

Blockchain Activities of the Deutsche Börse Group

Blockchain from a Central Bank Perspective | Symposium | Zurich, 3 November 2017

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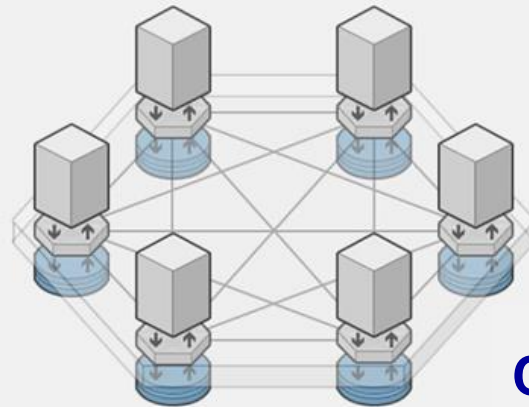
Technical elements of blockchain

Integrated logic

- Integration of **data and logic**
- Logic (smart contracts) operate on data

Distribution

- **Multiple replicas** of all data
- Consistency through **consensus algorithms**



Immutability

- “Write once” database

Cryptographic security

- Cryptographic/digital signature of transactions

Secure, immutable historical record – full audit trail

Remaining hurdles to introducing blockchain-based services

- Limited maturity of the technology, problems remain e.g. regarding
 - Scalability
 - Privacy

- Complex legislative framework
 - Need to assess what is possible while playing by the rules
 - Services based on new technology need to abide to the same rules as incumbents to ensure the integrity and stability of the financial system

- Mid-term perspective: Changes or specifications of the rulebook might be needed...
 - ...to specify the legal nature of a tokenised representation or smart contracts,
 - ...to define how to identify the applicable jurisdiction or relevant laws in a decentralised system.

- The “classical” legal issues in cross-border trading (“Giovannini barriers”) also affect blockchain based services

Foundational pillars enabling adoption of blockchain technology

- DBG assessed what elements are needed to clear the way for widespread adoption of the technology

- Three elements will be the key foundational pillars:
 1. the ability to access central bank liquidity on the blockchain;
 2. enabling access to commercial bank liquidity on the blockchain;
 3. being able to conduct multijurisdictional transfer of securities on a single blockchain platform.

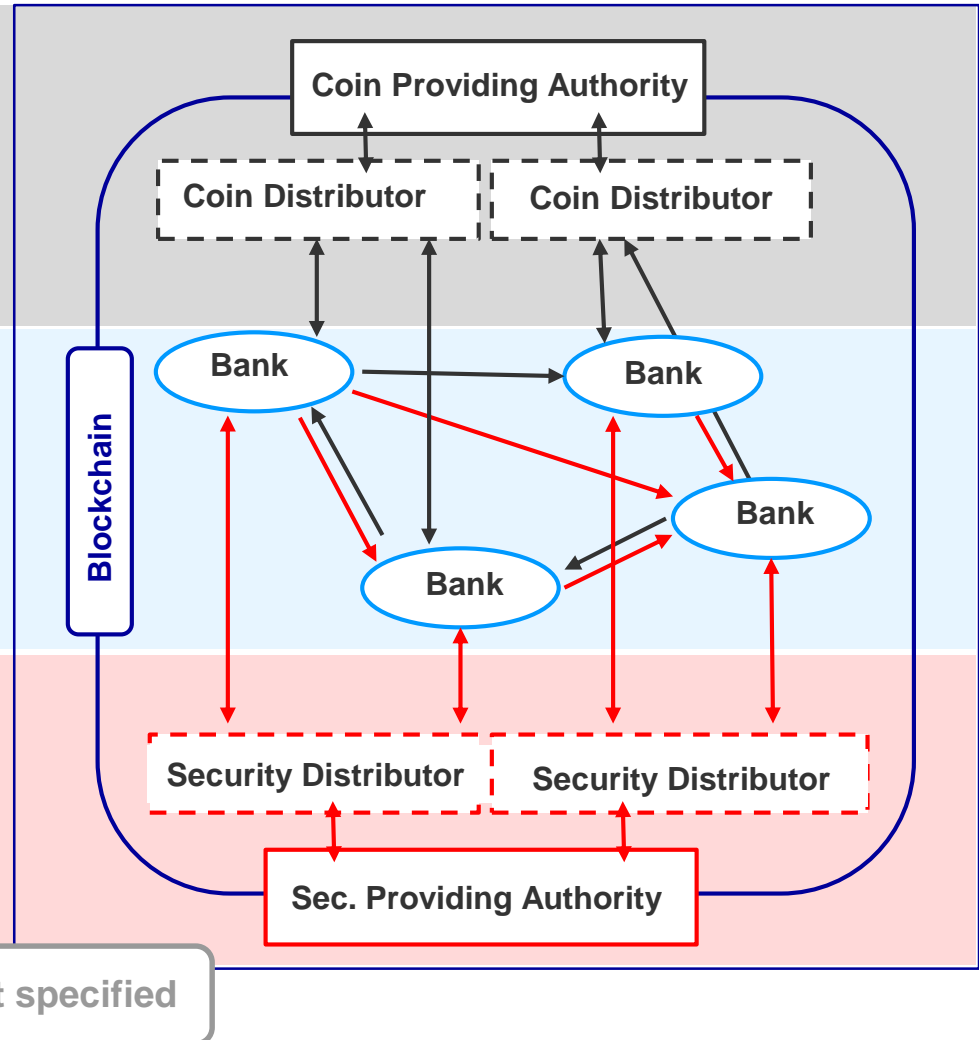
- The DBG research and Proofs of Concept were developed along these lines
 - Research Project with the Bundesbank
 - Collateralised Coin (CollCo)
 - Liquidity Alliance Ledger (LA Ledger)

