



EUROPEAN CENTRAL BANK

EUROSYSTEM

# **Distributed ledger technology: role and relevance from a regulatory perspective \***

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\* The views expressed are those of the author and do not necessarily reflect those of the ECB



**DLT: role and  
relevance from  
a regulatory  
perspective**

**1**

**The Eurosystem perspective:  
central banks and DLT innovation**

**2**

**A moving target: understanding DLT  
and the industry adoption scenarios**

**3**

**Analyzing DLT : impact on efficiency,  
safety and the broader financial markets**

**4**

**Accompanying the market: foster  
innovation while avoiding silos**

## Operational role



Offering efficient and safe market infrastructure services for settlement of payments and securities

assess if DLT is a technical solution able to serve the provision of settlement services

Conduct experimental work with DLT

## Catalyst role



Facilitating private sector efforts to improve market efficiency

facilitate the emergence of on standardized and interoperable market solutions

counter risk of DLT silos and proprietary solutions

## Oversight role



Monitoring and assessing systems; inducing change when necessary

Assess possible impact of DLT adoption on overseen entities and their business models

Ensure regulation is technology neutral in order not to stifle innovation



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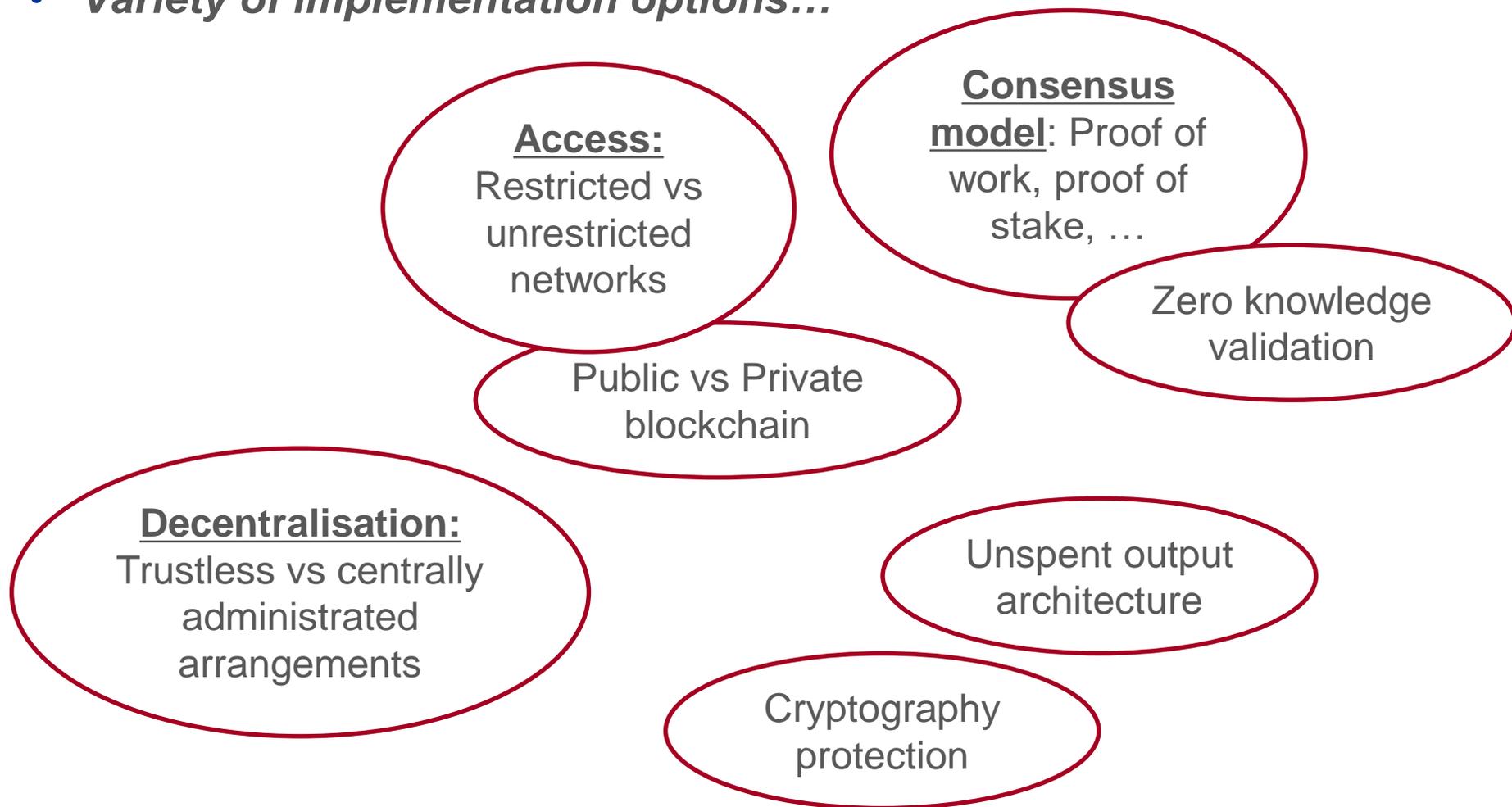
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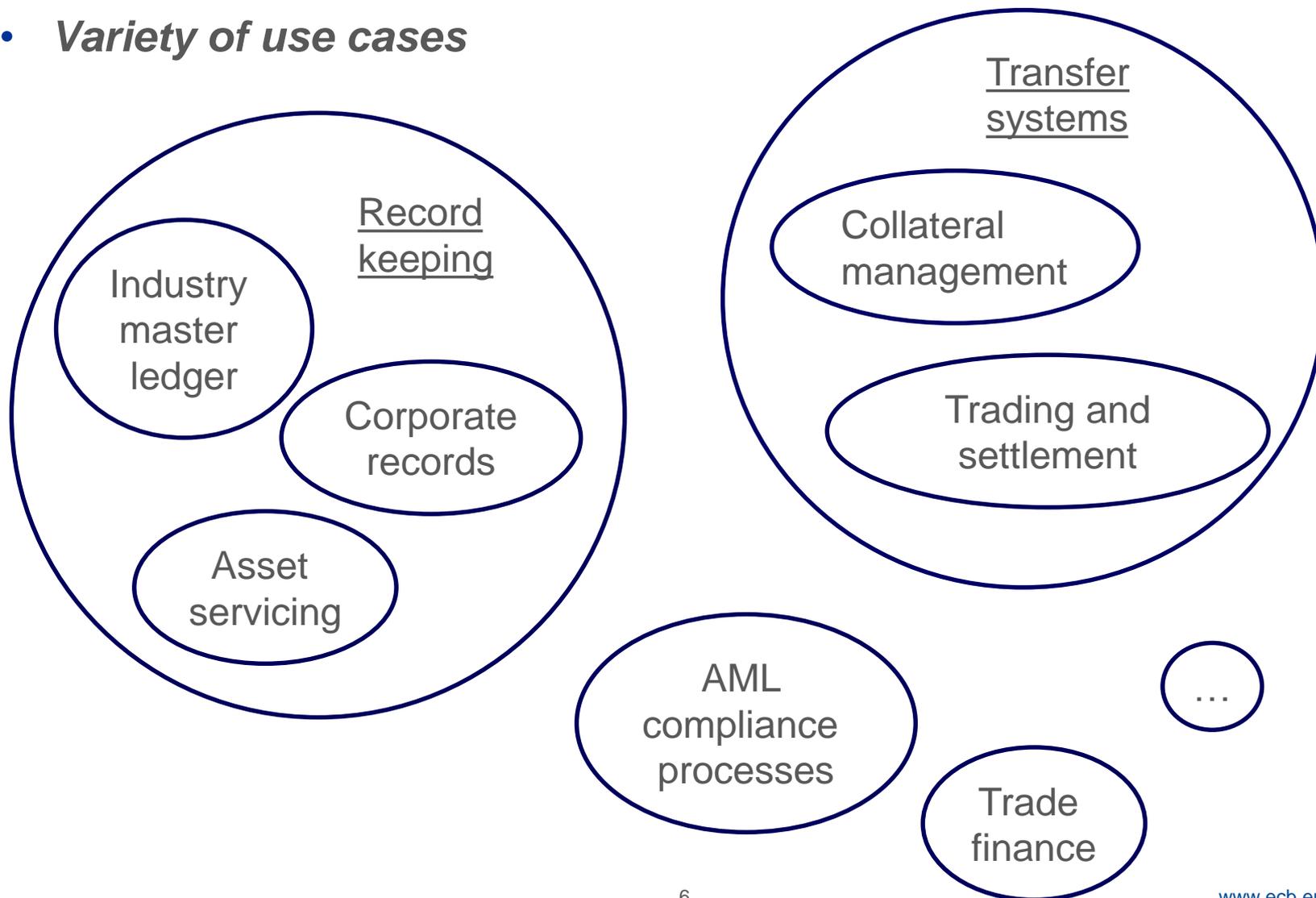
## DLT is a moving target

