

# From Paper To Pixel: A Global Perspective on CBDCs

DeNederlandscheBank

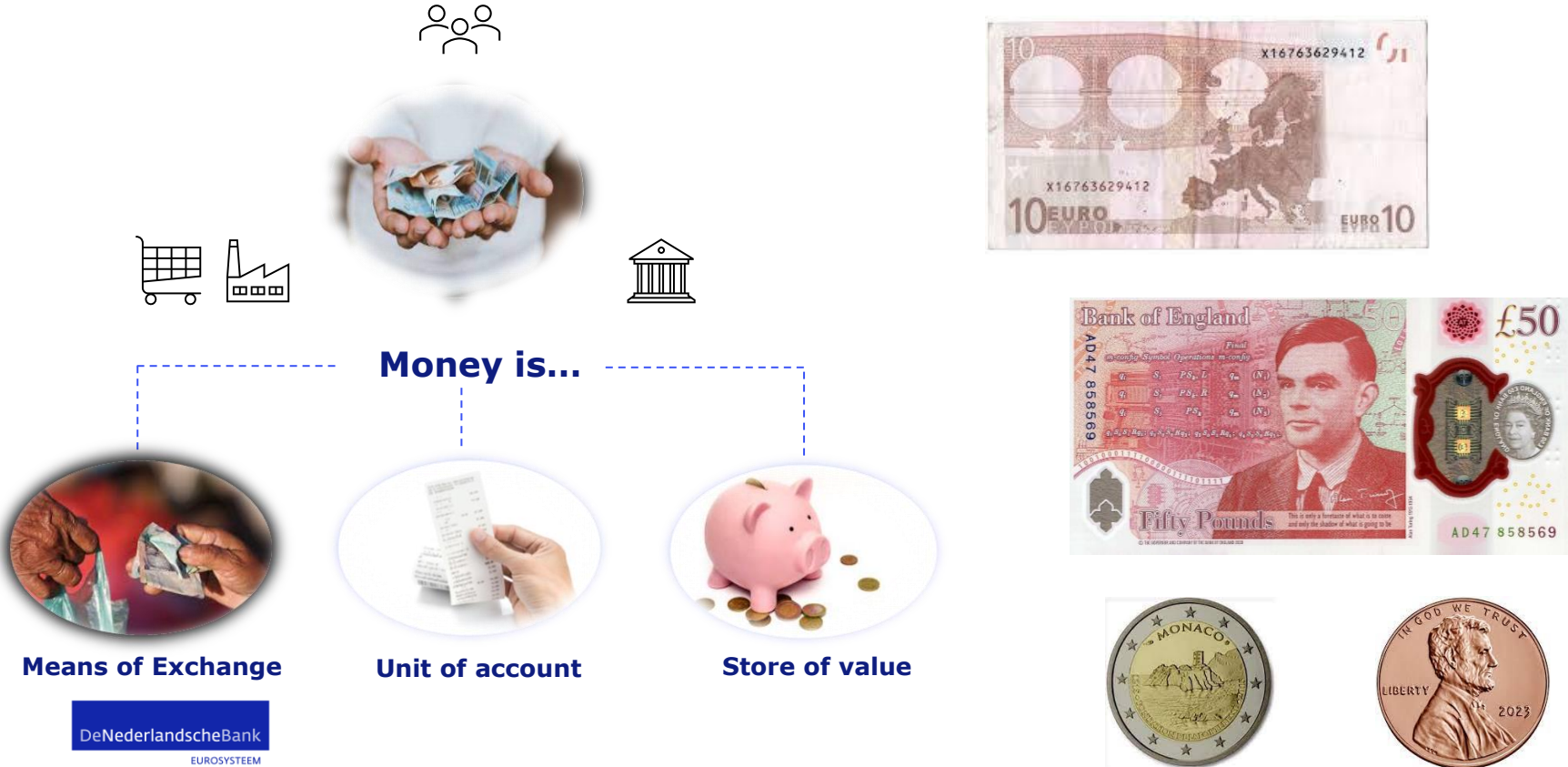
EUROSYSTEEM

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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

