, complemented where appropriate by specialised workstreams, workshops and practical experimentation. The findings of these groups will be published on the ECB website, together with regular updates on the progress of Appia. The strong response to the consultation – in particular on asset interoperability and standards – confirms both a clear market demand for Appia and a substantial pool of expertise to help shape it. The next stage will translate this support into concrete design choices and, in 2027, more complex, cross-cutting testing, leading to the delivery by 2028 of the Appia blueprint for a future European tokenised ecosystem that combines public trust with private innovation.

2 ECB (2026), "ECB paves way for acceptance of DLT-based assets as eligible Eurosystem collateral", press release, 27 January.

1 Introduction

The ECB published the Appia Roadmap[3] on 11 March 2026, setting out the Eurosystem's approach to Appia, its strategic initiative to shape a European tokenised finance ecosystem to foster integration, innovation and growth. The Roadmap describes the objectives of the initiative, the principles that guide it and the building blocks through which it will be delivered.

A first step towards creating this ecosystem has already been taken with the launch of Pontes, which enables the safe settlement of DLT-based wholesale transactions in central bank money. The broader promise of DLT and tokenised finance extends to potentially redesigning the entire transaction lifecycle, enhancing efficiency and innovation, well beyond settlement. To this end, the Eurosystem will deliver a blueprint for a future European tokenised ecosystem by 2028, covering the entire value chain and a wider range of use cases beyond settlement.

The success of such a transformative initiative depends on collaboration between the public and private sectors. The Eurosystem appreciates the efforts required for such a large-scale transformation and places great value on an open dialogue with the market.

The Appia Roadmap was therefore open for public consultation between 11 March and 22 April 2026. The consultation consisted of 18 open-ended questions organised into two sections: (1) feedback on the Appia Roadmap; and (2) proposals for contributions to Appia.

Part 1 addressed the following topics:

- high-level principles;
- network layer and tokenised market infrastructures as a neutral shared utility;
- strategic autonomy;
- common standards, rules and practices;
- central bank money settlement on a single or multiple networks;
- core service provision by the Eurosystem on a directly owned network, or shared governance;
- market and public sector engagement.

The full responses to Part 1 are published on the ECB website.

Part 2 covered possible contributions towards Appia Building Blocks (ABBs) 1-6:

- ABB 1 – Asset interoperability and standards;

3 ECB (2026), Appia – paving the way for a future-ready, integrated financial ecosystem leveraging tokenisation and DLT, 11 March .

- ABB 2 – Monetary policy implementation and collateral management on DLT;
- ABB 3 – European tokenised central bank money infrastructure(s);
- ABB 4 – The international dimension and cross-border links;
- ABB 5 – An innovative, safe and resilient ecosystem;
- ABB 6 – Implementation strategy and impact on existing infrastructures.

As announced in the public consultation, the responses to Part 2 are confidential and are not therefore published.

This report focuses on the lessons drawn from Part 1 of the consultation and incorporates feedback from 127 respondents from across the financial sector, covering all or part of the questions posed. Respondents included credit institutions, investment firms, investors and buy-side firms, issuers of financial assets, trading platforms, post-trade infrastructures, private settlement asset and payment infrastructure providers, technical and data providers, professional associations and standards initiatives, public authorities, academics, specialised consultants and experts replying in a personal capacity.

This report reflects market feedback only. It does not reflect the Eurosystem's views, nor does it express any preference on the design and architecture options for Appia, which remain open. The feedback will serve as an input into the Appia blueprint to be delivered by 2028, without prejudging its outcome. The Eurosystem will in the meantime communicate on the progress made in Appia.

