

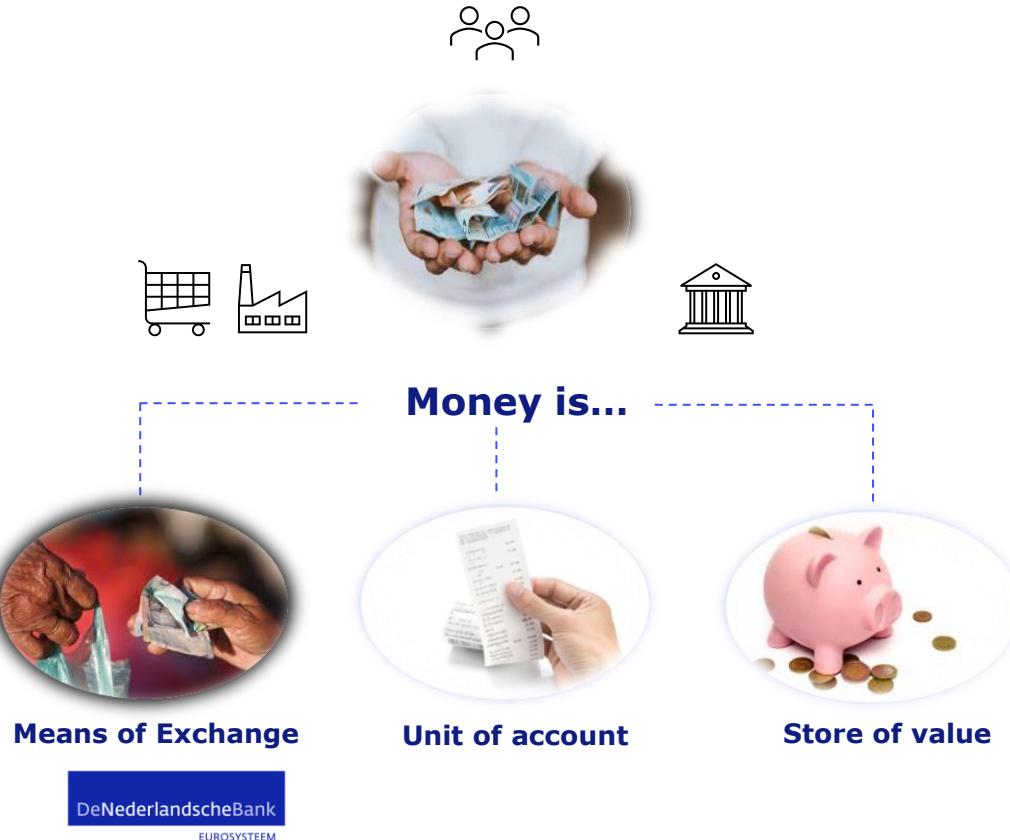
# From Paper To Pixel: A Global Perspective on CBDCs



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\*The views are those of the author and not necessarily the Dutch Central Bank

# Money: Timeless Function, Evolving Form



# CBDCs: what are they (not)

*"A CBDC is digital asset issued by a central bank for the purpose of payment and settlement, in either retail or wholesale transactions"*



## Liability of central banks

- I. Cash: physical form, to general public
- II. Central bank deposits: digital form, limited access
- III. CBDC: complement to cash and CB deposits



