



EUROPEAN CENTRAL BANK

EUROSYSTEM

New technologies for wholesale central bank money settlement

EMMEC meeting, Milan

27 March 2024

ECB-UNRESTRICTED

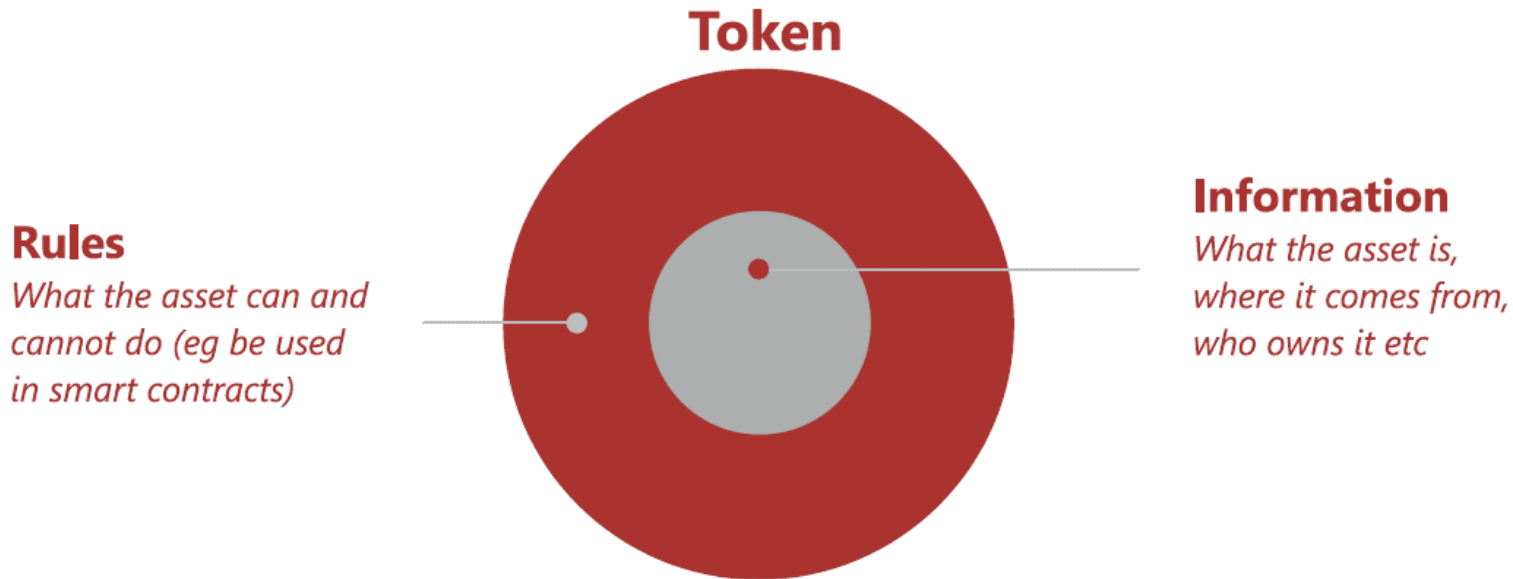


Mirjam Plooij
European Central Bank

Why?

Industry interest in
distributed ledger technology
and tokenisation

Tokenisation – a hot topic



Source: BIS

- Tokenisation is typically associated with the use of blockchain/distributed ledger technologies

The Eurosystem reached out to the market on the use of new technologies for wholesale financial transactions