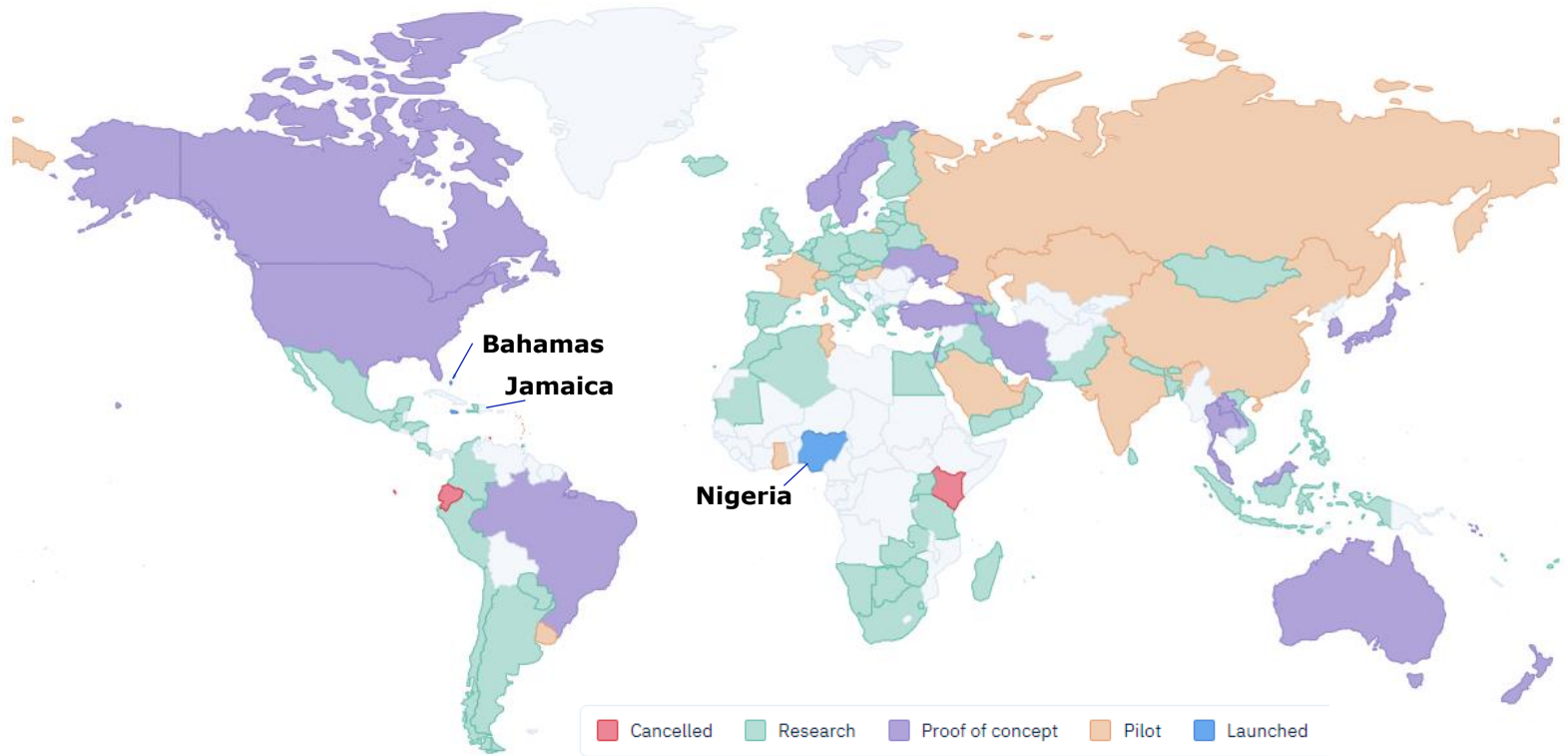
- I. Commercial bank money
- II. Electronic money
- III. Some stablecoins that entail a claim on an identifiable entity