- *Variety of implementation options...*



## DLT is a moving target

- *Variety of use cases*



## Possible market adoption scenarios

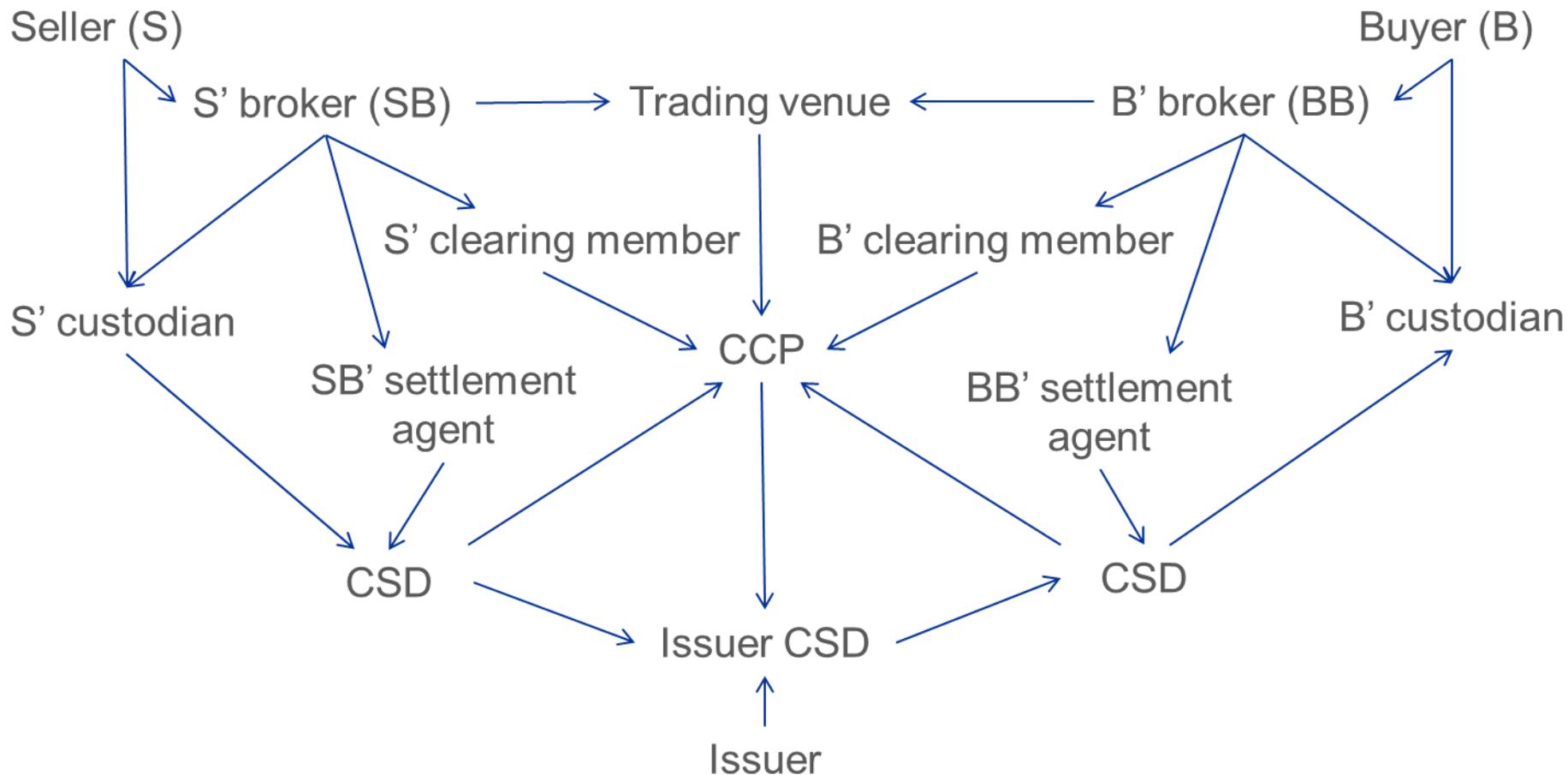
- ***Possible scenarios***

- i. individual market players try to use DLT mainly to improve internal efficiency => happens already, limited impact