**The
Eurosystem
sought market
feedback on...**

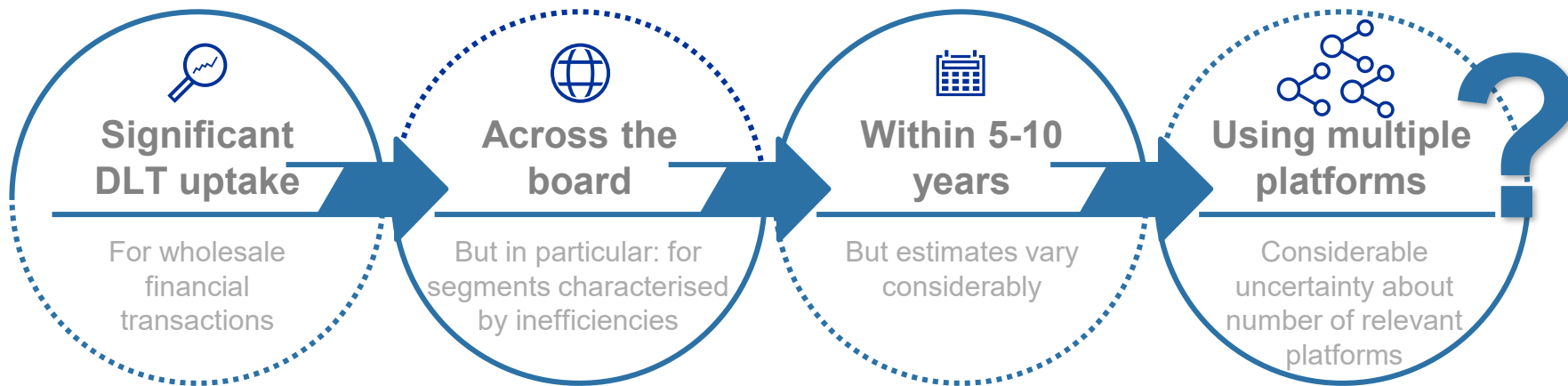
Market interest in the Eurosystem potentially providing wholesale central bank money settlement via new technologies, such as DLT

Market needs/merits/use cases that might justify the use of new technologies for wholesale central bank money settlement

Suitability of existing technologies, such as those used in current TARGET Services, to achieve the same results

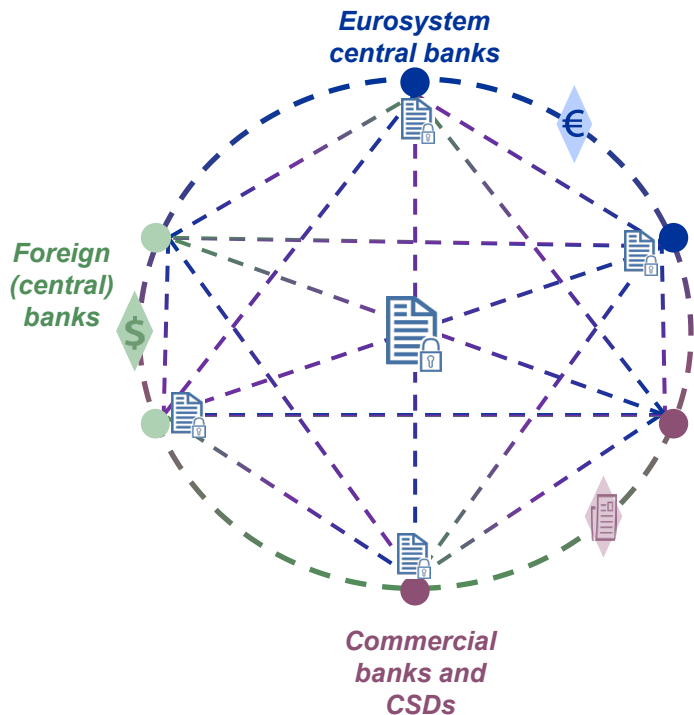
Key takeaways from market outreach

Market stakeholders* expect...



* Views expressed by majority of surveyed stakeholders (see presentation at [joint AMI Pay/AMI SeCo Dec 2022](#))

Why are financial market participants exploring distributed ledger technologies?