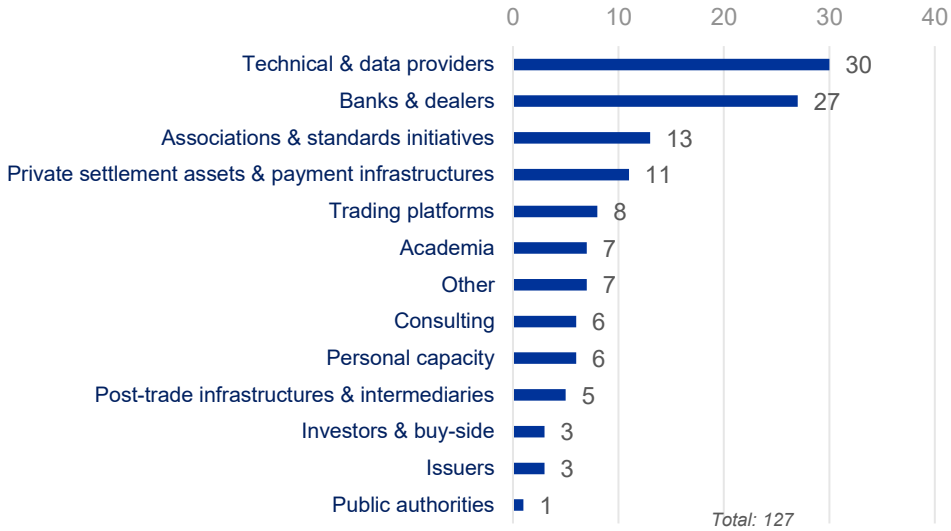
The remainder of the report is structured as follows. Section 2 provides descriptive statistics on the results of the consultation. Section 3 sets out the feedback on the high-level principles and desired policy outcomes. Section 4 turns to architecture options and designs. Section 5 presents the feedback on common standards, rules and practices. Section 6 looks at the way forward, including how the feedback will be incorporated into the design of Appia, market interest in contributing to the Appia Building Blocks and the next steps for engaging with the market. Sections 3, 4 and 5 each open with a recap of the relevant key points of the Appia Roadmap before summarising the views expressed by respondents.

2 Descriptive statistics on the results of the consultation

Respondents represented the full breadth of the tokenised finance value chain, as well as public authorities, academia and individual experts. Chart 1 shows the distribution of respondents by sector, classified on a best-efforts basis.

Chart 1

Share of respondents by sector

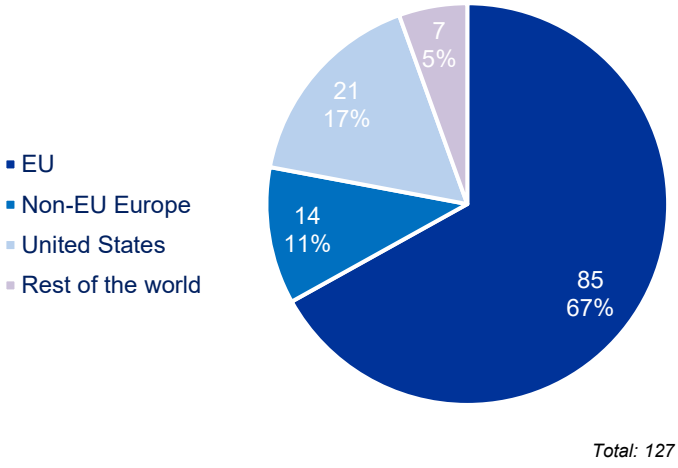


Source: ECB.
Note: Respondents classified on a best-efforts basis.

Diversity among respondents was not limited to sectoral representation, but also extended to geographical distribution. As shown in Chart 2, most respondents were from the European Union, with the largest share of replies coming from Germany, Spain, France, Italy and the Netherlands. Non-EU European respondents also contributed, in particular from Switzerland and the United Kingdom, while comments from outside Europe mainly came from the United States.

Chart 2

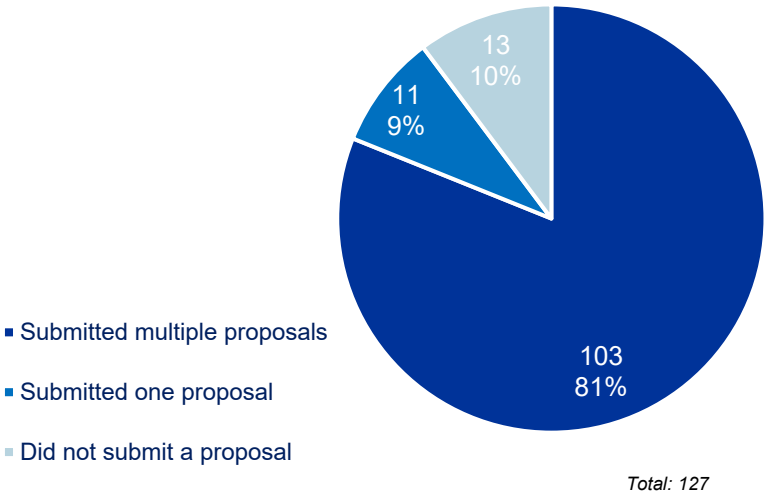
Share of respondents by geography



Source: ECB.

The overall depth of responses was substantial, with a large number of replies covering the full breadth of the consultation. This also holds true for the second (optional) part of the consultation, where respondents were invited to share, on a confidential basis, proposals to contribute to specific building blocks. As shown in Chart 3, 90% of respondents included one or, in most cases, multiple proposals.

