BUILDING THE EU'S DIGITAL FINANCIAL ECOSYSTEM

FIONA VAN ECHELPOEL
Deputy Director General, DG Market Infrastructure & Payments – European Central Bank (ECB)

Pontes and Appia - Bridges and roads to the future digital financial ecosystem

Many roads lead to Rome, but none is as famous as Via Appia. As one of the most important trade roads of the Roman Empire, the Via Appia contributed substantially to the economic and cultural boom during the regal period of ancient Rome.

In the 21st Century, the name Appia was chosen for a Eurosystem initiative that will further a digital savings and investments union in Europe by fostering increased market efficiency and integration. Taking a collaborative approach across public sector and private stakeholders, the Eurosystem will analyse how a deeper, more integrated European capital market for digital assets could be achieved. As market participants are interested in settling digital asset transactions in central bank money and scaling their DLT infrastructures, there is a clear demand for the Eurosystem to take action. In 2024, this was clearly revealed through the Eurosystem's exploratory work in which 64 participants from 9 countries conducted over 50 *trials* (with actual settlement of transactions in central bank money) and *experiments* (with mock settlement of the cash and assets legs in test environments). Use cases covered the full value chain beyond settlement.

One of the Eurosystem's main considerations is to avoid increased fragmentation in the financial market through the uncoordinated proliferation of DLT platforms and to address the need for harmonisation from the start. A European shared ledger, or a constellation of fully interoperable ledgers, could bring tangible benefits to the market. This could substantially reduce transaction costs, enhance efficiency and lower entry barriers. Such long-term solutions should be multi-currency by design and include the international dimension, with central bank money as the monetary anchor for settlement of payments and digital asset transactions.

The Eurosystem intends to publish a launch paper for Appia in the first half of 2026, outlining the Eurosystem's future perspectives on DLT, tokenisation and central bank money settlement. Following the launch paper, the Eurosystem, in close cooperation with public sector stakeholders and market participants, will work on a blueprint for a long-term integrated DLT solution for payments and capital markets in the EU.

Rome wasn't built in a day. Likewise, Appia will need time to come to fruition. To bridge the gap, the Eurosystem has launched project Pontes to deliver a short-term offering to settle DLT-based transactions in central bank money. Pontes will enable interoperability of market DLT platforms and TARGET Services.

The Eurosystem plans to launch a pilot for Pontes in the third quarter of 2026. The pilot will offer a solution which incorporates features used in the Eurosystem's exploratory work on DLT in 2024. These features will be taken from three Eurosystem-developed interoperability-based solutions:

a. the Trigger Solution, provided by the Deutsche Bundesbank;
b. the Full DLT Interoperability solution, provided by the Banque de France; and
c. the TARGET Instant Payments Settlement (TIPS) Hash-Link solution, provided by the Banca d'Italia.

The pilot phase of Pontes will comprise two settlement models, namely the settlement of central bank money directly on cash accounts in the RTGS component of T2 or the settlement of cash tokens on the Eurosystem DLT platform. The Eurosystem is currently finalising the eligibility criteria for eligible assets, eligible market participants and eligible market DLT operators for the pilot phase, leveraging on the experience gained during the exploratory work.

The roadmap of the Pontes project foresees enhancements beyond the pilot phase. The aim is to expand the alignment with the TARGET Services operational, legal and technical standards. In addition, it is expected that wherever the use case allows, licensing under the CSDR or the DLT Pilot Regime Regulation would be a mandatory requirement for market DLT operators to migrate to the enhanced Pontes solution. This is important from an oversight and an integration policy perspective; harmonised EU frameworks, where available, for market infrastructures including DLT market infrastructures, are preferable to market participants remaining under national law regimes.

Future perspectives on DLT, tokenisation and central bank money settlement.

To support and facilitate an active dialogue with the market regarding the Pontes project, the Eurosystem invited financial market stakeholders to express their formal interest in participating to the Pontes market contact group; the group plans to commence work in October 2025.

In summary, building Pontes and Appia, the bridges and roads to the future European digital financial Infrastructure, through a collaborative approach by public sector and private stakeholders will support the emergence of a resilient, integrated and competitive digital capital market in Europe.