## Liability of private entities

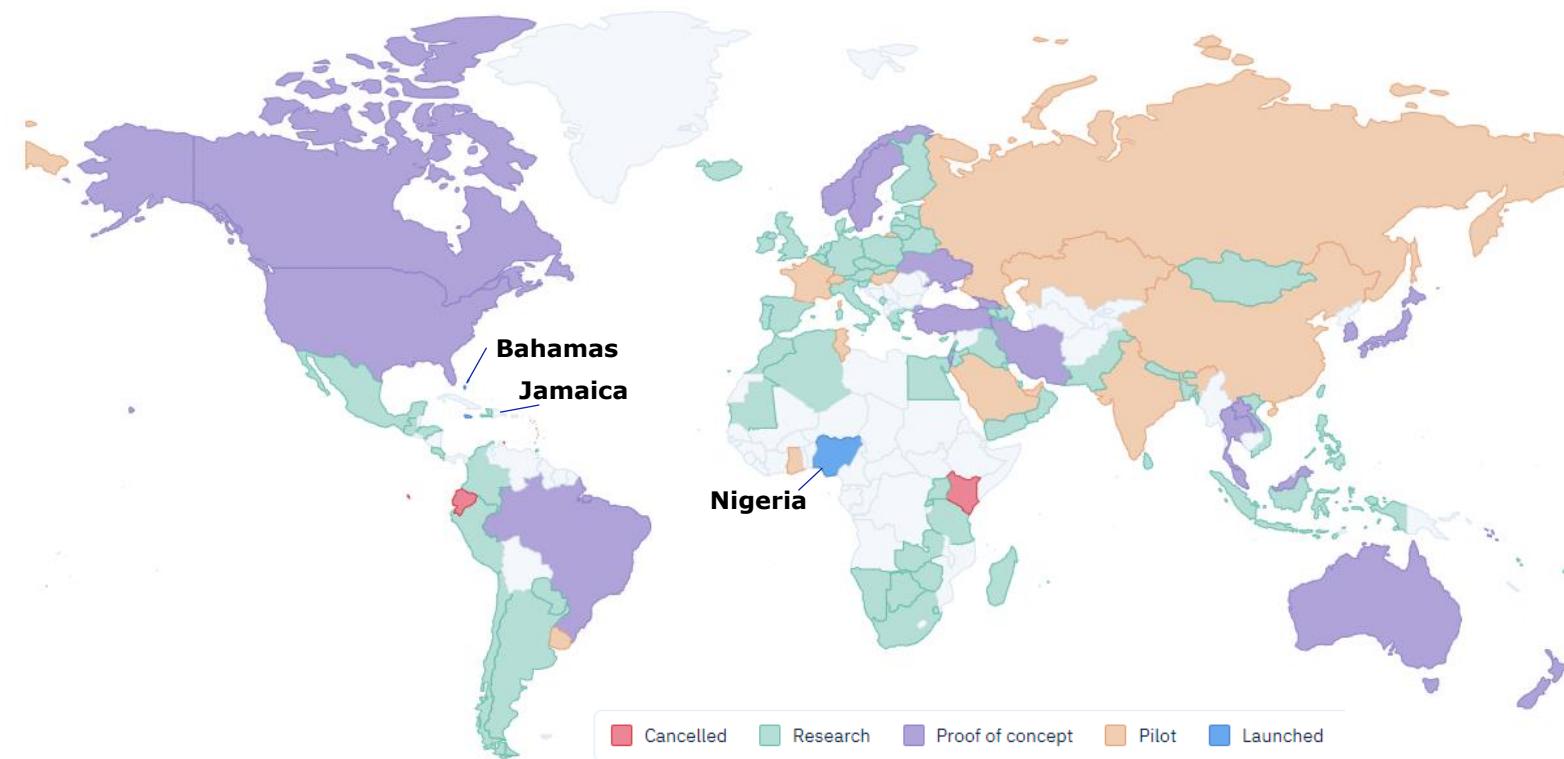
- I. Commercial bank money
- II. Electronic money
- III. Some stablecoins that entail a claim on an identifiable entity



## Not a liability

- I. Crypto-assets

# CBDCs: A response to the digitalisation of society?



# Economic rationale and policy goals behind rCBDCs

Ensuring monetary sovereignty

- Displacement of domestic currency from private and/or foreign digital money hindering lender of last resort

Responding to the decline of cash

- Relative share of 59% in 2023 in EA (86% in 2019)
- Role of public money as a monetary anchor

Improving payment efficiency

- Economies of scale and network effects

Increasing resilience during crises

- CB money distribution in crises events (climate crisis, pandemics)

