# DigitalBits

## The Blockchain for Brands

DigitalBits is a protocol layer blockchain built to support consumer digital assets, specifically branded currencies. With a focus on mainstream crypto adoption, DigitalBits aims to solve a real world problem by integrating with consumer brands and applications.

## Branded Currencies Today

Many branded currencies have been effective in driving consumer engagement for the past 30 years. Consumers are rewarded in the form of points, credits, cashback, or other forms of rewards. However, many of these reward programs are filled with friction for brands and consumers.

## The Problem

### Issues faced by consumers

- Points systems are fragmented and redemption processes are often confusing for consumers, resulting in lack of engagement.
- Over $50 billion points are generated annually in the U.S alone, with approximately $16.6 billion never used - partially because programs operate in silos, restricting the movement of value.
- Programs may not communicate with one another and cross-program value transfer is difficult to impossible.
- Changing rules and requirements make the redemption process difficult and frustrating.
- Assets lack perceived value from the inability to spend - doesn't feel like real cash value.

### Issues faced by brands

- Large brands are losing consumer engagement with complicated, fragmented points systems.
- D2C marketing has placed large pressure on CPG (consumer packaged goods) brands to re-engage with their consumer due to the lack of direct insight.
- Programs are subject to high initiation and maintenance costs.
- Underlying program infrastructure is not conducive to joint alliances, making it difficult for programs to integrate with one another.

## The DigitalBits Solution

### The Power of a Branded Cryptocurrency

DigitalBits serves as the protocol layer for the creation of branded cryptocurrencies and other tokenized assets. Brands will be able to launch their own currency on-chain. In some cases, they may resemble stablecoins and be able to connect with the consumer in a more interactive way. Branded cryptocurrencies are designed to support heightened levels of consumer engagement, market intelligence, and overall value that people can spend everyday! (ref. 1, 2)

## Core Benefits of a Blockchain Solution

- Ability to launch a branded stablecoin which represents real world value, which may be spent anywhere, not just with the issuing brand.
- Ability to re-engage the consumer through understanding transactional behaviour.
- Tap into existing applications and deploy crypto-assets without changing learned behaviour.
- Ability to engage directly with the brand for promotions tailored to the user, removing the retailer in some cases.
- Ability for programs to easily create alliances and commerce on one network - creating a standard for brands across the world.
- Network effect increases connectivity with brands, merchants, consumers and payment providers.

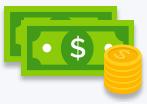
## Branded Stablecoin Features

As brands explore the use of their own native currency, branded stablecoins have gained recent traction with the advent of Facebook's Libra Project and Walmart's stablecoin patent. The use of this new asset class helps to provide better insight that will allow brands to better serve their consumers. (ref. 3)

Branded stablecoins are a subset of branded cryptocurrencies

- **Insight** - Brands possess knowledge of consumer spending habits and can therefore adapt to serve them better.
- **Targeting** - Offerings can be tailored with the consumer in mind, creating the ability to re-engage them after purchase, creating a more holistic approach to promotions.
- **Experience** - Consumers benefit by utilizing existing applications and point-of-sale devices, leaving learned behaviour unchanged, and improving the experience with seamless integration.

### Cash



- Established, liquid, and widely accepted
- Unit of account, store of value, medium of exchange
- The use of cash and fiat currencies is second nature for many people worldwide, allowing them to easily engage in financial activities.

### Generation 1: Stablecoins

- Volatily is a large barrier to adoption for most cryptocurrencies, as it prevents them from fulfilling 2 of the 3 requirements of good money: a store of value and a unit of account.
- Stablecoins combine the stability associated with certain fiat currencies such as the US dollar, with the benefits of blockchain technology.
- Demand for stablecoins is growing - from projects such as Libra to the development of Central Bank Digital Currencies.