- ii. new market solutions are offered on a sector wide level  
=> standardisation pre-condition, potentially high efficiency increase
- iii. a *peer-to-peer* world without intermediaries emerges  
=> totally changes the business model, but unlikely to happen

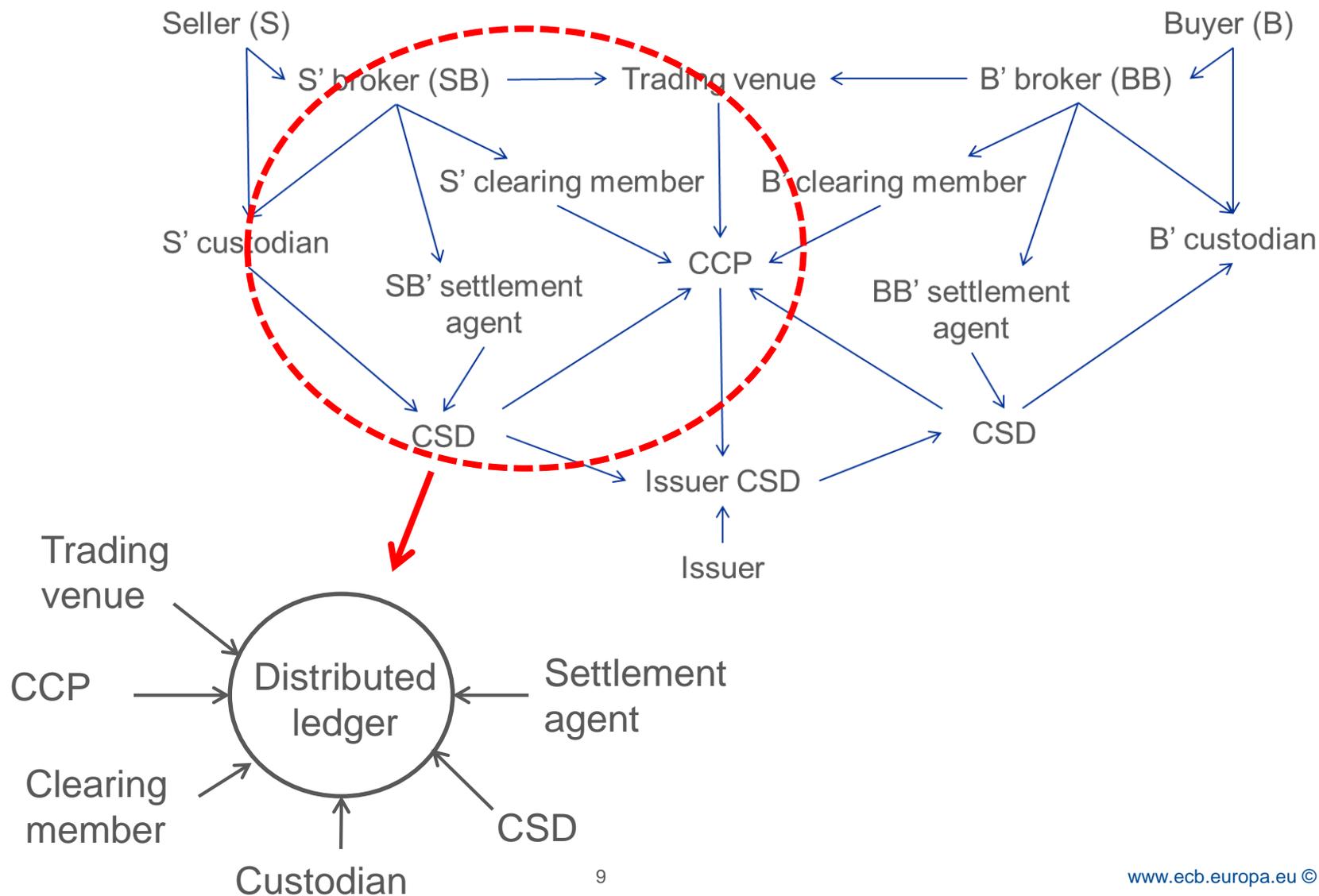
- ***And who is going to implement them***

