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The Banque de France publishes a second report to share lessons learned from its wholesale CBDC experiments using distributed ledger technologies

The Banque de France shares lessons from its wholesale CBDC experiments using distributed ledger technologies (DLTs).

Following the publication of an initial report in 2021¹, the Banque de France is now releasing a new set of conclusions and lessons learned, covering the first and the second tranches of its wholesale central bank digital currency (wCBDC) experimentation programme, launched in March 2020 and comprising twelve experiments. These findings contribute to the Eurosystem's exploratory work announced in April 2023² which aims to investigate how wholesale financial transactions recorded on DLT platforms could be settled in central bank money.

Through these experiments, the Banque de France shows the operational feasibility and practical implementation of the three models it has conceptualised for issuing wCBDC directly on DLT: (1) the interoperability model, (2) the distribution model and (3) the integration model. They all address key aspects of wholesale CBDC implementation and each model offers different capabilities and functionalities compared to the conventional systems, so they can be complementary rather than exclusive.

These three models have been tested with different types of DLTs **across a large spectrum of use cases, covering two key strategic areas: (i) the tokenisation of finance and (ii) the improvement of cross-border transactions.**

Eight key takeaways have emerged from these experiments:

Key policy takeaways

1. Issuing a wholesale CBDC, as a complement to a retail CBDC, would contribute to the singleness of money by ensuring the anchoring value of central bank money for both retail and wholesale payments, and convertibility between the different forms of private money.
2. International cooperation and public-private partnerships remain a priority to converge towards a more globally inclusive and interoperable wholesale CBDC framework.
3. Interoperability should be prioritised to ensure seamless data and transaction exchange between DLT-based and conventional infrastructures.
4. Climate-related concerns highlight the need to develop energy-efficient solutions in the design of wholesale CBDCs.

¹ [Wholesale CBDC experiments with the Banque de France, Banque de France, 2021](#)

² [Eurosystem to explore new technologies for wholesale central bank money settlement](#), ECB, April 2023

Key technical takeaways

5. Technological advancements related to DLT offer various means for central banks to maintain control over their wholesale CBDC.
6. Central banks should remain technologically neutral while actively contributing to the adoption of common standards.
7. DLT could enhance the straight-through processing of trade and post-trade activities and contribute to overall financial stability.
8. Continued experiments at domestic and international level are essential to advance our analysis and our efforts to develop an operational framework through a learning-by-doing approach.

Promoting the role of central bank money, the safest settlement asset

Through its experiments, the Banque de France shows that a tokenised form of central bank money could improve cross-border payments and settlement finality and security for a vast range of financial assets, from government bonds to fund shares, and a larger scope of stakeholders in wholesale transactions. A wholesale CBDC would therefore be key for native digital assets and tokenised assets that fall under the category of unlisted financial assets and which cannot currently be settled using the existing TARGET Services.

Regarding wholesale financial transactions, it is essential to prioritise and strengthen the use of central bank money within the DLT ecosystem, for the continued application of the Principles for Financial Market Infrastructures³. This is necessary to maintain the anchoring function of central bank money for interbank and wholesale payments and to ensure financial market stability. Issuing a wholesale CBDC, as a complement to a retail CBDC, would also contribute to the singleness of money by ensuring the anchoring value of central bank money for both retail and wholesale payments, and convertibility between the different forms of private money.

A pioneering work: testing the tools of decentralised finance (DeFi) and proof-testing its own DLT, DL3S

The Banque de France proof-tested its DL3S (*Distributed Ledger for Securities Settlement System*) DLT to assess its capabilities and adaptability to various use cases; it also experienced other DLTs to gain insight on different technologies. The Banque de France also tested the use of an automated market maker (AMM) in the latest of its experiments, Project Mariana⁴, conducted with the Monetary Authority of Singapore, the Swiss National Bank and the BIS Innovation Hubs, breaking new ground to optimise wholesale CBDC liquidity through a pool managed on a common shared platform.

The next steps: supporting the Eurosystem exploratory work and exploring the boundaries of cross-border payments

“These twelve experiments, which were all carried out successfully with our partners, central banks and commercial banks, in a public-private partnership, have provided us with the assurance that central bank money can be provided in a tokenised form to settle tokenised assets and improve cross-border payments. We are happy to provide our DL3S DLT solution in the context of the exploratory work announced by the Eurosystem for settling tokenised transactions, using central bank money, including in the European Pilot Regime, and are also ready to explore other solutions to facilitate the interaction between TARGET Services and DLT platforms. We have demonstrated that our DLT solution is flexible and can be interoperated with TARGET solutions and other DLT solutions. We are also keen to keep abreast of developments in the field of

³ [Principles for Financial Market Infrastructures](#), BIS, 2012

⁴ [Project Mariana: Interim report, BIS, 2023](#)

cross-border payment and explore new concepts” said Emmanuelle Assouan, Director General of Financial Stability and Operations.

