How to integrate CBDC with DLTs?

Strategies and Solutions

Lars Hupel
TUM Blockchain Salon
2023-05-12

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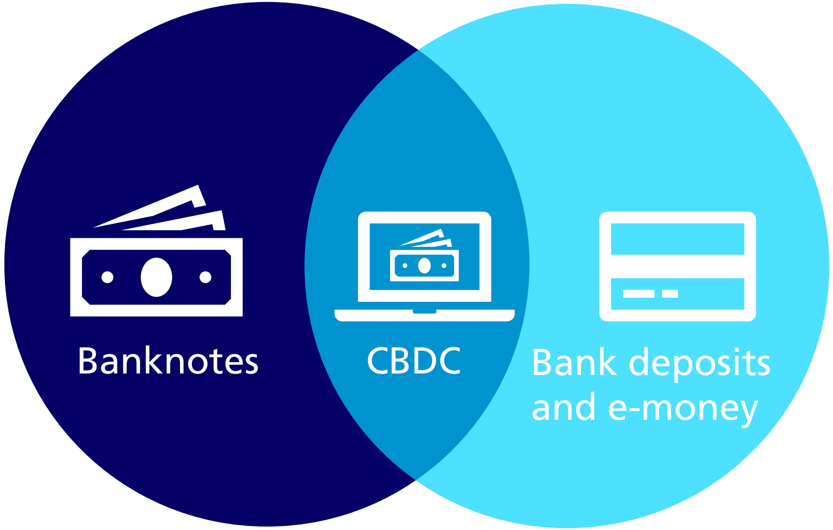
Central Bank Digital Currency