Driving financial inclusion

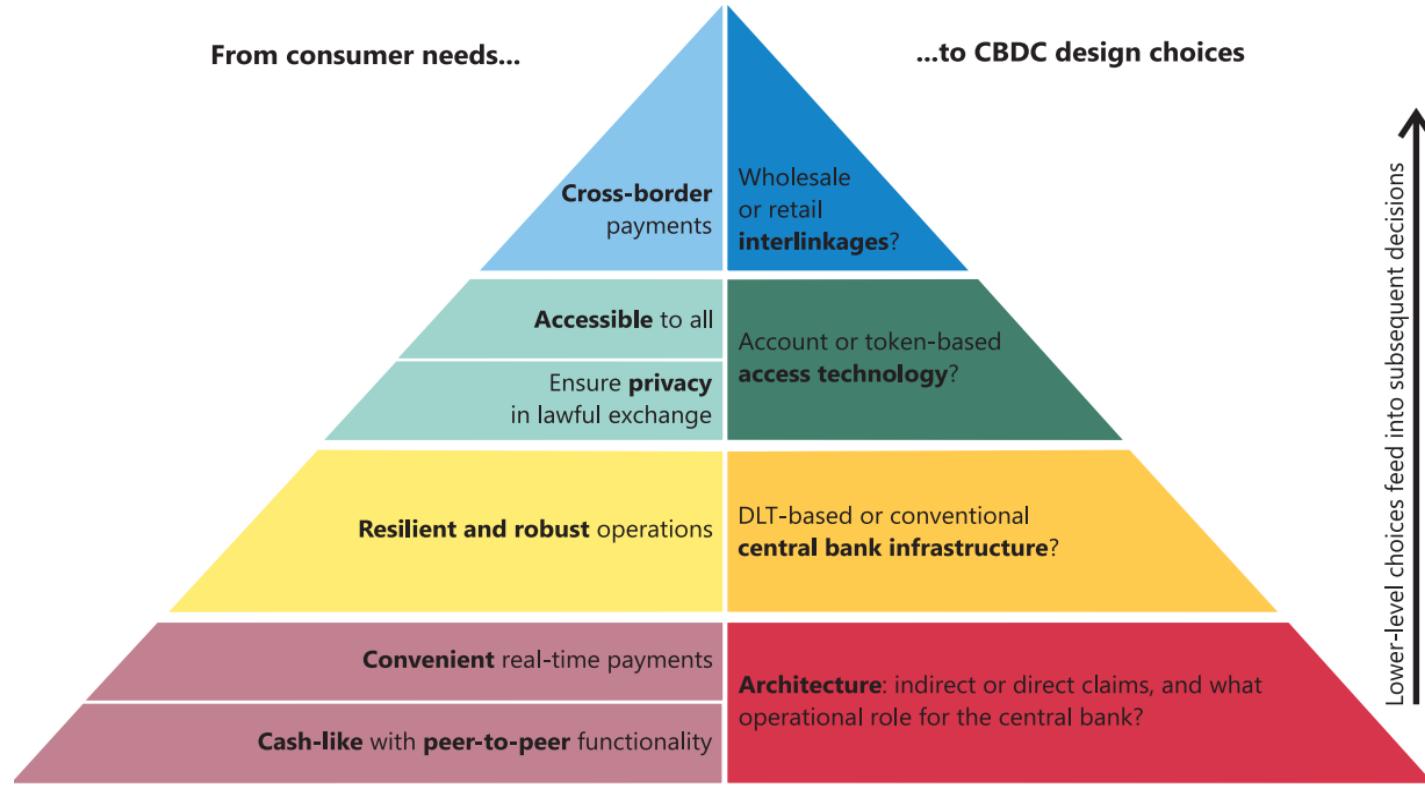
- Reaching the unbanked and the underbanked
- Marketing and design crucial

# FOMO?

*'It's our obligation to understand it well and not wake up one day and realise that the dollar is no longer the world reserve currency because we just missed a technological change'*

