SPEECH

From vision to delivery: building Europe's tokenised financial market

Speech by Piero Cipollone, Member of the Executive Board of the ECB, at the Deutsche Bundesbank's Symposium on "Future of payments: trends and innovations in Germany and Europe"[1]

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Two years ago, at this very same Symposium, I argued that Europe had a unique opportunity.[2]

Tokenisation and distributed ledger technology, or DLT, were beginning to reshape financial markets. By representing and transferring assets in the form of programmable data files – tokens – they offered the prospect of making finance more efficient, enabling it to operate around the clock with greater automation and fewer intermediaries.

At the heart of this transformation lies a Copernican revolution. Tokenised assets will be at the centre of a new digital finance ecosystem that allows issuers, investors and intermediaries to think anew and innovate.

But this transformation also poses a risk: a proliferation of incompatible platforms could reproduce, or even deepen, the current fragmentation of Europe's capital markets.

I therefore outlined a vision for building an integrated and dynamic European ecosystem for digital assets from the outset, with central bank money at its core. Since then, we have moved from vision to delivery. And today, I will discuss the next steps in turning that vision into reality.

I will first recall the objectives we set ourselves and why they remain our cardinal points. I will then explain the progress we have made, in particular through our Pontes and Appia projects. Finally, I will outline the conditions for success, namely what it will take to turn technological change into a genuine transformation of finance in Europe.

The vision: an integrated European market for digital assets

The promise of tokenisation is not simply that existing processes will become faster, but that it will enable us to simplify the architecture of finance itself.

This is particularly relevant in Europe, where capital markets remain deeply fragmented despite some recent progress towards integration.[3] The EU now has 31 central securities depositories (CSDs), 14 central counterparties (CCPs) and 323 trading venues.[4] And while some larger groups cover the value chain – encompassing trading, clearing, settlement and asset servicing – cross-border settlement remains limited. Securities are still predominantly held and settled within local CSDs. Even in CSDs belonging to the same group, most transactions are settled within individual CSDs in the group, with limited cross-border transactions. In 2023 more than 95% of transactions in both volume and value terms were settled between parties in the same individual CSD.[5]

So how can tokenisation help simplify our financial ecosystem and make it more efficient?

Today, the lifecycle of a financial asset often involves a succession of infrastructures and ledgers. Issuance, trading, clearing, settlement, custody and asset servicing may all take place in different systems. Each step requires information to be transmitted, verified and reconciled.

Tokenisation could bring several of these functions into a shared digital environment. Transactions could be executed conditionally and atomically, meaning that the cash and asset legs are either settled together or not at all. Smart contracts could automate processes ranging from coupon payments to collateral movements and compliance checks.

Tokenisation is therefore not merely an incremental improvement to one stage of a financial transaction. Instead, it has the potential to reorganise the entire financial value chain.

This reorganisation provides an opportunity for Europe. If we design and build an integrated European market for tokenised assets from the outset, the digital finance transformation will allow us to leapfrog the fragmentation of existing legacy systems.

But technology alone will not determine the outcome.

The same technology can support an integrated market or a collection of closed platforms. It can lower barriers to entry or create new gatekeepers. It can foster competition or entrench technological dependencies.

This is no longer a purely hypothetical question. Globally, tokenised finance is moving from experimentation to early adoption, as institutional players increasingly focus on tokenising traditional financial instruments.

While still small, the figures point to genuine momentum.

Worldwide, tokenised traditional assets recorded on public blockchains increased roughly fivefold between March 2025 and March 2026.[6] In some segments, activity has already reached meaningful operational scale. In the United States, one private platform processed an average of USD 354 billion in tokenised repo transactions per day in March 2026, four times the average daily volume it recorded a year earlier.[7]

In Europe, adoption is progressing and European institutions are developing tokenised bonds, deposits, collateral and settlement solutions. European CSDs have also announced major initiatives to tokenise securities on a large scale, matching similar initiatives in the United States. And in March, we started accepting marketable assets issued via DLT-based services at European CSDs as eligible Eurosystem collateral.[8]

Compared with the size of global markets, tokenised real-world assets remain tiny, with limited liquidity and secondary market activity. But we are at a critical juncture. The market is sufficiently advanced for the opportunities to be tangible, but still young enough for Europe to shape its architecture and overcome coordination challenges.