Distributed Ledger Technology

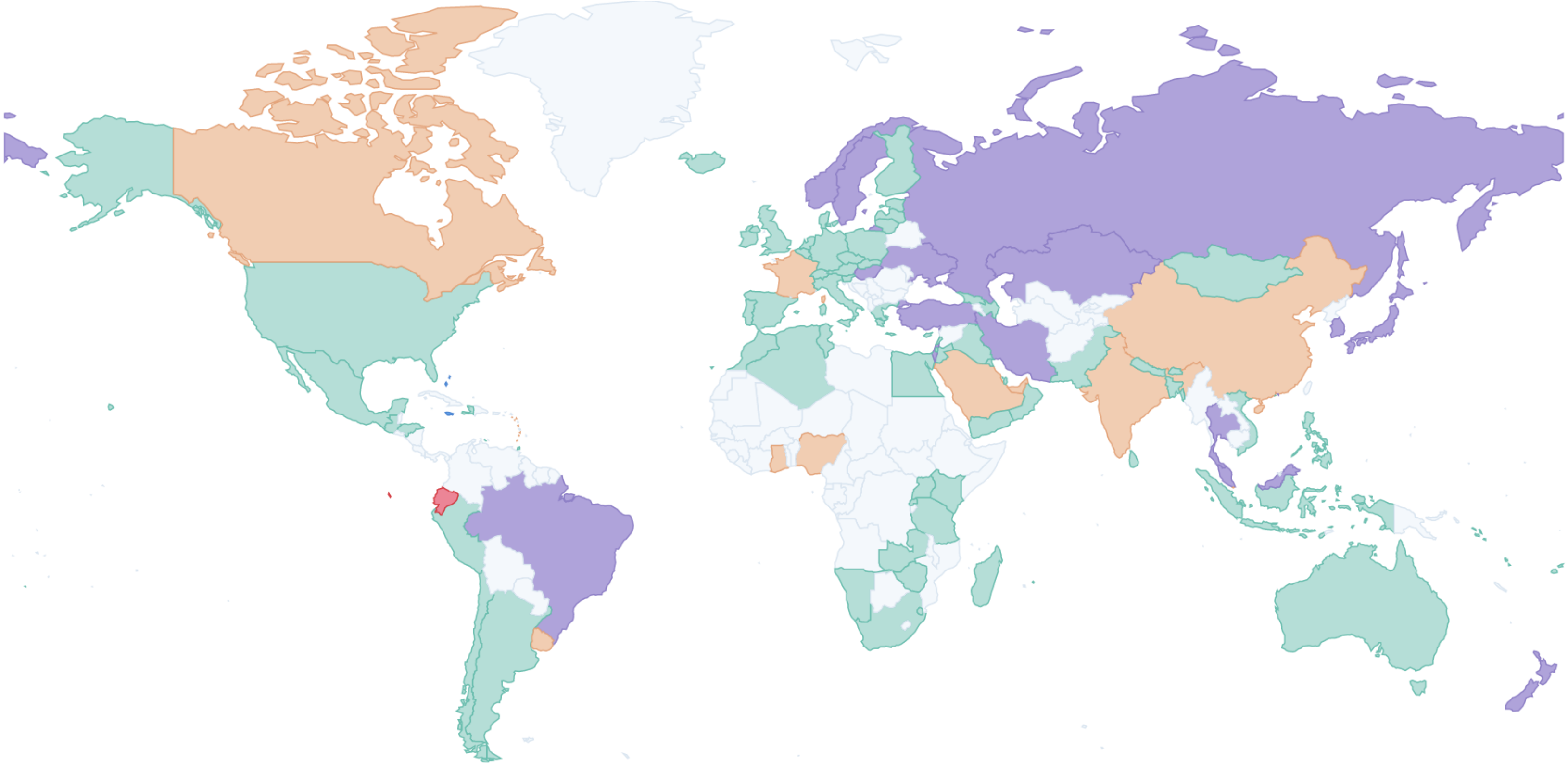
Central Bank Digital Currency

Issued by the
central bank



Digital money

CBDC worldwide



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https://cbdctracker.org/

In 2023, over 20 countries will take significant steps towards piloting a CBDC.

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https://www.atlanticcouncil.org/cbdctracker/

distributed ledger:

append-only store of transactions which is distributed across many machines

Xu et al.: Architecture for Blockchain Applications (2019)

Will CBDC run on DLT?

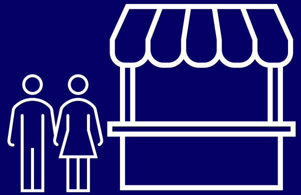
Does it matter?