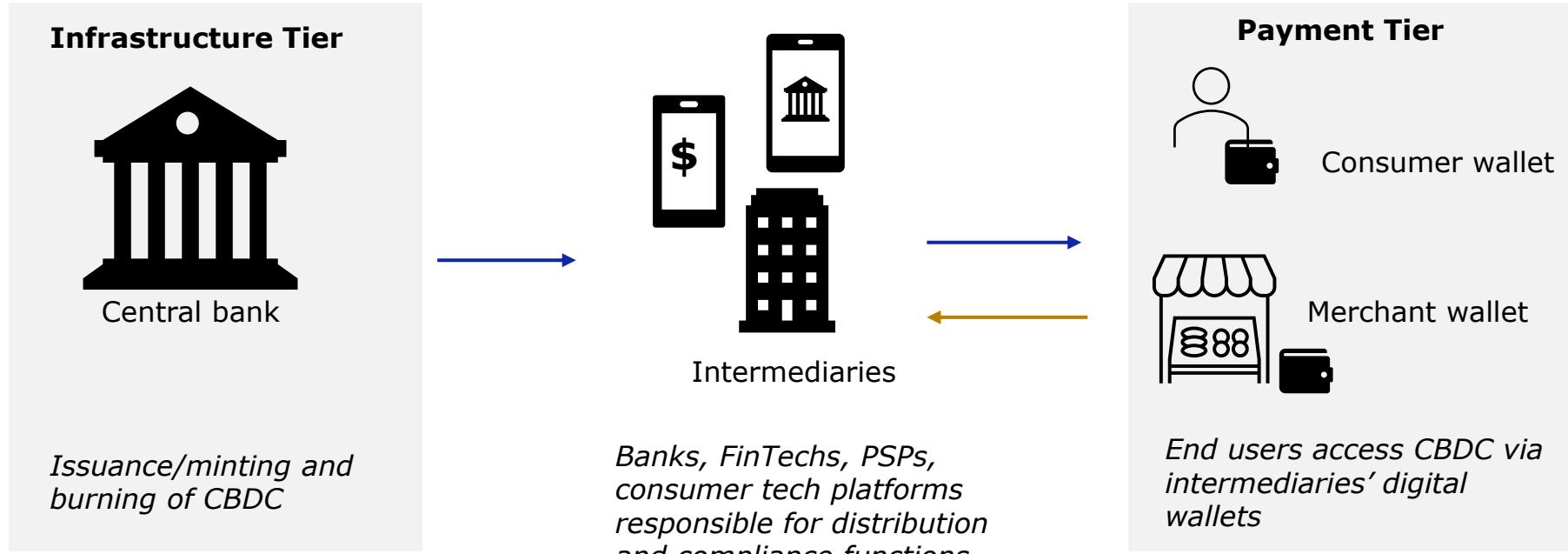
Powell (FED)

# Design choices for CBDC



Source: BIS (2020)

# Many central banks favor a two-tier infrastructure



# Players and beneficiaries in a rCBDC ecosystem

## Central banks

- Issue & withdraw CBDC
- Provide a core ledger where transactions are settled

## Financial intermediaries

- Connect to the core ledger to verify/execute payments
- Conduct compliance checks & provide VAS to users

## Regulators

- Update the existing legal frameworks
- Monitor and supervise financial intermediaries