Chart 3
Number of respondents submitting proposals to contribute



Source: ECB.

3 Feedback on high-level principles and desired policy outcomes

Respondents were first asked for feedback on the proposed high-level principles guiding future development, on the potential of the network layer as a common shared utility and on their views on European strategic autonomy and how Appia can further this goal.

3.1 Recapping the key points from the Roadmap

The Appia Roadmap first sets out four objectives:

- ensuring the effectiveness of monetary policy and financial stability and the smooth functioning of payment systems by maintaining central bank money as the anchor of a two-tier monetary system;
- fostering a more integrated, competitive and innovative payments and securities ecosystem through efficient infrastructures for financial markets;
- supporting strategic autonomy and increased resilience;
- ensuring the relevance of the euro as an international currency.

The Roadmap then sets out a series of high-level principles to guide progress towards a future-ready solution. It also provides a conceptual basis for Appia, distinguishing between a network layer (the basic infrastructure) and an assets and services layer, each of which has its own governance arrangements (e.g. who operates the layer, who can access it and who can see the data). The network layer would:

- function as a shared utility, providing all participants with equal and non-discriminatory access, thereby enabling innovation and competition at the assets and services layer;
- support strategic autonomy by relying primarily on utilities that are located, operated and governed in Europe and are subject to European legal and regulatory frameworks.

3.2 Broad support for Appia's high-level principles

Respondents placed the greatest emphasis on the role of central bank money as the monetary anchor of the system. This emphasis was expressed at two levels: as a policy objective – central bank money should remain the ultimate settlement asset underpinning the tokenised ecosystem – and as a design requirement – the architecture of Appia should be built so that central bank money settlement is available to participants by default, rather than as an add-on.

Respondents also saw a key role for the central bank in several functions beyond settlement. The Eurosystem will further develop these in light of the results of Appia, building on Pontes. In collateral management, respondents pointed to the central bank's role in accepting and mobilising tokenised collateral for credit operations. On liquidity, they highlighted the need to ensure that central bank money balances can move efficiently between DLT platforms and existing TARGET Services, to mitigate the risk of liquidity becoming fragmented across venues.

The anchor role of central bank money was valued because it strengthens monetary sovereignty, ensures settlement finality, provides legal certainty and improves systemic resilience. Respondents also highlighted the way the central bank provides its services under a public mandate, in a market-neutral fashion, ensuring connectivity of market stakeholders across the wholesale ecosystem, through harmonised access to central bank money as the ultimate safe settlement asset.

A two-tier system combining tokenised central bank money with private settlement assets was viewed favourably by many respondents, as a design considered both more feasible and more conducive to innovation. In reference to tokenised deposits and (euro-denominated) stablecoins as complementary assets, respondents noted that these tokenised assets could further support the development of additional or more advanced use cases. In any event, the singleness of money should be ensured and the hierarchy of assets should remain clear.

Respondents expressed strong support for the principles of market access and integration and competition and contestability, but stressed that these can only be achieved if barriers to entry are actively addressed. Competition concerns rivalry among existing providers, while contestability refers to the ability of new providers to enter the market and challenge incumbents on equal terms. Several respondents noted that low interoperability between networks, the absence of common industry standards and the emergence of walled gardens would, in practice, entrench incumbents and lock participants into single platforms. A number of respondents therefore asked that contestability be treated as a concrete design requirement rather than a general aspiration. This feedback confirms Appia's focus on the implications of DLT adoption for market functioning, economic efficiency and governance as equally important to its technical considerations.

Robustness, legal certainty, innovation and governance and control were also seen as key principles, which many respondents argued should be functionally equivalent to those that apply to existing financial market infrastructures. Respondents identified several areas that require specific treatment given the nature of DLT, such as the legal finality of on-chain settlement, the treatment of smart contract execution and the allocation of liability where such execution fails, key management and custody of cryptographic credentials and the governance of protocol upgrades and forks. Some respondents stressed that the interaction with existing financial market infrastructures should also be taken into consideration, as the transition towards tokenised finance is expected to happen gradually, and that the implementation of Appia should therefore ensure a degree of backward compatibility and pragmatism with regard to TARGET Services, central securities depositories and other existing financial market infrastructures.

A limited number of additional principles were proposed, with interoperability the most frequently cited by far. Several respondents nevertheless considered that interoperability was already covered by the existing principles.

