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For Banks and Financial Institutions

# A Best-in-Class Money Commodity for Strengthening Monetary Sovereignty with a Digital Economic Union

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# Abstract

Bitcoin inspired a generation of cryptographic store of value and medium of exchange innovations intended to disrupt and to circumvent regulated banking and financial institutions. The International Monetary Fund (IMF) recently published a report on the potential risks of crypto assets to the international monetary system and recommended not to provide legal tender status to crypto assets.

The IMF did not consider the possibility of a new class of cryptographic innovations conceived to not only support but to strengthen the monetary sovereignty of the international banking system (i.e., Crypto 2.0).

The Digital Currency Monetary Authority (DCMA) is a world leader in the advocacy of digital currency innovations for governments and monetary authorities and has innovated a best-in-class design for international Central Bank Digital Currency (CBDC) leveraging a digital economic union.

The IMF states it has a mandate to provide economic and financial stability to its member states. There are some noted encumbrances in the current international monetary system that continually challenge emerging markets, and even some advanced economies, in sustaining their monetary sovereignty.

This paper outlines the blueprint for a best-in-class CBDC design and discusses how a digital economic union and an international CBDC could complement and strengthen the international monetary system.

Several sovereign states have collaborated with the DCMA on a Model Law for an international CBDC, or money commodity, and have provided draft legislation for such outlined in Appendix 1.

# A Best-in-Class Design for Central Bank Digital Currency

Over the past few years nearly all central banks around the world have initiated research and development on central bank digital currency (CBDC). Many pilot projects show the promise of CBDC.

Some pilots merely seek to establish a digital equivalent of their existing fiat legal tender, while others seek to enhance the safety, security, and economic benefits cryptography can deliver.

The leadership team of the DCMA has vast experience in blockchain, artificial intelligence, and digital currency. Prior work has been featured by the European Commission and the World Economic Forum.

The DCMA's journey into CBDC began with a first meeting with the People's Bank of China (PBOC) in 2018 and subsequently several other central banks in both advanced and emerging market countries.

In this section, we identify the Top 10 features we consider as "best in class" for a CBDC design. The DCMA presented these features to central banks around the world at a public lecture on CBDC hosted by the University of Maryland<sup>1</sup>.

## A Trusted Consensus Protocol – Staked Proof of Trust (SPOT) Protocol



Unlike public blockchains deployed with trustless consensus protocols, central banks and monetary authorities are trusted entities for providing a safe and secure monetary system.

Trustless consensus protocols are usually complex and requires majority consensus on a transaction before recording in the general ledger.

Ucoin optimizes a high-performance 2-tiered consensus protocol for trusted monetary authorities.

The first tier is a clustered group of trusted monetary authority nodes, called meganodes, which provides instantaneous validation and processing of network transactions.

The second tier is a non-clustered group of validating nodes, called mesonodes, which reviews and verifies the meganodes.

Any mesonode can stake and reject a pending transaction from the mesonodes. If the majority accepts the transaction of the meganodes, the challenging mesonodes will lose their stake.

Like Proof of Stake (PoS), all mesonodes must commit a financial stake to validate transactions and earn Ucoins for their validation services.

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<sup>1</sup> [A Deep Dive into the Possible Future of Money](#)

However, because meganodes are trusted entities, the Staked Proof of Trust (SPOT) Protocol implements a “no response” response acknowledgement system.

In computing, a timeout or no-response within a specified timeslot is considered a response. Contrary to trustless consensus where each node broadcasts consensus messages for each block, in the SPOT protocol, mesonodes only send reject messages when challenging a transaction.

If a mesonode does not respond to a pending meganode transaction within a specified timeslot, their “no response” is considered an affirmative response. Once majority consensus is achieved the transaction is updated from pending to the either accepted or rejected status.

The 2-tiered SPOT protocol has unlimited scaling potential due to the adoption of “no response” acknowledgements and is not hindered by network congestion and latency issues.

The below diagram outlines the core features of the Trust Consensus, SPOT Protocol.



**Figure 1: Staked Proof of Trust (SPOT) Protocol**

Meganodes parallel process incoming transactions using a message queue with preprocessing financial integrity validations and then apply sharding with regulatory validations within the transaction processor.

The meganodes parallel and sharded processing combined with the mesonodes SPOT protocol have been able to achieve throughput processing of over 100,000 TPS which includes transaction validation.

### Solving for Double Spend Attacks

Double Spend is one of the most important network attacks that must be solved in cryptographic monetary networks. There two general approaches to solving the double spend attack depending on the DLT architecture.

UTXO DLTs solve double spend at the cryptographic layer by requiring the output of a UTXO transaction to be used by the wallet as the input on their next money transfer transaction. This feature coupled with designating the longest chain as the official chain of the DLT solves the potential double spend attack.

This solution is ideal for single currency assets and single ledger technology. However, banking is far more sophisticated and needs to be able to support multiple settlement currencies and several asset and liability ledgers. Hence, DCMA has adopted the account model for the Unicoins UMU CBDC.

In the account model DLT, double spend must be solved at the transaction processor level. UMU implements an authenticated money transfer gateway coupled with a message queue. This message queue has various network attack prevention capabilities including rate limits and IP Address intelligence.

The message queue automatically removes physical and logical transaction duplicates and enforces a first-in-first-out (FIFO) processing model for all transactions from the same wallet. Hence, parallel processing occurs across wallet transactions but are restricted within the same wallet.

Logical duplicates are money transfers with additional attribution to make the transaction unique but is financially equivalent to another transaction processing with the same deduplication time period.

Deduplication and FIFO processing of same wallet transactions solve the double spend attack for account model DLTs.

### **Linear Scale Node Degree Architecture**

Many blockchain projects boast their substantiated claims of high-performance transaction processing networks up to one million transactions per second. These projects are mainly driven by academics and not by prudent requirements of banking and financial services.

Regulatory compliance and financial integrity validation and protections are the most important requirements of a banking and financial services processing system. These preprocessing requirements significantly impacts throughput and performance. However, leveraging a linear scale node degree architecture, CBDC transaction processors can scale to any required throughput requirement.

Due to the double spend and other network attack prevention technology needed within the message queue, each message queue can process up to 300 transactions per second. The Unicoins network can scale to support an unlimited number of message queues currently configured at 1024 queues, yielding a total throughput capacity of over 300,000 TPS.

Figure 2 below illustrates the Unicoins Transaction Processor Design.



# Money Transfer Transaction Processor Design

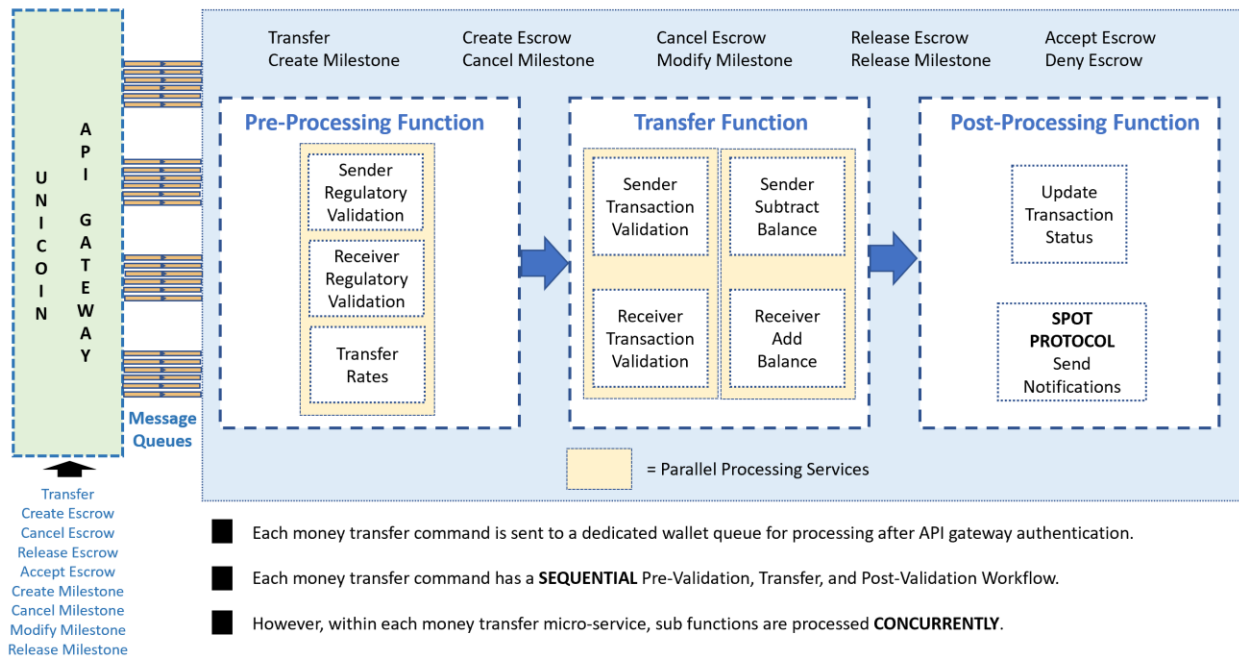
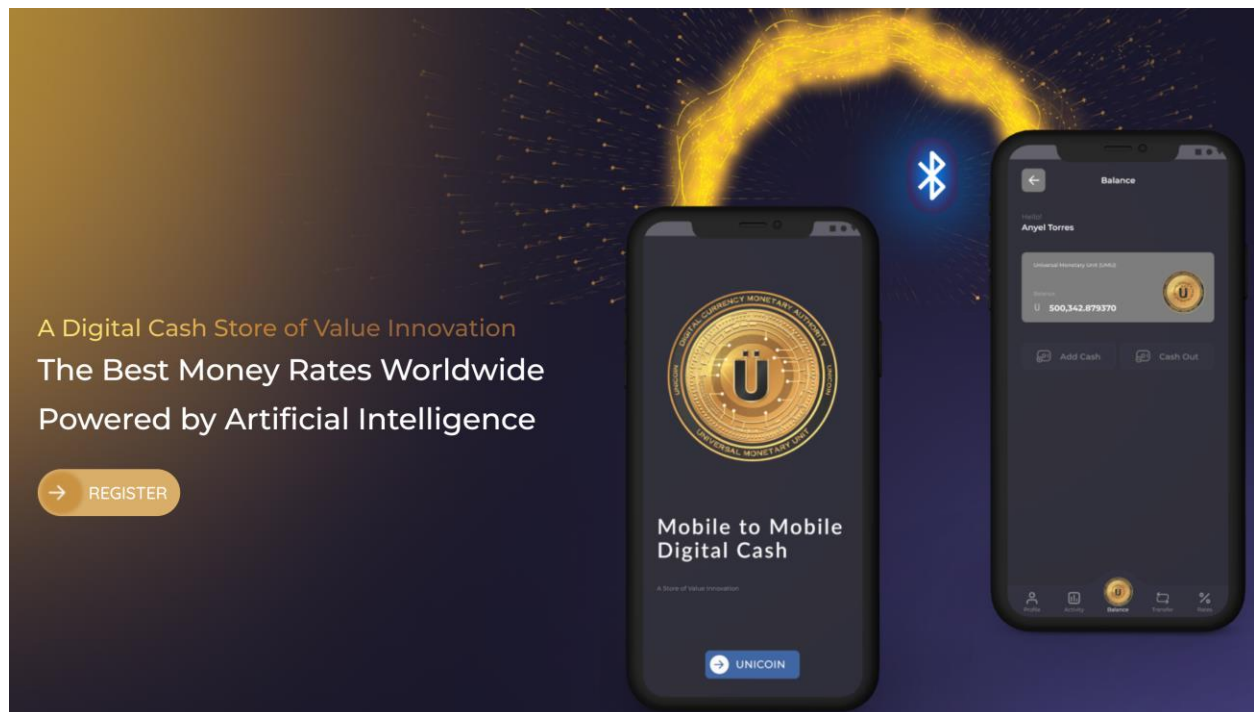


Figure 2: UnicoIn Transaction Processor Design

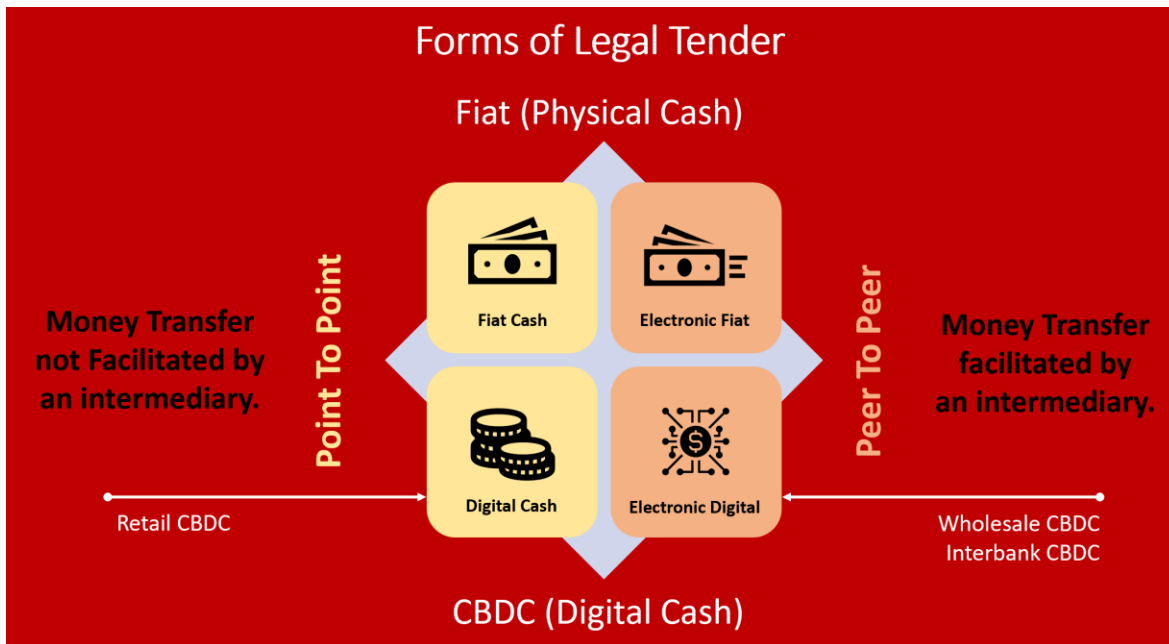
## Physical Cash and Electronic Cash Cryptography



In society, physical cash and electronic cash are the two forms of legal tender recognized by the international monetary system. With the advent of CBDC, both societal forms of legal cash will be represented in a cryptographic form, called Digital Cash, yielding four forms of societal legal tender.