## Merchants

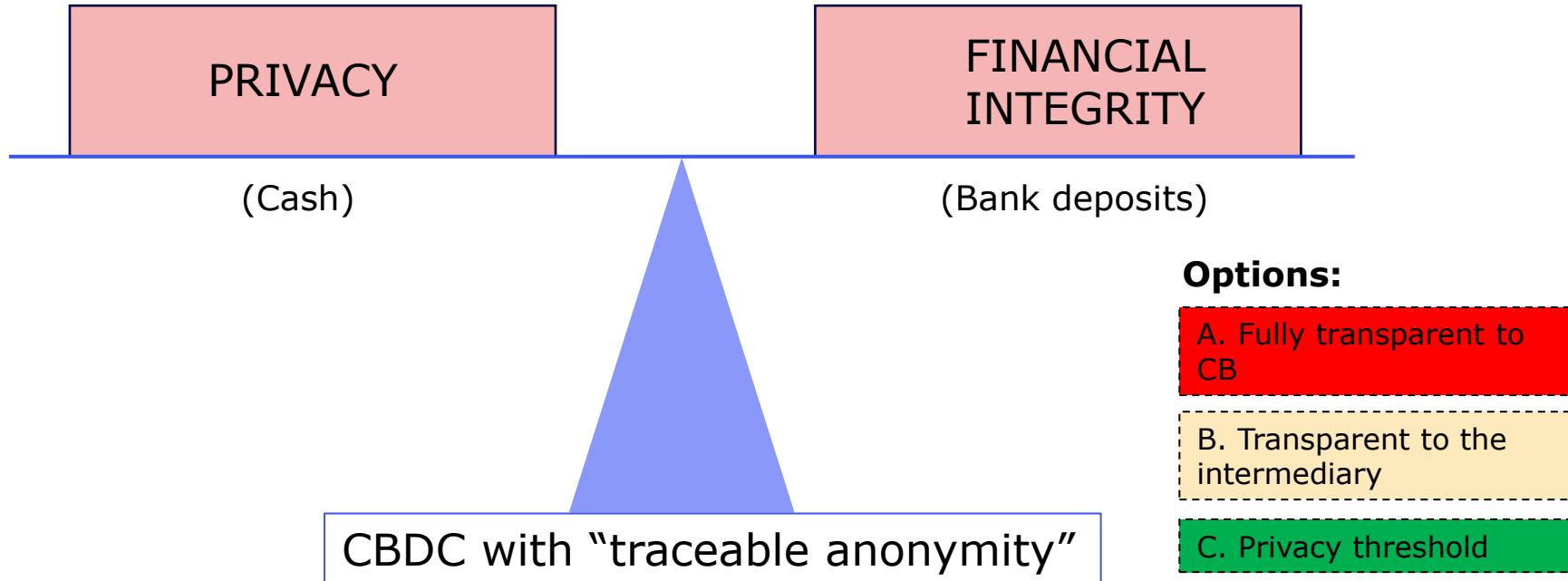
- Enable CBDC payments online and PoS

## Retail customers

- Understand CBDC use & acquire a digital wallet

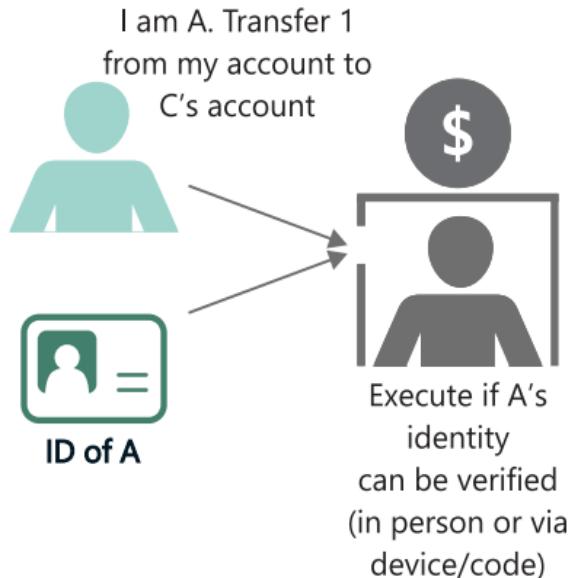


# Privacy vs Financial Integrity: Where do rCBDC stand?

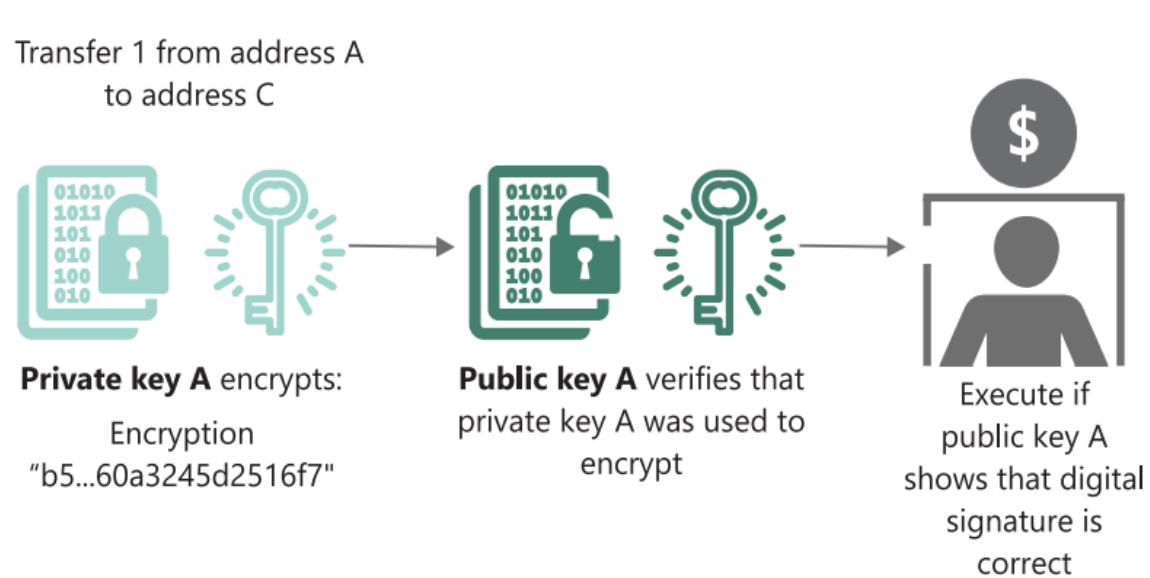


# Safeguarding Privacy: Account-vs-Token-Based Access

Accounts: "I am, therefore I own"



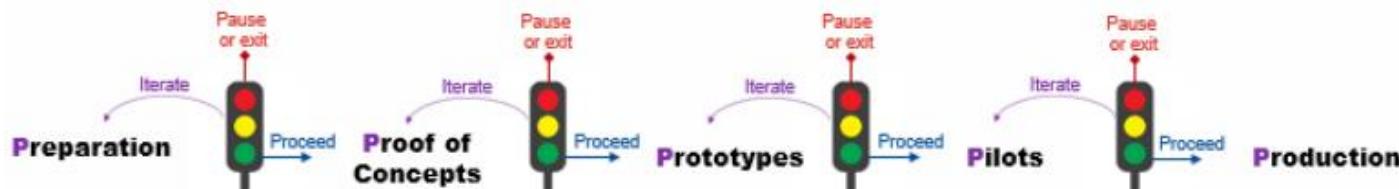
Digital tokens: "I know, therefore I own"



Source: BIS (2020)

# Confronting the challenges of rCBDC implementation

Public Interest and Trust	Financial Stability	Offline Use	Cybersecurity	Interoperability
<ul style="list-style-type: none"><li>Varies per jurisdiction</li><li>Political support is crucial</li></ul>	<ul style="list-style-type: none"><li>Bank dis-intermediation</li><li>Risk of currency substitution</li></ul>	<ul style="list-style-type: none"><li>Risk of double spending</li><li>Balance between security and usability</li></ul>	<ul style="list-style-type: none"><li>Data breaches, system manipulation</li><li>International collaboration critical</li></ul>	<ul style="list-style-type: none"><li>Too much focus on domestic use</li><li>Coordination required for future-proof CBDCs</li></ul>