The other most frequently proposed additions concerned privacy and confidentiality, on the one hand, and transparency, compliance and auditability, on the other – two sets of requirements that pull in opposite directions. To ensure the privacy and confidentiality of positions, counterparties and transaction terms, data must be shielded from other participants on a shared ledger. Meanwhile, supervisory reporting, auditability and AML/CFT compliance mean that transactions must be verifiable by third parties. While this tension is not specific to DLT, respondents noted that it becomes more acute when records are validated and replicated across multiple participants, rather than held by a single trusted operator. Several respondents therefore suggested that Appia should not choose between the two, but rather should set out explicitly how they are to be reconciled – e.g. through selective disclosure, permissioned data visibility or privacy-enhancing technologies such as zero-knowledge proofs – and that the allocation of visibility rights should be treated as a matter of governance, not simply a technical issue.

Several respondents also suggested adding cross-border connectivity and proportionality of participation requirements, i.e. ensuring that market participants of different sizes and with different scopes of activity are able to participate.

Many respondents translated these principles into concrete requirements for the architecture of the ecosystem. These are presented together with the architecture feedback in Section 4.

3.3 The network layer as a shared utility

There was overall support for the concept of the network layer as a shared utility, although views differed on its nature. While many respondents supported the idea of a neutral, shared layer, they considered that the precise elements to be included need further elaboration. Most respondents favoured a (limited) coordination layer allowing users to connect to various services, rather than a monolithic ledger or vertically integrated platform. In their view, the network layer does not necessarily imply a single layer or infrastructure, but could instead consist of a landscape of multiple connected networks or layers established under a common framework.

Within the network layer, respondents identified a number of elements that could realistically function as a shared utility:

- the basic infrastructure providing core functions, such as ledger integrity, consensus and validation;
- functions relating to transaction settlement, in particular but not only in central bank money, and including multi-leg transactions, such as delivery-versus-payment and payment-versus payment;
- functions relating to identity and access management;
- functions relating to regulatory requirements and compliance, such as reporting, attestations and auditability;
- standards, including for tokens, smart contracts and messaging;
- interoperability services, frameworks, interfaces and gateways;
- functions relating to (cyber-)security and resilience.

To ensure neutrality, a number of respondents pointed out the need for operational criteria as well as enforcement. Open and non-discriminatory access based on objective criteria would be required, alongside a technology-agnostic solution for the broadest possible participation across the market.

Governance would be another core element, ensuring in particular that the operator or governing body of this layer does not compete commercially with other entities. Some respondents mentioned a cooperative model, whereby participants using the network would hold governance rights, as a way of delivering accountability and neutrality. Irrespective of the model chosen, respondents called for a clear delineation between the network layer and the competitive services offered within the ecosystem.

In line with the concept set out in the Appia Roadmap, respondents generally considered commercially driven functions unsuitable for operation as a shared utility. These include value-added services; commercial and product decisions such as pricing and product design; balance-sheet intermediation and risk transformation; and client-facing services such as issuance, trading, custody, asset servicing, corporate actions, the provision of wallets and client onboarding. These are areas in which providers should be able to differentiate themselves and compete. Placing them in a shared utility would put the utility in competition with its own users, undermining the neutrality that justifies its existence in the first place.

There was therefore broad consensus that the assets and services layer should be contestable, with competition focused on the quality and pricing of services, as also stated in the Appia Roadmap. Views differed as to the extent to which the network layer should be contestable, and as to how far a common base infrastructure is needed in order to share key functions in an integrated ecosystem.

3.4 Strategic autonomy in theory and in practice

Respondents supported the objective of strategic autonomy overall, but held different views on how best to achieve it. A major theme among the responses was resilience, meaning the ability to continue providing services irrespective of failures or other barriers resulting from actors outside the EU.

A clear baseline emerged with regard to the legal dimension: core infrastructures and critical functions should operate under harmonised EU legal and regulatory frameworks and should, where relevant, be subject to EU supervision or oversight. Respondents considered that the interaction between Appia and existing regulations (e.g. the Markets in Crypto-Assets Regulation,[4] the Central Securities Depository Regulation[5] and the Settlement Finality Directive[6]) should be clarified. In some areas, further legislative acts would be required to ensure full harmonisation or cover specific gaps resulting from tokenisation. For example, respondents suggested that proof of compliance should be embedded in the tokenised assets themselves, rather than relying on self-certification.