### Generation 2: Branded Stablecoins

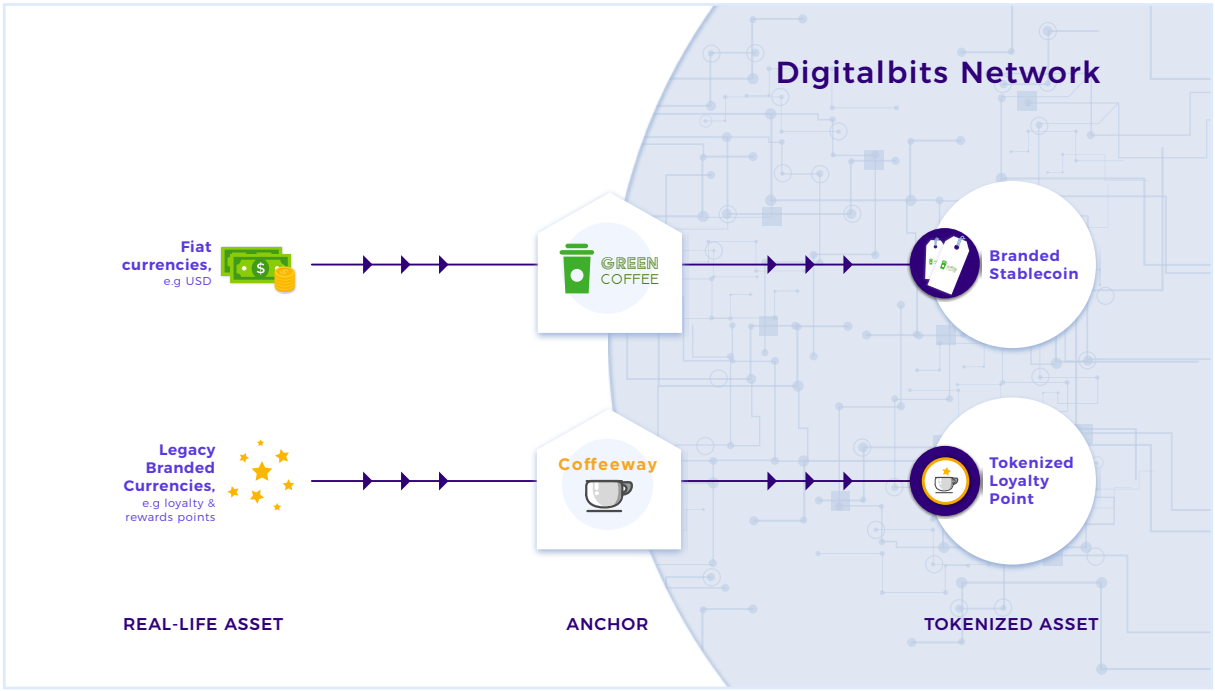
- Heightened levels of marketing intelligence extending past the point-of-sale.
- Higher perceived value for the consumer as the asset is backed by real dollars, as opposed to traditional branded currencies that stand as IOU's (loyalty points and rewards).
- Consumers are able to spend value much like cash, as opposed to being restricted to certain retailers.
- Direct engagement with the brand for future incentives, promotions and loyalty features built directly into the customer experience for unparalleled convenience and simplicity.
- Easier integration, utilizing existing hardware solutions already operating in stores. Brands, merchants and consumers will be able to engage with blockchain technology without significant changes to learned behaviour, allowing for the easy consumption of technology.

A branded stablecoin is a subset of branded cryptocurrencies, backed by realizable value, such as the US dollar. Considered the 2nd generation of stablecoins, branded stablecoins move past simply combining stability with blockchain technology, to enhancing the relationship that exists between consumers and brands.

## DigitalBits Value Proposition

### Creation of Branded Cryptocurrencies

Support the creation and launch of branded cryptocurrencies for specific companies through ecosystem partners. Each account created on the network will require a minimum amount of XDB to become active. As the number of accounts and assets on-chain increases, so does the inherent demand for XDB (ref. Token Utility). The DigitalBits network supports lightweight integration for enterprises to support their use-cases (ref. Consensus Mechanism).




### A Network Layer for the Points Economy

DigitalBits may serve as the network layer to tokenize new and existing programs (points, rewards, credits etc.), supporting the seamless interaction between native and non-native assets within the same industry category. This enhances network effects within brand ecosystems, facilitating cross-program value transfer (ref. Multi-Hop). Brands and consumers may benefit from alliances that can easily communicate via a common network.

