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DC³ Conference

From Cryptocurrencies to CBDCs

DLT models for wholesale *and retail*
CBDC Design for payments

January 2023

The background of the slide is a solid blue color. In the lower half, there is a decorative graphic consisting of numerous thin, parallel, wavy lines that create a sense of motion and depth, resembling a stylized wave or a digital signal.

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Our Projects and Achievements

Our Projects

Eastern Caribbean Central Bank (ECCB) DCash (CBDC)



- Deployed **world's first CBDC** (DCash) for a **currency union** in March 2021 – pilot project still underway
- Is **world's first cross-border** CBDC across eight Eastern Caribbean Central Bank member countries
- Central bank, banks, merchants, and retail users can transact with CBDC using Bitt's solution

Central Bank of Nigeria (CBN) eNaira (CBDC)



- Technical solution provider for Central Bank of Nigeria's eNaira platform
- Nigeria is the **largest economy of Africa** with a **population of 212+ million** citizens
- Central bank, banks, merchants, and retail users can transact with CBDC using Bitt's solution

mMoney mMoney (Stablecoin)



- **Deployed and operating** the first **Barbados stablecoin** (mMoney) since 2017
- Includes applications for merchants, retail users, and organizations
- Enables over **20,000 retail users and 1,500 merchants** to transact in digital currency

National Bank of Belize (NBB) NBB Pay (Stablecoin)



- **Deploying** the **stablecoin infrastructure** for the National Bank of Belize Limited (NBBL)
- NBBL is a **government-owned bank** headquartered in Belmopan, Belize
- Bitt software applications suite is to serve its retail and corporate consumers

Tascombank Hryvnia stablecoin



- Bitt and TASCMBANK, have **successfully executed a pilot** to issue the digital hryvnia stablecoin on Stellar
- Test the stablecoin on the use-cases of programmable payroll for public employees at Diia, an IT solutions enterprise, as well as for peer-to-peer payments and merchant payments

CBDC Workshop [European Central Bank]



- Bitt partnered with a **European central bank** to workshop and demonstrate Bitt's CBDC solution.
- The European Central Bank gained **hands on access to Bitt's DCMS** deepening their understanding of Bitt's technology and a greater understanding on how central bank functions would operate within a CBDC system.

Our Awards



Bitt was awarded as the **2021 Central Bank Digital Currency Partner** by leading industry information resource Central Banking Publications for its work on the ECCB DCash pilot.

“Complete end-to-end CBDC solution, from technology development through to marketing and training for consumers and stakeholders” (Rachael King, Chair of the Central Banking Awards Committee and Associate Editor of Central Banking)

The Central Banking FinTech and RegTech Global Awards are held annually and celebrate the innovations and achievements of central banks and technology partners around the world in the areas of financial and regulatory technology.



Bitt is the proud recipient of the **Most Empowering Cross Border Payment Systems Provider - Caribbean** award from Wealth and Finance International's FinTech Awards 2021

The FinTech Awards aim to recognise and highlight individuals, companies and enterprises who are transforming the FinTech industry.

Wealth & Finance International is dedicated to providing fund managers, institutional and private investors around the world with the latest industry news through their quarterly publication Wealth and Finance Magazine.



Bitt was one of 15 finalists for the Monetary Authority of Singapore's (MAS) **Global CBDC Challenge** to develop and showcase retail central bank digital currency (CBDC) solutions at the Singapore FinTech Festival in November 2021.

The competition received over 300 submissions from more than 50 countries. As part of this submission, the Bitt DCMS integrated with the Stellar network, which provides asset issuers like central banks certainty, safety, and control with respect to their digital currency, as well as the openness and interoperability of a permissionless network that fosters innovation and competition. Bitt merged with winners of the competition, Criteo, in August 2022.



Bitt + IDEMIA were one of the three winners of the G20 TechSprint 2022 Challenge sponsored by the Bank for International Settlements and Bank Indonesia. Bitt partnered with IDEMIA under the category “Enabling Financial Inclusion”.