- i. fintech startups *disintermediating* incumbents
- ii. bigtech companies *crowding out* incumbents
- iii. incumbent banks and infrastructures *cooperating* with fintech companies

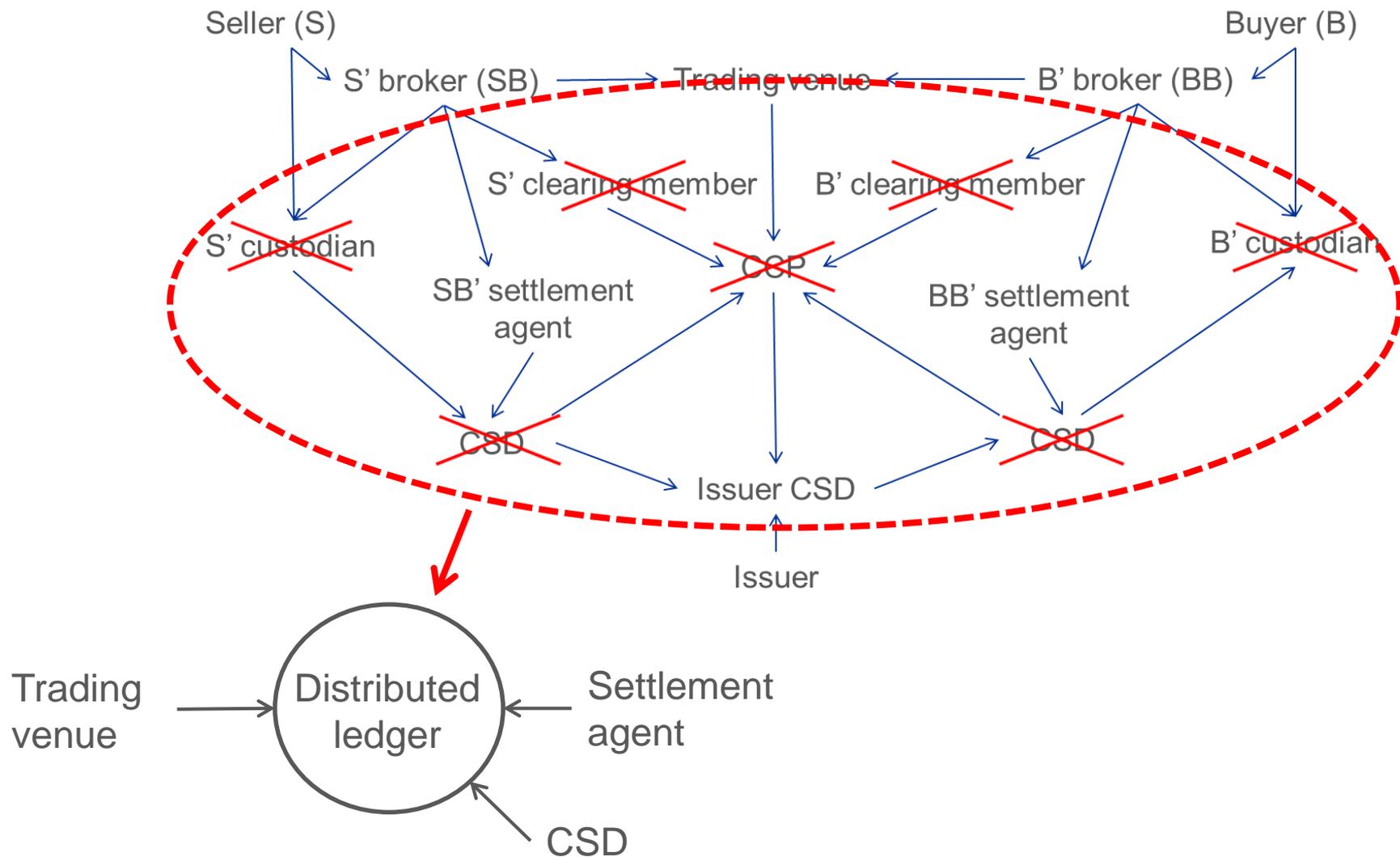
# DLT adoption scenarios applied to the post-trade industry