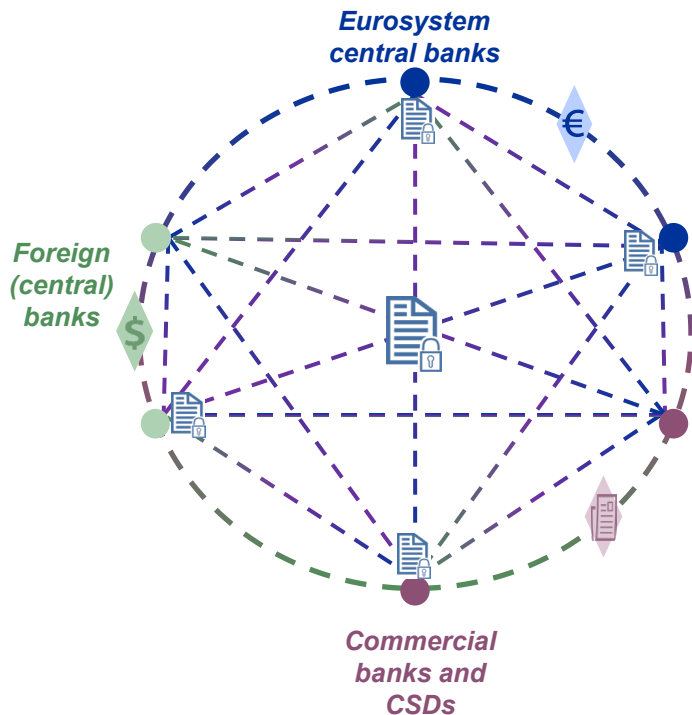


Money, securities or any other digital assets can be recorded as tokens on a shared network

Benefits expected by market stakeholders:

- **Atomicity:** technical solution to automate conditional transactions
- **Decentralised programmability:** participants can implement functionalities without relying on a central operator
- **Ease of reconciliation:** enabled by the common ledger

What might a future with significant DLT uptake look like?



Risk of market fragmentation if multiple DLT platforms co-exist in the long-term but lack interoperability

- One global ledger covering all assets in all jurisdictions seems unlikely

Risk that central bank money loses relevance as wholesale settlement asset if no (timely) solution is provided

Central bank money settlement needed as enabler; attractive business and use cases/efficiency gains to be created by the market

What?

Exploring ways to settle transactions recorded on DLT platforms in central bank money

Eurosystem exploration of new technologies for wholesale settlement of transactions in central bank money

Eurosystem is investigating **how central bank money settlement in euro could take place in the presence of new technologies** such as Distributed Ledger Technologies (DLT).

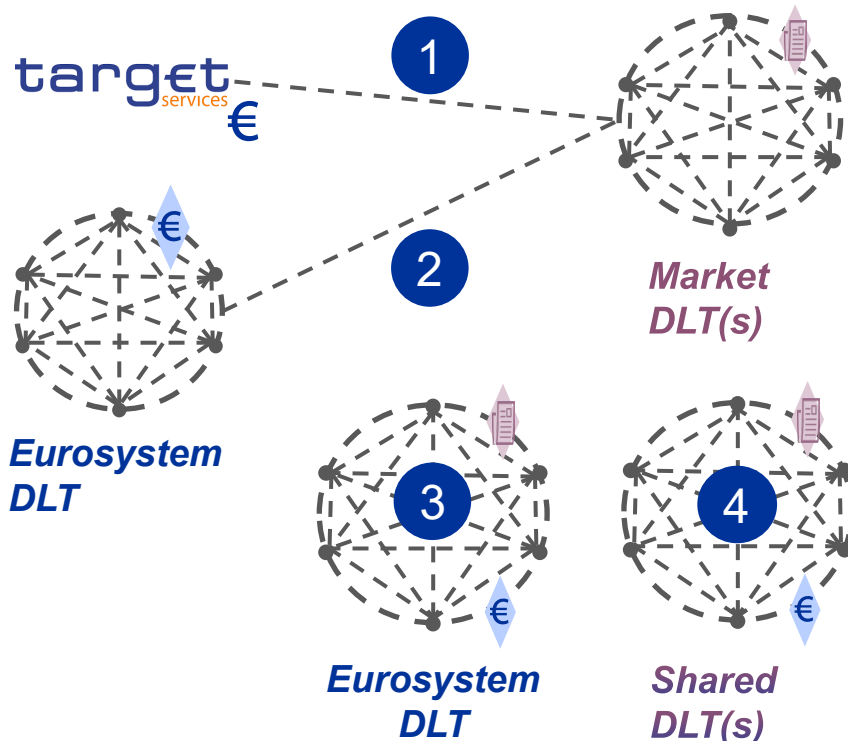
Objectives

- (i) consolidate and **further develop the ongoing work** of Eurosystem central banks in this area,
- (ii) gain insight into how different solutions could **facilitate interaction** between TARGET Services and DLT platforms, and
- (iii) meet **market demand** for central bank money settlement during their own pilots for example under **DLT Pilot Regime**



Market stakeholders can gain experience and showcase business and use cases

Central bank money settlement could take place on...