European governance of core infrastructures and critical functions – or at least majority European shareholding and majority European representation in decision-making bodies – was also seen as a key element of strategic autonomy. Several respondents considered this essential to the ability to set European rules on access and operations and to ensure that resilience requirements are met. Some respondents also argued that critical infrastructures and/or their operators should be located in Europe. In the same vein, they pointed to

4 Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on markets in crypto-assets, and amending Regulations (EU) No 1093/2010 and (EU) No 1095/2010 and Directives 2013/36/EU and (EU) 2019/1937 (OJ L 150, p. 40).

5 Regulation (EU) No 909/2014 of the European Parliament and of the Council of 23 July 2014 on improving securities settlement in the European Union and on central securities depositories and amending Directives 98/26/EC and 2014/65/EU and Regulation (EU) No 236/2012 (OJ L 257, p. 1).

6 Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on settlement finality in payment and securities settlement systems (OJ L 166, p. 45).

dependencies on open-source components whose maintainers, sponsoring foundations or upgrade governance lie outside European jurisdiction, and suggested that these should be mitigated – e.g. by securing European participation in the governance and maintenance of the relevant projects, by hosting European code repositories or forks or, where feasible, by substituting European-maintained alternatives. Others believed that building on top of global networks could also be sufficient to safeguard strategic autonomy, as long as lock-in effects are reduced and open standards, portable data and data formats and clear exit strategies are all in place. Functions specifically identified as requiring the involvement of European entities included consensus and validation, data (with reference to data sovereignty and data storage in Europe) and identity.

Central bank money settlement came in for particular attention, both as an important element of strategic autonomy in itself and because respondents considered that effective control over the issuance, holding and transfer of tokenised central bank money must remain with the Eurosystem. This must be secured by design, through legal, contractual, technical and operational means. Different ways of ensuring this control were put forward, which depend on architecture choices, as explained in Section 4. Some respondents added that, alongside tokenised central bank money, euro-denominated private settlement assets such as stablecoins and tokenised deposits should also be supported, so that a broad range of euro-based settlement options is available.

One key theme in the replies was the need to avoid dependence – not only on non-European providers, but more generally on any single provider for critical functions, or on a concentration of control among very few entities. Open standards and open-source protocols, as well as portability and interoperability between providers, were put forward as means of preventing such dependencies. Respondents noted in particular that open-source code reduces vendor dependency precisely because it is auditable, portable and can be forked, but that its contribution to strategic autonomy can only be fully realised if European stakeholders are also present in the governance and maintenance of the relevant projects. Another prevalent theme was the importance of ensuring that the relevant technological capabilities are available in Europe, e.g. through R&D funding and skills development.

Finally, many respondents stressed that the pursuit of European sovereignty should not lead to isolation. Interoperability with the rest of the world was seen as essential, including for the attractiveness of the European market and the euro. Respondents warned that the efficiency of monetary policy transmission could be affected if the market came to rely on foreign-denominated currencies or liquidity pools.

4 Feedback on architecture options and designs

Across the responses, there was clear common ground that central bank money should serve as the settlement anchor for the tokenised ecosystem. However,

respondents underlined key trade-offs in translating this anchor role into a concrete architecture for Appia, given the fundamental uncertainties over technological and market developments.

4.1 Recapping the key points from the Roadmap

The Appia Roadmap deliberately keeps architecture open, presenting it as a set of options to be assessed holistically against Appia's objectives.

One of the roadmap's foundational objectives is to maintain central bank money as the anchor of the system, thereby safeguarding the effectiveness of monetary policy, financial stability and the smooth functioning of payment systems. A key question expressly left open is whether the requirement for central bank control over central bank money can be met under different infrastructure configurations and, if so, how.

Three key interrelated areas bear directly on architecture:

- **Interoperability and standards (ABB 1).** Whether assets can be transferred across market DLT platforms, requiring both suitable interoperability and asset transfer mechanisms and compatible standards and data formats across platforms.
- **Network configuration (ABB 2).** The assessment of network configuration variants for monetary policy implementation and collateral management, including whether – and how – to control mobilised assets on DLT not fully operated by the Eurosystem, and whether a single platform for collateral mobilisation is required.
- **Infrastructure type, number and scope (ABB 3).** The type(s), number and scope of infrastructures on which tokenised central bank money is provided – covering as a minimum the euro and other TARGET currencies – including whether they should host central bank money only or also investment assets such as securities and/or regulated private settlement assets. Governance, the role of the Eurosystem and the impact on existing TARGET Services and their development relative to market players are additional core considerations.

The Roadmap also emphasises the international dimension and cross-border links (ABB 4) and the need for a safe and resilient ecosystem (ABB 5), including the risks that fragmentation and divergence in technological and operational standards could pose to financial stability. All of this must be taken into account when designing the architecture of the Appia ecosystem.

