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# **ECB tests and collaboration on technological innovation**

ECSDA TechDay

*Brussels 27 November 2018*

# Overview

- 1** ECB approach to technological innovation
- 2** ECB Innovation Lab
  - *EUROchain research network*
  - *Joint BoJ/ECB research project Stella*
- 3** Conclusions

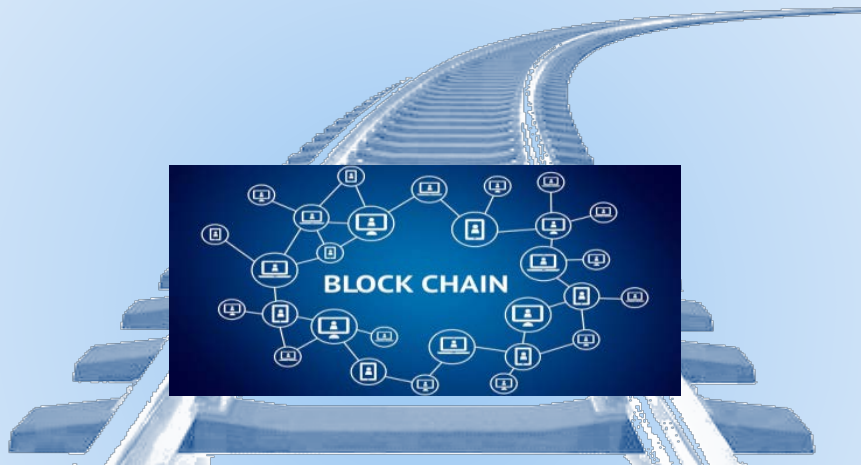
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# ECB approach to technological innovation

## Distinguish infrastructure from asset

### Infrastructure



**Distributed Ledger  
Technologies / Cloud / AI**

### Asset



**Digital currencies / crypto  
assets / tokens**

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# The ECB Innovation Lab



The team

Collaboration between **market infrastructures and IT departments** within the ECB

Business and IT experts working on **research topics** in market infrastructure and payments.



The (main) projects



**EUROchain**

Work within EU central bank community

World's first DLT research network between a large group of central banks



Joint project with Bank of Japan

- Phase1: Wholesale Payments
- Phase2: Delivery vs Payment
- Phase 3: Interoperability

# The EUROchain Research Network



The **ECB Innovation Lab** along **with** experts from **17 NCBs of ESCB** is exploring new technologies (currently DLT) in the field of market infrastructure and payments.

Few group characteristics:

- Different backgrounds
- Heterogeneous skills
- Different countries
- Generic “research” mandate, but strong technical focus



# Bank of Japan/European Central Bank cooperation



Project “Stella” launched in December 2016

Objective: deepen understanding of DLT

Not geared towards replacing existing central bank services with DLT-based solutions

**09/2017 Stella 1:**

Can specific liquidity-saving mechanisms of RTGS be run on DLT?  
*(Hyperledger)*

**03/2018 Stella 2:**

How Delivery-versus-Payment be designed and operated on DLT?  
*(Hyperledger, Corda, elements)*

**H1/2019 Stella 3:**

Interoperability (details to be confirmed)





## Report 1 Payments

### Main findings

#### performance

Current performance needs of RTGS system can be processed without difficulty

Liquidity-saving mechanisms not a major factor for latency (adding 0.01-0.02 seconds)

DLT performance is affected by distance between nodes

#### availability

DLT solutions are resilient to the failure of individual network nodes

Validating nodes mostly recovered in less than 30 seconds

DLT solutions cope with incorrectly formatted messages; latency remained below 1 second

