



EUROPEAN CENTRAL BANK

EUROSYSTEM

# New technologies for wholesale central bank money settlement

FXCG

ECB-UNRESTRICTED



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# Overview

- 1 Feedback of market outreach activities on DLT uptake
- 2 Possible approaches for CeBM settlement of DLT-based transactions
- 3 Eurosystem exploratory work

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



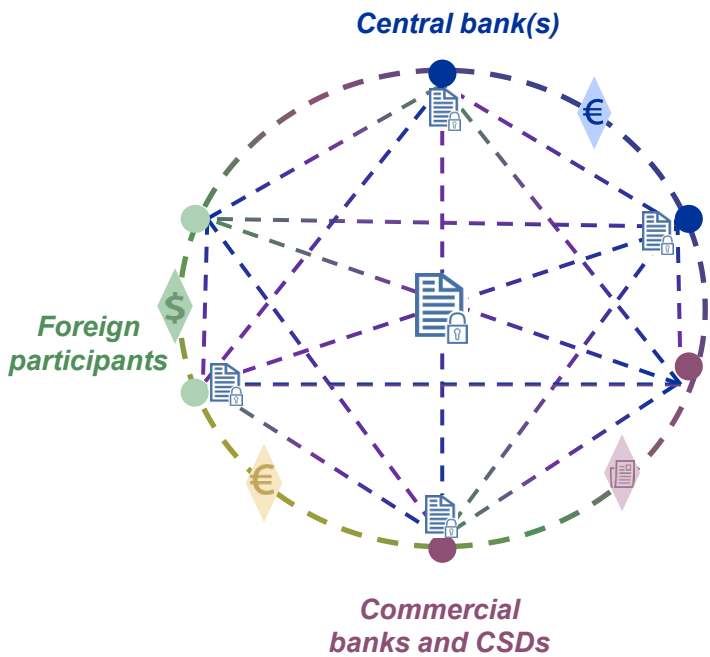
The  
Eurosystem  
sought market  
feedback on...

**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

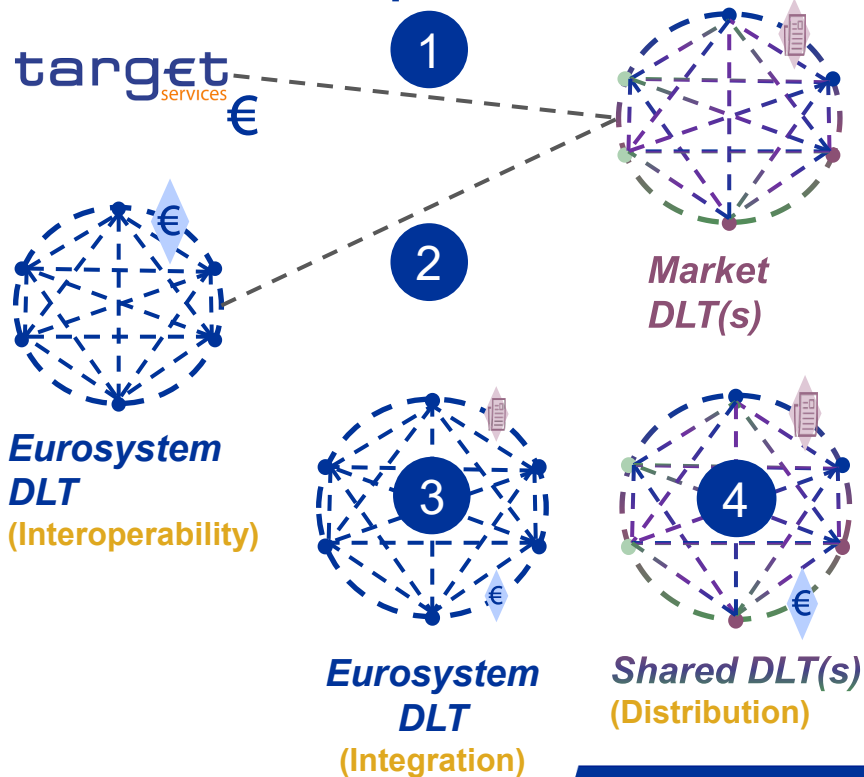
**Suitability of existing technologies**, such as those used in current TARGET Services, to achieve the same results

# 1 DLT: implications for central bank money settlement



- 1 Money, securities or, other digital asset recorded as tokens on a shared network
- 2 Benefits expected by market: atomicity, decentralised programmability, ease of reconciliation (and disintermediation)
- 3 Central bank money settlement needed to reduce risks and as enabler; attractive business and use cases/ efficiency gains to be created by the market
- 4 Absent full migration to DLT by all, coexistence with and settlement also for existing technologies