DBG Project 1: Research Project with the Bundesbank

Functionality

- Import and export of **Digital Coins**
- **Peer-to-peer transactions**
Transfer of Digital Coins and Digital Securities (DvP, payments, FoP)
- **Bond corporate actions**
Redemption, coupon payment
- Import and export of **Digital Securities**

Overview



DBG Project 2: CollCo

Functionality

The “Collateralised Coin Infrastructure” is based on the (margining / collateral) functionality of a clearing house

Coins

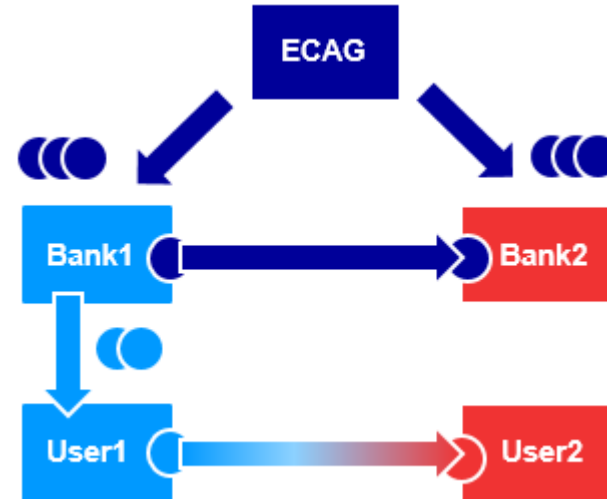
- Commercial bank money coins issued by banks (participants of the clearing house) to their customers – corresponding to commercial bank money of the respective bank.
- Collateral coins issued by the clearing house to banks. Backed by collateral outside the chain

Mechanisms

- Collateralised peer-to-peer payments / transfer of commercial bank money coins between users
- Collateralisation of commercial bank money coins held by a user