JOSEF MEICHENITSCH
Board Member –
Oesterreichische Nationalbank

Futuring the Euro: From DELPHI to Pontes to the digital euro

The global monetary landscape is changing. US dollar dominance is challenged, offering momentum for a more powerful euro. Europe is well positioned to take this chance, yet some issues need to be addressed.

The financial and economic landscape of today is being shaped by digitalisation, leading to the emergence of new forms of payment, investment, and asset. Digital assets like stablecoins and digital currencies issued by central banks are no longer a niche but well-explored priorities in central bank strategies. While the US focuses on digital assets, other countries and currency unions are already advanced in experimenting with Central Bank Digital Currencies (CBDCs).

The euro's moment is now

Although the share of foreign exchange reserves held in US dollars has declined steadily over the past year, this has not yet been reflected in the rising attractiveness of the euro. This suggests that Europe should act now, and the Eurosystem is preparing thoroughly. The digital euro is a key project to ensure sovereignty and resilience of European (retail) payments, building trust and stability in the euro area. In July 2025 the digital euro project was followed by Pontes addressing the need for liquidity in private digital (DLT) platforms. The project aims to provide European digital-asset infrastructure linking those platforms with T2 seamlessly. Building on the experience of the OeNB gained through participating in the digital euro project and operational initiatives such as the DELPHI project, the article explores the future of a digital monetary strategy and the financial infrastructure in Europe.

It's all about interoperability

At the heart of modern fit-for-purpose digital asset infrastructure lies interoperability. This was demonstrated several times; Euroclear's Digital Financial Market Infrastructure (D-FMI) and Clearstream's D7 platform demonstrated this through dual issuance and convertibility mechanisms. The initiatives allow securities to be issued simultaneously in both traditional and DLT-native formats, enabling FMIs to operate across systems without disruption. Similarly, Switzerland's SIX Digital Exchange (SDX) has implemented an "operational link" between its DLT-platform and legacy infrastructure.

The Eurosystem´s early exploratory work focused on similar aspects: to ensure safety and scalability, programmable ledgers must be designed to support atomic settlement mechanisms, such as hashed time-locked contracts (HTLCs). They also enable delivery versus payment (DvP) across interoperable platforms. The OeNB contributed to these experiments with the Delivery vs. Payment Hybrid Initiative (DELPHI) platform. DELPHI is a self-developed market DLT that explores tokenization of Austrian treasury bills on a public blockchain: interoperability between public and private blockchains as well as atomic settlement have been the focus of this project. The first successful transaction during the exploratory work was conducted in May 2024, between Banque de France and OeNB. Further insights into the viability of DLT in today's financial infrastructure were gained in subsequent tests.

What DELPHI taught us

The models highlight the importance of bridging technologies, such as trigger solutions to connect DLT-based securities with central bank liquidity systems like T2, an approach that continues with the Pontes pilot. To support this hybrid environment, central banks should promote the concept of "a single liquidity pool of central bank money" across infrastructures. Whether settlement occurs on legacy rails or DLT platforms, the underlying cash leg should be backed by central bank money to reduce fragmentation and preserve monetary policy transmission. A unified liquidity model can be enabled through programmable APIs and smart contracts that facilitate real-time, atomic settlement across platforms. The potential of DLT can be leveraged even more, when looking beyond the settlement itself.

> The digital euro is a key project to ensure sovereignty and resilience of European (retail) payment.

Ultimately, a coordinated approach involving regulators, central banks, and market participants will be necessary to harmonize legal frameworks, technical standards, and operational practices, ensuring that innovation enhances rather than fragments the financial system.

Best of both worlds

To enter the stage of a modernized, digital payment infrastructure, the euro must act now: Action includes building a secure, financial infrastructure, pushing for a CBDC in the euro area, and strengthening the international role of the euro by enhancing settlement operations and enabling euro-denominated digital assets. The digital euro will offer secure payments with digital central bank money, within a European infrastructure, complementing physical cash. The technology-driven financial innovations are facilitated by Pontes and Appia initiatives linking private digital (DLT) platforms and Eurosytem liquidity in T2 in frictionless, secure and resilient way.