In doing so, we need to avoid three risks.

The first is fragmentation. Incompatible networks could potentially divide assets, liquidity and participants into separate ecosystems. This would disperse activity across platforms that may not communicate with each other, fragmenting liquidity.

The second risk is the loss of the monetary anchor. Without access to central bank money, tokenised markets could become reliant on private settlement assets which carry credit and liquidity risks and do not have the same ability to scale elastically.

The third risk is external dependence. Europe could become reliant on infrastructures, technologies, governance arrangements or settlement assets controlled outside Europe.

The question is therefore no longer whether tokenised finance is emerging, but whether it will develop as an integrated and competitive market in Europe, or as a collection of disconnected technological islands that fail to scale up and compete globally.

The Eurosystem's objectives are clear. We want to offer settlement of DLT transactions in central bank money, providing a safe asset and a monetary anchor on which tokenised finance can grow. We want to foster an integrated, competitive and innovative European payments and securities ecosystem, which would also support the euro's attractiveness globally. And we want to preserve Europe's resilience and strategic autonomy.[9]

The progress: from experimentation to implementation

Two years ago, I argued that public authorities needed to act early, before fragmentation became entrenched.

We have acted, and we have moved at pace.

The EU co-legislators are discussing the legislative proposal to extend and enhance the DLT Pilot Regime. At the same time, the European Commission has launched a consultation to assess whether and how the Markets in Crypto-Assets Regulation should be fine-tuned, drawing on the experience gained in its first years of application.

The Eurosystem is also making quick progress. Its first step was to assess the market's needs and test possible technological solutions.

In 2024 we brought together 64 market participants in more than 50 trials and experiments. This work showed that central bank money can be used to settle transactions conducted on DLT platforms. It also confirmed that access to central bank money is not a secondary consideration for the market, but one of the conditions for tokenised finance to develop safely and at scale.[10]

We have transformed those findings into a coherent strategy, which we are implementing through two complementary projects: Pontes and Appia.

Pontes will turn our commitment to provide central bank money for settling tokenised transactions into an operational service.

It will connect market DLT platforms with the Eurosystem's TARGET Services. Final settlement of the cash leg will take place in central bank money. And synchronisation will enable delivery versus payment and other transactions that require all-or-none settlement.

In 2024 we said that tokenised markets needed access to central bank money. This year, we intend to deliver on what we said by going live with Pontes. To support its early adoption, we will offer attractive pricing conditions, charging only one-off onboarding fees for the initial launch.[11]

We will then gradually enhance the service by extending operating hours to 22.5 per business day and offering immediate settlement finality in the Eurosystem DLT.[12] By mid-2028, we plan to offer a 24/7 service as well as greater programmability, state-of-the-art resilience and multi-currency capability.

Pontes matters, because confidence in a settlement asset is not something that technology can manufacture. Central bank money does not carry credit or liquidity risk. What's more, it serves as the common settlement anchor across the financial system.

By making central bank money available for DLT-based transactions and bringing central bank money on-chain, Pontes will provide market participants with a firmer basis for investing, innovating and scaling up. At the same time, it will generate valuable operational experience that can be taken into account when designing the long-term ecosystem.

But providing central bank money is a necessary, not a sufficient condition for expanding and integrating digital finance in Europe.

That's why we launched Appia.

Appia addresses the broader architecture, standards and governance of a European tokenised financial ecosystem. The roadmap we published in March combines analytical work with practical experiments and close cooperation between the market and public authorities.