- 1 Eurosystem infrastructures using current technology, interoperable with market DLTs (*Trigger/Bridge*)
- 2 Eurosystem DLT, interoperable with market DLTs (*Interoperability*)
- 3 Eurosystem DLT for integrated EUR CeBM and securities settlement (*Integration*)
- 4 DLTs shared between Eurosystem and other stakeholders for EUR CeBM and securities (*Distribution*)

Possible degrees of central bank involvement in the ecosystem

Trigger/bridge

Central bank DLT *(Interoperability)*

Central bank standardises and offers cash leg on own infrastructure for wholesale financial transactions of institutions having access to central bank money

Market side manages asset and payment leg (e.g. CoBM) and develops its own ecosystem

Shared DLT(s) *(Distribution)*

Central bank DLT *(Integration)*

With **other full-DLT solutions**, central bank offers cash leg and participates to own/shared infrastructure where other assets and payment transaction legs (e.g. CoBM) are settled:

- Strong central bank requirements for controlling CeBM,
- Higher central bank involvement in the governance of DLT platforms and standardisation
- **The central bank taking on a bigger role, would come with more requirements for the DLT ecosystem**
- **The DLT platform needs to be attractive enough to be used by market participants**

How?

Ongoing and planned
Eurosystem activities

Eurosystem planned work

Practical work to explore solutions for cash leg settlement in CeBM of DLT transactions, planned from **13 May to 29 November 2024**, with three **Interoperability-type solutions**:

- **Trigger Solution** by Deutsche Bundesbank ([link 1](#); [link 2](#))
- **TIPS Hash Link** by Banca d'Italia ([link](#))
- **Full-DLT Interoperability** by Banque de France ([link 1](#); [link 2](#))

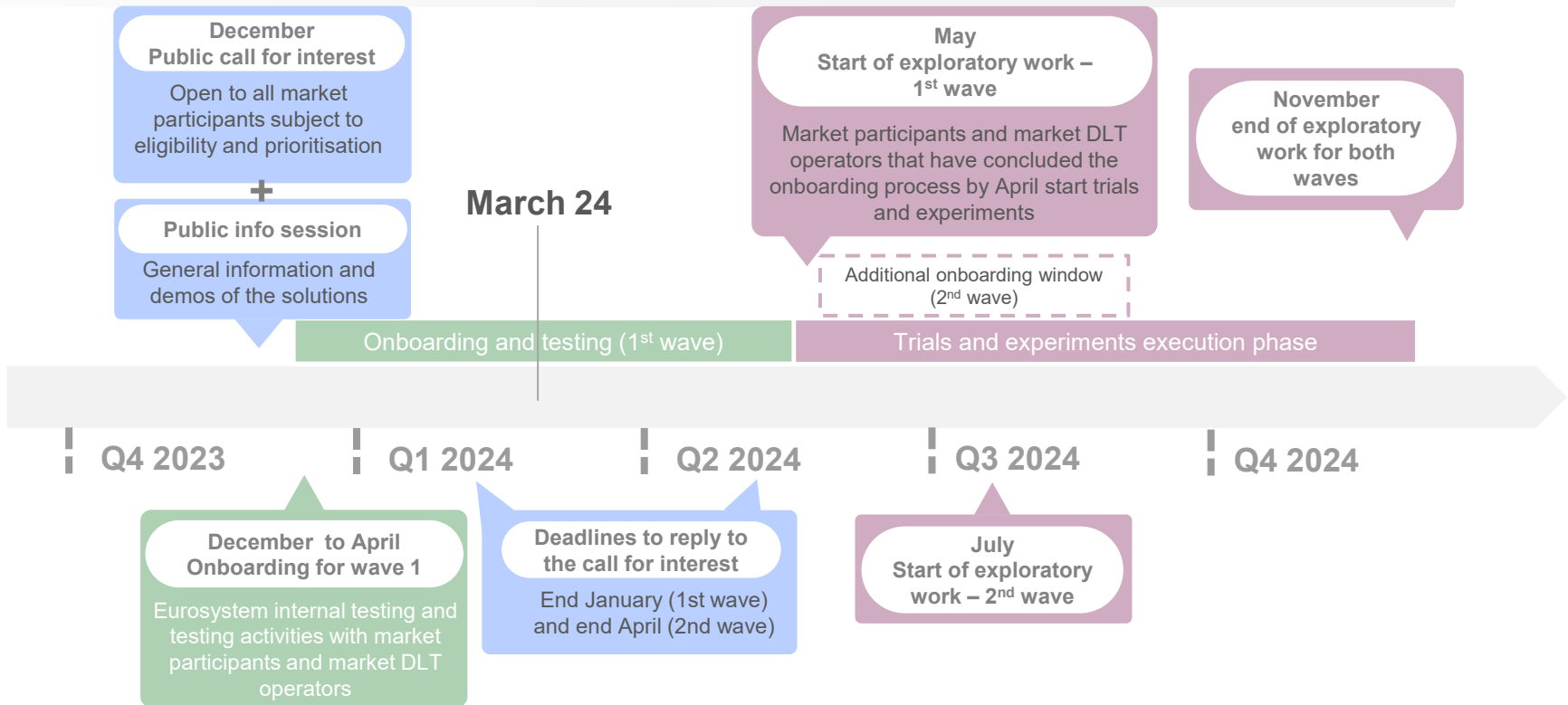
Consisting of ad hoc limited *trials* and *experiments*