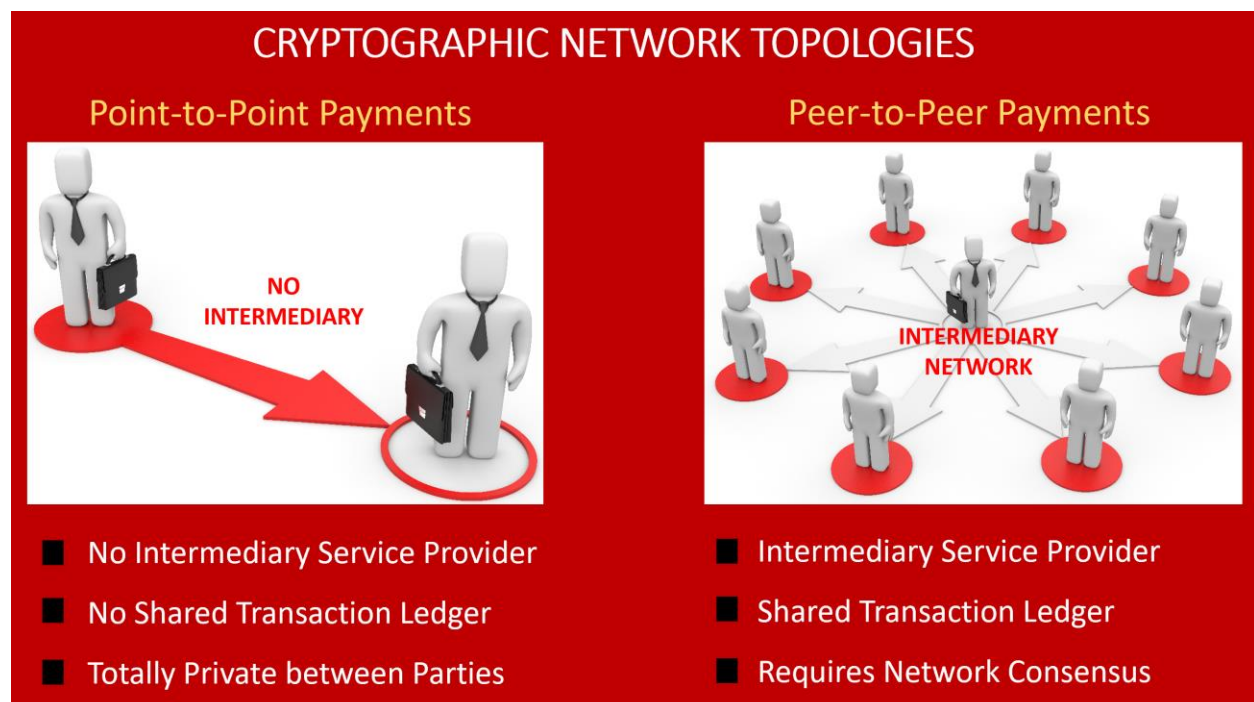
Electronic Cash is transacted through the regulated banking system, requiring KYC, AML, and other requirements. Physical Cash can transact outside the banking system privately between two parties.

Many citizens fear with the advent of retail CBDC, governments may take away private physical cash money and incorporate surveillance capabilities in retail CBDC.



**Figure 3: Societal Forms of Legal Tender**

Figure 4 below explains the difference between a point-to-point and a peer-to-peer physical cash and electronic cash transacted over a cryptographic payment network.



**Figure 4: Cryptographic Network Topologies**

The same as customers can deposit and withdraw cash from their bank account, the same model should apply to Retail CBDC (physical cash) and Wholesale CBDC (electronic cash). On the Unicoi Network, users can attach their mobile wallet to their bank wallet and transfer money between them.

Figure 5 below shows how UMU uses QR Code technology to link bank and mobile wallets together. Mobile wallet transactions are processed point-to-point and are not recorded on the banking network.

Point-to-point digital cash transactions supports financial inclusion and the unbanked as WiFi and a smart phone are not needed.



**Figure 5: Unicoi Link Mobile Wallet to Bank Wallet**

### CBDC Cash Ledgers

The same way banks must classify and account for different types of loans and investments, they must also classify and account for different types of cash. Central banking cash is also classified and accounted for differently than retail and commercial banking cash.

With the advent of CBDC, this explodes the classification of cash accounts even further. Figure 6 below shows the various types of central banking and commercial banking cash that must be classified and accounted for and the potential interactions or transfers between them.

Although CBDC offers tremendous promise for central and commercial banking, it is not realistic to assume retail and wholesale CBDC will replace the current international monetary system. The DCMA suggests CBDC will augment the banking system and must co-exist and interact with legacy banking.

A major function of both central banking and retail and commercial banking is the creation or minting of money. Central banks create money through purchasing government bonds from banks. Retail and commercial banks create money by issue loans to consumers and businesses.

The DCMA does not suspect this foundational layer of the banking system will be displaced by CBDC. In the Unicoi Network, we leverage existing traditional banking legacy systems for the creation of money, then enable to capability to transfer between legacy fiat bank accounts and CBDC bank accounts at both the central bank and commercial banking levels.

The below diagram shows the potential flow of cash between central banking and commercial banking fiat and CBDC bank accounts.

All these interaction models have been implemented in the Unicorn Network.

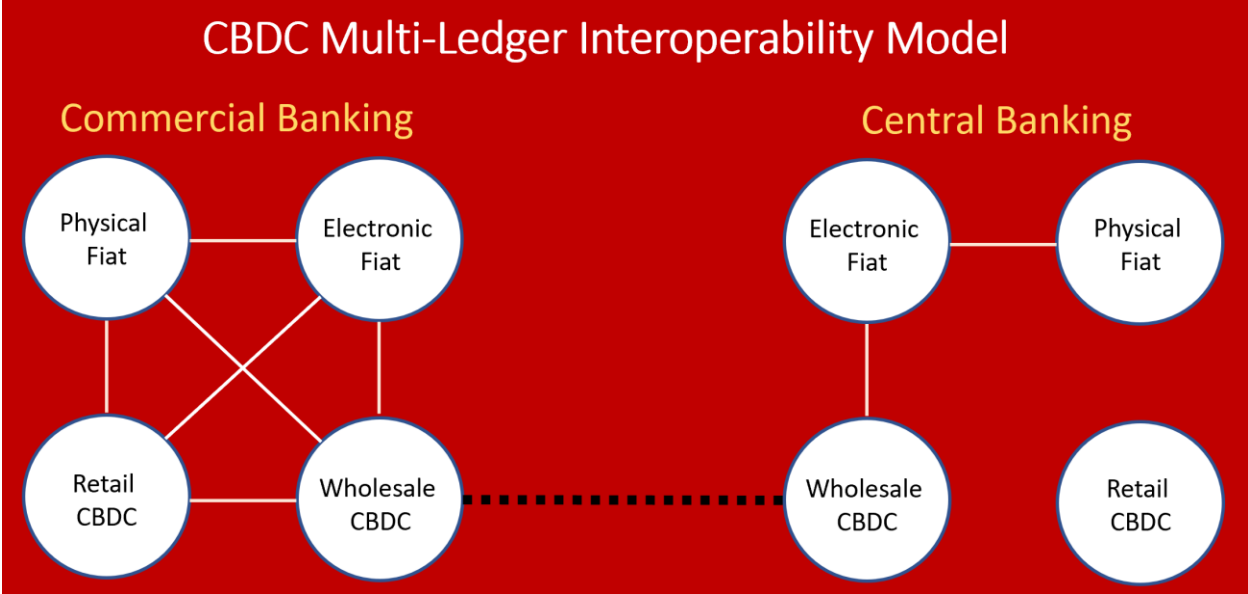


Figure 6: CBDC Multi-Ledger Interoperability Model

## Multi-Currency and Multi-Ledger Digital Ledger Technology (mDLT)

As a key target of the United Nations Sustainable Development Goals (SDGs), they have cited by 2030, they aim to reduce to less than 3 per cent the transaction costs of migrant remittances and eliminate remittance corridors with costs higher than 5 per cent<sup>2</sup>.

It seem impossible for the banking industry to achieve this goal with the current design of the correspondent banking system. In one customer discovery exercise with a state bank in North Carolina, USA, for them to send money to another rural bank in Africa took five (5) hops within the correspondent banking system with each hop incurring time and fees.

The Unicoon Network was able transact the identical transaction using SWIFT bank accounts in less than 1 second and with no participation from correspondent banking at less than at total cost of \$0.05 USD.

We illustrate in another section how we attach SWIFT bank accounts to UMU wallets to transact SWIFT-like transfers over a DLT network.

This case study magnifies and validates the case for digital currency solutions and a total inefficiency of the international correspondent banking system.

The DCMA has ensured our digital currency technology does not disrupt central banking and the foundational workings of the international monetary system. However, retail and commercial banking may be totally disrupted while maintaining the integrity of the international monetary system.

Digital currency technology can make international money transfers faster, cheaper, and safer adopting multi-currency and multi-ledger technology.

The problem with the current international correspondent banking system is every central bank has its own ledger and intermediary cross-border remitters must maintain cash accounts with both the originating and destination central bank.

Given each retail or commercial bank does not have a relationship with every central bank worldwide, it may take a network of correspondent banking networks to complete a money transfer transaction.

In an IMF interview with Tobias Adrian<sup>3</sup>, Financial Counsellor at the International Monetary Fund, he states “Cross-border payments can be slow, expensive, and risky. In today’s world of payments, counterparties in different jurisdictions rely on costly trusted relationships to offset the lack of a common settlement asset together with common rules and governance. But imagine if a multilateral platform existed that could improve cross-border payments—at the same time transforming foreign exchange transactions, risk sharing, and more generally, financial contracting.”

The vision Tobias expresses is shared by others in the international banking community. Now, there is no reason to only imagine because this is the exact vision we have implemented in the Unicoon Network.

Augustin Carstens, General Manager of the Bank of International Settlements (BIS), gave a keynote speech<sup>4</sup> at the Monetary Authority of Singapore (MAS) on February 22, 2023.

He stated “Around the world, central banks are exploring how to give money new capabilities... But to fully realise the transformative potential of these new financial technologies, we need some way to bring

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<sup>2</sup> [Reduce inequality within and among countries](#)

<sup>3</sup> [Tobias Adrian: Cross-Border Payments for the 21<sup>st</sup> Century](#)

<sup>4</sup> [Innovation and the future of the monetary system](#)

them all together. In this regard, there is great promise in developing the idea of a "unified ledger" with a common programming environment.

A unified ledger is a digital infrastructure with the potential to combine the monetary system with other registries of real and financial claims. It would need to be a public-private partnership with a clear division of roles, and where the central bank is tasked with underpinning the trust in money.”

The DCMA is attempting to fulfill this public-private partnership and have already realized the vision expressed by Augustin.

To realize the vision expressed by both Tobias and Augustin, a DLT must be able to settle multiple currencies negotiated in international trade.

This requirement can be achieved without compromising the monetary sovereignty of any central bank. The UnicoIn Network has implemented multi-currency settlement DLT that broadcasts the transaction back to each central bank and participating retail or commercial bank to record in their ledgers.

To implement multi-currency settlements, multiple ledgers must be supported with the DLT. This requires a materially different DLT architecture than any of the public ledgers known to date.