4.2 The number of networks on which tokenised central money is made available

Enabling central bank money settlement on a single network was widely recognised by respondents as a powerful way to reduce fragmentation, fully leverage the benefits of a common ledger for different assets and services, simplify governance, concentrate liquidity and standardise processes. Respondents noted that this could have a positive impact on efficiency, reduce duplicated investment and lower coordination costs. Several respondents outlined the robust governance, resilience, access and security frameworks required to make a single network viable in the medium and long term.

At the same time, respondents highlighted the drawbacks of a common ledger: greater concentration of activity, the systemic importance that such a network would inevitably acquire, the risk of long-term lock-in into a specific technology or vendor and potentially weaker incentives to innovate. Respondents pointed out that such a design could discourage market experimentation. Many respondents nevertheless took a positive view of a single network. In particular, it was seen as the best way to achieve some of the objectives in the Appia Roadmap: mainly, reducing market and liquidity fragmentation and maintaining neutrality.

Several respondents noted that the ecosystem is currently developing on multiple networks and warned against limiting the usability of central bank money to a single or narrow set of networks that cannot fully meet market needs. In their view, this would create a risk that other settlement assets not anchored on central bank money would service those needs on other networks, thereby weakening the role of central bank money as the settlement anchor and increasing fragmentation across settlement assets.

Many respondents therefore described enabling central bank money settlement on a limited number of selected networks as a realistic medium-term configuration and, for several, a credible long-term target. This would reflect today's multi-network reality, foster competition and innovation and reduce single-point concentration risk, while still allowing the Eurosystem to set clear and transparent eligibility requirements and promote common standards and oversight expectations across the eligible networks. It would require strict, transparent eligibility criteria, contestability and interoperability and standardisation across all these networks. Such an approach would balance the resilience and adaptability of distinct networks operating in parallel with the need to ensure interoperability and the mobility of assets and liquidity across networks. Respondents identified fragmentation as the main challenge of this approach. In their assessment, without robust and enforceable interoperability standards and common semantics, a multi-network design risks becoming a set of silos that fragment liquidity, collateral, identity and compliance.

4.3 The choice between a proprietary or a shared network

Respondents did not converge on a single preference between a network operated by the Eurosystem itself and the provision of Eurosystem services on networks operated by the market. They saw merit in both approaches, provided the Eurosystem retains full control over central bank money. Respondents acknowledged the value of the Eurosystem providing its own network from where it operates its core services, as this could provide legal certainty, settlement finality and a neutral basis for connectivity to the wider ecosystem and existing infrastructures. They also underlined that the benefits of such a network would be greater if it were designed as an interoperable foundation for the wider ecosystem, enabling market stakeholders to develop value-added services and, where appropriate, programmable functionalities.

Equally, respondents stressed the benefits of the Eurosystem providing its services on multiple eligible networks to best meet market needs, while acknowledging that the central bank would need to specify governance requirements to retain control over central bank money and fulfil its mandate. The bottom line drawn by respondents is that network ownership is less decisive than the ability to guarantee central bank control, neutrality and open access. Such conditions were considered achievable, albeit with different trade-offs, under both options.

4.4 Shared governance

Shared governance between public and private stakeholders was seen by many respondents as important for unlocking the full potential of tokenisation in terms of market efficiency and competition. Respondents underlined the benefits of multiple assets, services and providers operating on common trusted networks that are neutral and rely on common interoperability mechanisms and open standards to foster competition and market efficiency in the tokenised ecosystem. Governance arrangements that balance the needs of public and private stakeholders, while maintaining legal certainty and regulatory compliance and ensuring clear responsibilities and separation of roles, were seen as an important enabler of these benefits.

4.5 A matter of choice(s)

Many respondents set out the pros and cons of different approaches without expressing a firm preference, instead emphasising the need for Appia to identify the preferred approach following deliberation and experimentation with the market.

Irrespective of the network architecture chosen, respondents consistently translated the high-level principles detailed in Section 3 into a set of design requirements for the provision of tokenised central bank money:

- Neutrality and separation of roles: strict governance separation between network operations and the governance of central bank money, other assets and services.
- Openness: open technological implementation of tokenised central bank money, based on open standards to ensure seamlessly interoperability with other networks and existing infrastructures.
- Resilience: 24/7/365 availability, clear service level agreements, deterministic finality, strong observability and a credible cyber and quantum-resilience roadmap aligned with relevant EU operational resilience requirements.
- Programmability: support for conditional settlement, atomic DvP and PvP, netting of flows and lifecycle controls, without over-extending into application-layer services.
- Privacy and sovereignty by design: strong identity and privacy features, read-only regulatory access separated from operations and a European-controlled technology stack with governance that preserves European sovereignty.
- Competitiveness: competition preserved where the market wants it. Many respondents that favour a multi-network model want competition at both the infrastructure and service layers. A single network model would confine competition to the service layer, which some respondents viewed as a drawback rather than a design goal.