## 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

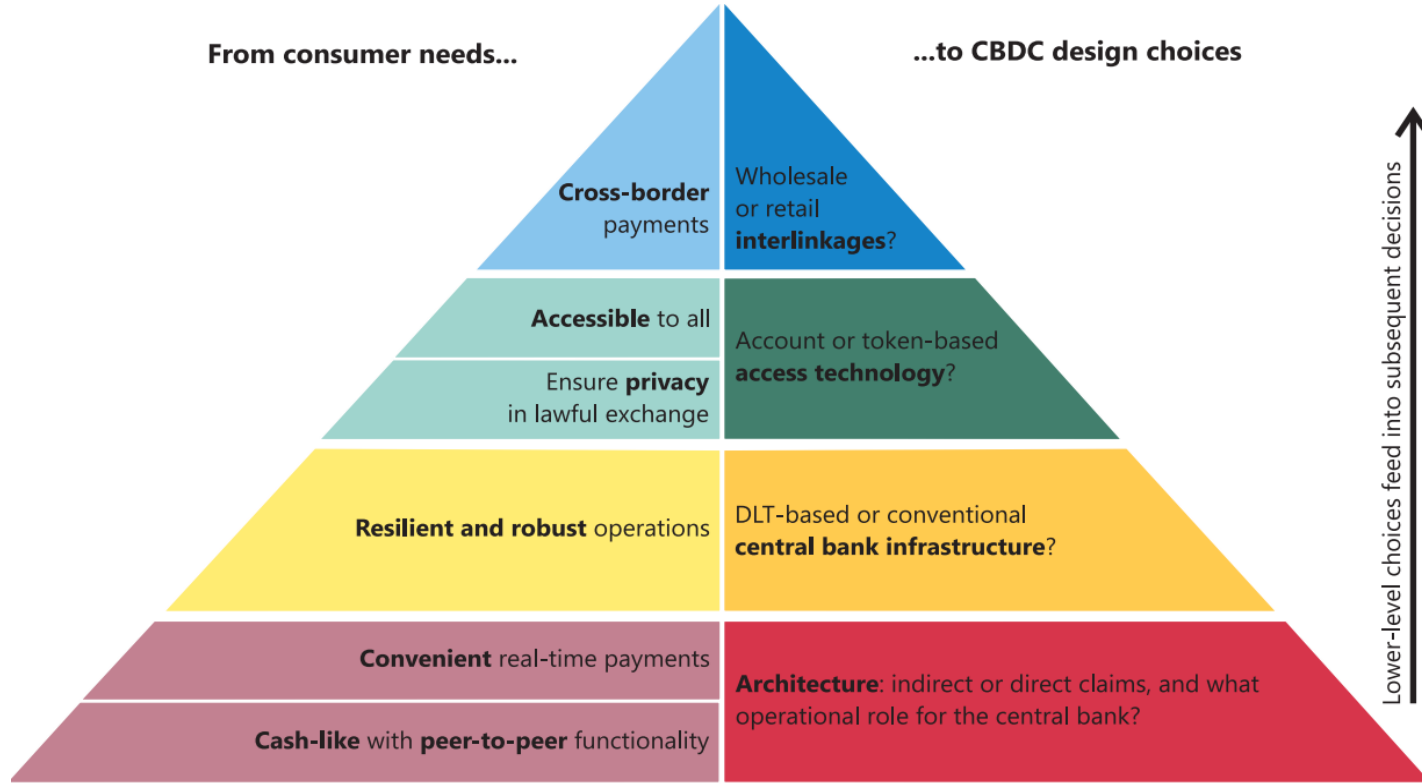
- Reaching the unbanked and the underbanked
- Marketing and design crucial