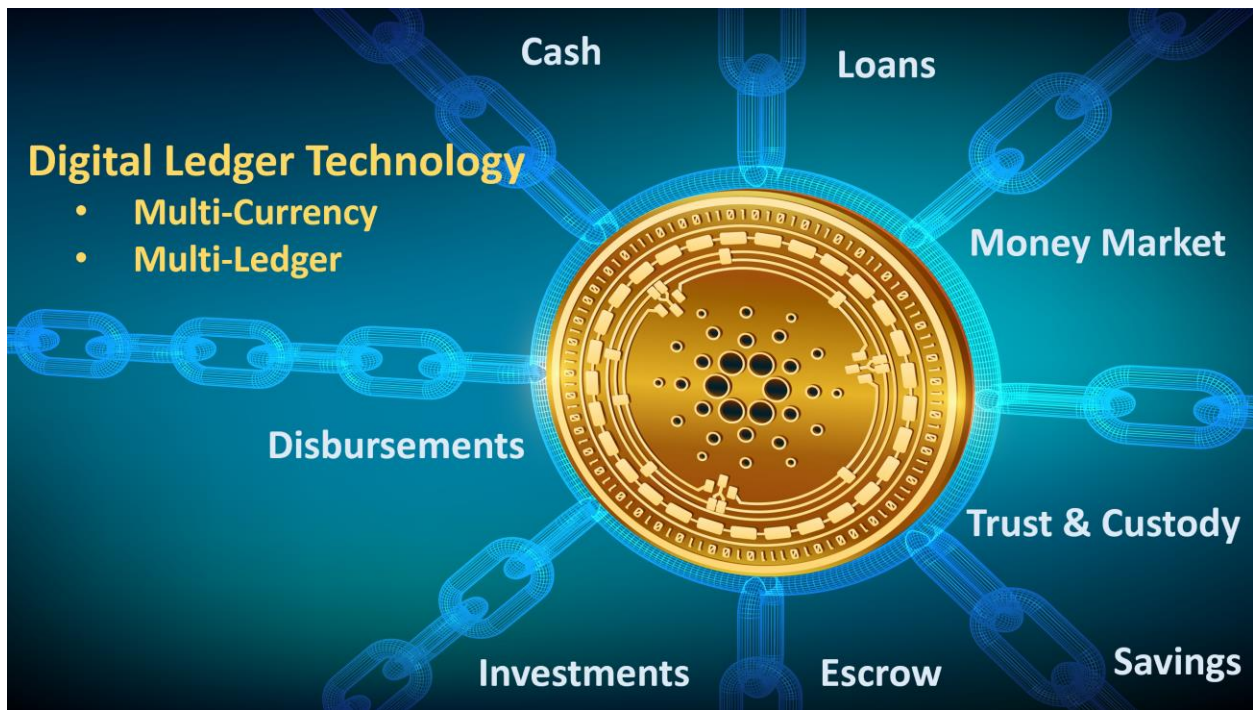
In addition to multi-currency ledgers, full-service banking also requires more than just cash ledgers. It requires dozens of assets and liabilities ledgers for the transfer of money. Hence, ideally multiple accounting ledgers, beyond cash, should be supported by CBDC ledger technology.

Even with cash, it can be nuanced into central banking cash and commercial banking cash with even further subclassifications of cash for accounting purposes.

The DCMA has implemented a multi-currency and multi-ledger DLT without the need for any smart contracts. We call this multi-Ledger DLT, or mDLT.

The UnicoIn Network can support any type of asset or liability ledger within the banking system with the configurations necessary to implement all required functionality of the ledger.

Below is a visualization of a partial list of ledger types mDLT could support.



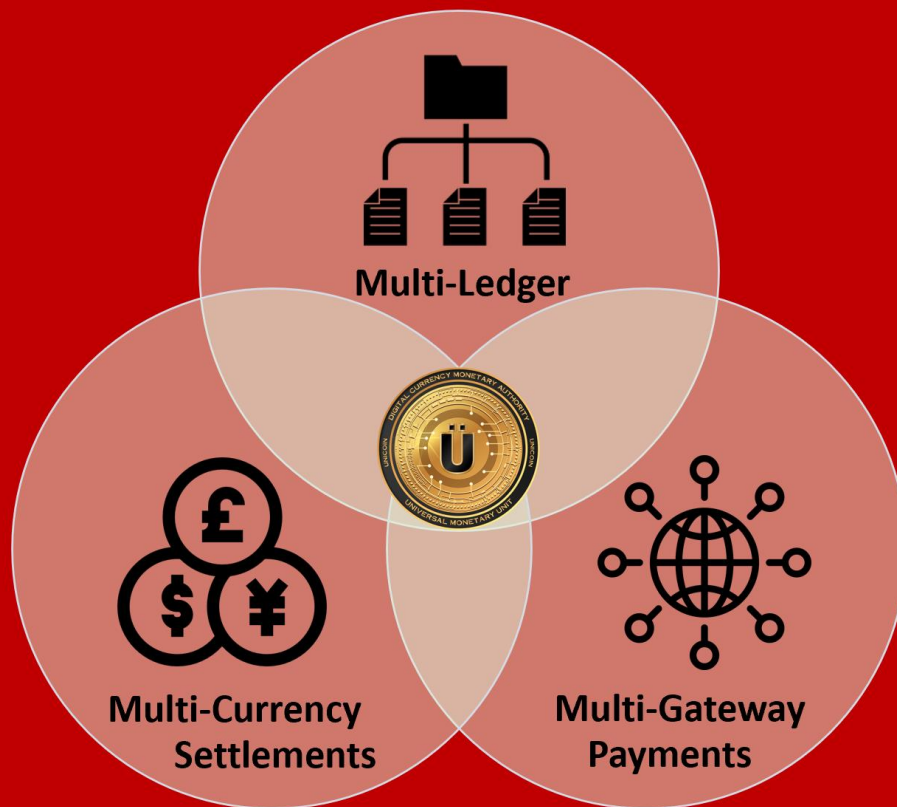
**Figure 7: Unicon Multi-Currency Multi-Ledger (mDLT)**

In addition to multi-currency and multi-accounting ledgers, to maintain operational support of the legacy banking system, a CBDC public monetary system should also include interoperability features to the legacy real-time gross settlement (RTGS) and the National Electronic Funds Transfer (NEFT) systems.

Any banking use case should be solvable with any CBDC Public Monetary System that cohesively integrates the functionality and capabilities of multi-currency, multi-ledger, and multi-gateway features.



# Best-In-Class CBDC Public Monetary System



**Figure 8: Best-in-Class CBDC Public Monetary System**

Multi-ledger use cases includes users being able to hold balances in different asset accounts such as cash accounts, savings accounts, money market accounts, and investment accounts. Multi-ledgers can also support liability accounts such as loans and accounts payables.

Multi-ledger is the foundation for implementing multi-currency ledgers. Each settlement or legal tender should have its own ledger for customer activity and balances. Multi-currency enables bilateral and multi-lateral trade agreements and the ability for a central bank to hold multiple CBDCs on their digital ledger.

Multi-gateway enables the transfer of money between both legacy payment systems and digital currency and CBDC payment rails. Given that digital currency and CBDC payment rails must complement the existing financial system, it is important for digital currency public monetary systems to be able to interface and transfer funds between existing RTGS and NEFT payment systems.

## Open Standards and No Smart Contracts

Smart contracts are usually third-party custom software that runs on a virtual machine of the DLT. It provides enhanced functionality not provided by the DLT.



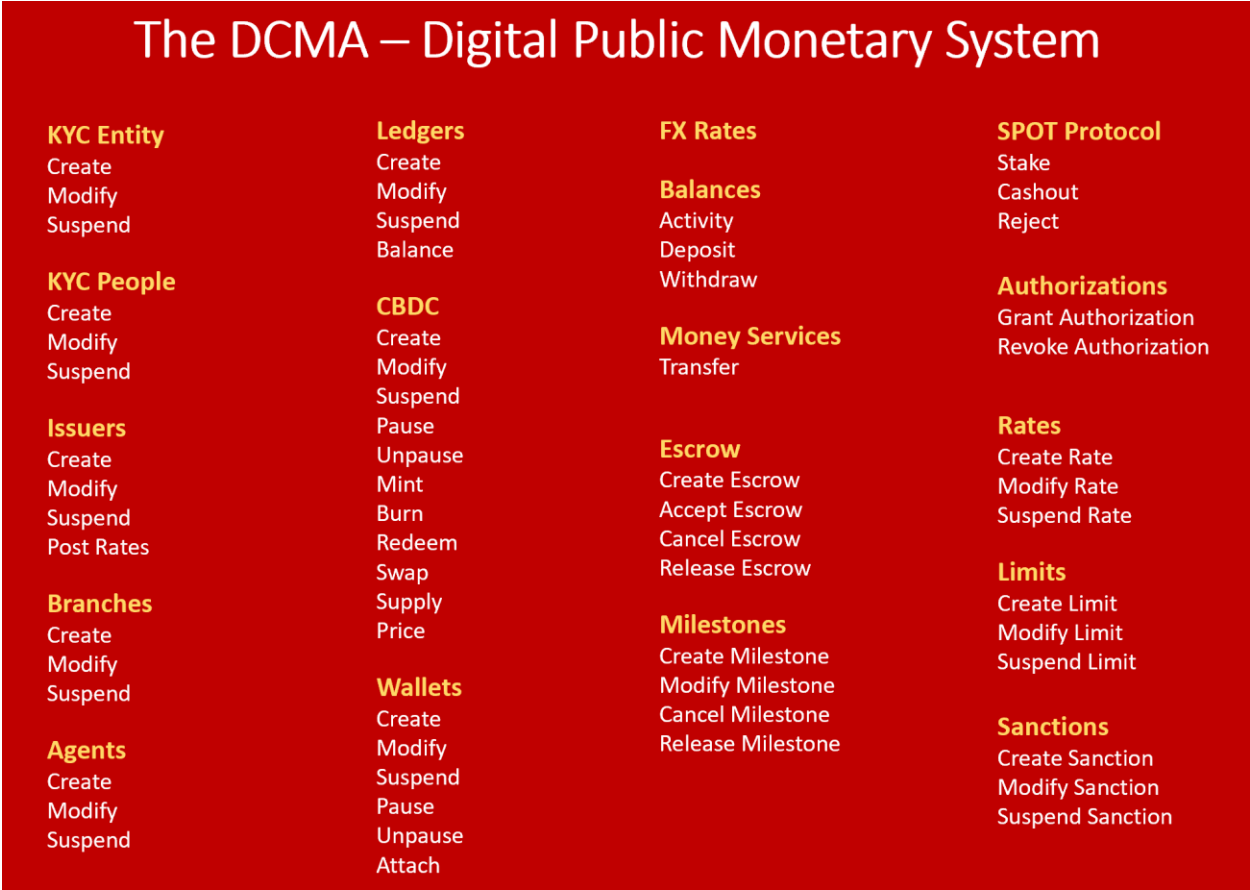
In the view of the DCMA, smart contracts are not the way forward for international banking. There are thousands of banks worldwide with their own definitions and thinking about banking and financial services. If every bank were to write a smart contract for deploying interest-bearing checking accounts, they would all code it differently. Some would undoubtedly introduce security vulnerabilities.

Instead of thousands of banks writing their own version of a smart contract to implement common features all banks need and could simply configure, the DCMA recommends establishing open standards for all public monetary system features that could be configured by all banks to their local requirements.

This approach is like deploying a money operating system. Apple and Microsoft have one operating system the world uses to implement their computing requirements. This same approach could apply to DLTs.

The Unicoi Network has published a money servicing DLT with over one hundred commands that could be configured to the needs of each central bank or retail or commercial bank. Levering these commands, unlimited digital banking, digital trade, and digital payment applications could be built without the need for any smart contracts.

Below is a partial list of open standard CBDC commands supported by the Unicoi Network. Each of these CBDC commands are implemented using a global localization framework.



**Figure 9: Unicoi Global Localization of a CBDC Public Monetary System**

Can you imagine every central bank and commercial bank writing their own smart contracts to fulfill these few features cited above? The DCMA CBDC Unicoi Network implements all these features in open standards that can be configured by each jurisdiction without the need for any smart contracts.

## Geolocation-based Regulatory Compliance

Banking and regulatory compliance are the biggest void not provisioned in public DLT networks because they were not engineered for banking or financial institutions. In fact, most are intended to circumvent banking and financial intermediaries all together.

Secondly, many sovereign states have different and conflicting regulatory requirements. Hence, to solve this problem in a global cost-effective manner requires the adoption of global localization technology.

Global localization technology enables one asset or features to be access globally but customized locally.

Adopting a global localization regulatory compliance architecture, UMU can be configured with all domestic banking and crypto assets rules and regulations across all international jurisdictions. Every money transfer complies with the configured originator and recipient jurisdictional rules.

The onboarding information banks require to conduct KYC may vary by jurisdiction. The AML limits applied to accounts on a daily, weekly, and monthly basis may vary by jurisdiction. The fees and basis points central banks and member banks charge for their services could vary by jurisdiction.

Sanctions are another good use case for global localization. One central bank may decide to sanction a person, entity, or another jurisdiction, whereas another sovereign state may not elect to do so.

The DCMA does not impose any centralized regulatory rules. It is the responsibility of each central bank and/or commercial bank on the UnicoIn Network to configure their regulatory compliance rules.

For example, if one central bank sanctions another country, entity, or person that sanctions would be applicable at the country level for any money transfers sent or received from within its jurisdiction. However, because each country has their independent monetary sovereignty, it is up to other countries to decide if they choose to adopt the same sanctions.