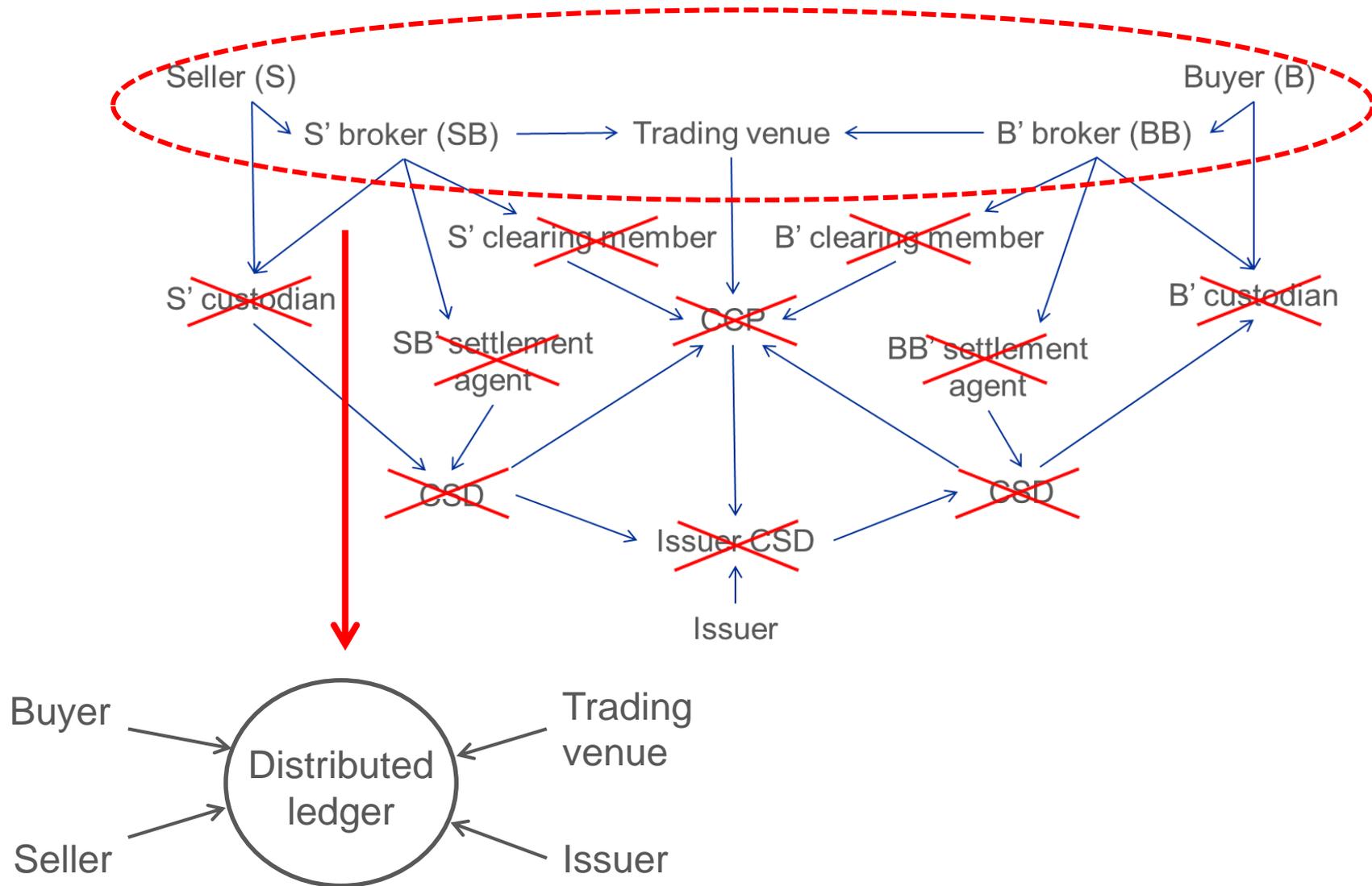
## Scenario 1: DLT improves cluster efficiency