AGNÈS BÉNASSY-QUÉRÉ

Second Deputy Governor – Banque de France

Building the EU's digital financial ecosystem

As digital finance enters a new phase shaped by distributed ledger technologies (DLT), Europe faces both a challenge and an opportunity. The challenge is to prevent fragmentation, preserve the safe, two-tier monetary architecture, and address the growing dependency on non-European infrastructures. The opportunity is to shape a secure, efficient and inclusive financial ecosystem anchored in public trust. Banque de France believes this will require a renewed European vision and an evolution of the two-tier monetary system to meet the demands of the digital age.

DLT is transforming financial markets, introducing new actors - including crypto-native firms and BigTechs - and offering alternative settlement infrastructures. While DLT promises enhanced efficiency, transparency and programmability in post-trade and settlement processes, it also introduces risks of market fragmentation, reliance on non-European technology providers, cyber vulnerabilities and a potential erosion of monetary sovereignty. This is particularly visible in the rapid growth of stablecoins – 99% of which are USD-denominated and issued by non-European players, with leading issuers such as Tether, Circle and Paxos all US-based. Unlocking DLT's benefits therefore requires trusted, scalable and interoperable settlement assets to secure market integrity and sustain confidence.

The expansion of stablecoins use into traditional finance and payments reinforces the risks of monetary fragmentation. Initially rooted in the crypto ecosystem as a settlement asset and store of value, their use is now extending to traditional finance and cross-border payments. Circle and PayPal are developing global networks for USD-denominated stablecoins, enabling value transfers outside traditional banking rails. Platforms such as Shopify now accept USDC for retail payments, while Amazon and Walmart have signalled interest in issuing their own stablecoins to bypass card networks like Visa and Mastercard. Without a coordinated response, these dynamics could entrench parallel infrastructures dominated by non-European actors - undermining the effectiveness of monetary policy, financial stability, and European sovereignty.

To sustain financial stability and trust, Europe's two-tier monetary system must adapt. Wholesale and retail central bank digital currencies (CDBC) offer part of the solution. At the wholesale level, a CBDC can ensure secure settlement in tokenised markets and interoperability between tokenised commercial moneys. At the retail level, it preserves public access to central bank money in the digital era, maintaining the one-to-one convertibility that underpins confidence in commercial bank money.

> **Two-tier monetary system must adapt to tokenised world.**

However, central bank money cannot address all use cases of at tokenised economy alone. Commercial bank money must also evolve to complement CBDCs in the tokenised ecosystem. The current rise of stablecoins reflects market demand for innovative settlement assets, but in their current form they raise a number of risks. Dollar-dominated, non-European stablecoins challenge monetary sovereignty, financial stability and the essential role of commercial banks in monetary transmission and financing of the economy. If left unaddressed, network effects could drive extreme market concentration, locking users into private tokenised ecosystems.

A strategic response could involve supporting a euro-denominated, tokenised commercial bank money. This would provide an alternative to non-European stablecoins and complement CBDCs for specific use cases, such as cross-border activity or corporates needs. Instruments such as tokenised deposits or euro-denominated, bank-issued stablecoins – if designed carefully - may offer European market-led, regulated alternatives to private USD stablecoins. In any case, a tokenised commercial bank money will maintain essential for banks to extend credit, transmit monetary policy impulses and meet emerging needs in tokenised finance - such as settlement of tokenised assets or cross-border transfers.

Looking further ahead, building a trusted and interoperable digital ecosystem will be critical to fostering innovation, efficiency and sovereignty. Over time, these developments could converge into a European Shared Ledger, backbone for secure, integrated and scalable digital financial services. This infrastructure would reinforce the international role of the euro while supporting the EU's strategic autonomy in key financial infrastructures.

Ensuring that Europe's two-tier monetary system remains fit for purpose in the tokenised era will require a pragmatic yet ambitious approach. By combining wholesale and retail CBDCs with innovative forms of commercial bank money, and by developing interoperable infrastructures, Europe can safeguard financial stability and trust while fostering the innovation needed to remain competitive in global finance.

ISABELLE DELORME

Head of Product Strategy & Innovation - Euroclear S.A.