## 2 CeBM cash leg for settlement of transactions on DLT – five conceptual solutions



1. CeBM settlement in current TARGET Services through adding a **Trigger / Bridge** component

2. CeBM settlement on Eurosysteem DLT interoperable with market DLTs (**Interoperability**)

3. CeBM and **securities** settlement on own Eurosysteem DLT (T2S DLT) (**Integration**)

4. CeBM and **securities** settlement on DLTs shared between Eurosysteem and other stakeholders (**Distribution**)

### 3 Exploratory work on 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).  
Dedicated [market contact group](#) set up to continue dialogue with the market.

#### 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**

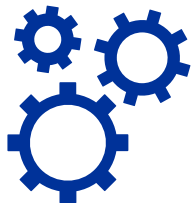
The exploratory work is **part of the Eurosystem's broader efforts** to:



- contribute to digital innovation in payments and securities settlement
- ensure central bank money to remain monetary anchor supporting stability, integration and efficiency of the European financial system

## 3 Eurosystem planned work

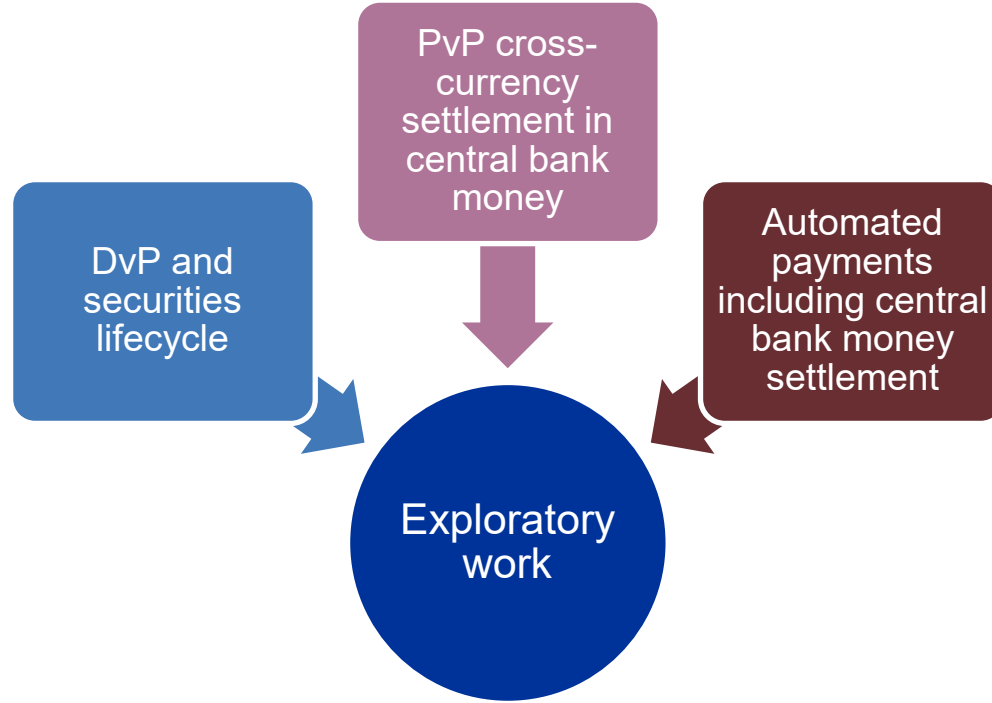
The Eurosystem will set up **practical work to explore different solutions** for cash leg settlement in CeBM of DLT transactions, planned from **13 May to 29 November 2024**, focused on the **Interoperability-type solutions**:



- **Experiments:** mock settlement of the cash and asset legs in test environments, jointly conducted by the Eurosystem and eligible participants at specific dates and times.
- **Trials:** actual settlement of transactions in central bank money in a limited setting for a limited period of time.

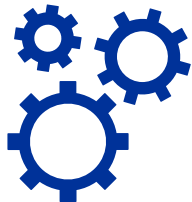
The formal call for **expressions of interest** was published on [ECB's webpage](#) and **remains open until 30 April 2024**, exploratory work from May – November 2024

### 3 Ingredients of the concluding report





## 3 Questions remain, for example ...



- will DLT be the future?
- impact on market practices and structures?
- how to handle different speeds?
- how to enable standardisation in presence of reluctance to invest in modern standards?