New horizons for cross-border payments

Regarding cross-border payments, the Banque de France’s approach complements recent conceptual work conducted by the IMF and the BIS. The IMF has been reflecting on how DLT could be used to serve public policy objectives, with a particular focus on the design of multi-currency DLT platforms to facilitate cross-border payments and FX transactions, known as *XC platforms*^{5,6}. Similarly, the BIS is elaborating on the design of a single platform through the concept of a *unified ledger*⁷, which aims to bring together on a single DLT all kinds of tokenised assets, including tokenised deposits and CBDCs. Both are promising concepts which call for further work, to which the Banque de France will be happy to contribute including through further experiments.

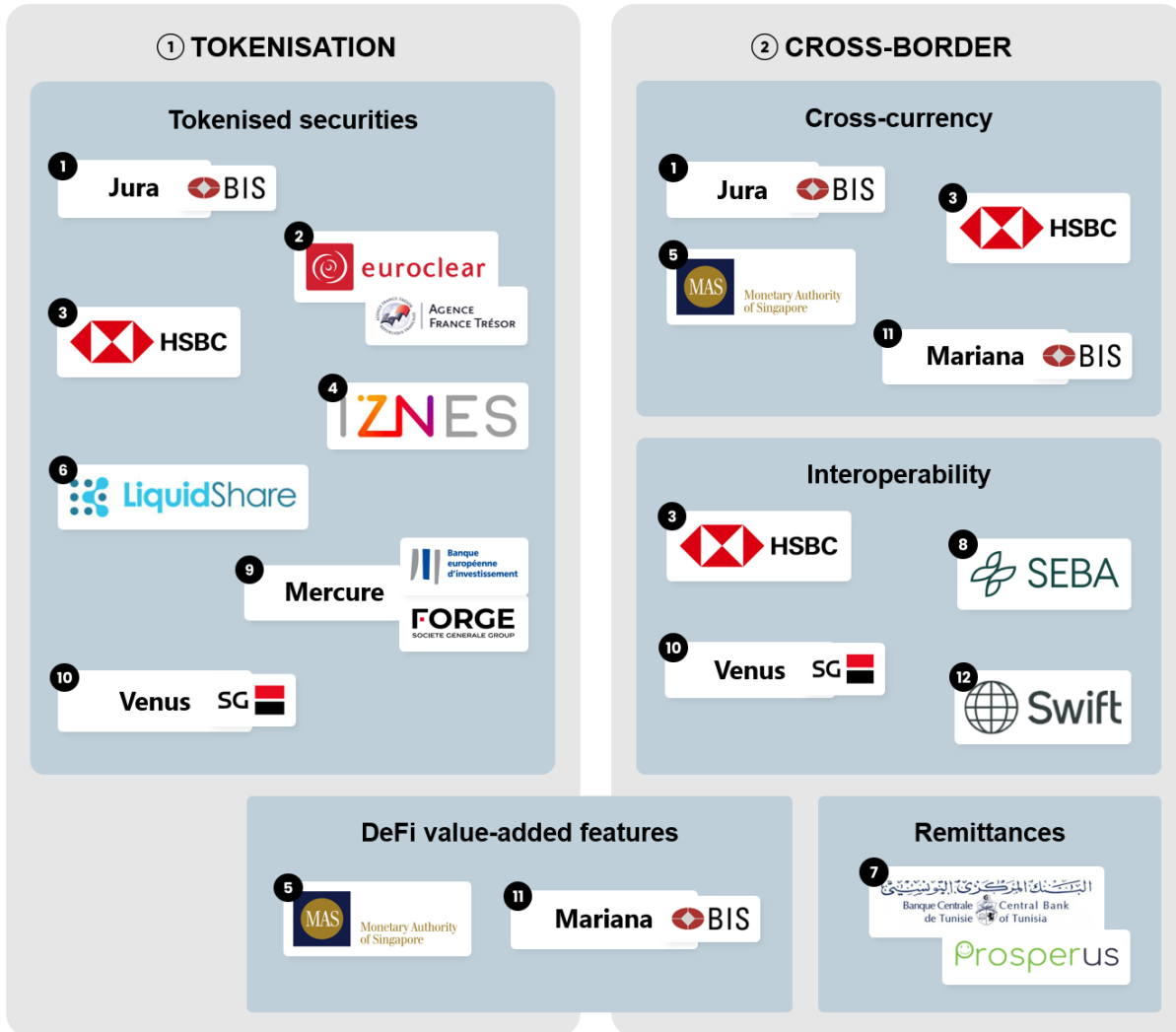
“This is only the beginning of the journey; we contemplate that multiple wCBDC DLTs could coexist on a global scale. It is therefore key to explore their interoperability from the outset of their design, to avoid replicating hurdles experienced on interlinking existing Real-Time Gross Settlement Systems (RTGS)” said Emmanuelle Assouan.

⁵ [A multi-currency exchange and contracting platform](#), IMF, 2022

⁶ [The rise of payment and contracting platforms](#), IMF, 2023

⁷ [Annual Economic Report, Section 3](#), BIS, 2023

Overview of the added value of the Banque de France’s experiments



About Banque de France

The Banque de France, a member of the Eurosystem, is an independent institution with three core tasks: monetary strategy, financial stability, and the provision of services to the economy. It contributes to the definition of euro area monetary policy and ensures its implementation in France. It supervises banks and insurance companies, and works to mitigate risks. It also offers a range of economic services to businesses and private individuals.

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