Roles & Responsibilities in CBDC

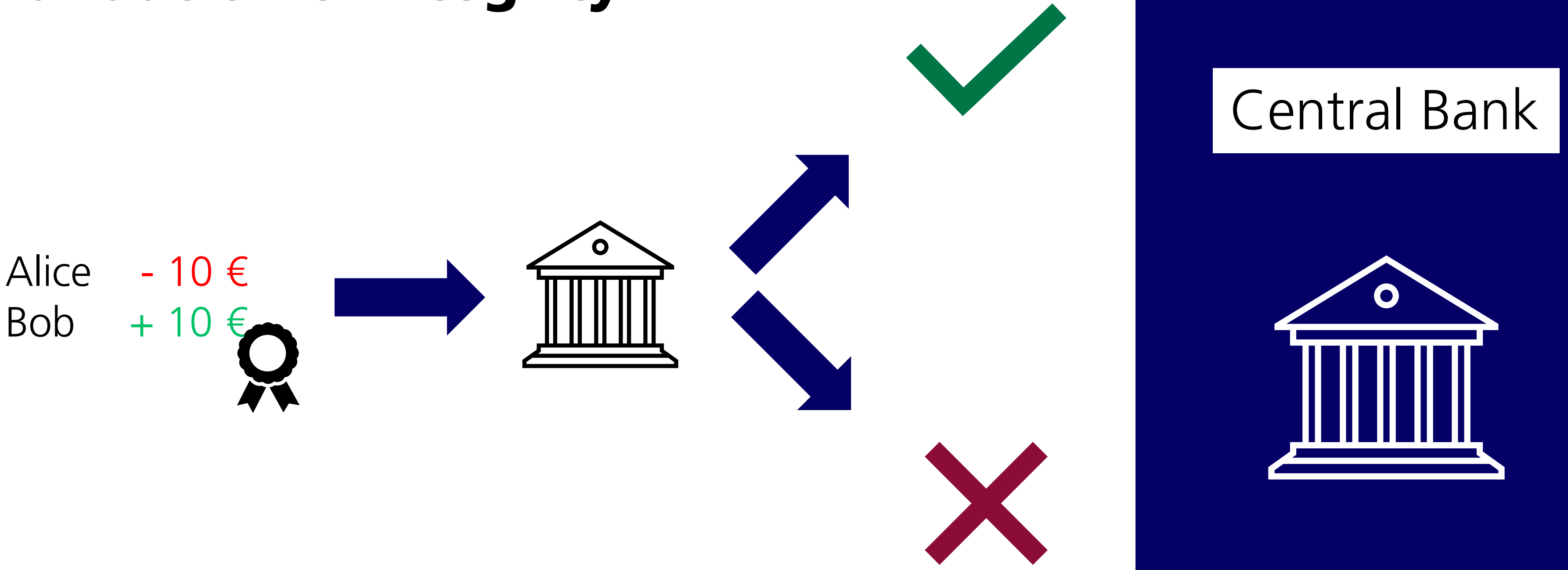
Central Bank

Intermediaries

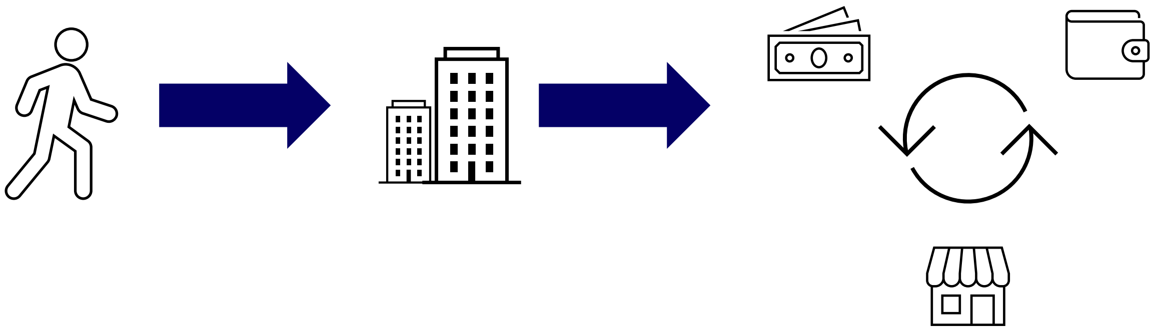
Users



Validation & Integrity



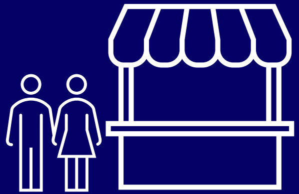
Distribution & Custody



Intermediaries

Payments & more ...

Users



Programmability in CBDC

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Programmable Money

(e.g. HTLC)

Programmable Payments

(e.g. ERC-20)

Programmable Money

Programmable Payments

Digital pound CBDC won't be programmable to avoid government control perceptions

ECB Says Yes to Programmable Payments, No to Programmable Money

CBDC – How Dangerous is Programmability?

September 21, 2021

Policy

Digital Euro Will Never Be Programmable, ECB's Panetta Says

Some observers have touted restrictions on how people can spend their money as an advantage of a central bank digital currency.

By Jack Schickler Jan 23, 2023 at 4:28 p.m. Updated Jan 23, 2023 at 6:10 p.m.