# Related documents

## 1. To learn more on 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](#)

## 2. To receive practical information to participate to 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](#)



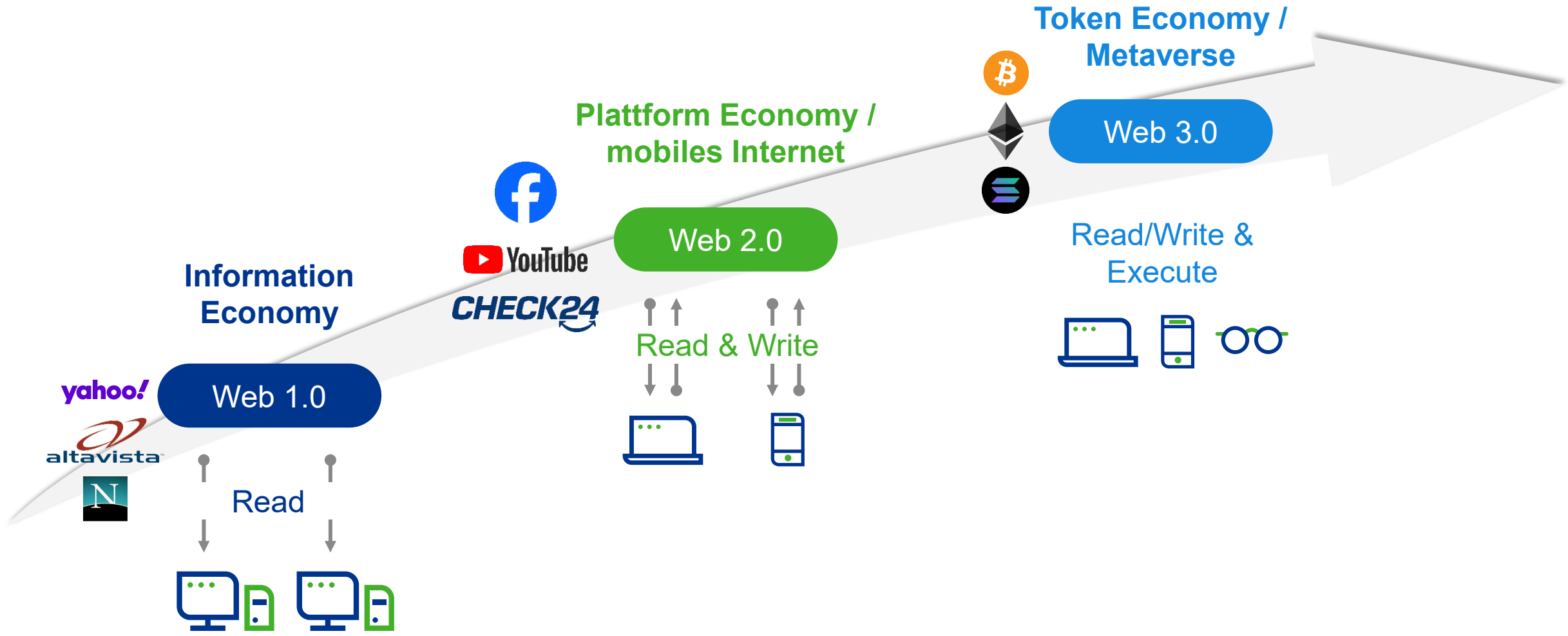
ECB FX Contact Group

# Asset management perspective on token economy

Frankfurt, 19 March 2024 – Christoph Hock

# Token Economy and Digital Assets as Disruptive Factors

Web 3.0 as an evolution of the internet of the 90s



# What's in DLT and CBDC for the ecosystem?



## Pain Points

- Manual, non-automized process (time)
  - Lack of standardization (data)
  - Bank syndicate as intermediary (costs)
  - High transaction costs
  - Poor data quality
  - Fragmented liquidity
- ### Traditional Financial System (TradFi)
- Extended settlement time frame (costs & risks)
  - Siloed data structures
  - Long supply chain
  - Siloed data structures
  - Multiple reconciliations
  - Heavy processes for maintenance/ safekeeping and reporting of ownership records
  - Manual processes for booking coupons and payment at maturity
  - Complex processing of corporate actions

## Optimisation with DLT

### Assets on Chain: Automation, transparency and real-time data

- Registration of securities and funds directly by issuer
- Innovative blockchain-enabled trading platform
- Automation of trade execution
- Instant matching and clearing, i. e. atomic settlement
- Fewer and new intermediaries
- Single, immutable record of truth, therefore less manual reconciliations
- Fewer and new intermediaries
- Smart contracts automating trigger of events

## Positive Impact of wCeBM

### Cash on Chain: Full potential of automated bond lifecycle & financial integrity, legal tender and economic certainty in capital markets on DLT