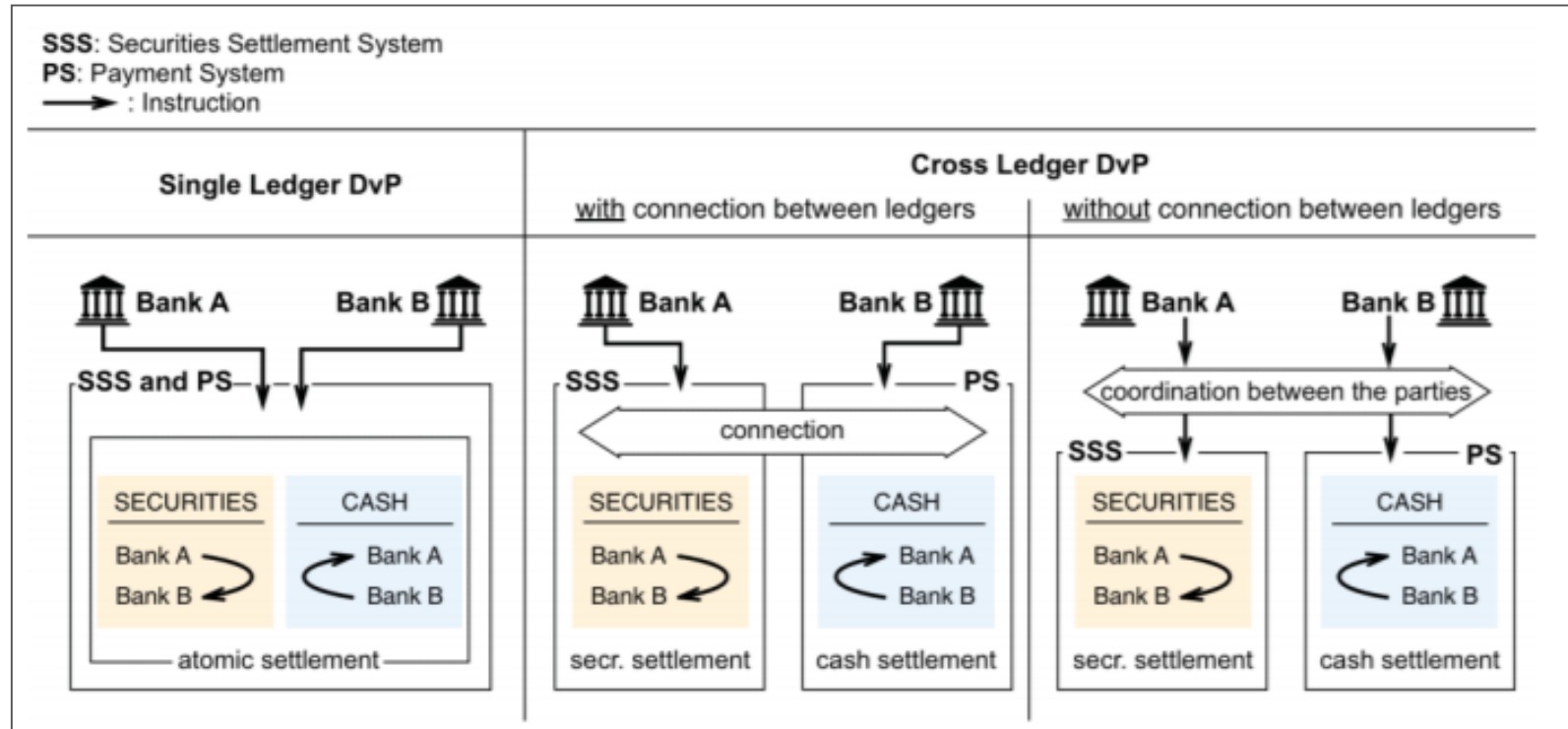


# Report 2 Securities

## Main findings

DLT offers new approach to DvP without technical connection between ledgers (cross-chain atomic swap)

This new interoperability approach entails complexities and additional risks (e.g. higher liquidity needs)



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## Conclusions

# *Hammer looking for a nail?*



## ECB stance

Technological innovation such as DLT has the potential to profoundly impact the financial market we know today. But any new technology-based market infrastructure service **needs to be mature enough to meet high requirements in terms of safety and efficiency.**

Against this background, the ECB **cannot, at this stage, consider basing its market infrastructure on a DLT solution.**

The ECB will **continue to explore, analyse and test new technologies, leveraging on joint experience with other central banks and market stakeholders.** By doing so we will ensure that tomorrow's market infrastructure not only is efficient and innovative but also remains safe and resilient.

# Thank you!



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