Bitt and IDEMIA's proposed solution combines the world's leading CBDC system, Bitt's Digital Currency Management System (DCMS), with IDEMIA's state-of-the-art offline payment instrument. The offering can bring retail CBDC to everyone, including the unbanked and those without connectivity. An independent panel of 11 experts, convened by Bank Indonesia, assessed the developed prototypes from the shortlisted teams to determine the winners.

What advantages do CBDCs offer vs legacy systems?



Central Banks and Monetary Authorities

- ✓ Real time financial data across industries, geographies, and more.
- ✓ Direct and precise monetary policy transmission mechanisms.
- ✓ Advanced toolset (such as embedded interest rates, programmability, and real time indexing) for maintaining monetary stability and govern money supply
- ✓ Drive competition in payments
- ✓ Extension of central bank money throughout the economy.



Governments

- ✓ Increased accessibility to global financial networks.
- ✓ Provision of public financial infrastructure, accessible to all citizens and businesses in country, and beyond as desired.
- ✓ Increased auditability for public expenditures
- ✓ Lower cost direct payments to and from counterparties.



Financial Institutions

- ✓ Increased accessibility to global financial networks.
- ✓ Seamless access to central bank money in digital form.
- ✓ Ability to offer low-cost instant payments to enterprise and retail clients, including cross-institutional transaction and settlement



Merchants and Consumers

- ✓ Access to risk-free central bank money in digital form.
- ✓ Cost effective, secure, and interoperable payment instrument.
- ✓ Instant settlement.
- ✓ Low barrier to access (multiple applications from banks, payment services providers, and other intermediaries)

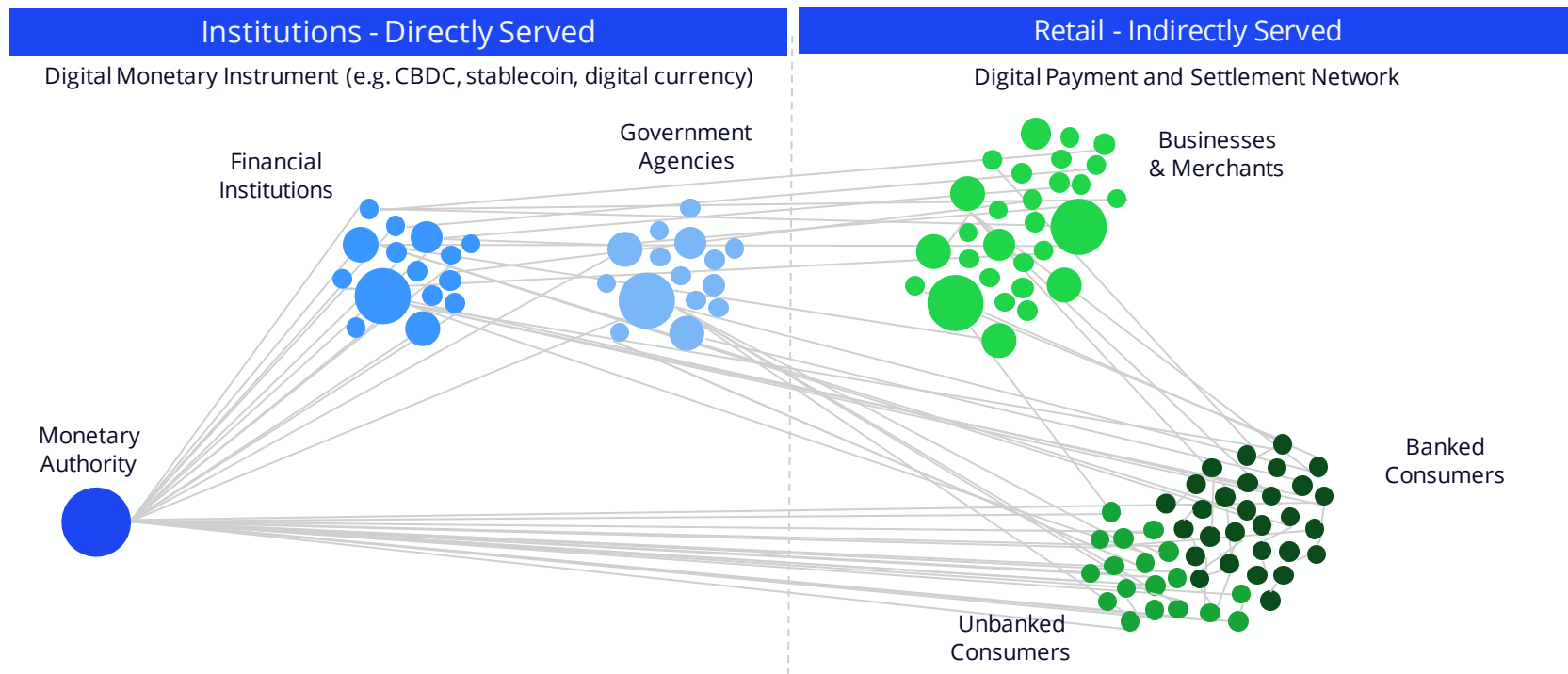
The logo for Bitt, consisting of the word "bitt" in a bold, white, lowercase sans-serif font. The background is a solid blue color with a decorative pattern of concentric, wavy lines in a lighter shade of blue, creating a sense of motion and digital connectivity.