Building the future of post-trade: Euroclear's vision for a digital, integrated capital market

Europe is entering a pivotal phase in the evolution of its financial system. The digitalisation of capital markets is no longer a distant ambition but a present reality. Technologies such as distributed ledger technology (DLT), tokenised assets, and programmable finance are reshaping the way value moves. Initiatives like the Savings and Investments Union (SIU), the DLT Pilot Regime, and the Eurosystem's wholesale CBDC projects are laying the groundwork for a more integrated and resilient financial ecosystem.

For Euroclear, this transformation is a natural evolution. As one of the world's largest financial market infrastructures, Euroclear has long served as a trusted backbone of European capital markets. Today, it is embracing a new role: not only as a neutral and reliable post-trade operator, but as a digital and data-driven infrastructure, actively shaping the next generation of market connectivity.

The early days of DLT in capital markets were marked by bold promises and fragmented experiments. Many tried to build everything at once, but quickly learned that innovation without adoption is like paving roads where no one drives. Euroclear took a different path by building a system fully aligned with CSDR, enabling broader adoption and scalability. The result was a model where digital securities could be issued, traded, and used as collateral within seconds, while preserving the trust and liquidity of traditional systems. This hybrid approach has become a reference point. It shows that DLT can enhance existing infrastructure, bringing speed, transparency, and efficiency to the areas that need it most. Success in digital markets is not about the flashiest platform, but about trust, usability, and scale — and building what the market is ready to use. We also feel that the market is now ready to move to the next phase.

As with the dematerialisation of securities, the adoption of DLT is unfolding in stages. The industry has moved from experimentation to early implementation, with firms beginning to realise operational and liquidity benefits. As technical maturity and regulatory clarity improve, the focus is shifting from isolated deployments to ecosystem-wide integration. Euroclear sees its role as enabling this shift, helping to connect the industry, reduce barriers to entry, and support the standardisation needed to scale.

As financial market infrastructures, we help drive digital transformation by facilitating scale, connectivity, and safety. Having provided trusted access since the inception of dematerialised securities, we are uniquely positioned to support the next phase of DLT's growth. This includes reducing the cost of entry for new participants, standardising processes across the digital asset lifecycle, and improving interoperability between traditional and digital infrastructures within a well-regulated framework.

> **As financial market infrastructures, we help drive digital transformation by facilitating scale, connectivity, and safety.**

Still, the transition is complex. Europe's post-trade landscape cannot be rebuilt in a single move. Legacy systems and new technologies must operate side by side, ensuring continuity while unlocking new efficiencies. This requires careful coordination, especially in addressing the legal and regulatory fragmentation across Member States. To support this, Euroclear advocates for the creation of a 28th regimen for digital assets: a harmonised legal framework that would provide clarity on issuance, ownership, and settlement across the EU. Starting with bonds, this regime could reduce friction and enable true cross-border scalability for DLT-based markets.

At the same time, Euroclear recognises that no single actor can build the future alone. Collaboration between public and private stakeholders is essential. Initiatives like the SIU and the wCBDC projects offer a unique opportunity to align efforts and explore a shared infrastructure that balances innovation with stability. Euroclear's experience shows that trust and neutrality are essential. By collaborating closely with the market, we are able to provide solutions that cater to everyone's needs. By working with central banks, regulators, and peer infrastructures, Euroclear aims to support innovation that is scalable, inclusive, and built on a foundation of shared trust.

Europe stands at a turning point. The foundations of its financial system, built over decades, are strong, but the architecture must evolve. The shift to digital is not a demolition job; it is a renovation. The walls of trust, scale, and resilience remain, but new windows are opening for speed, transparency, and global reach.

Euroclear is helping to lay the bricks of this new structure. By investing in digital infrastructure, supporting legal clarity through proposals like the 28th regime, and fostering collaboration across borders, we are building a future where capital markets are not only more efficient, but more inclusive and competitive.

This transformation will take time, and it will require coordination. But with the right tools, commitment, and a shared blueprint, Europe can construct a digital financial ecosystem that reflects its values: open, secure, and built to last.