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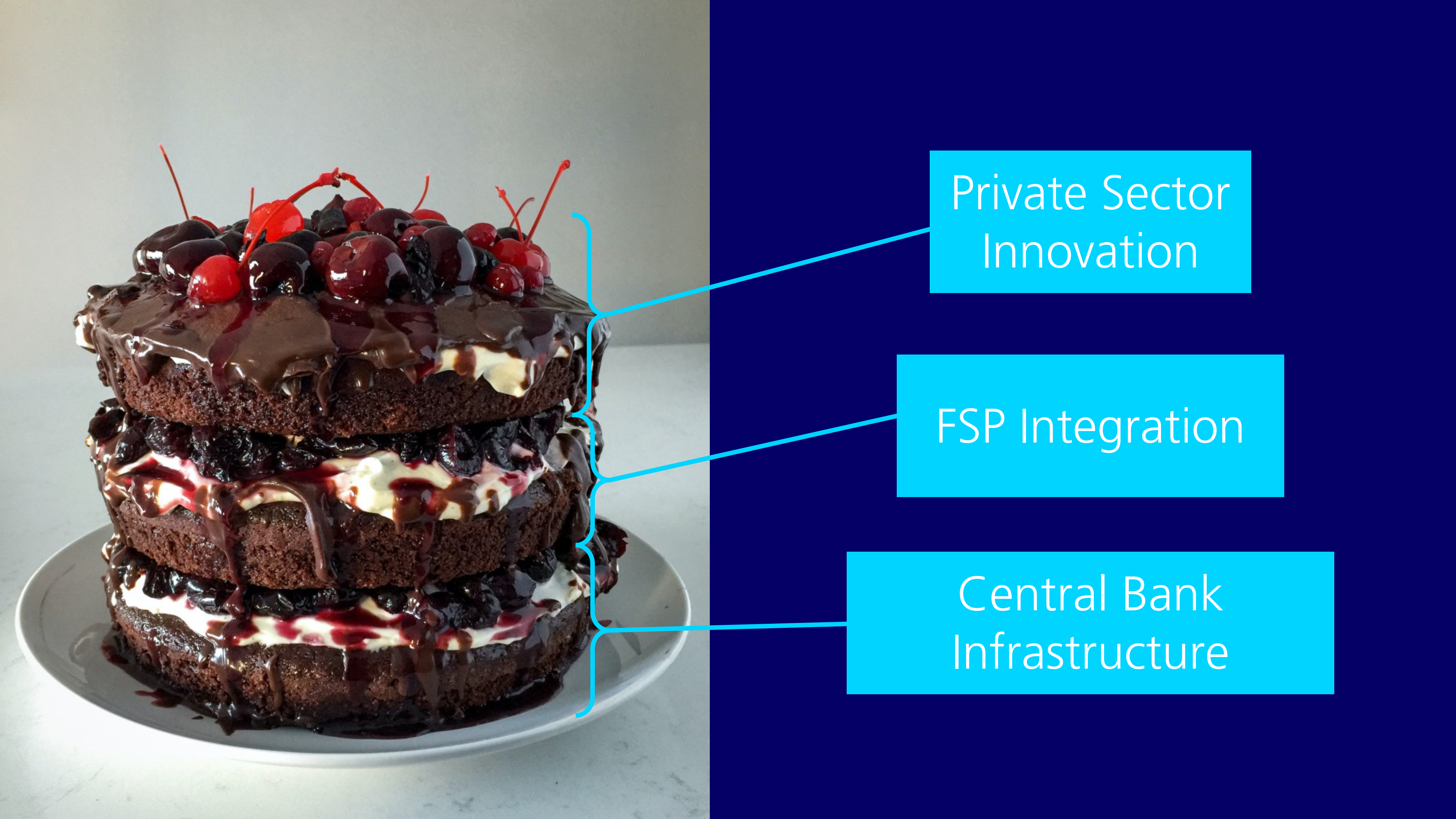
Private Sector Innovation
FSP Integration
Central Bank Infrastructure