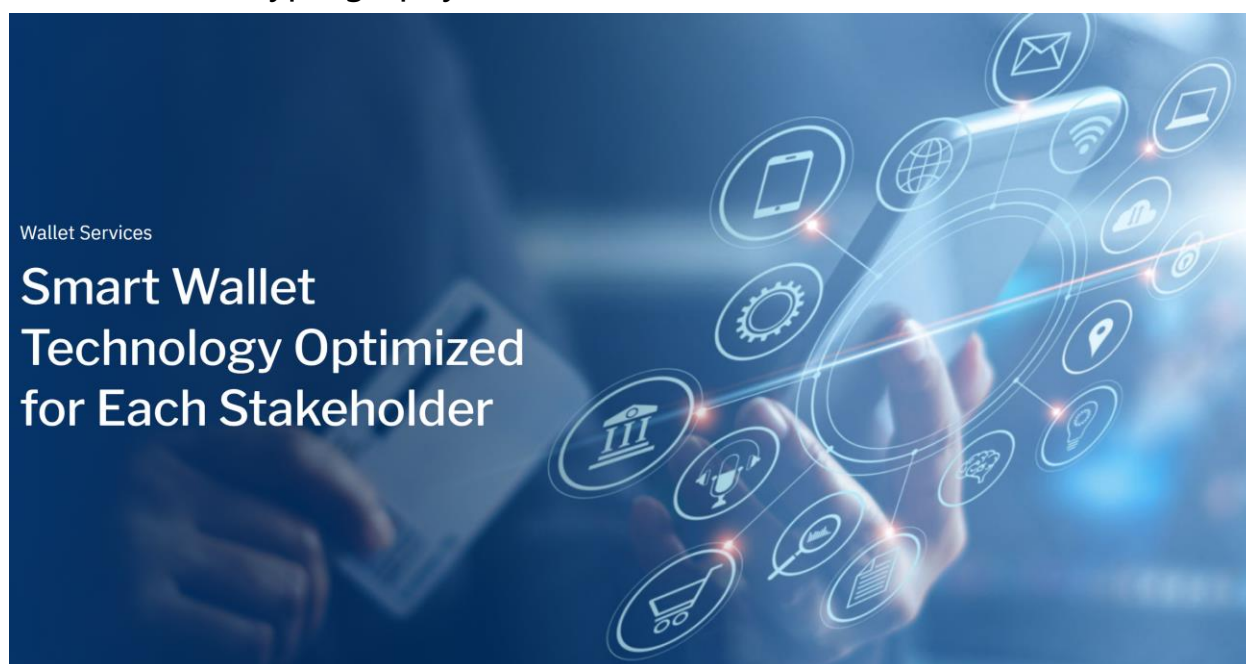
Often allies of a country may adopt the same or similar sanctions for their economy. If so, each ally would have to configure the sanction independently. Ensuring each country maintains their monetary sovereignty, the DCMA does not implement any centralized sanctions or compliance rules.

This global decentralization approach is applicable to all money servicing and compliance commands on the UnicoIn Network.

Banks and financial institutions can monetize their services for conducting any financial transaction on the UnicoIn Network on behalf of their customers. Financial services providers (FSPs) can establish their own basis points pricing for domestic and international money transfers for both sending and receiving.

Although Universal Monetary Unit (UMU) is a common international money commodity, it can strengthen the monetary sovereignty of all states adopting it as a payment commodity and it can also be configured to operate like a CBDC within any local economy.

## Smart Wallet Cryptography



CBDC networks should be permissioned and should support varying roles within the ecosystem. Each of these roles offer different features and access to services within the public monetary system. Hence, adopting smart wallet technology is an ideal way to meet this requirement.

With Smart Wallet technology each wallet issued is assigned a different wallet class, and each wallet class is like a role that is granted varying access to the public monetary system.

The Unicorn Network implements smart wallets and supports the following wallet classes or roles for –

- Central Banks
- Member Banks (Retail and Commercial Banks)
- Cryptocurrency Exchanges
- Fintech Companies
- Merchants
- Private Citizens

Depending on the role or wallet class, the user will have access one or more of the open standard commands listed in the prior section.

For example, only central banks can create, modify, or suspend a CBDC. Central banks can also onboard member banks, fintech companies, and crypto exchanges. Member banks can create, modify, and suspend branches and their agents. Merchants and Citizens can deposit, withdraw, and send money.

Smart Wallet technology is the enabler for building a wide adoption CBDC public monetary system as discussed in the following section.

## A CBDC Widespread Adoption Framework

A public monetary system must support use cases for all constituents in an economy. Legal tender must be widespread and easy to use and transact for it to be a public good.

Smart Wallet technology alongside a multi-currency, multi-ledger (assets and liabilities), and multi-gateway are the foundational technology for building a ubiquitous CBDC public monetary system.

### Use Cases for CBDC

Constituent	Common Use Cases
Central Banks	<b>Mint and Issue CBDC</b>
Member Banks	<b>Tokenized Deposits and Withdrawals, Loans</b>
Crypto Exchanges	<b>Onboard Funds, Buy and Liquidate Crypto to/from CBDC</b>
Fintech	<b>Cross-Border Payments</b>
Merchants	<b>Buying and Selling Goods, Making Payments, Trade</b>
Citizens	<b>Purchase CBDC and Pay for Goods and Services</b>

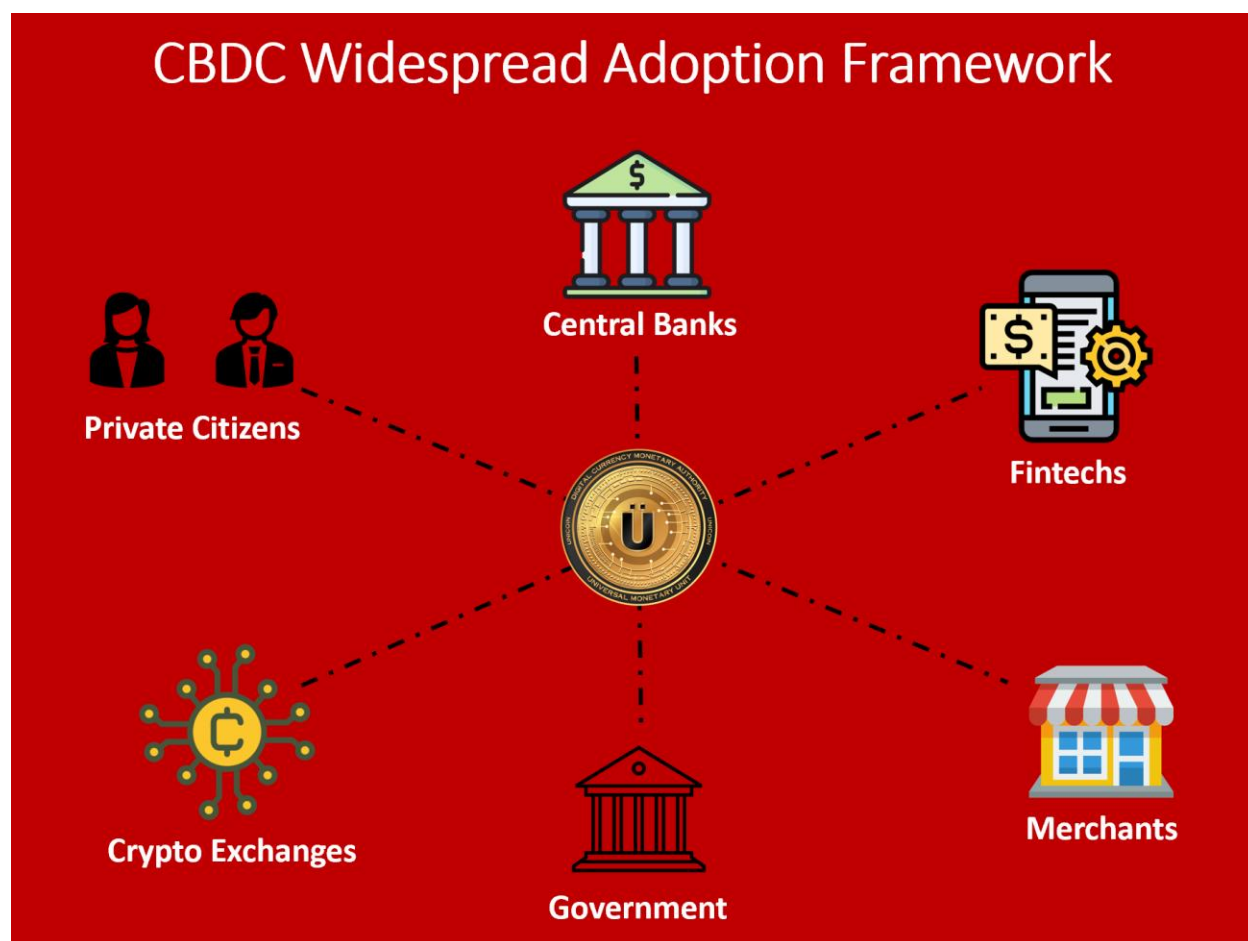


Figure 10: CBDC Widespread Adoption Framework

## Global Electronic KYC



There is a tremendous opportunity for the international monetary system to reduce fraud and global money laundering transactions through the user of global electronic KYC technology without violating any consumer protection, data privacy, and bank secrecy laws.

Imagine a global customer identification registry that is decentralized in every central banking jurisdiction so customer information is not passed out of the country and is not shared with any other bank.

This global, yet decentralized, registry would create a unique global identifier for every person and entity for every bank account opened in the international monetary system, or at least, the participating member banks.

So, if a banking customer in the United States have the same or statistically similar KYC information as banking customer in the Cayman Islands, the global KYC registry would generate the same globally unique identifier (GUID) for each customer.

Although the customer is transacting in two distinct banking systems, if both banks are members of the same CBDC network or digital economic union, the GUID will be associated with all their transactions enabling network monitoring technology to monitor customers on a global basis.

Global network monitoring of customer transactions can be achieved without sharing personally identifiable information (PII) across financial institutions.

The Unicorn Network has implemented a global electronic KYC registry for its participating members in the UMU digital economic union.

Combining global electronic KYC with artificial intelligence and machine learning is showing major promise as common avoidance patterns are more easily recognized and alerted to network monitoring systems.



## Artificial Intelligence



The banking industry is adopting artificial intelligence at an accelerated pace. Linking AI with cryptography opens even further possibilities. The DCMA leverages AI for forex and treasury management operations. We are also integrating AI into our global KYC registry and network monitoring technology.

## Tokenized Deposits



Tokenized Deposits<sup>5</sup> are a fundamental foundation to building block of a CBDC transaction network. Tokenized deposits are implemented the same as banking deposits and should fall under the same bank regulatory framework and protections for all legal tender deposits.

Cryptocurrencies and stablecoins are not tokenized deposits as they are issued and governed by private sector companies and pose a threat to the future of banking because of the outflow of capital leaving the international monetary banking system.

The banking industry views tokenized deposits as a safer solution than privately governed stablecoins.

With tokenized deposits the funds remain on the balance sheet of the depositing institution and can be monetized according for fractional reserve lending and other banking transactions.

The Unicoon Network has implemented a globally decentralized tokenized deposit mechanism where any bank can mint Unicoon on deposit or purchase transaction. The funds remain on the balance sheet of the bank and are not required to be outflowed to another bank or foreign economy like USDT or USDC.

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<sup>5</sup> [Deposit Tokens : A foundation for stable digital money by JP Morgan](#)

## Background on the International Monetary System<sup>6</sup>

The International Monetary Fund (IMF), the body responsible for monitoring the international monetary system, recognizes eight major reserve currencies: the Australian dollar, the British pound sterling, the Canadian dollar, the Chinese renminbi, the euro, the Japanese yen, the Swiss franc, and the U.S. dollar. The U.S. dollar is by far the most held reserve currency, making up more than 60 percent of global foreign exchange reserves.

Most countries want to hold their reserves in a currency with large and open financial markets, since they want to be sure that they can access their reserves in a moment of need. Central banks often hold currency in the form of government bonds, such as U.S. Treasuries. The U.S. Treasury market remains by far the world's largest and most liquid—the easiest to buy into and sell out of—bond market.

Since the end of World War II, the dollar has been the world's most important currency. It is the most held reserve currency and the most widely used currency for international trade. The centrality of the dollar to the global economy confers some benefits to the United States, including borrowing money abroad more easily and extending the reach of U.S. financial sanctions.

Factors that contribute to the dollar's dominance include its stable value, the size of the U.S. economy, and the United States' geopolitical heft. In addition, no other country has a market for its debt akin to the United States', which totals roughly \$18 trillion. "It's more helpful to think of U.S. Treasuries as the world's leading reserve asset," says CFR's Brad W. Setser. "It's hard to compete with the dollar if you don't have a market analogous to the Treasury market."

The dollar's status as the leading reserve currency has been called the "exorbitant privilege" of the United States, a phrase coined by former French Finance Minister Valéry Giscard d'Estaing in the 1960s.

Some experts warn, however, that the aggressive use of sanctions threatens dollar hegemony. After the Donald J. Trump administration unilaterally reimposed sanctions on Iran in 2018, other countries, including U.S. allies France, Germany, and the United Kingdom, began developing an alternate, dollar-free system to continue trading with Tehran. More recently, Russia and China have reduced the use of the dollar in their trade with each other.

The heightened demand for the dollar increases its value, but this comes at a cost. A stronger currency makes imports cheaper and exports more expensive, which can hurt domestic industries that sell their goods abroad and lead to job losses.

Some research has shown that the dollar's outsized role in international trade can also have negative consequences for the global economy. As a country's currency weakens, its goods exports should become cheaper and thus more competitive. But because so much trade is conducted in U.S. dollars, other countries do not always see this benefit when their currency depreciates.

The primacy of the dollar in trade and finance makes it the most attractive currency for countries to hold and therefore difficult to supplant. However, in recent years the international community has expressed the need for a new monetary commodity that could more steadily mitigate against global currency depreciation imposed by the strength of the U.S. dollar.

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<sup>6</sup> [The Dollar: The World's Currency](#)

# Universal Monetary Unit (UMU), an International CBDC

Universal Monetary Unit (UMU) is an innovation of the DCMA engineered and governed not to disrupt but to support and strengthen the international monetary system.

The foundational pillars of today's international monetary system include the strength of each country's legal tender in the international monetary system, with the U.S. Dollar being the strongest international currency, free floating exchange rates between any two legal currency pairs, and the negotiation of a central bank legal tender as a settlement currency in domestic and international trade and commerce.

