universal protocol

Universal Protocol Platform

Whitepaper

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NOTICE

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Mission

The Universal Protocol Platform is a culmination of the efforts of an alliance of like-minded cryptocurrency companies and blockchain pioneers ("UP Alliance"). Our ambition is to help decentralized ledger technology achieve mainstream adoption as a universal method for transferring value over the internet. The project addresses three major challenges facing the blockchain industry:

- The lack of a common language required for optimal innovation and mass adoption.
- The lack of conventional user safeguards characteristic of assets in mature financial markets.
- The lack of focus on practical products with mass-market utility.

01 | Executive summary

01. Executive summary

The Universal Protocol Platform is a digital reserve ecosystem that provides value substantiation, investor protection, and interoperability for blockchain-based assets. It makes cryptocurrencies and crypto assets safer to own and easier to convert across networks.

The UP Alliance, a coalition of cryptocurrency companies and blockchain pioneers, is launching the platform to provide users with a more convenient way to access a comprehensive array of assets through a single protocol, and thereby accelerate the adoption of blockchain as a mainstream financial technology.

The Universal Protocol Platform facilitates the seamless, decentralized exchange of tokenized assets on a single blockchain.

The Universal Protocol Platform addresses one of the biggest challenges facing blockchain users by allowing the instant and seamless transfer of value across different decentralized networks. Providing a 'common language' through which incompatible protocols can 'reason' with each other, the platform reduces the time, cost and risk of converting digital assets.

Put simply, the project enables blockchains to 'talk' to each other using existing technologies. Unlike alternatives such as atomic swaps and exchanges, the Universal Protocol Platform provides a scalable solution that can be applied across many blockchains rapidly.

The ecosystem will be activated through the creation of the Universal Protocol Token (Symbol: UPT) and a family of Universal Proxy Tokens, each representing a different asset.

The platform's goal is to facilitate seamless, decentralized conversion of tokenized assets – including commodities, equities, cryptocurrencies and debt.

This paper sets out how the UP Alliance plans to achieve its goal and create a substantiated reserve for the token economy.

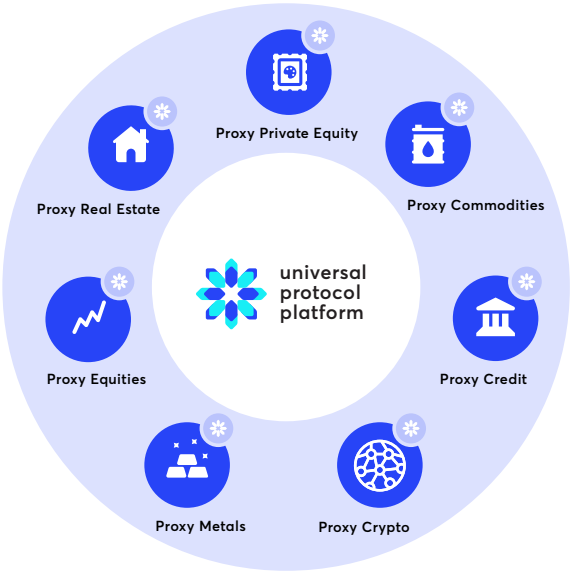


Figure 1: Virtually any asset class can be converted into Universal Proxies (as defined herein).

02 | Market problem

02. Market problem

The biggest challenge facing blockchain technology today is the lack of a common language through which different protocols can 'reason' with each other and enable the transfer of value across decentralized networks.

Blockchain technology has generated much interest because it promises to do for the movement of value what the standard shipping container did for the movement of goods: reduce the cost, time and friction of transferring assets.

Yet blockchain interoperability remains virtually non-existent. Today, if a user wants to move value across chains, they must first move tokens from one blockchain to a central exchange, trade on its in-house ledger, and then withdraw the 'new' asset to another blockchain. The process is slow, expensive and involves substantial counterparty risk[1].