5 Common standards, rules and practices

The use of common standards, rules and practices was considered one of the main drivers of widespread adoption and interoperability. Respondents shared their views on the importance of these topics, as well as on the Eurosystem's specific role in their development.

5.1 Recapping the key points from the Roadmap

The Appia Roadmap identified the establishment of common standards, rules and practices as essential for creating a competitive and integrated ecosystem. It envisions the network layer functioning as a shared utility, while compatibility across providers at the assets and services layer is necessary to foster competition and innovation. Common standards are designed to ensure this compatibility.

ABB 1 – asset interoperability and standards – reflects this approach. The Eurosystem will call for interoperability between market DLT platforms and collaborate with stakeholders to develop compatible standards and data formats for tokenised assets and smart contracts, with the aim of enabling smooth asset transfers across platforms.

The Appia Roadmap also emphasises the role of market participants and standards bodies in contributing to the standards, rules and practices required for an integrated ecosystem. Appia therefore builds on existing standardisation work rather than seeking to replace it.

In the public consultation, feedback was requested on the best ways to establish common standards, rules and practices when shaping the tokenised financial ecosystem, the domains in which standardisation should be prioritised and the role public institutions should play in this regard.

5.2 Building European standards

The importance of common standards was acknowledged by most respondents across market segments as a means of preventing platform fragmentation and ensuring interoperability between DLT and existing market infrastructures. Associations and standards initiatives highlighted that a lack of common standards would weaken network effects and delay adoption.

Respondents identified key domains for standardisation:

- asset representation on DLT;
- communication between systems and networks;
- identification, authentication and authorisation of participants;
- alignment of governance, compliance, access and operational rules across infrastructures.

Many respondents viewed standard-setting as a multi-stakeholder process in which the Eurosystem's role should vary according to the maturity of the market. Where market practices have already largely started to converge, respondents considered that the resulting standards should be enshrined in the Appia rulebook. Otherwise, experimentation and research should be encouraged until a market standard has emerged, which can then be formally adopted within the Appia ecosystem. Respondents considered this approach preferable to prescriptive action by public authorities. In their view, public institutions should set the strategic direction and guardrails while leaving technical design to the market.

Respondents expressed a preference for a staged approach, starting with the foundational layers that require the least effort. These would be tested through practical implementation, with the application of standards gradually extended to more complex domains as volumes and experience increase. This sequencing was considered optimal for balancing speed and resilience while avoiding the premature lock-in of immature designs. Many respondents also emphasised that emerging standards should support compatibility between DLT-based and existing infrastructures.

Identity, access and compliance were key topics due to existing issues with conflicting or incomplete frameworks. The issues raised concern the identification of both individuals and enterprises in the context of KYC/AML, sanctions screening and national requirements. Respondents considered that interoperable identifiers would strengthen interoperability between platforms or across borders, with some respondents arguing that this should be included in cryptographically certified or machine-readable format. Several respondents saw the certification of tokenised assets at the network level, rather than through self-certification, as a potentially major benefit of Appia.

Respondents stressed that clarity of governance is as critical as technical design. Transparent participation criteria in standard-setting, clearly defined roles and responsibilities and predictable decision-making processes were seen as vital to maintaining trust in the standard-setting process.

Irrespective of the specific choices made, some respondents invited the Eurosystem to take the role of global financial markets into account, so that European standards remain relevant in an international setting. In their view, European standards should be developed with a view to convergence, or at least compatibility, with emerging international practice.

6 The way forward

The public consultation also invited respondents to share their views on future collaboration and on how the Eurosystem should engage with a diverse pool of stakeholders.

6.1 Incorporating market feedback into the Appia design

The feedback received will feed into the further development of the Appia principles, the policy work and the architecture design. This report reflects the views of respondents and does not constitute a decision or preference of the Eurosystem on the design and architecture options for Appia, which remain open. The responses will be analysed in greater depth and will inform the analytical and practical work under the ABBs, leading to the Appia blueprint to be delivered by 2028. Engagement with the market will continue in the context of the ABBs, as well as through Pontes onboarding and development.