# FOMO?

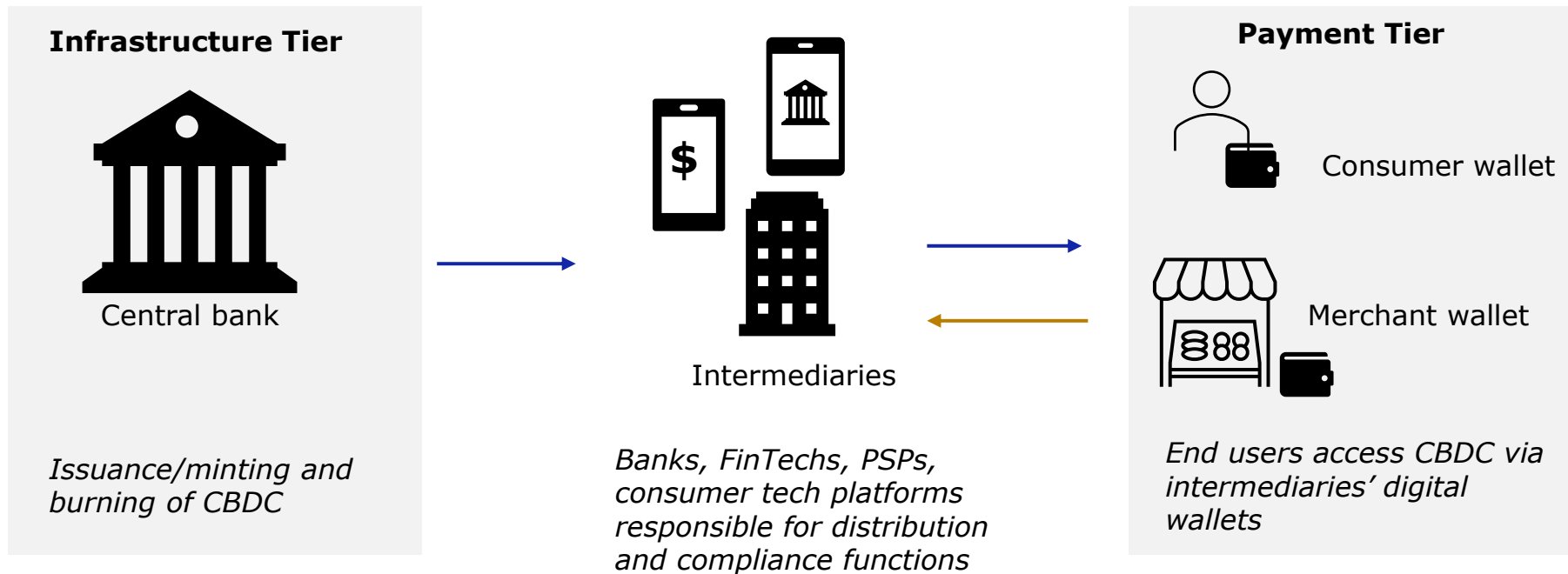
*'It's our obligation to understand it well and not wake up one day and realise that the dollar is no longer the world reserve currency because we just missed a technological change'*

Powell (FED)