- On demand real-time issuance of securities
- Lower transactions costs
- Reduced credit risk exposure
- Increase efficiency of settlement and clearing
- Less manual reconciliation process (reduced risks, costs and settlement delays)
- Programmable money with accessibility via wallet
- Real-time transfer of assets

# Benefits of the New Ecosystem around Decentralized Finance (DeFi) with Assets and Cash on Chain

Goals of  
the use cases



Innovation and competition leads to higher speed, lower cost, reduction of risk



Higher level of automation;  
Simplification of administrative processes



ESG and static data:  
High level of transparency through real-time golden sources



Settlement and Clearing:  
Atomic and instantaneous, i. e. not t0, but s0 (same second); also fewer and new intermediaries



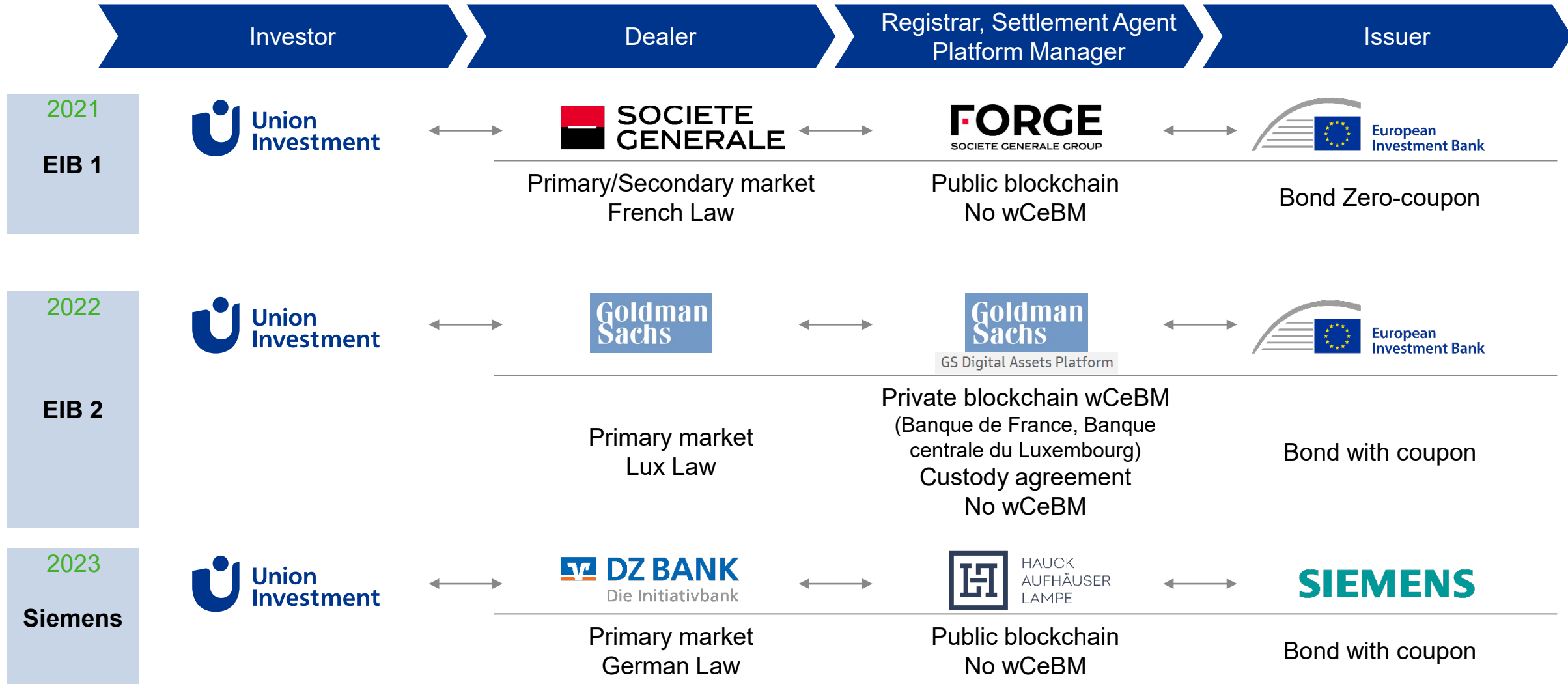
Smart Contracts as „brain“ of DApps (Decentralized Applications) in the focus of the DeFi universe



Customer Accessibility:  
Combined wallet with immediate accessibility to assets and cash on chain