CBDC & Smart Contracts

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Assumptions

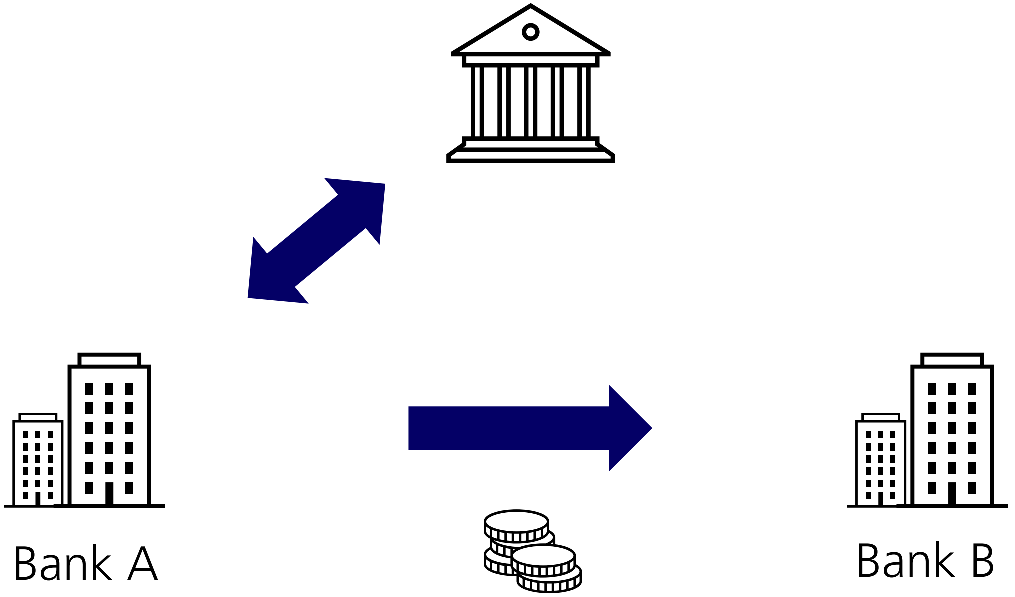
1. Central Banks do not care about specific DLT implementations.

2. Central Banks do not care about end-user operations.

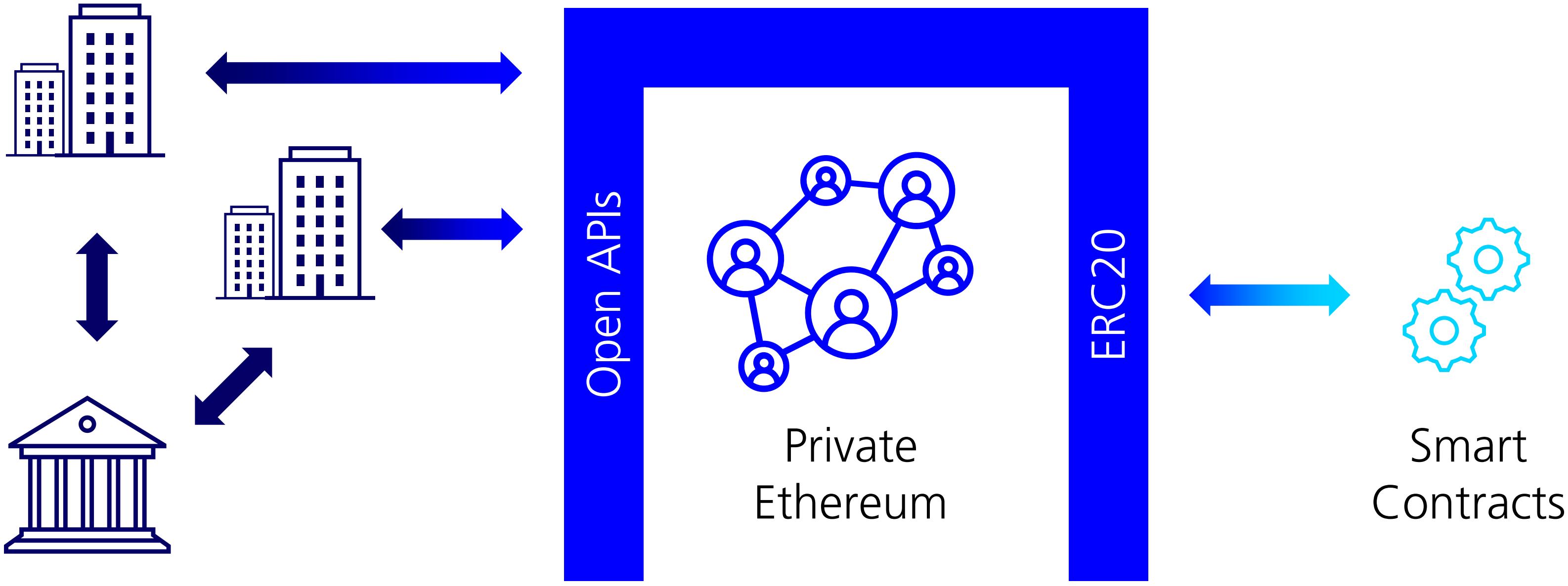
3. Commercial players know better about customer needs.