## Enterprise Go-to-Market Strategy

DigitalBits has engaged an enterprise go-to-market strategy in seeking to close the gap between blockchain technology and mainstream adoption. Leveraging enterprises enables the opportunity to take advantage of existing communities and infrastructure - with the potential to move millions of accounts on-chain within a short period of time. By porting entire programs onto the blockchain, brands are able to retain consumer engagement and exposure. Integrating directly with existing applications simplifies both enterprise and consumer adoption - optimizing the application back-end infrastructure, while allowing for the easy consumption of technology without altering learned behaviour.

# Technical

## Enhanced Open-Source Protocol

Forked from the Stellar protocol in 2017, DigitalBits is a purpose-built blockchain which introduces key modifications specific to supporting the industry of consumer digital assets. (ref. 7)

## Core Features & Improvements

- **Multi-Hop**: multi-hop technology enables on-chain trades to be completed up to 6-intermediary hops, thereby enabling the potential to enhance liquidity and bring consumer assets closer to the form of digital cash. (ref. 4)
- **TNCS**: Token Name Certification Service. TNCS will confirm the authenticity of token issuers. This is to ensure that malicious entities do not issue tokens representing brands/companies that they are not associated with. (ref. 5)
- **Algo-Pool**: Algorithmic token distribution of a certain reserve will reward users automatically for transactional usage of the blockchain based on 4-parallel algorithms. TNCS and Algo-Pool are planned for launch in 2020. (ref. 6)
- **Non-Inflationary**: Native token, XDB, is not subject to inflation, with a fixed total supply.

## Multi-Hop - Enhancing Liquidity for On-chain Assets

DigitalBits utilizes multi-hop technology to further support the potential for on-chain asset liquidity. Multi-hop enables the potential for trades to be completed up to 6-intermediary hops, in the absence of a direct market. This amalgamates all other order pairings within the ecosystem in such a case, to ultimately satisfy the initial trade.

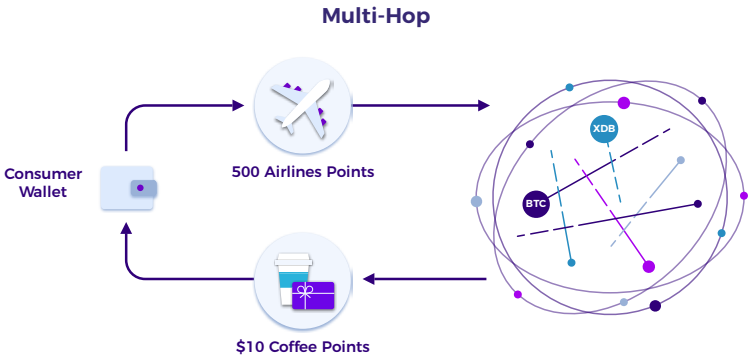
### Decentralized Multi-Hop Trading

#### Matchmaking

Users create an offer to buy/sell an asset. In order to make an offer, the account must hold the asset the user wishes to sell. The user must also have a trustline set up with the asset issuer. The offer is checked against the existing order book for that asset pair. If the offer crosses an existing offer, it is filled at the price of the existing offer. If not the offer is saved in the orderbook until it is taken by another offer, taken by a payment, cancelled by the account that created the offer, or invalidated because the account that made the offer no longer has the asset for sale.

#### Cross-Asset Multi-Hop Payments

Multi-hop technology enables the ability for tokens to have higher liquidity, even if no direct market exists. For example, if assets are up to 6 hops apart, this technology makes it possible for automatic trading across intermediate order books of other asset pairings in order to fill the user's intended trade. Since cross-asset payments and conversions are simple and seamless, users are not required to hold any unwanted assets just for payment purposes. Instead, they can hold their preferred assets, only converting if necessary. The DigitalBits protocol thereby creates the potential for an ecosystem where users only need to transfer tokens at the point-of-sale. Users could, for example, choose to keep their favourite tokens, transferring small amounts as needed, such as when an alternative token is required.