Still at an early stage of development, today's sparring blockchains recall the growing pains of the internet. In the early 1990s, competing and seemingly incompatible technologies threatened to create a web where AOL and Compuserve users would be unable to email each other[2].

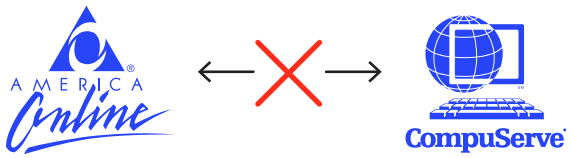


Figure 2. The state of the early internet era (1990s).

Transferring digital value across blockchains should be as easy as navigating across the internet.

Adopting a spirit of collaboration, developers overcame the challenge by focusing on universal interoperability as the overarching design goal of the internet. This meant incorporating existing systems' architecture; making a wide variety of network technologies compatible; and supporting manifold communication services designed for radically different purposes.

The breakthrough came when two technologies – TCP and IP – were brought together to form the bedrock of the internet – supported by a striking innovation, the datagram[3], a common unit of information that could travel between different protocols, oiling the cogs.

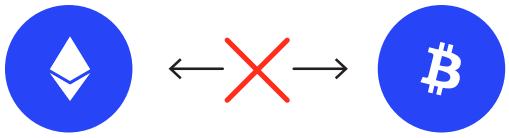


Figure 3. The state of the early blockchain era (2010s).

This connectivity-led approach means that today, digital information can be instantly sent, shared and exchanged worldwide, crossing distinct networks and technologies.

The Universal Protocol Platform is designed to ensure that value – ranging from tokenized real estate to digital fiat currency – can also be instantly sent, shared and converted across blockchains to create a decentralized network of finance.

1: The risks include, hacking, negligence, KYC errors, the 'gating' of funds and exchange failure.
2: www.wired.com/2014/07/how-to-keep-the-internet-of-things-from-repeating-aols-early-blunders/.
3: www.technologyreview.com/s/611187/how-to-get-blockchains-to-talk-to-each-other/.

The Universal Protocol Platform is designed to ensure that value can be instantly sent, shared, and converted across blockchains.

As the blockchain ecosystem continues to expand – with the potential to encompass trillions of dollars in assets – the need for interoperability is becoming ever more acute.

In truth, blockchain adoption has evolved relatively slowly since the technology was first introduced more than ten years ago, impeded by concerns over security and interoperability.

Over the next four years, adoption rates are expected to accelerate rapidly as blockchain technology is applied to a wide array of financial assets. As a result, application revenues are forecast to rise from $706MM in 2017 to more than $60bn in 2024, according to a new report, *Blockchain: Market Shares 2018 to 2024*[4].

To illustrate the scope of the opportunity, the market value for all cryptocurrencies currently stands at $292bn[5] compared with $294 trillion[6] for all financial assets – virtually all of which are tokenizable. To fulfill its vast potential, blockchain technology must overcome the security and connectivity concerns that have slowed its progress.

There has never been a better time to introduce the enhanced convenience, security and interoperability of the Universal Protocol Platform.

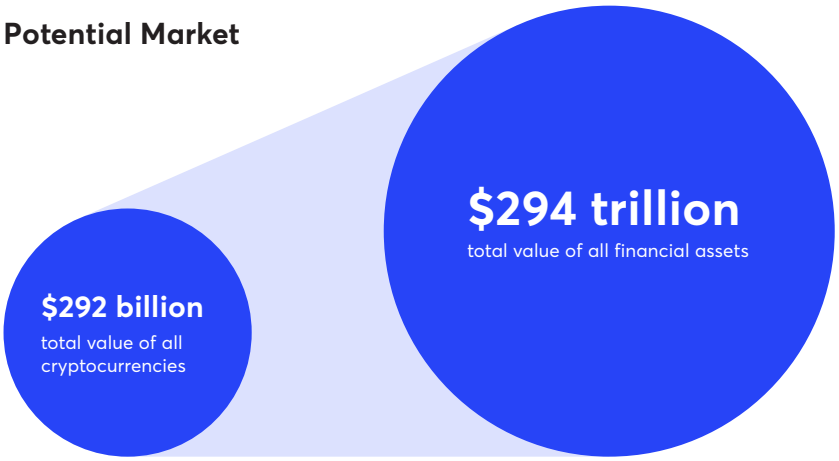


Figure 4: Growth of the addressable market for blockchain technology. [5,6]

4: www.wintergreenresearch.com/blockchain.
5: CoinMarketcap, June 2018.
6: McKinsey Institute, Haver, BIS, Deutsche Bank estimates.