# Design choices for CBDC



# 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

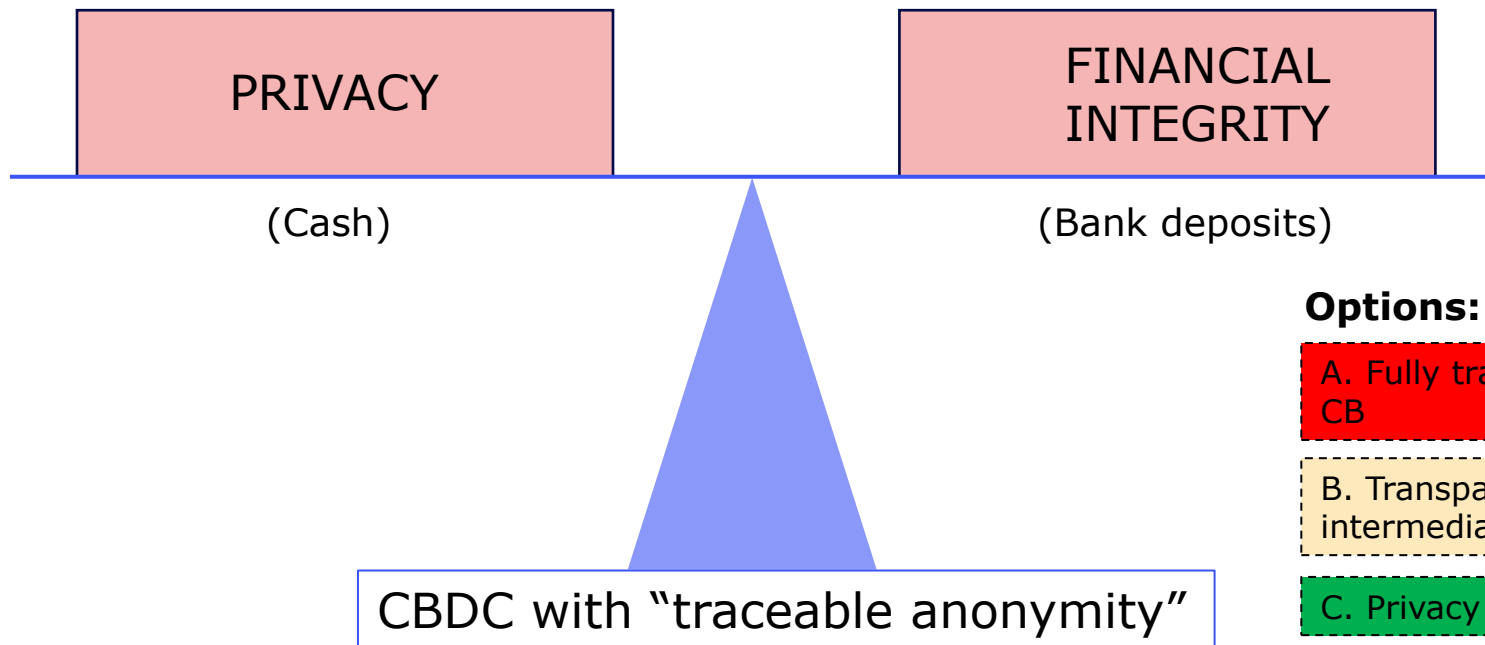
- Enable CBDC payments online and PoS

## Retail customers

- Understand CBDC use & acquire a digital wallet

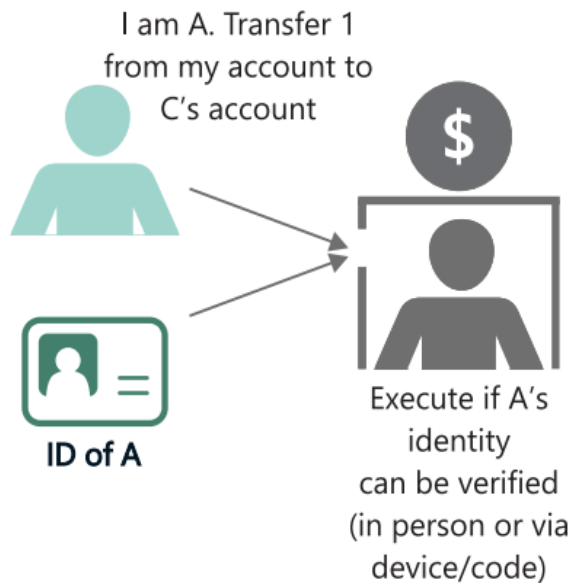


# Privacy vs Financial Integrity: Where do rCBDC stand?



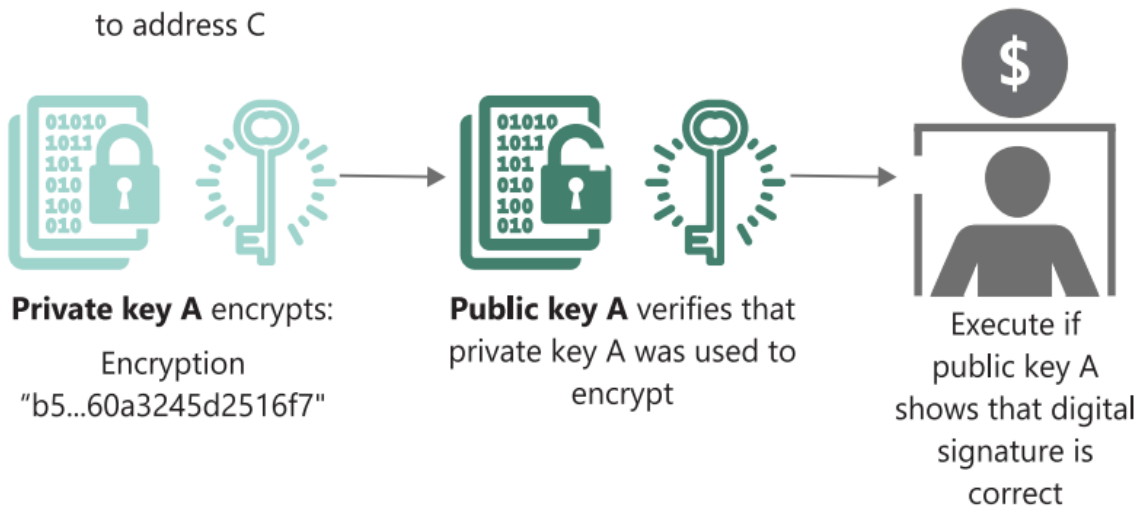
# Safeguarding Privacy: Account-vs-Token-Based Access

Accounts: "I am, therefore I own"



Digital tokens: "I know, therefore I own"

Transfer 1 from address A to address C



Source: BIS (2020)

# Confronting the challenges of rCBDC implementation

## Public Interest and Trust

- Varies per jurisdiction
- Political support is crucial

## Financial Stability

- Bank dis-intermediation
- Risk of currency substitution

## Offline Use

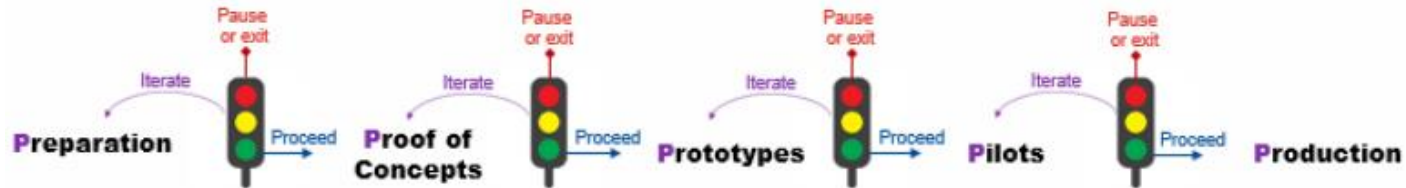
- Risk of double spending
- Balance between security and usability

