

# Delivering Central Bank Digital Currencies (CBDCs): Exploring the Technology Challenge

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**AWS Cloud Central Bank Digital Currency white paper can be found at:**

<https://pages.awscloud.com/GLOBAL-public-DL-cbdc-whitepapers-2021-reg.html>

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# Delivering Central Bank Digital Currencies (CBDCs): Exploring the Technology Challenge webinar

## Financial Ecosystems 2.0 & The Role of CBDCs

22 April 2021 | Expert Talk On CBDC

# INTRODUCTION

# GLOBAL TRENDS IN CBDC



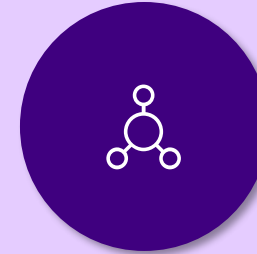
## Central Bank Focus Intensifying

People's Bank of China  
Digital Dollar Foundation  
European Central Bank  
Pivoting wholesale to retail  
80% CB's experimenting,  
10% close to implementing<sup>1</sup>



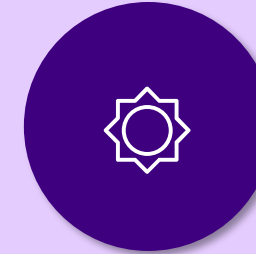
## Advanced Research & Experimentation

Completed: Jasper, UBIN, Stellar, Inthanon, LionRock, Khokha, Aber, Sand Dollar  
Additive: BoC & MAS, BoT & HKMA, ECB & BoJ, EuroChain  
Regional: Caribbean, Asia South Africa, Middle East



## Maturing Vendor Ecosystem

Feature rich solutions emerging (tokens, wallets)  
Non-functional: performance, scalability & security & resilience  
Increasing focus on standardization & interoperability

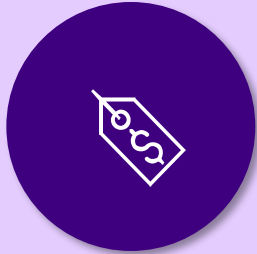


## Optimal Configurations Emerging

There are a wide variety of requirements and options  
Optimal configuration / balance & stakeholder alignment non-trivial  
Multi-faceted for optimal solution design & stakeholder acceptance

<sup>1</sup> BIS Papers No 107: Impending arrival – a sequel to the survey on central bank digital currency