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Our Product: The Bitt Digital
Currency Management System
(DCMS)

We serve the entire currency ecosystem

- Bitt licenses its Digital Currency Management System (DCMS) to central banks for the provision of CBDCs in their country and beyond.
- Bitt also provides downstream applications for financial institutions, government, enterprise, and retail users.



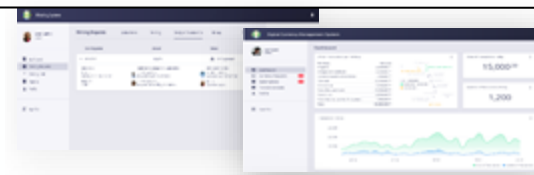
Bitt's Digital Currency Management System (DCMS)

Complete financial tech for institutions and monetary authorities.

Monetary Authority/
Central Banks



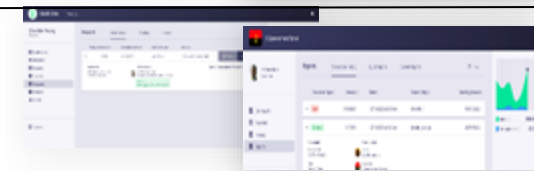
Minting & Managing Solution
Next Gen Monetary Policy Toolkit



Financial
Institutions (FI)/
Intermediaries



Digital Currency Operations Solution
AML Compliance
Core Banking Integration
APIs & SDKs