In no way does the adoption and use of UMU disrupt any of these foundational elements. Mechanics of the international monetary system has continually evolved over time. UMU proposes new mechanics that would not only complement but strengthen the international monetary system in a more safe, cost-effective, and efficient manner.

**For these reasons, the DCMA prohibits UMU from being legislated as legal tender or negotiated as a settlement currency in domestic or international trade. UMU can only be used as a payment currency.**

Each government is responsible for providing legal tender and a stable and secure monetary system for their local economy. Consider each country as a vertical market and the DCMA as a horizontal market providing digital currency innovations and services across all vertical CBDCs.

Although UMU is technically engineered and governed like an international CBDC, in international law it is considered a money commodity. UMU is engineered as a payment currency to tender the equivalent value in UMU of any purchase agreement settlement currency.

UMU has monetary policies to minimize price volatility and to strengthen the monetary sovereignty of central banks and local economies. Like other commodities in the international banking system, UMU can mitigate against inflation and local currency depreciation as a reserve money commodity.

UMU is governed by an international monetary policy committee of banks and financial institutions in both advanced economies and emerging markets.

UMU is geopolitically neutral and is not favorable to any political agenda. It is the responsibility of each bank or financial institution participating in the UMU digital economic union to comply with the regulatory requirements of their jurisdiction without intervention from the DCMA.

To ensure the monetary sovereignty of central banks, UMU can only be purchased and liquidated in the local legal currency. However, once purchased, UMU can be tendered domestically and internationally to pay the equivalent value in UMU of a settlement currency invoice amount.

## A Continuous Demand Money Commodity

Underlying monetary utility is the fundamental feature that qualifies UMU as a money commodity. UMU's #1 monetary utility is offering the best foreign exchange rates for cross-border payments.

UMU guarantees the best foreign exchange rates for transacting cross-border payments.

FOREX MINUS Rates is the common business model applied to cross-border payments. Meaning, if the foreign exchange rate to send money from the United States to Mexico is 1 to 20, remitters may offer 1 to 19 to earn a 5% spread.

Leveraging artificial intelligence (AI) for forex and treasury management optimization, UMU can generally beat the most competitive foreign exchange rates by 50 to 500 basis points.



UMU's cross-border rates advantage is a monetary policy aimed at establishing UMU as a continuous demand monetary commodity.

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## A Store of Value Innovation

Universal Monetary Unit (UMU) is a money commodity engineered to mitigate legal tender currency depreciation supporting the IMF's mandate to provide economic and financial stability to its members.

UMU has a unit of account up to six decimal places, is priced based on the U.S. Dollar (USD), and subsequently priced for all national currencies based on their USD forex currency exchange rates.

UMU is a store of value innovation and can be held and can accumulate a balance. UMU can be transferred to trading partners at the value of the settlement currency forex market exchange rate.

The money symbol for UMU is the ANSI character, Ü, and can be displayed on all computing devices.

UMU guarantees its purchased price as redemption value when purchased directly from UMU and not from 3<sup>rd</sup> party exchanges.

Universal Monetary Unit is governed by monetary policies to ensure it remains in continuous demand while minimizing price volatility. Monetary policies include not using 3<sup>rd</sup> party market makers and market making UMU in-house, engaging in open market operations, establishing term purchasing incentives, and setting UMU asset pricing targets.

Unicoin supports banking tokenized deposits and functions like an international CBDC.

As the UMU guarantor, the DCMA ensures UMU against any loss of value at the time of redemption making UMU ideal for banks and trading partners to hedge against inflation.

Because UMU is both a store of value money commodity and an international payment system, the #1 use case for UMU is mitigating or even reversing local currency depreciation.

The IMF has a stated mandate to assist its member states in achieving economic and financial stability. As a strong monetary commodity, UMU also assists in this goal.

### **UMU STRENGTHENS MONETARY SOVERIGNTY**

1. Local goods and services and purchase agreements should always be negotiated in a national legal tender.
2. UMU must be purchased in the local economy's legal tender.
3. Funds from UMU purchases must remain within the local economy (No Capital Outflows).
4. UMU liquidations must be converted and paid in the local economy legal tender.
5. UMU can be converted to the equivalent value of any settlement currency at the time of payment using UMU Forex Plus exchange rates.

UMU can benefit all the stakeholders of an economy. Citizens and trading partners can purchase UMU in their local national currency to mitigate against local currency depreciation. However, at the time of purchase, they can convert and tender UMU at the equivalent local currency value.

The DCMA will transparently report to financial markets the cumulation of UMU by country. Hence, as UMU is adopted and amassed by citizens, trading partners, banks, and central banks, the total market value of UMU by country will be factored into traditional forex currency valuation models.

Because of the strength of other international reserve currencies, it is difficult for many countries and trading partners to negotiate trade agreements in their local currency.

UMU removes the friction between the East and the West on the base currency negotiated in trade.

Because UMU is always purchased in the local currency and because UMU stakeholders can liquidate to their local currency at any time, the central bank burden of managing forex currency reserves becomes more efficiently outsourced to UMU while yielding the same international monetary impact.

## Liquid and Term Purchases

UMU can be purchased as a spot buy at the current market price. Spot buys are liquid UMU and can be liquidated back to the local currency at any time.

Leveraging our multi-ledger DLT, UMU also support term purchases. A term purchases specifies a fixed period of time before UMU could be liquidated back to the local currency. UMU held in term purchases are not immediately liquid and hence are not counted in the circulating money supply.

The benefit of purchasing UMU as a term purchase is the favorable pricing over the liquid UMU price. The longer the term period the more favorable the purchase price. UMU supports the following term periods from 30 days to 30 years (1, 2, 3, 6, and 9 months); (1, 2, 3, 4, 5, 10, 15, 20, 25, and 30 years).

## Money Supply

Leveraging our multi-ledger DLT, UMU accounts for several forms of cash –

- Central Banking UMU Wholesale CBDC Balances
- Commercial Banking Wholesale CBDC Balance
- Retail CBDC (Digital Cash) Balance

The Commercial Banking CBDC balances can be further divided into term purchase ledgers.

The UMU money supply is defined and charted in the following categories –

- M0 – Central Bank UMU Purchases
- M1 – UMU Circulating Supply
- M2 – UMU locked in a 1 Year or less contract.
- M3 – UMU locked into a 10 Year or less contract.
- M4 – UMU locked into a 30 Year or less contract.

The Unicorn protocol tracks the total number of UMU locked into each term purchase and charts the number of days all UMU term purchases before they become liquid into the circulating supply.

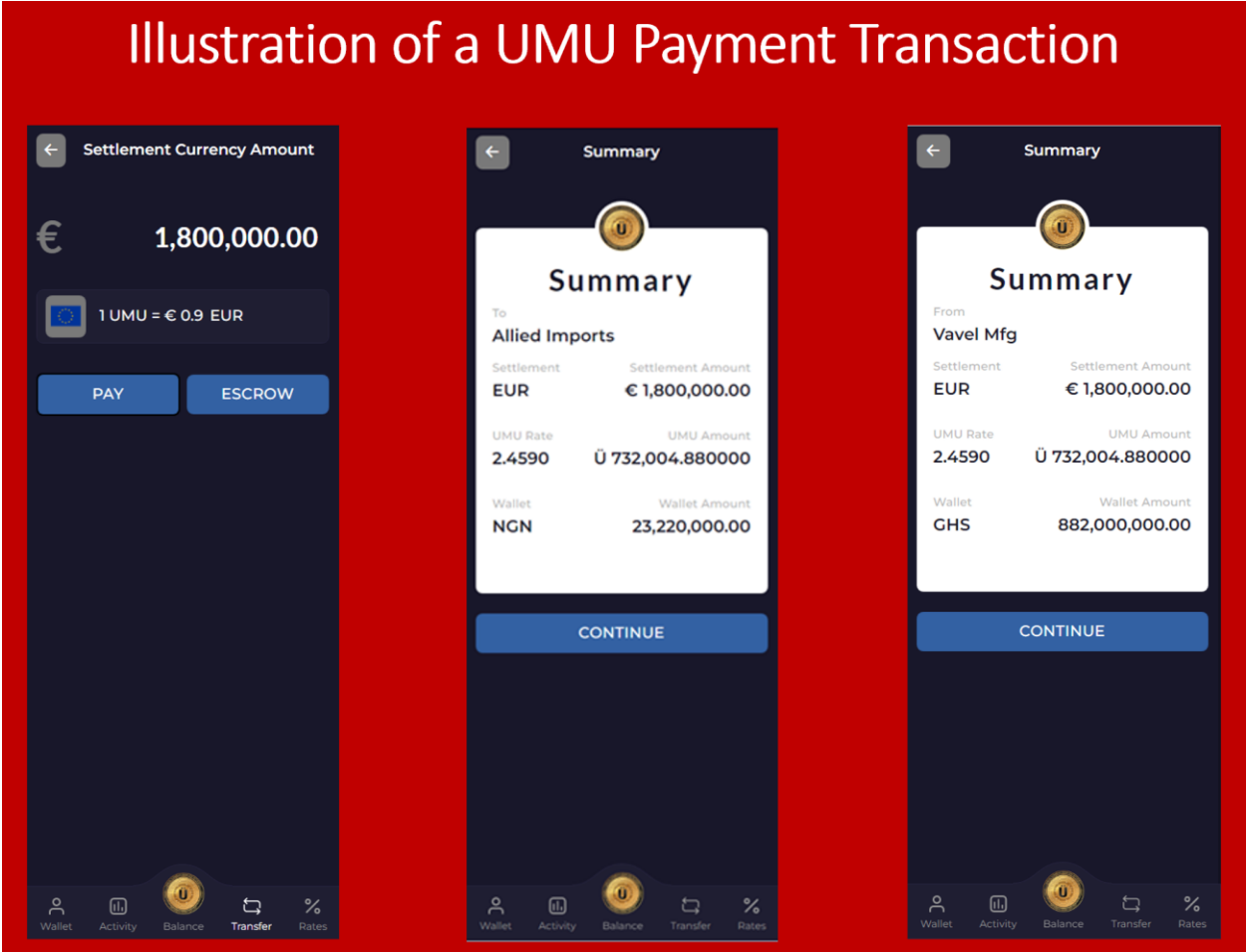
## Universal Settlement Currency Payment System

The Unicorn app can settle transactions in any national legal tender negotiated between trading partners.

For illustration purposes, let's say a Nigerian company buys commodities from Ghana and they agree to settle their transactions in Euro.

UMU is considered a Universal Monetary Unit because its value is always maintained in every national currency around the world. So, when the Nigerian company enters 1.8 million Euro to settle their purchase order, there are 2 summary pages generated. One for the buyer –

The first screen shows the 1.8 million Euro for settlement and the equivalent value in Unicoin UMU. The second screen shows the buyer how much the settlement payment is in the Nigerian Naira. On the seller side, the summary page also shows the Euro and UMU amounts with the buyer's Ghanaian Cedi amount.



**Figure 11: Illustration of a UMU Payment Transaction**

Every UMU transaction consists of up to four (4) units of account –

1. The settlement currency of the business transaction, like \$1,800,000 EUR.
2. The conversion to an equivalent UMU monetary value, like Ü 732,004 UMU.
3. The conversion from the UMU monetary value to the originator’s local currency (i.e., GHS).
4. The conversion from the UMU monetary value to the recipient’s local currency (i.e., NGN).

The above cross-border payment innovation supports the IMF crypto assets policy recommendation #9 as we have collaborated this innovation with several central and commercial banks around the world.

Because all UMU stakeholders can liquidate UMU to their local legal tender currency at any time, the above scenario is not a disruption to the existing international monetary system because it achieves the same outcome but with adopting more cost-efficient monetary system mechanisms.

In summary, UMU is a payment currency and always pays the equivalent amount of UMU for the amount due in the settlement currency.

And for convenience, all transactions show the local currency amounts of the buyer and seller.

## Universal Exchange Rates and Local Currency Balances

Currency	USD Rate	UMU Rate
UMU	1.00	1.0000
USD	1.00	1.0000
CNY	7.02	10.5272
EUR	0.95	1.4279
GBP	0.84	1.2668
INR	82.66	123.9858
JPY	137.77	206.6403
MXN	18.53	27.7877
LKR	336.00	490.0601

The U.S. dollar is the base currency for UMU. Meaning, daily, the price of UMU is updated in comparison to the U.S. dollar.

UMU also maintains global pricing by each national legal tender.

As the based price of UMU changes in U.S. dollars, subsequently all other currency prices to purchase UMU is also updated in real-time.

The Unicoin app default the display of the UMU balance in the local currency associated with the wallet. However, using the exchange rates, a stakeholder's UMU balance can be converted and displayed in all national legal tender.

## SWIFT Transfers over Digital Currency Rails

Select the type of wallet attachment.

Bank Account Mobile Number Email

Cash ID

Search Bank

SWIFT / BIC Code

ABA (American Bankers Association) f v

Bank Routing Number

Bank Account Number

CANCEL SUBMIT

In addition to the UMU public wallet address, users can attach their email, mobile, or their SWIFT bank account to the wallet. Once attached, they can send and receive money using either of these alternative wallet identifiers.

To complete a SWIFT-like transfer over the Unicoin Network, simply add a Payee to the UMU wallet using their SWIFT bank account. The network will confirm if the SWIFT bank account is attached to an existing wallet.

If confirmed, you can transfer money using their bank account and the funds will arrive in their UMU wallet.