The work conducted as part of the Appia roadmap covers asset interoperability and standards, monetary policy implementation and collateral management, the future infrastructure for tokenised central bank money, cross-border transactions, as well as the ecosystem's legal and regulatory framework, and foundation for resilience. It aims to deliver a blueprint for an integrated, European tokenised financial ecosystem in 2028.[13]

Put simply, Pontes builds bridges by offering digital finance a safe settlement asset and by making private settlement assets mutually convertible – enabling, for example, tokenised deposits to be transferred between banks or stablecoins to be settled in fiat currency directly via DLT.

Appia paves the way for a single European market for tokenised assets, but we have not predetermined what the architecture for that will actually look like.

On the one hand, a single shared European network would avoid fragmentation and would mutualise infrastructure costs. On the other hand, multiple interconnected networks would support innovation and resilience at the infrastructure level. However, these networks would require a high degree of interoperability to avoid the fragmentation of assets and liquidity. Combinations of these approaches would also be possible.

Appia will therefore assess the alternatives against our objectives for integration, competition, resilience, innovation, governance, strategic autonomy and the ability for the Eurosystem to set and enforce the rules applicable to central bank money.

Pontes and Appia should not be seen as separate projects, but as two parts of one strategy.

Appia's findings will feed into the gradual enhancement of Pontes. At the same time, the operational experience gained from Pontes will inform the choices made under Appia.

We are combining immediate delivery with long-term ambition. We are learning by doing, while ensuring that each operational step takes us closer to a dynamic, integrated and competitive European market.

The path to scale: the conditions for success

This brings me to the conditions for success.

Interoperability based on common standards and rules

The first condition is interoperability across DLT platforms based on common standards and rules. This will enable investors to access the vast majority of tokenised assets and services by joining only one or a few DLT networks. For this reason, the revised DLT Pilot Regime proposed by the Commission requires the industry to establish technical standards that support interoperability between DLT market infrastructures.

To achieve interoperability, connecting two ledgers is not enough. The assets must mean the same thing on both ledgers, rights must still be enforceable, the rules set by issuers must still apply, and transfers must achieve legal and operational finality.

A genuinely integrated tokenised ecosystem must therefore have five capabilities.

Systems must be interoperable so that they can exchange and understand trusted instructions and transaction states.

Assets must be transferable, with valid authorisation, compliance and settlement finality.

They must also be portable, and their identity, rights, obligations and history must be preserved when they move between platforms.

They must remain controllable, so that issuers and public authorities can exercise the powers required in regulated markets.

Lastly, they should be programmable, allowing automation to develop within a safe, legally valid and governable framework.

Achieving these capabilities requires more than technical protocols. It requires coordination across infrastructure, identity, data, asset representation, transaction mechanisms, governance, risk controls and supervision.

Europe's experience with SEPA and TARGET Services teaches us that integration requires common standards, harmonised practices and shared rules.

We should build on mature industry and international standards where they exist, rather than duplicate them, but we must also ensure that they are adopted consistently and fill in the remaining gaps.

Our immediate priorities should include mechanisms for transferring cash and securities tokens between platforms, compatible standards for representing those tokens, and common reference data that allow assets and lifecycle events to be interpreted consistently.

This does not mean imposing a one-size-fits-all on the market. Instead, it means ensuring that different solutions can interact and compete on the same market. This is an essential condition for tokenised finance to achieve scale and be widely adopted, as was the case for electrification, when the associated efficiency gains relied on the regulatory and standardisation choices made in the early 20th century.[14]

There should be competition in services, quality and price, not through incompatible standards or walled gardens.

A public-private partnership to drive adoption

The second condition is public-private cooperation that will lead to coordinated adoption.

Tokenisation is a system-wide innovation. Its benefits will only fully emerge if issuance, trading, settlement, custody, collateral and asset servicing all develop alongside each other.

Issuers need investors and liquid secondary markets. Investors need reliable custody, settlement and asset servicing. Market-makers need effective repo and collateral arrangements. And all participants need legal certainty and access to a trusted settlement asset.