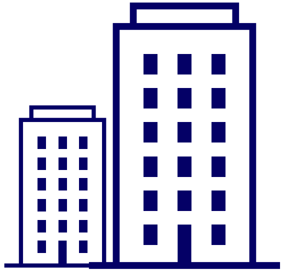
4. DLTs evolve much faster than currency does.

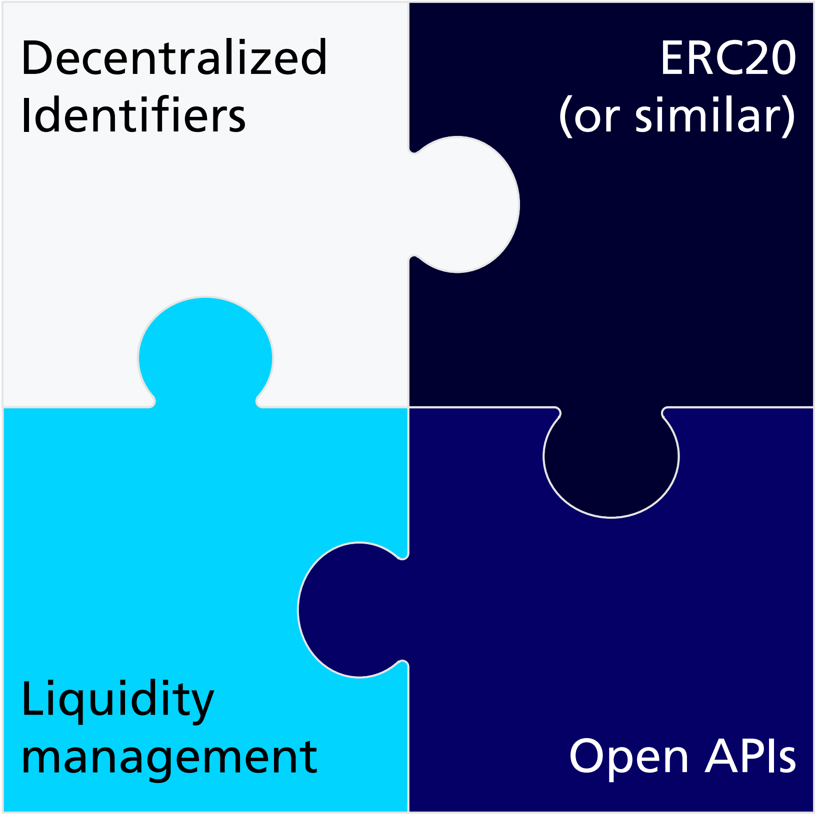
Transacting CBDC directly



Transacting CBDC in a Smart Contract






Decentralized Identifiers
ERC20 (or similar)
Liquidity management
Open APIs

What do we gain?	What do we need?
Ability to experiment	Stable currency
Flexibility for new use cases	Regulatory control
Separation of concerns	Standardization


PROCOR

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Questions?
Answers!

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