## Wholesale UMU and Retail UMU Software Development Kit (SDK)

UMU implements both forms of societal money. Electronic cash UMU leverages our multi-functional digital ledger technology (mDLT) and enforces all applicable banking and crypto regulations.

Our physical cash UMU, also known as digital cash, functions like retail CBDC, only exists on mobile devices, and is transferred directly mobile-to-mobile without going through any financial intermediary.

Our digital cash app converts in mobile device into a cold storage hardware wallet and enable device-to-device money transfers using both Bluetooth and Near-field communications (NFC) technology.

UMU has implemented a wide adoption framework and provides the core money servicing functionality for central banks, retail and commercial banks, cryptocurrency exchanges, fintech, trading partners, commodity investors, government, and private citizens.

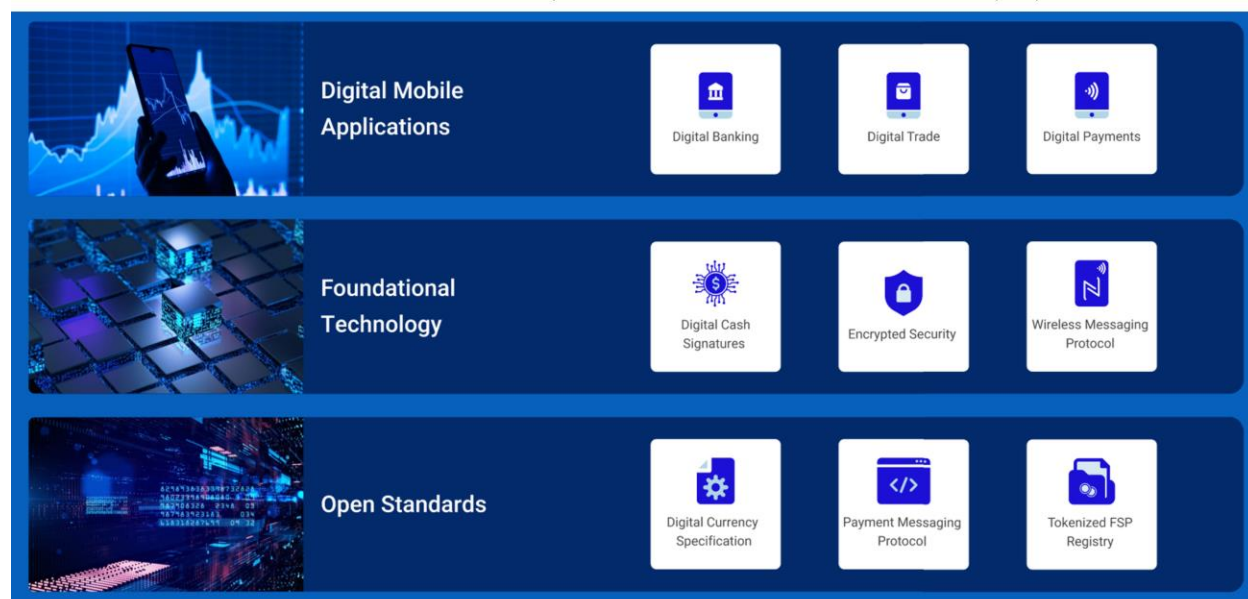
Retail UMU is codified in a standalone software development kit (SDK) and can be deployed across any public servicing payment operating system such as bus terminals and other public transit locations. The SDK can be deployed in ATM machines and any point of sale (POS) terminal.

By decoupling the user experience from the UMU money operating system, we present the below public monetary system componentized and layered architecture.

The Open Standards layer comprise a set of standards and money servicing commands available to all banks and financial institutions and users of the Unicoi Network. Leveraging the open standards, a foundational services layer is provided for security, encryption, and other wireless messaging services.

On top of the foundational layer and open money servicing standards, banks and financial institutions can build their own digital banking, digital trade, and digital payment applications.

### Unicoi Network – A CBDC Open Standards Public Monetary System



**Figure 12: Unicoi Open Standards Public Monetary System**

# Universal Monetary Unit (UMU) Monetary Policy Framework

The Digital Currency Monetary Authority (DCMA) is responsible for establishing monetary policy governing the Unicoi n money commodity. The DCMA hosts a Unicoi n monetary policy committee (UMPC) consisting of up to twelve leading economists, banking, and financial leaders around the world.

The primary goals of the UMPC are to establish a monetary policy framework for realizing Unicoi n as a continuous demand store of value and a medium of exchange cryptocurrency and to ensure Unicoi n qualifies as a cash reserve deposit currency for central banks around the world.

The Unicoi n monetary policy framework consists of four (4) parts: open market operations, cash reserve incentives, Premium cross-border FX rates, and term purchase incentives.

The UMPC currently meets on the first Monday of each month.

## Open Market Operations

The primary value of any commodity is its utility value. With money, utility is the ability to pay for goods, services, and debts as well as the ability to preserve value over a long period of time.

Because money can fluctuate based on fundamental economic factors as well as supply and demand, investors generally view money as a safer investment than traditional investments that have no underlying utility or value.

Aggressive movement in a currency price increases market volatility and lessens confidence in its stability. Highly volatile assets are viewed as speculative investments and lessens its adoptability as a true store of value or medium of exchange.

If money appreciates too fast, market participants tend to hoard it for the appreciation value, and if money depreciates too fast, market participants tend to overly spend it to minimize their loss of value.

The use of open market operations will assist in minimizing price volatility over time and should prevent Unicoi n from being traded in the same pattern of the broad cryptocurrency market.

Unicoi n open market operations will utilize a collaborating network of open market traders to buy and sell Unicoi n to stabilize any aggressive volatility that may arise in the open market.

Unicoi n open market operations will also be a strategic tool for achieving short-term and longer-term monetary policy targets and goals. The Unicoi n open market operations will deploy artificial intelligence and machine learning trading bot to assist in achieving Unicoi n monetary policy goals.

## Cash Reserve Incentives

To establish monetary value and confidence in their national currency, central bank monetary policies impose cash depository and asset value requirements. A central bank's cash reserves are an integral part of establishing their credit worthiness and ratings with global credit agencies.

In a trickledown effect, central banks also impose minimum cash reserve requirements for their member banks correlated with their total customer depository liability.

As a money commodity, Unicoi n could help central banks and their member banks meet their minimum depository requirements with less national fiat cash than would be generally required.

The UMPC monetary policy will establish specific monetary incentives for central banks and retail and commercial banks to purchase and hold Unicoïn in their cash reserves.

Unicoïn has cash reserve ledgers specifically for central banks and their member banks.

## Premium FX Rates

To stimulate continuous demand for Unicoïn, the Unicoïn protocol guarantees banks and wallet holders the best-priced cross-border FX rate market worldwide.

Central banks increase and decrease interest rates to stimulate and to contract their money supply. With Unicoïn, offering the best FX rates for cross-border money transfer should also stimulate Unicoïn demand.

Policymakers intend to achieve a cause-and-effect relationship of stimulating continuous demand for Unicoïn which would ultimately increase its asset value. Depending on the continuous demand, UMPC policymakers will determine the most effective UMU foreign exchange rates policy.

The UMU foreign exchange rates are generally priced from 0.5% to 5.0% above current forex rates.

## Term Purchase Incentives

As described in a previous section, term purchases offer incentives to buy and hold Unicoïn UMU for an extended time period before liquidating back to a legal tender currency. UMU held in term purchase agreements do not impact the circulating UMU money supply.



# A Monetary Sovereignty Model using Crypto Assets

In February 2023 the International Monetary Fund (IMF) published a press release and distributed guidance to IMF member countries on key elements of an appropriate policy response to crypto assets<sup>7</sup>.

The paper's objectives are in line with the IMF's mandate to support economic and financial stability across its membership. The paper sets forth a framework of nine elements that can help members develop a comprehensive, consistent, and coordinated policy response.

Cryptocurrency vastly gained its traction with the innovation of Bitcoin in 2008. Bitcoin is a purely peer-to-peer version of electronic cash and allows online payments to be sent directly from one party to another without going through a financial institution.

Bitcoin was design to disrupt the international monetary system by circumventing banking regulations and central bank monetary governance and oversight. This is led to the emergence of a private sector crypto industry with now thousands of cryptocurrencies offering traditional banking and financial services over distributed ledger technology (DLT) and cryptographic technology.

The Digital Currency Monetary Authority (DCMA) is the world leader in the innovation of digital currency innovations for the regulated banking industry. The DCMA has taken a complete contrarian approach to crypto than the first generation to crypto assets, hence Crypto 2.0.

Crypto 2.0 is cryptocurrency reimagined to support and strengthen the international monetary system for global banking, global trade, and global payments.

Crypto 2.0 applies the features, regulatory and compliance framework, and monetization framework of central bank digital currency (CBDC) to a money commodity, Universal Monetary Unit (UMU).

The research, assessment, and potential risks published by the IMF do not reflect any of the Crypto 2.0 digital currency innovations of the DCMA. This report is strictly in discussion of the first generation of crypto assets designed to circumvent and not support the international monetary system.

The document addresses each of the nine (9) potential crypto assets risks identified by the IMF. We explain how the DCMA's Universal Monetary Unit (UMU) does not pose any of the potential risks identified by the IMF, and will further explain how the UMU strengthens, not weakens, the economic and financial stability mandate for IMF members.

In response to the nine (9) IMF crypto assets potential risks and policy recommendations, we will demonstrate how UMU provide the following monetary sovereignty model for economies –

1. Safeguards and strengthens monetary sovereignty and economic stability of the banking system.
2. Minimizes or eliminates capital outflows from the monetary banking system.
3. Has a global tax classification status as a money commodity and does not impose fiscal risk.
4. Establishes legal certainty of UMU as a money commodity.
5. Establishes corporate and monetary governance to prevent bad actor and illicit activity.
6. Complies with domestic and international financial integrity agencies (FATF, FSB, BIS, and IMF).
7. Enables governments, central banks, and financial institutions to configure UMU to comply with their domestic banking and crypto assets regulations.
8. Measures the impact of UMU on each country's economic and financial stability.

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<sup>7</sup> [International Monetary Fund: Elements of Effective Policies for Crypto Assets](#)

9. Collaborates with governments and central banks for the research and development of crypto and other innovative solutions to improve cross-border payments and trade finance.

## An Inherent Encumbrance of the International Monetary System

Today's international monetary system is very robust and reliable. Nonetheless, as history has shown, periodic refinements in the monetary policies of the money system evolves as we learn the impacts of the current monetary policies are having on the global economic system.

National currencies trade in pairs with the U.S. dollar being the international reference currency. This pairing of currencies does not create a currency pricing model based primarily on supply and demand as in most financial instruments. There are other qualitative factors and market perceptions that drive exchange rate pricing. Many emerging market countries pay a perception premium on their FX rates.

Hence, regardless of how formidable a nation's fiscal and monetary policies, their currency is benchmarked and priced relative to and against the strength of more formidable, advanced economies.

This creates a systemic economic challenge for least developed and emerging market countries resulting in sustained local currency depreciation, higher prices on imports, and higher prices on domestic goods and services. In most cases, local labor wages are not keeping up with the sustained increases in local prices leading to higher growth rates of poverty.

In the 1960s, the United States did not have enough gold to cover the dollars in circulation outside the United States, leading to fears of a run that could wipe out U.S. gold reserves. Following failed efforts to save the system, President Richard Nixon suspended the dollar's convertibility to gold in August 1971, marking the beginning of the end of the Bretton Woods exchange rate system.

Now that the world has learned the economic strains the floating foreign exchange rate system is imposing on mainly least developed emerging markets, perhaps it is time to consider another refinement to the money system to reinforce the IMF's commitment to its economic stability mandate to member states.

Absent a monetary policy change to the foundational international monetary system, complementing the money system with a monetary commodity that could sustainably mitigate against local currency depreciation and inflation, like gold has been periodically adopted, seems to be a plausible alternative.

## CBDC Governance in a Digital Economic Union

Some economists and investment analysts advocate Bitcoin as digital gold and purport it could serve as a hedge against inflation. Bitcoin has not proven to meet this requirement because it lacks fundamental underlying monetary utility to drive sustained usage in the economy. Further, Bitcoin lacks proper governance and monetary policies that could positively impact its performance in the financial markets.

A Digital Economic Union is the perfect innovation to realizing a 'digital gold' money commodity. In a digital economic union, a monetary commodity, such as UMU, is traded as a single asset and not traded in financial markets as a currency pair against other currencies.

Contrary to the competitive nature of legal tender markets, all members of a digital economic union collaboratively aim to adopt monetary policies to ensure an international CBDC or money commodity sustains its strength and performance in the market.

A digital economic union should be politically agnostic as it is in the best interest of all participating members to create a sustainable store of value for any nation, bank, trading partner, or citizen that

purchases it. A strong and sustainable monetary commodity that complements the international monetary systems supports the IMF's mandate to provide economic stability to member states.

## DCMA RESPONSE to IMF Crypto Assets Potential Risk Factors

The international banking system is researching and developing central bank digital currency (CBDC) as a potential response to private enterprise cryptocurrencies. CBDC is legal tender of the central bank and has features that support the monetary sovereignty of central banks.

Although it does not exist in wide use today, the IMF does not consider the possibility that a digital currency or a monetary commodity could be invented to provide the same governance, economic stability, and financial risks and benefits of a CBDC.

The crypto assets risks identified by the IMF has also been vastly considered by the DCMA in our engineering of Universal Monetary Unit (UMU). The DCMA has been more than 7 years collaborating with banks and financial institutions from both advanced and emerging markets in the design of UMU.