Businesses &
Merchants



Government
Agencies



Merchant Applications
APIs & SDKs



Banked
Consumers



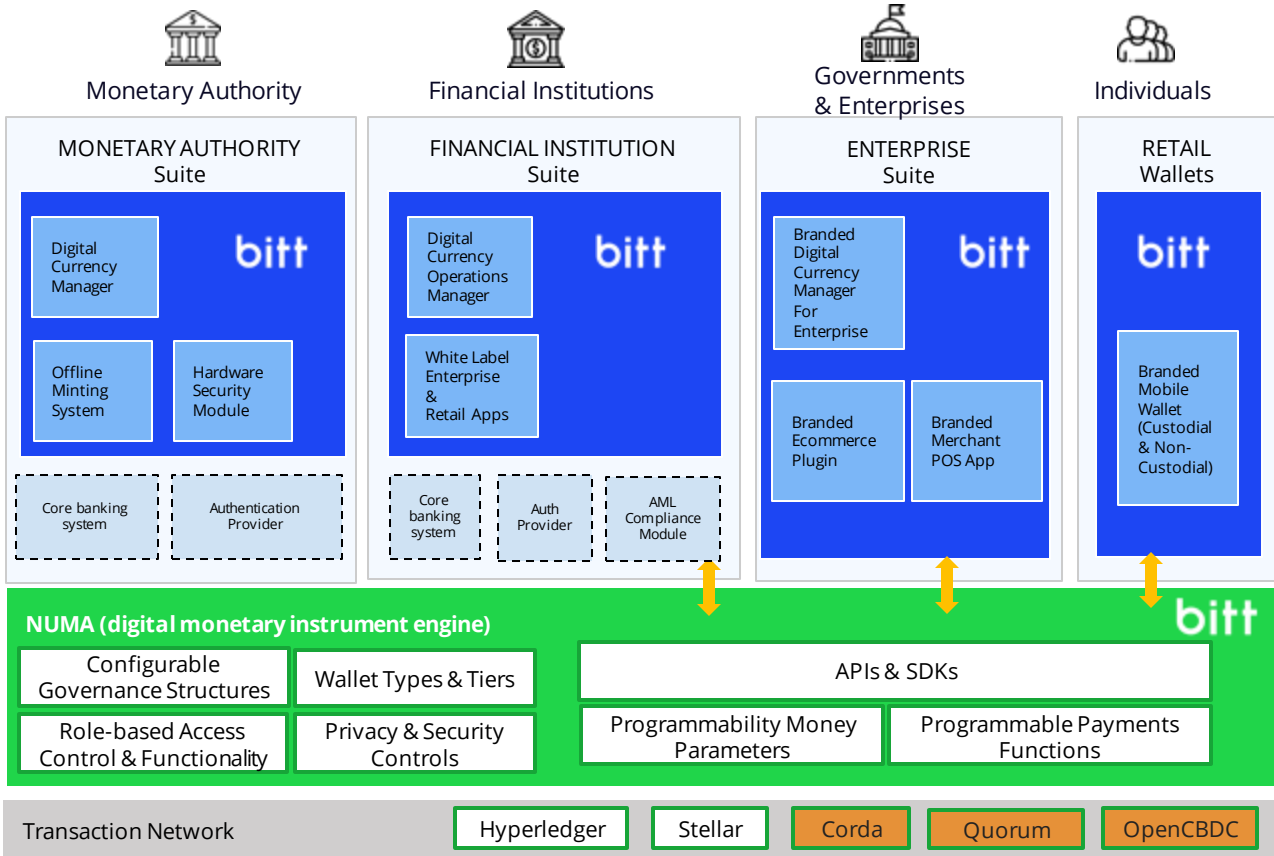
Unbanked
Consumers



Consumer Wallets
APIs & SDKs



Bitt's DCMS and Numa

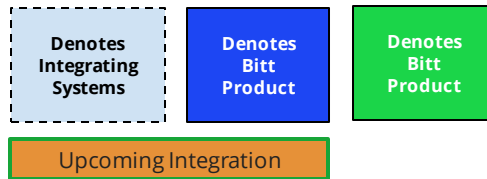


Bitt Digital Currency Management System (DCMS)

The Bitt DCMS encompasses a core transaction network, Numa infrastructure, and user interfaces for each ecosystem participant to enable a variety of actions to achieve their objectives in managing digital currency transactions and services.

Numa (digital monetary instrument engine)

Numa is the core technology behind the Bitt DCMS applications. It integrates business logic into the system architecture to achieve secure and reliable workstreams. The Numa can integrate with any underlying traditional or DLT network. The Numa is configurable for each new deployment based on client requirements.



Bitt's solution is built to meet all issuer needs

Bitt is well positioned to meet both CBDC and Stablecoin issuers needs across the entire stack of payments; from issuing to consumer wallets.

Issuer Control

- **Bitt's Solution:** The DCMS is interoperable with a variety of DLT transaction networks with controls (governance, KYC/AML, etc.).