## Cybersecurity

- Data breaches, system manipulation
- International collaboration critical

## Interoperability

- Too much focus on domestic use
- Coordination required for future-proof CBDCs















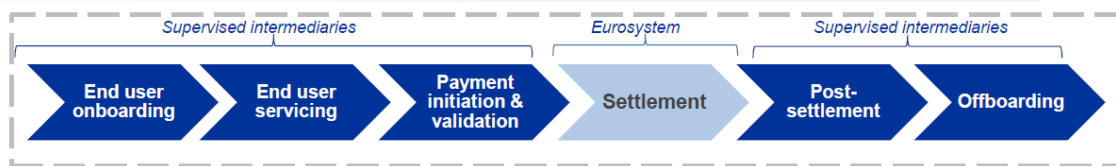
## Dynamic Decision-making Framework

# Digital Euro Deep Dive:

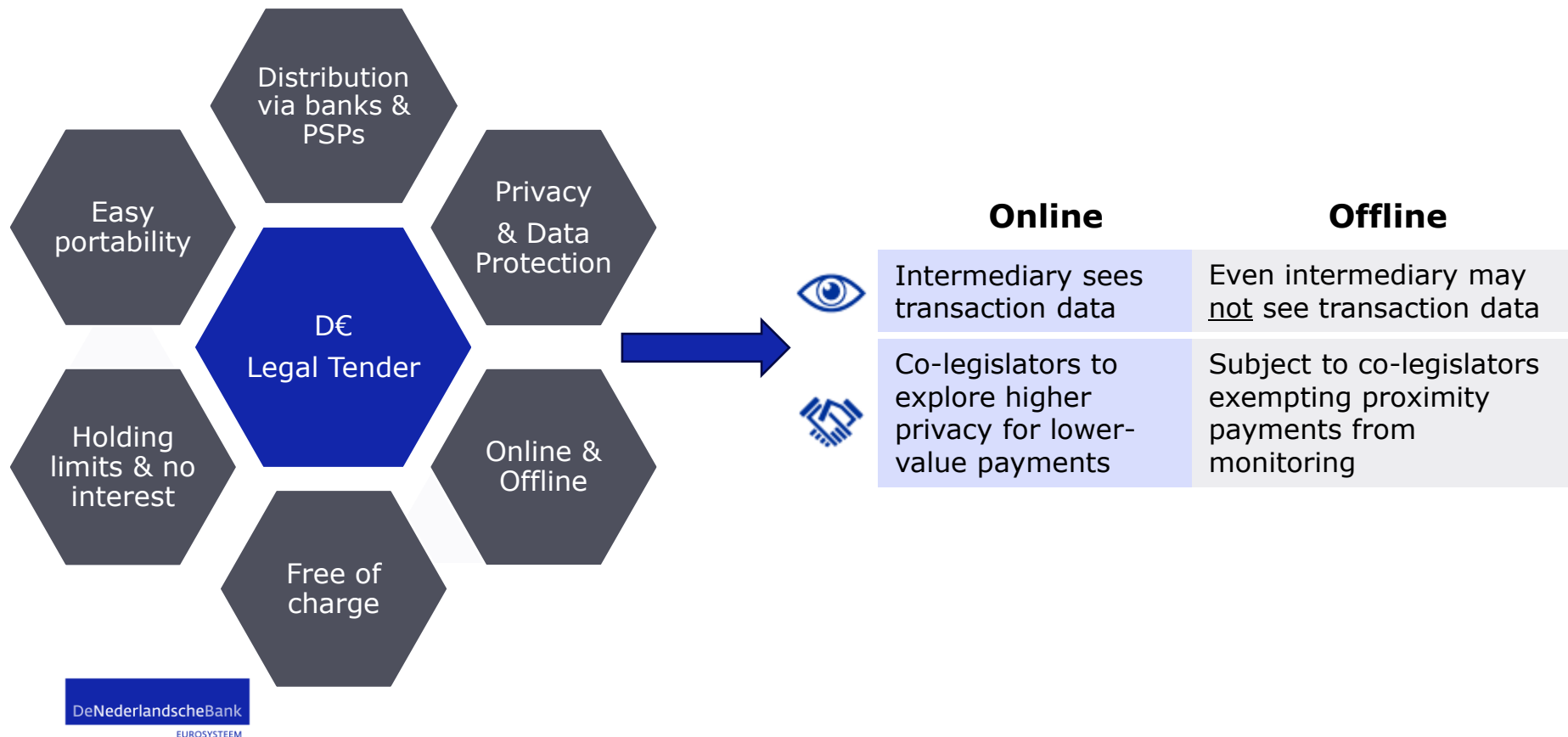
The Digital Euro would **complement cash**, **serve different needs**, and bring **most-liked features of cash** to the digital age.

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
  	 	 	 	 Alias/ proxy*  NFC  QR  <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