# TOKEN BASED RETAIL CBDC



## Wholesale VS Retail

Many projects focus on wholesale CBDC

Interest is pivoting to retail

Strong potential for overlap or transition

Cross border broadens functionality & scope



## Token DLT VS Account

Enables set of functions previously not possible

Token CBDC has properties of a digital bearer instrument

Token CBDC exists outside of but in full control of Central Bank



## Preservation of Two -Tiered Model

Central bank role vis-a-vis commercial banks

Preservation of existing consumer relationships

Mirrors cash cycle & distribution to market



## Token DLT Features

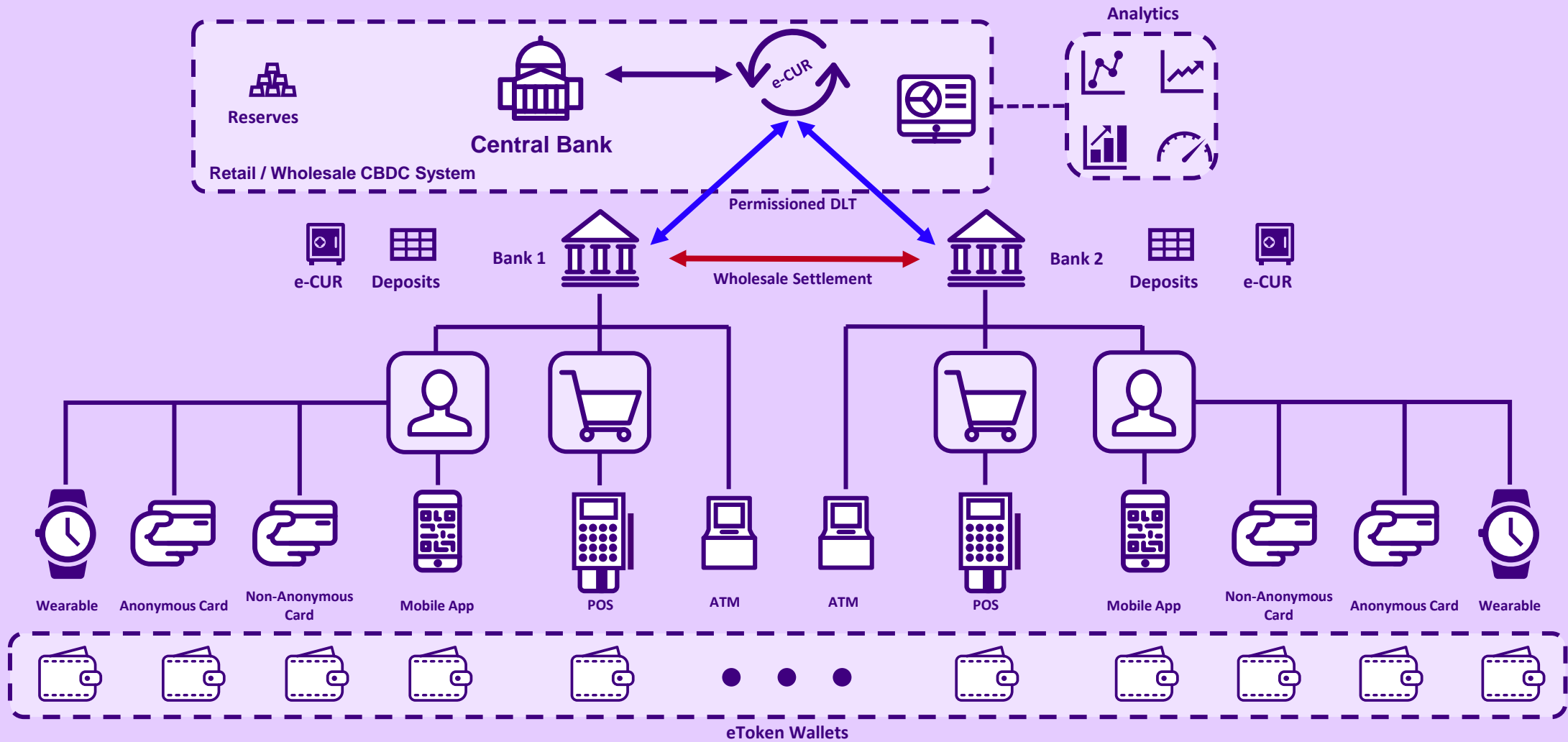
Wide accessibility to consumers

Peer to peer payments

Offline payments

Sovereign national payment rail

# TOKEN BASED RETAIL CBDC SYSTEM





# CONTACTS

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# David MacKeith

Principal Business Development Manager

**Delivering Central Bank Digital Currency:  
Exploring the Technology Challenge**

22<sup>nd</sup> April 2021







The future of money is digital: How the cloud can deliver solutions for central bank digital currencies  
by David MacKeith | on 23 MAR 2021 | in Amazon Quantum Ledger Database, Best Practices, Customer Solutions, Federal, Financial, Public Sector | Permalink | Comments | Share

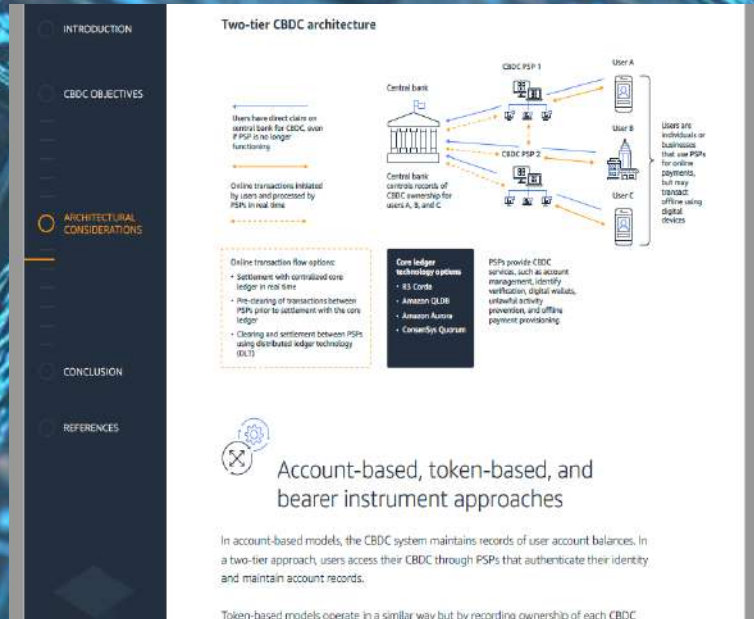
Increasingly, central banks want to answer practical questions and make the technology choices involved to create a digital currency (CBDC). They need a solution that delivers on their missions and meets the performance criteria of a stable monetary and financial system. To help organizations understand available technology options and select enable optimal solution designs, AWS authored a two-part whitepaper. Here are some of the highlights.