Overview

Peer-to-Peer Payment

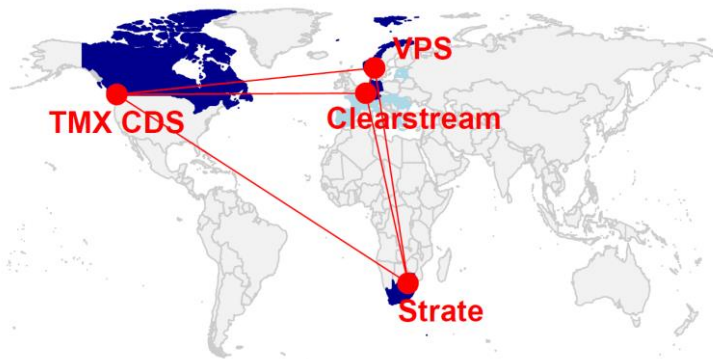


- Transfer of commercial bank coins between users (payment)
- Collateralisation through transfer of collateral coins (CollCos) between respective banks

DBG Project 3: Cross border collateral mobility | LA Ledger

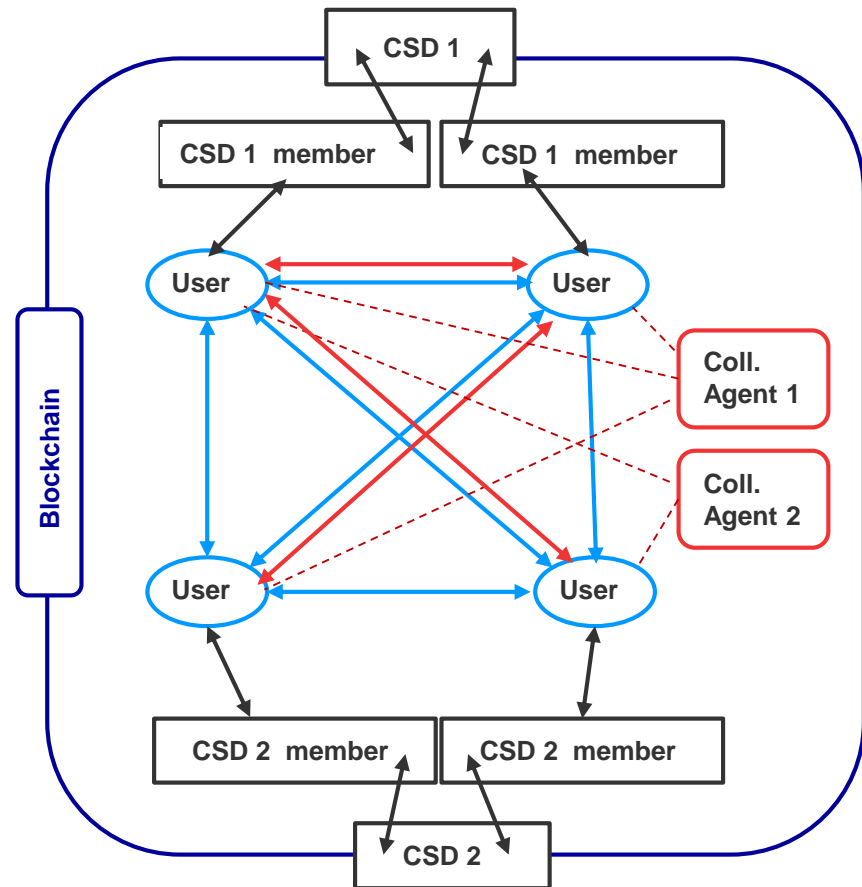
Functionality

Liquidity Alliance - CSD network



- Import/export of **digital securities** through CSDs and CSD members
- **Peer-to-peer** movement of digital securities (FoP)
- Securities movement by **collateral agent** (integration of collateral management system and blockchain)

Overview



No cash collateral

What next?

- New technology can be the best solution for some challenges, but for others the existing and well-established processes are hard to beat.

- We need to ask ourselves:

“Can the equivalent result to current ways of operating – in terms of transparency, stability and regulatory compliance – be achieved with new technologies, by improving existing technology or possibly through a combination of both?”

- The financial industry is a trust-based system - a role will remain for trusted third parties like CCP or CSD

- While we will see changes, blockchain technology will not lead to a complete overhaul of established market structures



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Thank you for your attention

Alexandra Hachmeister

Chief Regulatory Officer and Managing Director Group Regulatory Strategy