Real CeBM settlement

Mock CeBM settlement

The formal call for **expressions of interest** was published on the [ECB's webpage](#) and **remains open until 30 April 2024**

Eurosystem’s exploratory work – timeline



Envisioned use cases

Main focus - DVP use cases: securities settlement & lifecycle management - market DLT platforms can connect to the SPCB solutions for settlement of financial instruments available on those DLT platforms

- **Type of transactions** envisioned: DVP for **primary and secondary market operations**, other payments related to securities lifecycle e.g. coupon or dividend payments
- **Type of assets** envisioned: both **listed or unlisted** financial instruments according to MiFID available in market DLT platforms as either **native digital assets or tokenised assets** (e.g. representation of existing assets)

Envisioned use cases

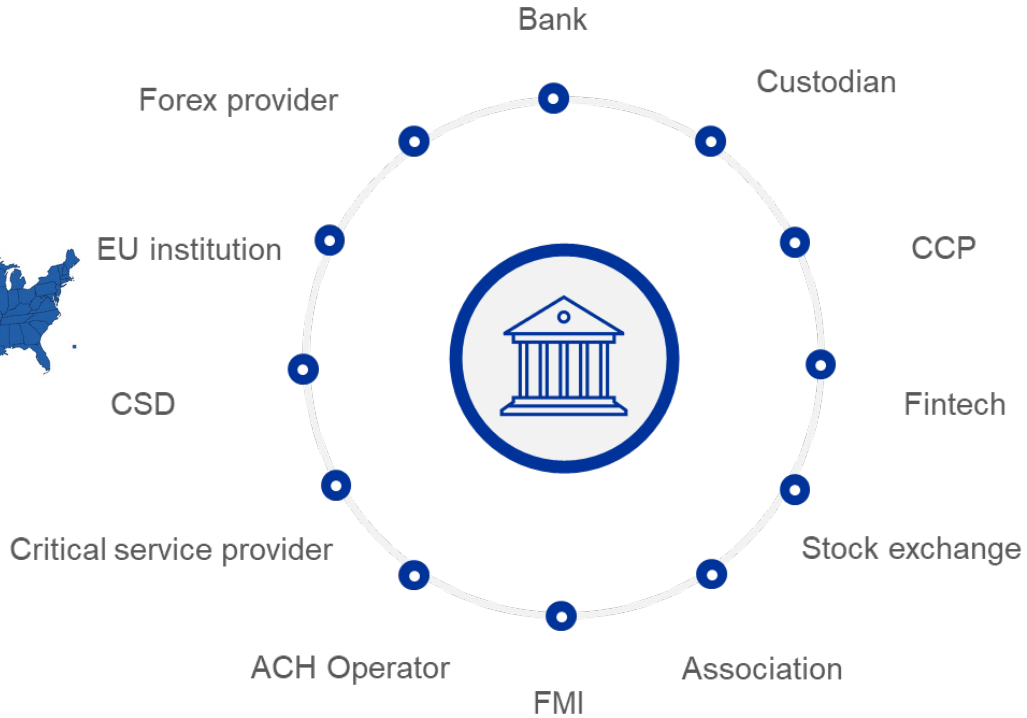
Additional use cases will be considered - exact setup will depend on other partners and will be subject to an assessment by the Eurosystem