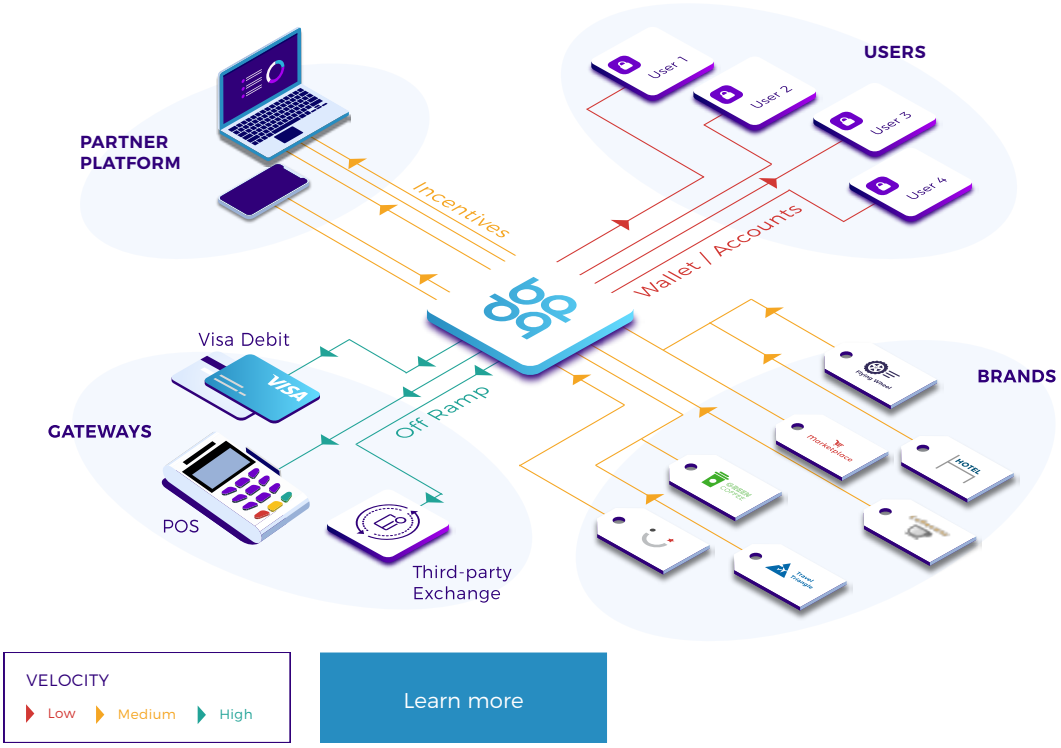



## Token (XDB)

### Token Utility

1. **Authenticate/Open Accounts**: A protective security feature known as anti-spam requires every account on the DigitalBits blockchain to stake a minimum of 10 XDB. This ensures authenticity and enables the account to send outgoing transactions.
2. **Bridge Token**: Enables transactions among non-native tokens - XDB has the potential to operate as a bridge currency to facilitate trades between pairs of digital assets that may not have a large direct market.
3. **Gas/Transaction Fees**: Each transaction is subject to a minor transaction fee of 100 nibs (0.00001 XDB). A second anti-spam feature, this fee creates a financial disincentive for malicious users that may look to flood the network.
4. **Low-cost payments**: Leveraged for fast and low-cost payments and remittances - up to 10k TPS.

### Token Velocity



## DigitalBits System Design

DigitalBits consists of components that perform different but complementary roles in order to maintain the health of the network. The three key components are Frontier, DigitalBits Core and the DigitalBits Network.

### Frontier

Frontier provides a RESTful API for the DigitalBits ecosystem. It acts as the interface for applications that wish to access the DigitalBits network. Frontier facilitates actions such as submission of transactions to the network, checking the status of accounts and subscribing to event streams. It also ingests and re-serves the data produced by the DigitalBits network in a form that is easier to consume than the performance-oriented data representations used in the network.