6.2 High market interest in contributing

Responses show a high degree of willingness across the full range of stakeholders to contribute further to the design of Appia, including through specialised contributions to specific building blocks. The contributions proposed by the broad range of respondents were highly diverse, ranging from analytical

design and reviews to active participation in prototype development and pilot projects, legal and regulatory feedback and governance design.

Respondents' proposals were flexible and tailored to their specific activity and expertise, highlighting their role in the value chain and how (global) interoperability could be ensured across interconnected platforms spanning both traditional and tokenised finance. While some respondents focused more on design-based contributions, others offered substantial participation in implementation work. In particular, several respondents stressed that engagement should not be limited to conceptual work, but should also include real-world implementation. By way of example, several respondents proposed a dedicated collaborative sandbox in which solutions could be tested on a more hands-on basis.

A number of stakeholders offered to work directly with the Eurosystem as part of an ongoing collaboration on specialised topics with leading experts. However, several respondents cautioned that over-reliance on individual contributors could distort the process. Given that stakeholders have diverse and at times divergent interests, diversity and representativeness were considered important as a safeguard against vested interests.

ABB 1, covering asset interoperability and standards, attracted the highest degree of interest, with more than 70% of respondents submitting ideas for collaboration. The other five ABBs garnered comparatively similar levels of interest, with around half of the respondents expressing an interest in contributing to each one.

Areas of particular focus included:

- tokenised securities
- tokenised private settlement assets
- sophisticated lifecycle management of tokenised assets;
- interoperability and transferability across networks;
- clearing, netting and on-chain liquidity management;
- collateral management;
- identity, credentials and business data management;
- governance and operation of shared networks;
- cross-border use cases;
- programmable compliance and sanctions screening;
- privacy and cryptographic techniques;
- resilience and stress testing.

These areas differ in nature, and the format for collaboration will therefore be adapted accordingly. Topics that are closely tied to specific products or services, such as the tokenisation of particular financial instruments, are best advanced by the actors directly concerned, with the Eurosystem drawing on the results of their efforts. Topics that shape the ecosystem as a whole – notably, governance arrangements, common standards and the shared utilities underpinning Appia – require joint work across stakeholder groups, since no single actor can address them alone. This distinction will guide how the Appia work is organised, and which stakeholders are involved in each workstream.

The ECB, together with several national central banks, has begun work on the core central banking foundations – in particular, tokenised central bank money and on-chain central bank collateral mobilisation – laying the groundwork for future experimentation with the market. In parallel, market stakeholders are invited to continue developing and experimenting with their key DLT-based services and products, in particular for aspects where tokenised securities and tokenised private settlement assets still require further investigation. Sharing the lessons learned from these activities could support the Eurosystem in its design work. Once the individual components and design elements have reached sufficient maturity, more complex, cross-cutting testing will follow, combining and connecting the different elements as part of the public-private partnership envisaged under Appia and building on the progress achieved during this foundational phase.

6.3 Engaging the market

The Eurosystem intends to strengthen its engagement with the market, including via the new Appia Contact Group as a forum for regular dialogue with market participants. This group (whose members were announced on the ECB website in August 2026) began its work in September 2026. The aim of this group is to provide the Eurosystem with informed feedback and to act as a sounding board on aspects linked to the Eurosystem's initiatives on tokenisation, namely Pontes and Appia. Meeting documentation of the Appia Contact Group is made publicly available on the ECB website.

In parallel, a stakeholder group supporting the creation of European market-wide standards is being set up. A call for nomination is expected to be launched in due course, with further details to be communicated.

The Eurosystem also intends to involve market participants in analytical and practical work, starting before the end of 2026, with a view to informing the Appia blueprint. Based on the feedback and proposals received in the public consultation, the Eurosystem has identified several areas of interest for such work. As a next step, the Eurosystem will launch a call for stakeholders to work on three priority topics: tokenised deposits and payments, tokenised securities and shared network governance. The aim is to progress the design of these topics jointly, building on ongoing market developments, including through joint experiments where

applicable. The modalities of this work, including its scope and the selection of participants, will be communicated in due course.

Engagement will extend beyond the Appia Contact Group and the standardisation group. Other engagement formats, such as deep dives, workshops and hands-on experimentation, may also be used. Stakeholders are encouraged to keep the ECB and their national central bank informed of their progress, so that they can be involved in the relevant fora. Regular public communication on the progress of the Appia initiative, such as Focus Sessions, will be provided via the ECB website.

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