[Read More](#)

INTRODUCTION	
CBDC ARCHITECTURAL CONSIDERATIONS: A SUMMARY	
KEY CBDC TECHNOLOGY OPTIONS	
TECHNICAL PERFORMANCE CRITERIA	
EXAMPLE REFERENCE ARCHITECTURE	
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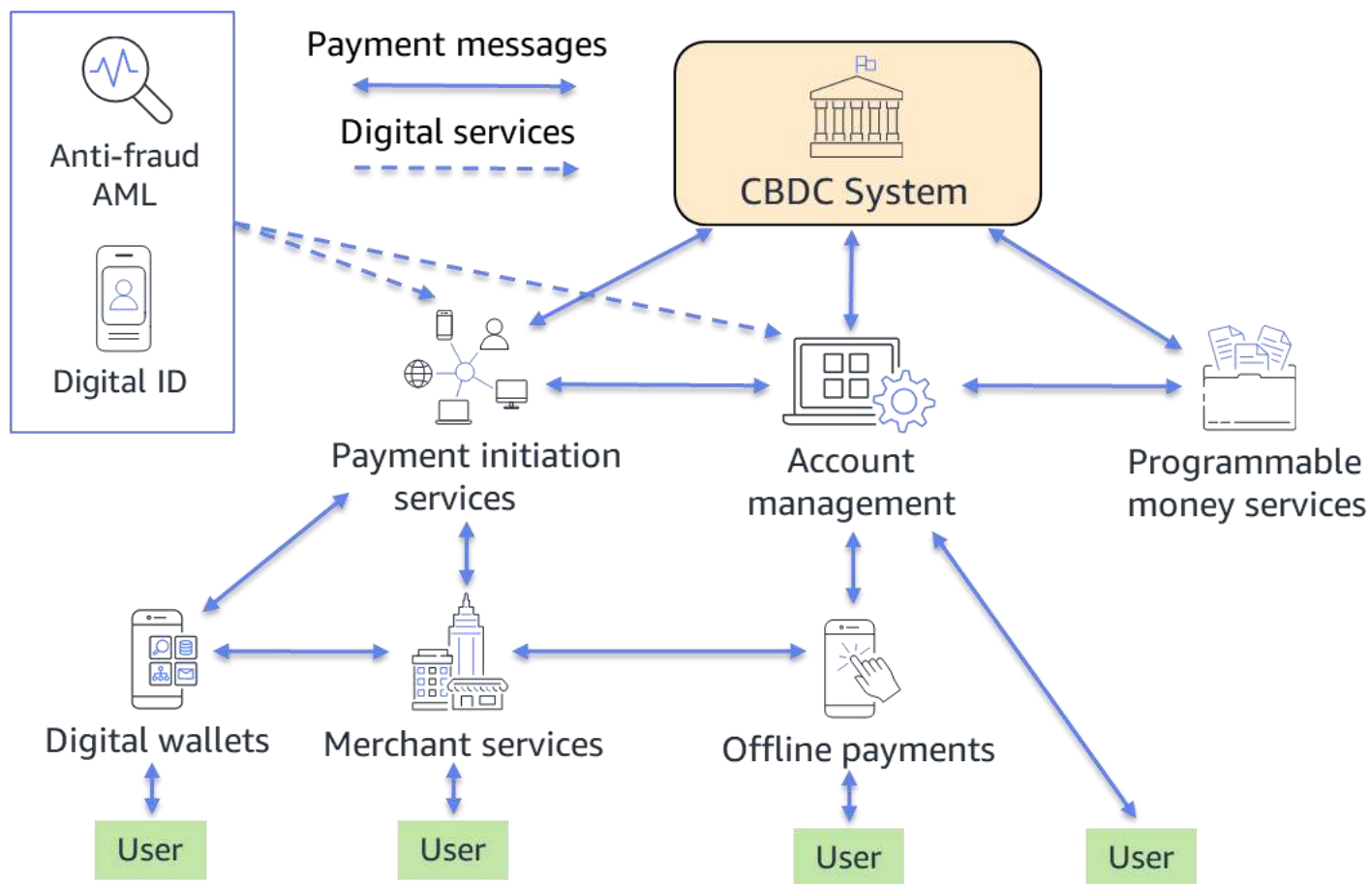


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# CBDC PSP ecosystem

## Interoperability between some of the key roles and functions



### Digital ID

- Key enabler for financial inclusion and open PSP competition

### Payment initiation services

- Capturing transaction - similar to payment gateway services

### Account management

- Central role in both token and account-based models

### Programmable money services

- Managing smart contracts and conditional payments

### Offline payments

- Separate system even in token-based solutions

# Delivering central bank digital currencies (CBDCs): Exploring the Technology Challenge

**ALISTAIR MILNE**

Global government forum/fintech webinar, 22<sup>nd</sup> April 2021



- Definition (so debate driven by application not technology),  
“**CBDC is any widely held, digitally transferable central bank monetary liability**”
- Focus on use cases
  - Retail
    - Safe form of bank account held with central bank
    - Non-bank (mobile) money for use in every day purchases
    - Cash substitute where cash use is in retreat (offline? Anonymous?)
  - Wholesale
    - Widening access to central bank liabilities
    - Allowing real time large value payment/ settlement *nb* “RTGS” is not fully real time !!
- Technology challenges
  - Blockchain is to me a distraction – centralised ledgers can be just as good for user experience, security and arguably more efficient
  - KYC/AML as an *identity* challenge
  - The real issue: “Delegated audit and control” see current SSRN paper  
What is really new about crypto currencies?  
[https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3473528](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3473528)