Compliant with data protection laws

- **Bitt's Solution:** Facilitate segregation of PII and transaction data, access control mechanisms for all data, alongside digital identity prototyping. Data residency options available.

Payment's immediacy and finality

- **Bitt's Solution:** Most DLT based transaction networks ensure irreversible instant settlement. We work with the clients to determine the optimal underlying transaction network that best suits their requirements.

Customer orientation

- **Bitt's Solution:** APIs and SDKs are available, via Bitt's Numa, to enable innovation and competition. Bitt's apps are refined to meet client requirements in an efficient and pleasant user experience.

Compliant with sound IT architecture principles

- **Bitt's Solution:** A variety of security tests have been implemented for the DCMS, including by third-party experts.

Technical independence and offline functionality

- **Bitt's Solution:** Applications and offline solutions can be provided/white labeled by Bitt or can be integrated into the DCMS using APIs/SDKs.

Accommodation of data protection solutions

- **Bitt's Solution:** The base wallet tier could have anonymity, with incrementing KYC requirements and tx/holding. Other anonymity features can be implemented using offline cards, or at transaction network level.

Claim on Issuing Bank

- **Bitt's Solution:** Minting, issuance, redemption, and destruction: General ledger managed by the issuing bank or central bank.

Platform for third-party providers

- **Bitt's Solution:** Provides APIs and SDKs to enable innovation, with the central bank maintaining control over rules (access, KYC policy, wallet limits, etc.)

Safeguard monetary efficacy

- **Bitt's Solution:** Interest rates can be applied in several ways through the DCMS, and targeted policy actions can also be executed based on industry and geography (on roadmap).

Macroeconomic monitoring

- **Bitt's Solution:** The DCMS has a growing list of economic analysis metrics and monitoring tools. This feature set will continue to grow and aid in dynamic monetary policy.

Niche Solution/DLT Compatibility

- **Bitt's Solution:** The DCMS is interoperable with a variety of underlying transaction networks via the Bitt Numa. The DCMS can also enable multi-currency and multi-network integrations.

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Retail &
Wholesale
CBDCs

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Retail & Wholesale CBDC's carry multiple benefits

Same instrument, different use cases

While retail and wholesale CBDC's differ in their use, customer base, and implementation, digital central bank money can provide significant improvements.

- 1 Financial inclusion:** both retail and wholesale CBDC's enable greater access to financial products and services without reducing barriers to financial products for vulnerable populations.
- 2 Augmented monetary policy tool set:** both retail and wholesale CBDC's enable Central Banks to carry out a variety of monetary policy actions in a precise, targeted, and real-time manner.
- 3 Targeted accountability:** both versions of CBDC allow for targeting and enhanced accountability of sectors and fiscal programs for a variety of use cases.
- 4 Enhances cross-border trade:** both versions of CBDC can improve cross-border payments making them faster, cheaper and more efficient which would be directly beneficial global populations and international trade.
- 5 Resilient, efficient, and interoperable payment system:** both retail and wholesale CBDC provide an alternative payment rail that is more resilient and cheaper than existing systems that multiple entities can integrate with for cross-institutional transactions.

Identity: a challenge to realizing the benefits

1

Comprehensive Identity solution is required: for any CBDC solution, a comprehensive identity architecture is needed in order to ensure privacy while also complying with needed KYC/AML regulation.

2

Metadata segregation is possible: with a comprehensive identity solution, we can separate out functional metadata for policy makers and researchers, all while preserving PII and privacy.

3

Increased information & access security: separation of PII and metadata via a comprehensive identity solution would also allow for increased security of important information and would allow increased management of who has access to such information.

4

Configurable and auditable user logs: with a comprehensive identity solution user logs can be audited which only increases the safeguards in place for accessing certain sensitive digital information

5

Increased trust: modern systems are not set up to increase trust in societies and institutions, more visibility of macroeconomic trends, while decreasing our digital footprint and traceability would increase trust in societies.