## Scenario 2: market-wide adoption (disintermediation)



## Scenario 3: peer-to-peer (ICO model)





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## Analytical framework

- Guidance on **understanding the arrangement (scope)**
  - Functionality and nature of the arrangement
  - Key factors for an effective implementation
- Potential implications for **efficiency, safety and the broader financial markets**

Efficiency	Safety
Speed of end-to-end settlement Costs of processing Reconciliation (speed, transparency) Credit and liquidity management Automated contract tools	Operational and security risk Settlement issues Legal risk Governance Data management and protection
Broader financial market implications	
Connectivity issues and standards development Financial market architecture (actors, markets, regulators) Broader financial market risks (micro- and macro-level)	



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## DLT's potential versus market reality

- **DLT has potential**, and innovation is welcome in the European financial market, wherever it can bring safety and efficiency.
- The industry face a number of challenges to the widespread uptake and use of DLTs.
  - 1) the technology is not yet mature;
  - 2) the clarification of critical legal, operational and governance issues will take time;
  - 3) even were DLT is to be adopted widely, certain centralised functions will continue to be necessary.
- **Not clear yet** whether DLTs will **cause major change** in mainstream financial markets or will **remain limited** to particular niches.
- If DLT finds its way into the mainstream market, it is more **likely to cause a gradual change in processes**, rather than a revolution in the market.

## Standardisation and harmonisation

- **Financial market integration efforts must not be jeopardised by new technologies:** Eurosystem market infrastructures facilitate financial market integration in Europe and supports Capital Markets Union.
- Interoperability is a key concern. Being built as “open source” projects is not sufficient. Two dimensions:
  - Different DLT solutions need to smoothly interact
  - DLT world needs to interoperate with legacy systems
- Markets shall rely on technical standardisation (eg. DLT IT platforms), and functional harmonisation (eg. interaction across different time zones)
- A DLT Task Force has been established in the T2S governance to analyse the possible impact of DLT adoption on T2S harmonisation activities and identify the possible need for further harmonisation activities in a DLT-enabled market

### Adaptation of oversight activities

- In general, **oversight principles appear to be technology neutral.**
- It is yet unclear if there would be anything distinctive about DLT that could justify a new approach to specific risks: **same service, same risks, same rules** principle apply
- Yet, DLT poses specific questions that will need to be assessed in order to provide a harmonised answer