If each actor waits for the other to play their part, tokenisation may remain confined to successful but isolated pilot schemes.

The public sector can provide the monetary anchor and establish a supportive European regulatory framework. But the market must provide the assets, the services and the innovation.

Together, we should not just coordinate experiments, but aim to create the conditions for widespread adoption, making it possible to reap complementarities across investors, issuers and intermediaries and enabling the market to scale up.

This is a joint endeavour that involves market participants, public authorities and members of academia. In Appia, we will jointly conduct targeted experiments, develop and test standards, and pursue practical work on asset transfers and collateral mobility. Throughout this process, we will seek continuous feedback from Pontes users.

An integrated legal framework

The third condition is a legal framework matching our technological ambition.

Advanced technology cannot compensate for fragmented law.

If an asset can move technically from one platform to another but its ownership status becomes uncertain in the process, it is not genuinely portable.

If a transaction is synchronised in code but its finality is not recognised across jurisdictions, it is not genuinely settled.

Technical interoperability without legal compatibility will remain incomplete and fail to overcome fragmentation. While the enhanced DLT Pilot Regime requires standards to ensure technical interoperability and seeks to open the market to new players, we need to provide the legal foundations for tokenised assets to be issued, held and transferred seamlessly across the EU.

Europe therefore needs greater clarity and harmonisation on the legal status of tokenised assets, ownership rights, settlement finality, liability, custody, asset servicing and the enforceability of smart-contract outcomes. Otherwise, we risk building advanced digital rails on fragmented legal foundations.

The three conditions I have described are closely connected. Common standards make interoperability possible. Public-private cooperation turns interoperability into adoption. And legal certainty allows adoption to occur safely and across borders.

Conclusion

Let me conclude.

Two years ago, I argued that Europe had a unique opportunity to build an integrated capital market for digital assets from the outset.

Today, we are delivering on that vision.

Pontes is turning the settlement of tokenised transactions in central bank money into an operational reality. Appia is turning a long-term ambition into a public-private roadmap.

But the next step will be decisive. We need to turn technological connectivity into genuine market integration. That requires common standards, interoperable assets, open access, effective governance and legal certainty. To create these conditions, public authorities and market participants need to work together.

If we wait too long to take action, fragmentation may become entrenched. If we act now, we can do more than just modernise settlement. We can use technological change to help build something Europe has sought for decades: a deeper, more innovative and more competitive capital market.

The vision is clear. The foundations are being built. And on those foundations we can build the future of European finance. Together.

Thank you.

1.

I would like to thank Jean-Francois Jamet for his help in preparing this speech, as well as Thomas Vlassopoulos and Alessandro Speciale for their comments.

2.

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3.

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4.

European Securities and Markets Authority (2025), *ESMA statistics on securities and markets*, 12 December.

5.

Hanssens, B., Sandín de Vega, D. and Sowa, H.F. (2025), "Advancing the capital markets union in Europe: a roadmap for harmonising securities post-trading", *Economic Bulletin*, Issue 4, ECB.

6.

From €4.7 billion at the end of the first quarter of 2025 to €23.3 billion at the end of the first quarter of 2026.

7.

The activity of Broadridge's Distributed Ledger Repo platform corresponds to roughly 7% of daily US repo activity. However, this comparison needs to be interpreted with caution to the extent that activity on the Broadridge DLR platform includes intraday transactions, implying a higher turnover velocity than in conventional repo statistics.

8.

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9.

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

10.

ECB (2025), *Bridging innovation and stability: the Eurosystem's exploratory work on new technologies for wholesale central bank money settlement*, June.

11.

ECB (2026), *Pontes Pricing Guide*, 19 August.

12.

Initially, settlement finality will be achieved once the corresponding movement of funds is reflected in T2.

13.

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

14.

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Century: an Agenda for Europe and the United States", hosted by the Harvard Law School and the Program on International Financial Systems, Washington DC, 15 April.

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