STEPHANIE CHAMPION
Executive Vice President, Head of Nasdaq Verafin – Nasdaq

Europe on the leading edge in the fight against financial crime

In today's interconnected world, financial crime poses a significant threat to the stability and security of economies worldwide. Consumers are increasingly susceptible to scams as fraudsters leverage new technologies to exploit the financial system for their own gain. Europe is no exception. Nasdaq Verafin's 2024 Global Financial Crime Report highlights the staggering scale of this issue, estimating that $750.2 billion in illicit funds moved through Europe's financial system in 2023 alone. This represents 2.3% of the continent's total GDP, a testament to the damaging effect of financial crime.

Behind those numbers are criminal activities with devastating economic and societal impacts, including elder abuse, human trafficking, drug trafficking, and terrorist financing. The scale and severity of these crimes underscores the urgent need for a concerted effort to combat existing and emerging threats.

In 2023, European fraud losses were estimated at $103.6 billion – including $61.5 billion from the EU, $33.2 billion from the UK, $3.4 billion from the Nordics – as criminals exploit the real-time and cross-border nature of the global payments system to obscure their money trails.

Authorized Push Payment (APP) fraud, in particular, has surged, with consumers being manipulated into transferring funds to fraudsters posing as legitimate payees. However, as banks strengthen their ability to fight APP scams, criminals continue to evolve, developing new methods of deceiving victims and maximizing profits. As scams grow more prevalent, so does fraud against the elderly. Nearly 20% of all European fraud losses were linked to the elderly, and in the Nordics that percentage jumps to 38%. The rise in fraud and scams that target society's most vulnerable underscores the need for collective action to protect consumers and safeguard the financial system.

Meanwhile, cross-border transactions have grown exponentially in the last decade, which criminals are leveraging to move proceeds from drug trafficking and fraud throughout the financial system. As cross-border payments become faster and more accessible, the risk of illicit activity will only increase.

In our report we surveyed over 270 anti-financial crime professionals across Europe and found that only 22% of respondents felt they had adequate resources to combat financial crime, underscoring the need for greater investment. Siloed data, legacy technologies, and manual processes further hamper financial institutions, increasing operational costs and impeding the effectiveness of anti-financial crime programs.

By uniting in a shared vision, embracing innovative technologies, and fostering collaboration across sectors and borders, Europe can set a new standard in safeguarding the integrity of the global financial system.

There are significant opportunities to improve the fight against financial crime. By embracing data-driven approaches, AI, and collaborative frameworks, banks can enhance their fraud detection capabilities and streamline compliance operations. The potential for AI to revolutionize transaction monitoring and uncover hidden criminal connections is immense, offering a path for more effective financial crime prevention. And new regulations in the UK and EU can enable greater bank-to-bank information sharing, improving the ability to eradicate criminals from the financial system.

Criminals are not bound by banks and borders. As such, it will require unified action from stakeholders across Europe – including regulators, law enforcement, and banks – to capitalize on the opportunities ahead of us.

Aligning priorities for financial crime prevention is a crucial first step. Clear guidance from regulators on typology-specific priorities will empower banks to better allocate resources, focusing on high-risk activities and enhancing overall program efficacy.

Second, collaboration across sectors and borders is essential to root out criminal activity. Criminals will not hesitate to exploit fragmentation in the financial system. Fighting financial crime demands a collective approach, with industry stakeholders working together to share information, disrupt criminal networks, and safeguard consumers. Public-private partnerships and regulatory support for information sharing initiatives will be key to breaking down siloes and enhancing crime-fighting effectiveness.

Finally, accelerating innovation through advanced technology is vital. Investments in AI, big data, and cloud technology will enable banks to overcome the limitations of manual processes and legacy systems, optimizing their anti-financial crime efforts. Consortium data and network-level analytics offer powerful tools for detecting and preventing fraud, reducing false positives, and protecting consumers and institutions from loss.

Europe stands at a crossroads, with a unique opportunity to take on the global fight against financial crime. By uniting in a shared vision, embracing innovative technologies, and fostering collaboration across sectors and borders, Europe can set a new standard in safeguarding the integrity of the global financial system. Together, we can create a more secure, trusted, and resilient financial future for the region and beyond.