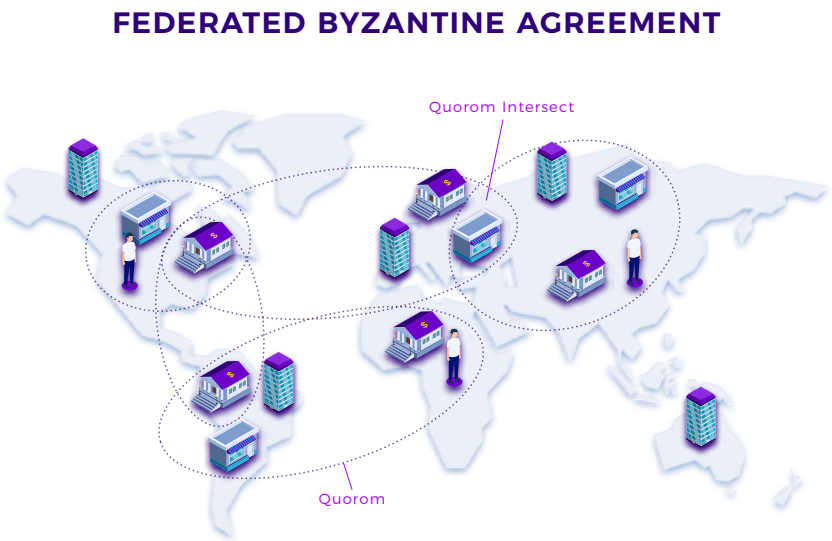
Application developers interact with Frontier's RESTful API via the web browser, simple command line tools like cURL, or the DigitalBits SDK. The following languages are used to communicate with Frontier.

| DigitalBits Maintained | Community Maintained |
|---|---|
| Javascript | Ruby |
| Java | Python |
| Go-based | C# |

In addition, Frontier's APIs and SDKs can also be used to build or enhance custom brand specific Apps and clients.

### DigitalBits Core - Network Backbone & Consensus

DigitalBits assumes the DigitalBits Consensus Protocol (DCP) in order to reach consensus on the network. This mechanism is an iteration of the Federated Byzantine Agreement (FBA).



Quorums, i.e circles of trust formed among DigitalBits core instances, are formed between various partner institutions and individuals. The DigitalBits core instances can choose to belong to one or more quorums and utilize them in a hierarchical manner or based on the type of transaction that needs to be verified. The nodes belonging to a quorum need not be located close to one another.

Federated Byzantine Agreement allows different quorums (sets of validators) to co-exist. This contrasts with the single list of validators engaged in the Byzantine Algorithm, which raises issues of centralization. The nodes are able to determine the composition of the quorum in a decentralized manner. The more organizations and partners that contribute nodes to the DigitalBits network, the more reliable and robust the network becomes.

### DigitalBits Network

The DigitalBits network itself is a collection of interconnected DigitalBits core instances run by various individuals and entities. DigitalBits core instances add reliability to the overall network. Additionally, they may choose to have a Frontier server for communication in order to access the DigitalBits network. The distributed nature of the network makes it reliable and safe. All these DigitalBits core instances within the network eventually agree on sets of transactions. Each transaction on the network costs a small fee: 100 nibbs (0.00001 XDB). This fee works as a deterrent to bad actors who may attempt to spam the network.

## DigitalBits Architecture

Key components of the DigitalBits architecture consist of the following:

- **Application server**

  The application server enables applications to be built and integrated with the DigitalBits blockchain, e.g points programs, wallets, explorer etc.

- **Bridge server**

  The bridge server enables applications to use the federation and compliance servers to send and receive payments. When a sender wishes to send a transaction, the sender's client contacts its bridge server to initiate the transaction. If required, the bridger server then connects the federation server of the receiver and its own compliance server. If all verifications are successfully completed, the transaction is recorded in the DigitalBits network. The bridge server on the receiver's side periodically monitors the DigitalBits network and spots transactions destined for its end-point, connects to the required federation and compliance server, and accepts the transaction. The bridge servers then inform the respective end-points about the result of the transaction.

- **Federation server**

  The federation server provides a mapping service between email-like human addresses and public-key-based addresses. To enhance consumer experience and ease of adoption, DigitalBits associates an account with an email-like human readable identification in addition to the standard public-key-based identification. Human readable email-like addresses allow consumers to easily use Apps and clients without having to familiarize themselves with public-key cryptography.