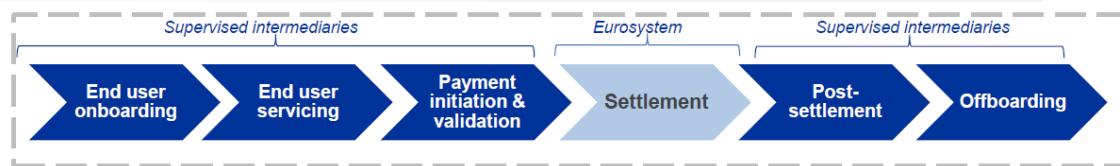


# Digital Euro Deep Dive:

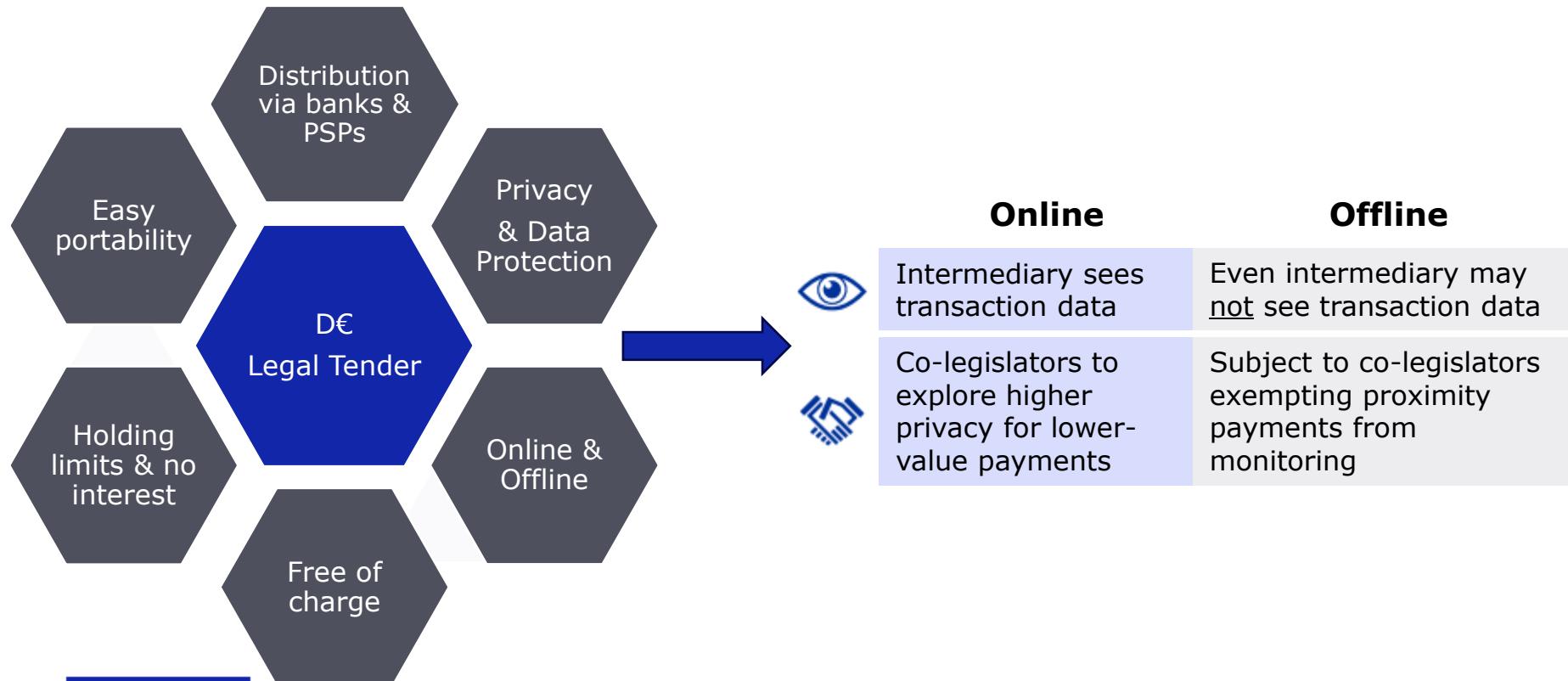
The Digital Euro would **complement cash, serve different needs, and bring most-liked features of cash to the digital age.**

**A digital euro would support different use cases through a wide range of devices and technologies:**

Use cases	Connectivity	Consumer device	Consumer interface	Data exchange technology
				 <i>Note: Likely different time-to-market</i>



# Digital Euro: Regulatory and Design Considerations



## **Amara's Law:**

*"We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run"*

Roy Amara