The DCMA defines Crypto 1.0 as the first generation of crypto assets issued and governed by private enterprises intended to circumvent financial institutions and the international monetary system.

The DCMA has engineered a new generation of cryptography with monetary policies reimagined for the banking industry that supports and strengthens the international monetary system, Crypto 2.0.

In this section we respond to each of the crypto assets risk factors noted by the IMF and explain how UMU either safeguards against the stated risk or provides a solution that strengthens the international monetary system in the risk factor identified.

## Crypto Assets Potential Risks

### Macroeconomic

#### **The widespread adoption of crypto assets could threaten the effectiveness of monetary policy.**

The transmission of monetary policy would weaken if firms and households prefer to save and invest in crypto assets that are not pegged to the domestic fiat currency (IMF 2020). The risk of currency substitution ("cryptoization") is particularly pertinent for countries with unstable currencies and weak monetary frameworks. Cryptoization is more likely to be associated with the adoption of stablecoins denominated in foreign currencies which, relative to other crypto assets, can offer a less volatile alternative to the domestic currency.

The decentralized and anonymity features of certain crypto assets, which make their regulation challenging, ease their accessibility and their potential use for circumventing existing capital control measures. This may incentivize substitution to crypto assets rather than to reserve currencies like the dollar or euro, even though the latter might still represent a safer alternative to domestic currencies.

The adoption of crypto assets as official currency or legal tender may further incentivize their adoption and weaken monetary policy effectiveness.

#### **DCMA Response**

In Crypto 2.0, CBDC tokenized deposits was invented to respond to the threat of capital outflows from the banking system into privatized crypto assets. With tokenized deposits, funds tendered to acquire a crypto asset is deposited into the banking system and can be monetized and assume the same banking protections of legal tender.

UMU implements a decentralized minting protocol that enables central banks and retail and commercial banks to mint UMU as a tokenized deposit upon a customer's purchase.

UMU can only be acquired through a regulated bank or licensed financial institution and must be purchased and liquidated in the legal currency of their country.

In fact, if a country has a CBDC Real-Time Gross Settlement (RTGS) system in their economy, the UMU protocol can deposit the funds from its purchase in either the traditional or CBDC RTGS.

In other words, with UMU the proceeds from a customer purchase remains on the balance sheet of the bank or financial institution originating the purchase transaction for the customer with no risk of outflows to another financial institution or foreign currency.

This UMU acquisition policy strengthens, not weakens, the monetary sovereignty of the international banking system and does not pose the potential risks factors identified by the IMF in this section.

### **Crypto asset usage could also have implications for capital flows' volume and volatility.**

If crypto assets have lower cross-border transaction costs than existing asset classes, they may create additional incentives for investors to allocate capital across borders. Gross capital flows could increase as a result, as could capital flow volatility, given the large price volatility of unbacked tokens and the potential for herding behavior by investors across borders. Although global crypto asset trading volumes remained relatively small as compared to other financial market transactions, crypto-related capital flows could be significant for countries where local adoption of crypto assets is relatively high (Chainalysis 2022).

### **DCMA Response**

As noted in the prior question, UMU purchases can only be transacted in the local legal tender of the financial institution originating their purchase mitigating any capital outflow risk.

JP Morgan Chase describes how tokenized deposits<sup>8</sup> minimizes volatility and are for the banking system.

"With the volatility of cryptocurrencies like Bitcoin and Ether, traders often use stablecoins to park their holdings in a stable asset and make cross-border payments. The deposit tokens would cover these uses but with a blockchain-based coin that is fully integrated into the traditional banking system<sup>9</sup>."

UMU further has monetary policies aimed at minimizing pricing volatility. UMU monetary policies ensure UMU is a strong and stable monetary commodity.

Further, UMU currently has been bought and sold over a private network since 2018 with five (5) years of consistent performance of price stability and minimal volatility. If we choose to allow UMU to trade publicly, it should sustain the same results, as UMU will always publish issuer pricing on its bank wallet.

### **The adoption of crypto assets could erode the effectiveness of capital flow measures (CFMs), which may limit countries' ability to counteract capital flow volatility.**

First, crypto assets may not be covered by existing CFM laws and regulations and authorities may not have a mandate and powers to control their use.

Second, particularly for pseudonymous crypto assets, prosecution and sanctioning may be difficult.

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<sup>8</sup> [JP Morgan Chase Tokenized Deposits](#)

<sup>9</sup> [Stablecoins under threat](#)

Third, crypto asset trades may not involve any intermediaries or service providers that can be held responsible to comply with CFM laws and regulations and that can verify the identities of transacting parties and the nature of transactions.

Lastly, crypto asset service providers might not be regulated. As existing CFM regulations are typically enforced through regulated entities, this limits their effectiveness (He et al. 2022).

### **DCMA Response**

CFMs are defined as measures that are designed to limit capital flows<sup>10</sup>. CFMs comprise two types of measures: (i) residency-based measures, which are measures affecting cross-border financial activity that discriminate on the basis of residency (i.e., between residents and nonresidents); and (ii) other CFMs, which are measures that do not discriminate by residency but are nonetheless designed to limit capital flows. CFM/MPMs are measures that are designed to limit capital flows and to reduce systemic financial risks stemming from such flows.

With UMU, all customers must be onboarded through a Know-Your-Customer (KYC) process. Before any wallet can be activated, the user's local legal tender currency must be validated and attached to their UMU wallet. Currently, the local wallet country is validated through verification of their mobile phone.

The mobile phone validation process establishes the wallet's default legal residency but can be overwritten. This feature enables banks can monitor and track cross-border financial activity or cash flow measures according to the basis of residency.

### **A potential rapid proliferation of crypto assets can affect the international monetary system.**

Crypto assets, as noted, have been mostly held in the hope that prices will rise, with only limited use as a medium of exchange.

The strong correlations between payment currency and reserve currency shares suggests that the adoption of crypto asset for payment purposes might eventually lead to a demand for crypto asset reserves. However, a significant increase in crypto efficiency and payment usage would be necessary before we see a material change in the existing reserve configuration. Illustrative network-model analysis suggests that crypto asset induced shocks could result in substantial reserve losses across the international monetary system, leading to increased demand for Global Financial Safety Net resources.

### **DCMA Response**

These statements are applicable to Crypto 1.0 assets which are primarily speculative securities. However, UMU is designed as a true stable monetary commodity that is suitable for store of value and as a medium of exchange. Because of UMU monetary policies it has minimal volatility and is guaranteed by the issuer on its value redemption when purchased directly from UMU and not a 3<sup>rd</sup> party exchange.

### **The spread of crypto assets can increase fiscal risks for public finances.**

New fiscal risks can arise from the financial sector's exposure to the crypto assets ecosystem, the lack of clarity of tax regimes, and the extra-territorial nature of crypto assets. The wide adoption of crypto assets in a weakly regulated environment could increase the likelihood of facing explicit and implicit fiscal risks from the financial sector. In turn, crypto assets, particularly if pseudonymous, can affect tax revenue collection and compliance, even when not adopted as legal tender. The use of withholding taxes and third-party information is challenging for crypto assets. Decentralized peer-to-peer (P2P) activities increase the reliance on voluntary compliance and self-reporting. Even if supervised institutions are required to report

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<sup>10</sup> [IMF Capital Flow Management Measures](#)

crypto-related activities to tax authorities, some institutions may fall outside of the scope of such regulations (e.g., because they are still unregulated or reside abroad).

### DCMA Response

The DCMA Unicorn Network protocol for the UMU monetary commodity is a permissioned network and is not pseudonymous or fully decentralized without centralized oversight and monetary controls.

UMU can only be purchased and transacted through a financial service provider (FSP) which includes a regulated bank or a licensed fintech responsible for withholding taxes, compliance, and reporting.

UMU as a money commodity is regulated by the U.S. Commodity Futures and Trade Commission (CFTC). CFTC rules and regulations are published, clear, and widely known throughout the world.

### Granting a crypto asset official currency or legal tender status has far-reaching consequences for monetary stability.

If a crypto asset were granted official currency or legal tender status, creditors would be required to accept it in payment of monetary obligations, including taxes, like notes and coins (currency) issued by the central bank. Governments can also enact legislation to encourage the use of crypto assets as an official currency, serving as both a unit of account for monetary obligations and a mandatory means of payment for everyday purchases. But there are consequences. If goods and services are priced in both an official currency and a crypto asset, households and businesses would spend significant time and resources choosing which money to hold as opposed to engaging in productive activities. And domestic prices could become highly unstable. Even if all prices were quoted in, say, Bitcoin, the prices of imported goods and services would still fluctuate massively, following the whims of market valuations.

### DCMA Response

If goods and services were negotiated in cryptocurrency, it would disrupt to the international monetary system. For this reason, the DCMA has prohibited UMU to be issued as legal tender or official currency in any jurisdiction. The DCMA could ban any country that legislates UMU as legal tender.

Having said this, it is not clear every country has the same definition of legal tender and official currency.

The DCMA views legal tender of the official tender of a jurisdiction guaranteed by the central bank of said jurisdiction. Cryptocurrencies are issued by private sector enterprises and are legislated by the executive branch of government. Hence, the DCMA views official currency legislated, not by the central bank, but by the executive branch or political parties.

Given the definitions of legal tender and official currency may differ by jurisdiction, the DCMA has prohibited the use of UMU in a manner that would potentially disrupt the monetary system –

- UMU is prohibited from being enacted a legal tender by any government.
- UMU cannot perform the role of a national settlement currency, but only as a payment currency.
- UMU settlements must convert at the forex foreign exchange rates at the time of payment.
- UMU must be purchased in the national legal tender with funds remaining in the local economy.
- UMU must be liquidated back to the local currency tendered to purchase UMU.
- Each country's cumulative UMU balance must be transparent to financial markets for disclosing the local currency liquidation value held in UMU and for inclusion in local currency valuation.

The above monetary policies not only support but strengthens the international monetary system and only proposes new mechanics for how cross-border transfer works to mitigate against local currency depreciation achieving the IMF's mandate for a stable economic and financial system for its members.

UMU is a payment money commodity. Meaning, UMU can pay the equivalent value of a price specified in a settlement currency at the prevailing market exchange rate at the time of payment.

### **Granting a crypto asset official currency or legal tender would also amplify fiscal risks.**

If a crypto asset that is not pegged to the domestic fiat currency, or whose peg may not be sustainable, is adopted as an official currency or granted legal tender status, government revenues may be exposed to exchange rate risk if taxes or non-tax revenues are quoted in advance in a crypto asset while expenditures are primarily made in the local currency.

Moreover, contingent liabilities arise if convertibility to fiat currency is guaranteed by the government. and if the operationalization of such convertibility is through the establishment of public digital e-wallets and trust funds held in public development banks.

In addition, the adoption of a crypto asset as official currency or legal tender could affect a government's social policy objectives, particularly for unbacked tokens, as their high price volatility could affect poor households more. The adoption of a crypto asset as a legal tender, which would allow the government to use it as a means of payments, could also significantly impact public financial management.

Finally, taxpayers may be able to gain a tax advantage where the application of tax laws to crypto asset transactions is uncertain or otherwise incomplete. The risk of tax avoidance and evasion is heightened in the case of cross border transactions due to potential differences in classification of crypto assets by different jurisdictions.

### **DCMA Response**

None of the above stated potential risk factors are applicable to UMU.

First, UMU is the guarantor of all direct UMU purchases not the government or central bank. Since UMU is prohibited from being enacted as legal tender, it does not pose any threats to the international monetary system.

The tax laws for commodity gains, if applicable, are prevalent in virtually every jurisdiction worldwide. UMU does not impose any heightened tax avoidance or evasion more than the general market at large.

### **Granting a crypto asset official currency or legal tender status could raise significant macro-critical legal issues.**

Legal tender status requires that a means of payment be widely accessible. However, internet access and technology needed to transfer crypto assets remains scarce in many countries, raising issues about fairness and financial inclusion. Moreover, the official monetary unit must be sufficiently stable in value to facilitate its use for medium- to long-term monetary obligations. And changes to a country's legal tender status and monetary unit typically require complex and widespread changes to monetary law to avoid creating a disjointed legal system.

### **DCMA Response**

UMU solves all the potential risk factors identified above.

A smartphone and internet access are not required to own a UMU wallet and conduct monetary transactions. UMU supports both peer-to-peer money transfer over the internet (electronic cash) or point-to-point mobile money transfer using Bluetooth or NFC (digital cash) achieving widespread financial inclusion.

The monetary policies of UMU ensure it is a strong and stable continuous demand monetary system.



## Financial Stability

### Unbacked tokens and stablecoins without credible backing may pose financial stability risks.

Sharp declines in crypto asset prices can have large negative effects on the balance sheets of investors. Financial institutions may hold crypto assets directly to pursue trading, custodial, or market-making activities. They may also be exposed to crypto asset volatility indirectly if they provide credit or other financial services to crypto asset trading platforms and wallet providers, institutional or retail investors in crypto assets, or if they accept crypto assets as collateral for lending. Moreover, a rapid adoption of crypto assets may pose financial stability and credit provision concerns due to changes in bank funding models. Spillovers may materialize if financial institutions are closely connected.

### DCMA Response

Most national legal tender are fiat exchange rate currencies with fractional reserve policies less than ten percent (10%). UMU has a fractional reserve policy of over ninety percent (90%). Because of the high cash reserve ratio of UMU to underlying cash a rapid adoption of UMU purchasing or liquidation pose minimal to no financial risk to the stability of UMU.