- **Compliance server**

  The DigitalBits compliance protocol supports the exchange of compliance information to pre-approve a transaction with another enterprise/ institution (EI). The customer information exchanged between EI's via the compliance protocol is quite flexible and typically consists of the full name, date of birth and physical address.

## Wallets & Apps

Businesses and third-party developers can easily develop custom Apps by leveraging the Frontier API and DigitalBits SDK. DigitalBits also provides wallet source code that can be directly used or easily adapted to create a brand specific wallet. The bridge server facilitates easy access for the end points to the federation and compliance server. As previously noted, brands can deploy branded currencies into their respective consumer applications. Effectively, this creates an interactive system between the brand and the consumer and in some cases, it may remove the retailer (ie. Middlemen) from the system.

## Stakeholders Engagement & Services Interaction

The following are the underlying processes that enable entities to engage and interact with the DigitalBits blockchain:

## Onboarding Process for Digital Assets

Two different scenarios may be faced when onboarding digital assets. The first entails a new program without any legacy dependency. The second involves porting an existing legacy (non-blockchain) program onto the DigitalBits network.

The asset provider is to choose an identification code for the new asset, a combination of up to 12 letters/numbers that identify the asset in human readable form, after which the asset is ready to be used on the network. In order for other users to be able to receive these new tokenized assets, users have to choose to trust the asset provider, since the DigitalBits asset is a credit. This is done by establishing a trustline with the given asset provider. Each account can create a trustline, or a declaration that it trusts a particular asset.

In instances where an existing program is ported onto the DigitalBits blockchain there are 3 approaches:

1. The issuer creates accounts (consisting of public and private keys) for each legacy user, and loads the account with the respective amount of value held in the users existing account. These accounts may be managed directly via the DigitalBits SDK, or frontier server.
2. The program bridges their existing database via their bridge server to handle on-chain actions. The existing account database is maintained, while the bridge server maintains the blockchain events (sending/receiving tokens).
3. Customers register with a DigitalBits ID. When an account is registered, the issuer transfers the tokens equivalent, or proportional value that the customer possessed in the legacy system. The migration process may consist of different stages (early access program, proof-of-concept and cut-over). Users of the legacy system that wish to continue to accumulate points have to migrate before the cut-over in order to ensure they do not lose their points.

## Conclusion

Branded currencies have been around for decades and have experienced inherent friction, in part due to technological constraints. This asset class is due for an upgrade and considering the increased awareness with the development of Facebook's Libra Project and Walmart actively exploring blockchain patents, in particular having to do with stable currency. The union of blockchain technology and branded currencies represents the next stage in the evolution of the brand-consumer relationship. DigitalBits' envisions the emergence of new economies based around branded currencies, allowing consumers and brands to interact in ways never seen before. DigitalBits intends to engage large brands to join this wave for the future to come.

# Additional Resources & References

### Reference Links:

Tokenomics
Token Velocity
Token Utility
Token Audits & Terms
Branded Currencies

### Applications & Beyond:

The State of the Points Economy
Branded Stablecoins

### Additional Documentation:

Presentation Deck
Whitepaper
Technical Overview Deck
Developer Documents

### References:


#1 https://blokt.com/news/the-future-of-branded-stabecoins

#2 https://medium.com/digitalbitsorg/what-is-a-branded-currency-457c9ec5e6b4

#3 https://www.coindesk.com/walmart-wants-to-patent-a-stablecoin-that-looks-a-lot-like-facebook-libra

#4 https://medium.com/digitalbitsorg/digitalbits-piecing-it-together-part-1-4bc686ad4aa1

#5 https://medium.com/digitalbitsorg/piecing-it-together-pt-2-assets-trustlines-anchors-the-t-n-c-s-d0b7bfed86cd

#6 https://medium.com/digitalbitsorg/piecing-it-together-pt-4-algorithmic-dissemination-5ca80dd16634

#7 https://medium.com/digitalbitsorg/piecing-it-together-pt-3-forking-stellar-b416c4e38bdb

## Disclaimer:

This lightpaper document is for information purposes only and has been created to provide a general overview of the DigitalBits project. It will outline some of the key characteristics of the project, creating a concise vision of what we look to achieve. For further details, please reference our whitepaper.

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