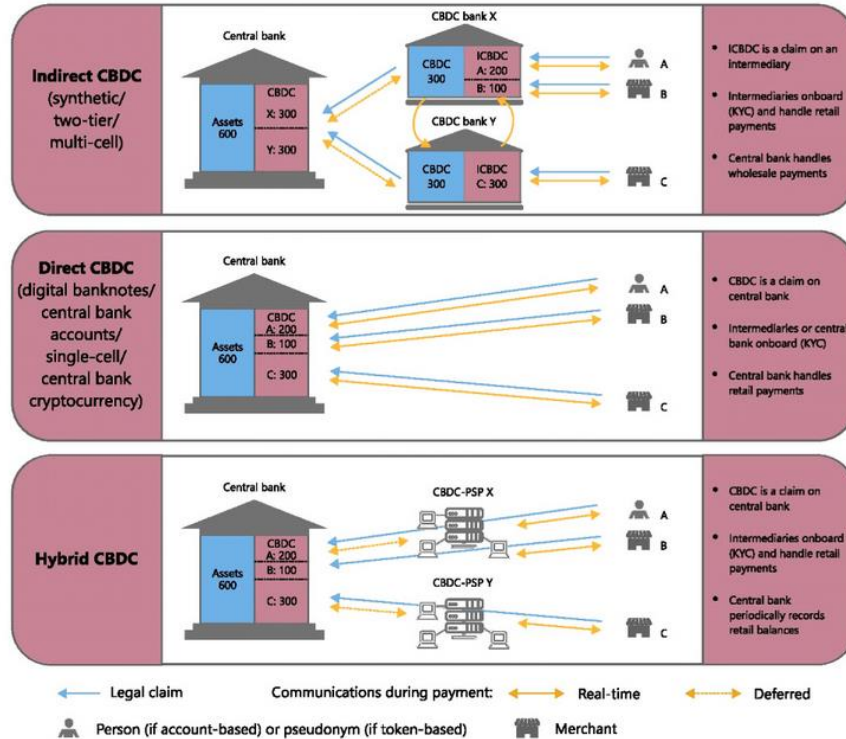
Digital Identity unlocks potential

Without a comprehensive digital identity solution, both retail and wholesale CBDC systems would have much less trust, usability, and utility; inhibiting their full potential.

We have multiple choices when it comes to design

An overview of potential retail CBDC architectures

2



Hybrid can also apply to retail + wholesale CBDCs

- ✓ Increased flexibility in onboarding economies into modern payment rails.
- ✓ Direct and precise monetary policy transmission mechanisms.
- ✓ Increased potential use cases.

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What can Bitt do for
your institution?

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Bitt can assist you on your CBDC journey



Workshop / Demo

- ✓ Learn more about how the DCMS can enable CBDCs in your country and beyond.
- ✓ Interact with Bitt experts and view Bitt's monetary applications.



Sandbox Environment

- ✓ Get your own dedicated DCMS environment where you can experiment with all application suites and tools.
- ✓ Basic configuration of all tools per your institutional governance structures.
- ✓ Access Bitt's experts for onboarding, training, and ongoing technical, operational, organizational, and subject matter support.
- ✓ Test advanced functionality to address specific use cases.



Pilot Project

- ✓ Expand users of the Digital Currency Management System to test desired use cases.
- ✓ Configure DCMS to enable specific governance structures and operational policies and procedures
- ✓ Ongoing support from Bitt's experts to ensure use cases are being tested per functional and technical specification (s)
- ✓ Scope integrations with legacy financial system infrastructure including core banking, intermediaries, telcom, identity, and more.



Live Deployment

- ✓ Deploy your CBDC into operation in your country and beyond.
- ✓ Integrate DCMS with legacy financial infrastructure
- ✓ Enable intermediaries to integrate with the DCMS for the provision of CBDC payment services to their clientele,
- ✓ Integrate your CBDC with other CBDCs via strategic international efforts.
- ✓ Test and deploy modules to meet specific requirements for achieving goals in your country and beyond.

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Thank you for your time