- **PVP and other payment use cases:** cross-currency and cross-border payments in CeBM as well as automated wholesale interbank payments in CeBM (e.g. in relation to the use by commercial banks of deposit tokens with a need for CeBM wholesale settlement)
- Expectation that **participants will propose DvP and PvP use cases that explore the opportunities and benefits of new technologies and set up the necessary partnerships**, e.g. for native DLT assets, requires that market participants find issuers, investors and trading venues etc

Market Contact Group



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And beyond?

Longer-term
considerations

Future role of DLT in wholesale financial transactions?

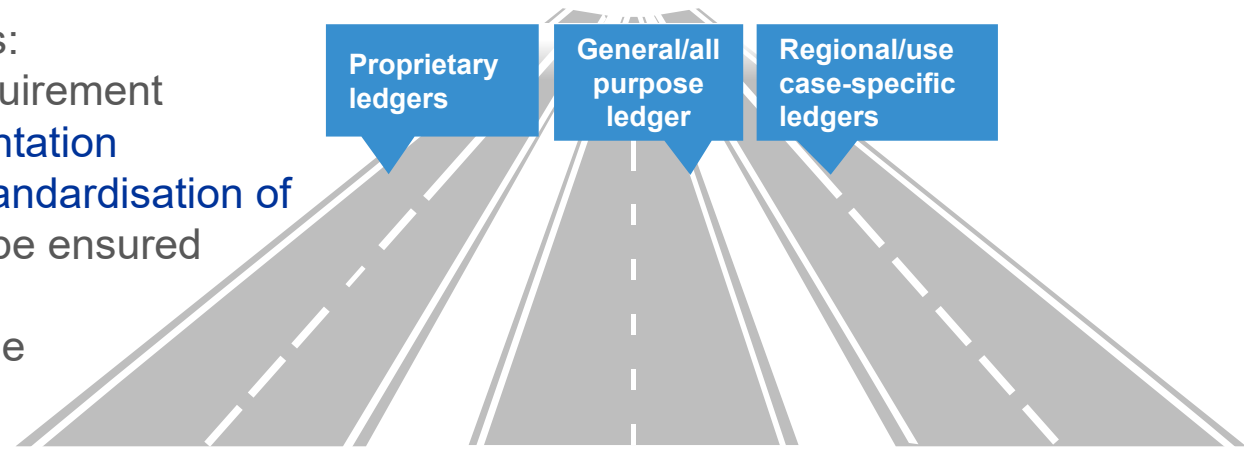
Challenges:



- will DLT be *the* future?
- can it provide sufficient scale, privacy for selected information, attractive liquidity management?
- Ensuring central bank control over CeBM while also allowing market stakeholders to innovate and adapt functionalities to their needs
- prolonged coexistence of technologies across and within countries and market segments?
- avoiding fragmentation through interoperability, harmonisation, standardisation, ... with **important role for the market**

A single- or multi-ledger future for settlement?

- Single platform could be useful to leverage advantages of DLT and avoid fragmentation
- Challenge compared to multiple ledgers:
 - more difficult to realise and keep up to date
 - less likely to address specific needs
 - time to market
- For single and multiple ledgers:
 - Interoperability is key requirement to avoid potential fragmentation
 - Common protocol and standardisation of concepts and data must be ensured
- ‘Network of networks’ as middle option?



Related documents

1. To learn more about the Eurosystem's approach to new technologies for wholesale Central bank Money settlement

- [Economic Bulletin Article: Central bank money settlement of wholesale transactions in the face of technological innovation](#)
- [Speech by Executive Board Member Mr Cipollone: Modernising finance, the role of central bank money](#)
- [New Technologies for Wholesale settlement Contact Group \(NTW-CG\) documents](#)

2. To receive practical information to participate in exploratory work

- [Focus session: Potential use of new technology for wholesale central bank money settlement](#)
- [Call for expression of interest: exploring new technologies for wholesale central bank money settlement](#)