### Some forms of crypto assets come with risks to ecosystem governance.

DLT allows for governance rights to be decentralized through governance tokens (Aramonte et al. 2021). As governance tokens are traded on the market, an attacker who gathers enough voting rights may impose policies that allow him or her to drain funds from users (Wharton 2021). Due to the current lack of regulation, the draining of funds is currently not penalized.

This raises several macro-critical issues. For unbacked crypto assets, how can monetary obligations be expressed in a monetary unit with high volatility? For private stablecoins, what would be the effect on the discharge of monetary debt when the stablecoin is delivered in payment and its market value is “below par”? And what happens with debt discharge if the stablecoin subsequently ceases to exist?

Banks typically rely on retail depositors to fund their operations. If crypto adoption rises, banks might have to pay higher rates on deposits or see their funding shift from stable, low-cost deposits to more expensive, less stable wholesale funding. Banks might respond by taking on greater risks to support profits.

### DCMA Response

Neither of the above potential risk scenarios are applicable to UMU.

First, UMU has anti-whale monetary policy provisions and would prevent any single actor or entity from having any notable influence or control over the UMU monetary system. Depending on the size of the UMU purchase, large purchases must be made in longer-term purchase agreements.

UMU Term purchases establish a holding period for which UMU could not be sold or liquidated. Term purchases could however be sold to another party to continue the term purchase.

### Crypto asset platforms with an open architecture could be subject to significant cyber risks as they allow anyone to create malicious protocols or protocols with bugs (errors).

Anyone can create open DLT applications in an unregulated manner. Even when the code is publicly available, its complexity means that many applications with bugs become widely used before the bug is discovered. Users have financial incentives to take advantage of bugs at the expense of others rather than report them. Accessing crypto assets through self-custody wallets creates the additional risk of password loss. By their nature, combined with a lack of regulation, recourse is not possible.



### DCMA Response

The open architecture risk discussed in this section is not applicable to UMU and the Unicoin Network because our source code is not open and available to the public. The DCMA is open to having selected financial institutions like the IMF audit our source code by a 3<sup>rd</sup> party to ensure its safety and integrity.

## Financial Integrity

**Due to their pseudonymous nature, crypto assets can be attractive to criminals, raising financial integrity risks.**

Although in most DLT networks transactions are public and therefore visible, linking an address or wallet to an individual can be challenging. While the value of crypto assets involved in most criminal cases detected so far has been relatively small compared to those using traditional financial products and services, some known cases of misuse involve relatively large amounts (FATF 2021). Crypto assets can be misused to commit a range of crimes (e.g., fraud, theft, tax evasion, and terrorist financing) and launder the proceeds of these or other crimes (e.g., corruption). Alnasaa et al. (2022) find that crypto asset usage is significantly and positively associated with higher perceptions of corruption.

### DCMA Response

As cited above the evidence of fraud related to cryptocurrency is less than that measured in the traditional banking and financial systems. All industries are subject to bad actors and fraud. There is no substantial evidence crypto attracts a greater allocation than any other financial services industry.

## Legal Risks

**The legal classification of crypto assets and the application of existing rules to them pose significant challenges, leading to uncertainty and potential legal risks.**

In particular, uncertainties in the application of private laws (e.g., insolvency law) could result in the parties to a crypto asset arrangement facing different risks than those envisaged at the time of the transaction.

For example, holders of crypto assets could face the risk of having their rights recharacterized as unsecured personal claims instead of proprietary rights in the event of the insolvency of an intermediary. This could give rise to financial instability if it occurs on a large scale. If not clearly included in existing financial law classifications, a crypto asset may fall entirely or partially outside the regulatory framework, leading to regulatory arbitrage or inadequate handling of financial stability risks. These uncertainties may also expose the private sector to the risk of unpredictable supervisory actions, curbing financial innovation, while exposing the regulatory authorities to the risk of successful legal challenges due to a broad interpretation of their mandates. Finally, legal risks, including conflict of law challenges, are heightened in cross-border transactions due to differences in legal classification and treatment of crypto assets across jurisdictions.

### DCMA Response

UMU has a definitive and extensive monetary utility and qualifies as a money commodity by the United States Commodities and Futures Trade Commission (CFTC). Commodities laws are well established worldwide and do not pose any significant risk in understanding how to financially record and report commodity investments and trades.

## Consumer Protection

**Consumer protection risks arise when consumers and investors are unaware or do not fully comprehend the risks associated with crypto assets.**

Risks to consumers stem from inadequate governance, opaque decision-making processes, and limited recourse when there is insufficient regulation. Consumer protection risks may also arise from price volatility, fraud, or cyber-attacks.

The filing for bankruptcy protection in November 2022 by FTX, a major crypto exchange, revealed risky investments, inadequate governance, and opaque corporate interlinkages. The run on FTX exerted significant spillovers on major crypto assets and impacted decentralized finance and stablecoin markets, ultimately impacting investors (Figures 3 and 4). Similarly, the fallout of the third largest stablecoin, TerraUSD (UST), in May 2022 highlighted significant risks to investors. The stablecoin experienced significant redemptions culminating in the breakdown of the entire Terra ecosystem.

### DCMA Response

The above risk is not applicable to UMU which has well documented monetary policy governance and corporate governance. UMU operates under well-established commodities laws worldwide.

## Market Integrity and Contestability

**Crypto assets can suffer from market contestability issues.**

Permissionless crypto assets' scalability constraints may cause congestion, leading to high transaction costs and fragmentation (BIS 2022). The presence of multiple blockchains may generate interoperability problems. Instead, for permissioned DLT, the value of networks and returns to scale make the market prone to concentration risks and market power.

Permissioned platforms, including for digital currencies issued by "big techs," could use their networks to shut out competitors and monetize information, using proprietary data on customer transactions.

### DCMA Response

Neither of the above permissionless or permissioned blockchain risks are applicable to UMU.

First, UMU is not a permissionless blockchain but a permissioned network governed by the international monetary system of central banks. It is the intent to always elect banking officials to govern the UMU monetary system in to support and strengthen the international monetary system.

**Crypto assets are also prone to manipulation and therefore to fraud and market integrity risks.**

In permissionless DLT, users can set the fees of their own transactions to rank higher or lower in the settlement queue and obtain financial gains. Large validators could congest the blockchain with artificial trades (Bains 2022), raising the fees that other users pay them (Aramonte, Huang, and Schrimpf 2021). Moreover, illiquidity of certain exchanges or crypto assets may facilitate price manipulations - to trigger liquidations and purchase liquidated collateral at a discounted price or short the collateral asset (Werner et al. 2021).

### DCMA Response

None of the above risk factors are applicable to UMU. UMU is a permissioned network with only appointed in-house market makers engaging in open market operations based on DCMA's governance and with monetary policies and controls to prevent price manipulation and other risks cited.

**Additional risks inherent to some forms of crypto assets include uncertainty in payment finality and environmental risks.**

Many types of consensus mechanisms that underpin public blockchains can only deliver probabilistic settlement due to the possibility of forks in the blockchain, which might cancel earlier transactions (Bains 2022). In addition, crypto assets based on proof-of-work consensus mechanisms are highly energy intensive and generate large amounts of e-waste (De Vries and Stoll 2021).

**DCMA Response**

None of the risk factors identified above are applicable to UMU. UMU has innovated it’s own energy efficient consensus protocol, Staked Proof of Trust (SPOT) Protocol. It cannot be forked, is the fastest consensus algorithm available for cryptographic networks, and is the most energy efficient as well because with SPOT ‘no response’ is a confirmation response in confirming and validating transactions.

**Annex I. Classification of the Crypto Asset Ecosystem**

	CRYPTO ASSETS			
	UNBACKED TOKENS	STABLECOINS	OTHER	
Characteristic		Includes algorithmic stablecoins	Utility tokens	Security tokens
Privately issued?	✓	✓	✓	✓
Deployed on distributed ledger technology?				
Pseudonymous? <sup>60</sup>				
Centralized (known issuer) or decentralized issuance?	Usually decentralized	Centralized or decentralized	Usually centralized	Usually centralized
Claim or no claim on the issuer?	No claim	Depends on design	Depends on design	Depends on design
Redemption pledge (at face value)?	None	Fixed/variable	None <sup>61</sup>	None (equity instruments) Fixed (debt instruments)
Backed assets?	No backing assets	Safe or varied Collateralized (off chain) assets (e.g., fiat, commodity, commercial paper) or uncollateralized but could be backed (on chain crypto assets)	N/A	Can represent real world securities
Stable or volatile price?	Volatile	Dampened price volatility  (fluctuates around peg; de-pegs likely)	N/A	N/A

# UMU – A Monetary Commodity Crypto Asset

UMU is a monetary commodity crypto asset and is not defined in the above classification of crypto assets chart defined by the IMF and does not pose a threat to the international monetary system as Unbacked Tokens, Stablecoins, and other tokens as defined above.

UMU is a continuous demand monetary system with a guarantor of its redemption value with a high ratio cash reserve for greater than any fractional reserve requirements of commercial banks.

As a continuous demand monetary system, the value propositions for adopting UMU are mitigating against local currency depreciation, making cross-border payments faster and most cost-efficient, and enabling a more open, safe, and stable economic and financial international monetary system.

## Conclusion

Crypto assets, digital currencies, and CBDCs all have tremendous promise in the future of banking and financial services. However, the banking industry must reimagine crypto assets for banking and not merely attempt to replicate crypto assets to meet current traditional banking features.

Although the advent of crypto assets should not disrupt the central banking international monetary system, the protection of global correspondent banking is a totally different scenario.

Global commercial and retail banks are private enterprises and can be disrupted like any other private enterprise that does not sustain their value in the marketplace. The correspondent banking industry has been slow, costly, and inefficient for decades. If correspondent banking does not embrace the future of digital money in a way to vastly improve global money services, they may soon become obsolete.

The IMF assumes that all crypto assets pose a risk to the international monetary system. The IMF does not consider, there could be a class of digital currency innovations designed to enhance the safety and stability of the international monetary system.

The IMF also needs to accept the reality some governments and central banks within the international monetary system have totally lost of trust of their citizens due to a history of corruption and poor fiscal and monetary policies. These countries generally have the weakest currencies, and their citizens view crypto assets as a potential alternative for storing their money.

Central bank digital currency (CBDC), which is merely a digital form of a country's legal tender, is not going to solve economic challenges of a weak currency, and citizens will continue seeking monetary safekeeping alternatives.

Central banks and retail and commercial banks often hold financial instruments and commodities in lieu of treasuries to manage risk, to generate income, and to support financial stability. UMU has been designed as a money commodity reserve currency to satisfy these desired outcomes.

Instead of totally discrediting an entire class of cryptographic innovations, the IMF should also consider an offensive crypto assets strategy, and outline what features in money commodities could be of value to the international monetary system if invented or implemented.

If gold and bonds have a place in the international monetary system, surely there is a niche of monetary cryptographic assets that could also have a benefit to the global banking system.

It should be of strategic importance to the IMF to have at least one cryptographic monetary commodity working in alignment with the goals and policies of the IMF even if operating under a different set of monetary mechanics.

The DCMA invites the IMF to learn more about Universal Monetary Unit (UMU), consider joining as an Observer member and collaborating with us to refine UMU even further to support and strengthen the international monetary system.

## About the Author, Darrell Hubbard

Darrell Hubbard has an exceptional record of achievement in Computer Science and Information Technology. He entered college at age 16; received his bachelor's in computer information systems at the age of 18 from North Carolina Wesleyan College; and received his master's in computer science at the age of 19 from North Carolina State University (NCSU).

Darrell taught college level computer accounting at a community college at the age of 17 and started his career as a Chief Architect at AT&T Bell Laboratories.

He served as a member of the National Institute of Science and Technology (NIST) during its release of TCP/IP, known as the Internet. He was appointed as a US Expert in the American National Standards Institute (ANSI) and elected as a Chairperson within the International Standards Organization (ISO).

Darrell has over 25 years of high-technology and financial technology experience serving as the Head of Financial Management Architect at AT&T and consulting for leading corporations in America. His clients include Fannie Mae, Northern Trust Bank, Huntington Bank, Ameritrade, Coinstar Money Transfer, Amgen, Warner Bros., Toyota, Sony Pictures, Screen Actors Guild (SAG), Philips Healthcare, McKesson, Kiewit, Ansys, Ferguson, Oracle, HP, Dell, and others.

Over the past ten years he has dedicated his talents to Distributed Ledger Technology (DLT) and digital currencies. Darrell has collaborated with or completed projects for the European Union<sup>11</sup>, the Korean Government<sup>12</sup>, and other central banks around the world.

His work is featured by the European Commission and the World Economic Forum<sup>13</sup>. In 2018, Darrell was inducted into the Computer Science Alumni Hall of Fame at North Carolina State University (NCSU),<sup>14</sup> and has been appointed as a Strategic Advisory Board Member for the NCSU Computer Science Department<sup>15</sup>.

Darrell graduated with an MBA from Harvard University.

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<sup>11</sup> [EU-Funded Research ignites Yetta: A Next Generation Blockchain Currency for the Smart Economy](#)

<sup>12</sup> [South Korea Smart City Initiative](#)

<sup>13</sup> [Blockchain is facing a backlash. Can it survive?](#)

<sup>14</sup> [NCSU 2018 Computer Science Hall of Fame Inductees](#)

<sup>15</sup> [NCSU Strategic Advisory Board Member](#)