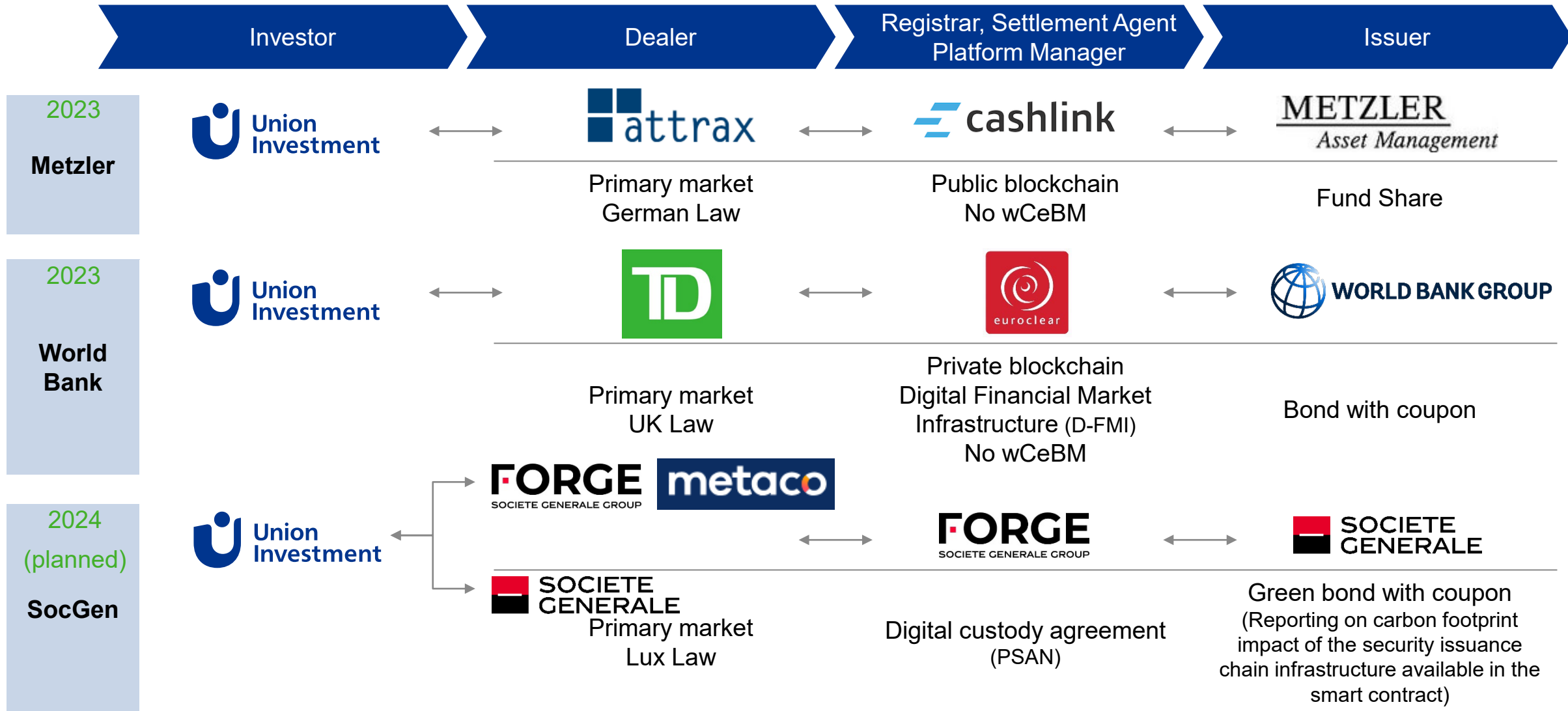
# Use Cases in Cryptobonds and –Fund Shares (1)

Union Investment  
blockchain transactions



# Use Cases in Cryptobonds and –Fund Shares (2)

Union Investment  
blockchain transactions





# Summary

1

**Blockchain** enables **token economy**; token economy as a **disruptive factor** makes existing processes more **efficient** in terms of speed, costs and risks and **enables new business models**

2

Combination of **assets on chain** and **cash on chain** is key for leveraging significant synergy potentials; this year in spotlight are first **DLT-trading platforms** (DLT Pilot Regime) and **e-Money** (Stablecoin under MiCA, Trials around wCeBM)

3

Tokenization of assets creates higher liquidity through **fungibility**, lowers entry hurdles for investors due to **fractionalization** and is a nucleus of a **new generation of financial assets**

4

Cash on Chain enables **atomic and instantaneous settlement and clearing processes**, offers more **transparency** and lowers **risks and costs**; makes **global payment processes** more efficient

5

**Tokenization** generates a significant amount of **data** that creates a competitive advantage also in **ESG topics** (like measurement of carbon footprint for financial ecosystem, trading activity and position keeping)

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