The Emerging Tech Stack for Digital Assets and Asset Tokenization

Steve Cerveny
steve.cerveny@kaleido.io
THE BLOCKCHAIN BUSINESS CLOUD

Made Radically Simple

Web3 & Digital Assets  Made Radically Simple  For Enterprise
Kaleido’s Product Suite

Institutional Web3
Digital Assets & Tokenization
- Institutional grade digital assets platform across public and private

Consumer Web3
Mass scale user applications
- Mass scale dedicated NFT platform with zero gas and high performance

Multi-Party Web3
Business Networks
- Full stack, decentralized hosting on an automated, compliant platform

Kaleido Asset Platform
- Digital Asset
- NFT

FireFly Supernode
CBDC Middleware & Infrastructure
- Custody
- FireFly OS
- Enterprise Integration
  - Web3 Gateway
  - Transaction Manager
  - Data Manager
  - Event Bus

Chain
Blockchain-as-a-Service infrastructure
- Private
- Consortium
- App Chain
- Side Chain
- Public Chain
  - Industry leading BaaS - multi-protocol, cross-cloud, and hybrid
Progress in the past year

- play to earn
- Enterprise NFTs
- Asset Tokenization (RWAs)
- Digital Twins
- DAOs
- Regulated Liability Networks
- Digital Assets
- Digital Identity
- tokenized deposits
- interop
- Metaverse
- Bank Custody of Crypto
- Stablecoins
- w-CDBCs
- r-CDBCs
Considerations in a Digital Asset strategy

Digital Asset

- Business Value
- Regulatory
- Risk Controls
- Customer needs
- Tech
- Ecosystem

External → Digital Asset → Internal
Digital assets strategy challenge... scaling and interop

Typical Financial Services Company:

30+ use cases
60+ team

But...

1–2 completed
2–3 working on
Digital Assets will transform thousands of use cases for enterprises and consumers.

Wave 1
- Crypto
- Digital Gold
  - 1 use case
  - Wallets
  - Exchanges
  - L1 chains

Wave 2
- Defi
- Value
  - 10s use cases
  - Stablecoins
  - Bridges
  - Scaling Chains

Wave 3
- Digital Assets
- CDBCs
- Transactions
- Ownership Experiences
  - Platforms
  - Gateways
  - Interop
  - Identity
  - Mass scale chains
  - 1000s use cases
Notional Digital Asset Architecture - CBDC Example

*source: Bank Indonesia whitepaper*
Introducing the 3 Tier Digital Asset Architecture
Notional Digital Asset Architecture

**DLT Layer**
- How centralized?
- DLT vs blockchain
- Privacy model
- Token lifecycle
- Governance
- Scalability
DLT Layer Considerations

Which DLT?
- UTXO vs Account
- EVM vs other

Privacy Model
- On chain vs off chain
- UTXO model
- Zero Knowledge Proofs (zkp)

Topology
- Distribute nodes
- API access only
- Redundancy design

Governance
- Permissioning model
- Lifecycle management
- Issuance controls

Scalability
- Throughput
- Latency
- Finality characteristics
DLT Layer Trends

Trend 1: Purpose built chains

Example 1:
Cash and Asset networks

Example 2:
w-CDBC and r-CDBC networks
DLT Layer Trends

Trend 2: Layered Chains

Layer 1

Base - CDBC

rollup & state transfer

Layer 2

Bespoke Network

Bespoke Network

Bespoke Network
Notional Digital Asset Architecture

Middleware Layer
- Transaction management
- Realtime event bus
- Api gateway
- Data management
- Custody
- Trusted bridge interop
Middleware Layer Considerations

**Transaction mgmt**
- guaranteed delivery
- API abstraction layer
- submission gateway

**Realtime event bus**
- event driven coordination bus
- mass scale processing

**Data mgmt**
- Indexing engine
- Intelligence platform
- AI & analytics integration

**Custody**
- custodial wallet mgmt
- non custodial support
- Security model

**Trusted bridge interop**
- omni-network interop
- move assets in trusted workflows
Middleware Layer Trends

Trend 1: Look open source
Middleware Layer Trends

Trend 2: Whole enterprise architecture
The Challenge

- Fragmentation leading to ‘digital islands’ springing up across the globe
- Businesses and consumers aren’t currently able to make frictionless cross-border payments using CBDCs
- Different systems and different CBDCs will need to be able to efficiently work together

The Solution

- Integrated tokenized CBDC gateway for the industry

The Results

- Orchestrated a cross-border transaction between one entity on a DLT-based CBDC network and a second running on an established real-time gross settlement (RTGS) system
- Interlinking the multiple domestic-based CBDC networks emerging worldwide to make cross-border payments with CBDCs seamless
Australian Central Bank Digital Currency Pilot

The Challenge
- Identify and understand innovative business models, use cases, benefits, risks, and operational models for a CBDC in Australia

The Solution
- Robust sandbox environment providing integrated tokenized CBDC with support for multiple use cases

The (On-going) Results
- 15 industry participants actively experimenting as of March 2023, across a wide variety Wholesale and Retail CBDC use cases:
  - CBDC interoperability
  - Bond Settlement acceleration with CBDC
  - Supply Chain finance
  - Foreign Exchange settlement
Philippines payments network and stablecoin
Year 4 in production

The Challenge
- 35% of Filipinos are unbanked
- 56% of Filipinos live in rural areas with no access to financial services
- 476 rural banks that are disconnected from electronic banking services and money transfer networks

The Solution
- A decentralized, cost-efficient, approximately real-time inter-rural bank payment platform to connect rural banks to each other and to national commercial banks built on Kaleido
- Additional services such as wallet-as-a-service

The Results
- Streamlined individual remittance process flows from 26 steps to 5
- Slashed payment transfer time from 30 days to minutes
- >500M Php million transactions on the blockchain
- Over 200 banks and entities participating
- Launched PHP Stablecoin

Download Case Study
Thank You

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