03 | Solution overview

03. Solution overview

The Universal Protocol Platform introduces foundational architecture for interoperability between blockchains, both enabling users to buy exposure to multiple cryptocurrencies on a single network, and freeing developers to choose the most appropriate protocol for their individual projects. This is accomplished by making any blockchain readily compatible with Ethereum and its ecosystem of smart contracts, DApps and decentralized exchanges.

Like the breakthrough developments of the early internet, the Universal Protocol Platform combines proven technologies – Ethereum smart contracts and digital reserve management – with genuine innovation: secure and easily-convertible Universal Proxy Tokens.

A "Universal Proxy Token" is a digital representation of an underlying asset, such as Bitcoin, on the Ethereum blockchain and is compatible with smart contracts – self-executing agreements that operate on the network. Holders can convert Universal Proxy Tokens on-chain since smart contracts act as a 'conversion' layer and allow tokens representing any cryptocurrency (or other tokenized asset) to be seamlessly exchanged without the involvement of a centralized authority.

Universal Proxies combine decentralized exchange[7] with many of the investor safeguards of mainstream financial assets.

The Universal Proxy Token ecosystem is built on a solid financial foundation since it is anchored to a well-proven and fully-transparent asset reserve. The value of every Universal Proxy Token is fully-backed by a matching, underlying asset held in custody.

When an investor buys $1,000 worth of Universal Bitcoin [UPBTC], for example, $1,000 worth of actual Bitcoin [BTC] is acquired and held in the reserve to substantiate its value. Consequently, the price of the Universal Bitcoin [UPBTC] will mirror that of actual Bitcoin [BTC] since it directly represents the 'real' underlying cryptocurrency in the reserve.

While both Bitcoin and Universal Bitcoin will trade on centralized and decentralized exchanges alike, the key difference is that Universal Bitcoin will be convertible into Universal Litecoin [UPLTC] – or any other Universal Proxy asset – in a single step, with seamless conversion on a single blockchain.[8]

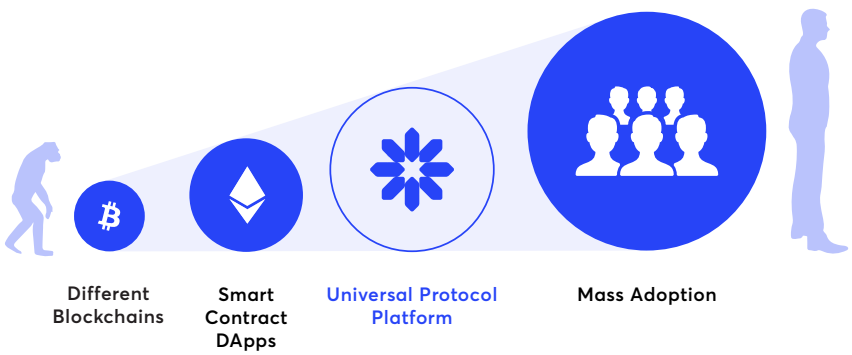


Figure 5: The evolutionary path of blockchain towards maturity and mass adoption.

7: For more on decentralized exchanges see www.hackernoon.com/understanding-decentralized-exchanges-51b70ed3fe67.
8: Smart contracts are supported by a number of blockchains. For a list of notable ones see www.github.com/overtorment/awesome-smart-contracts.

A 'common language' for cryptocurrencies: Universal Proxies pegged to reserve assets convert value across chains

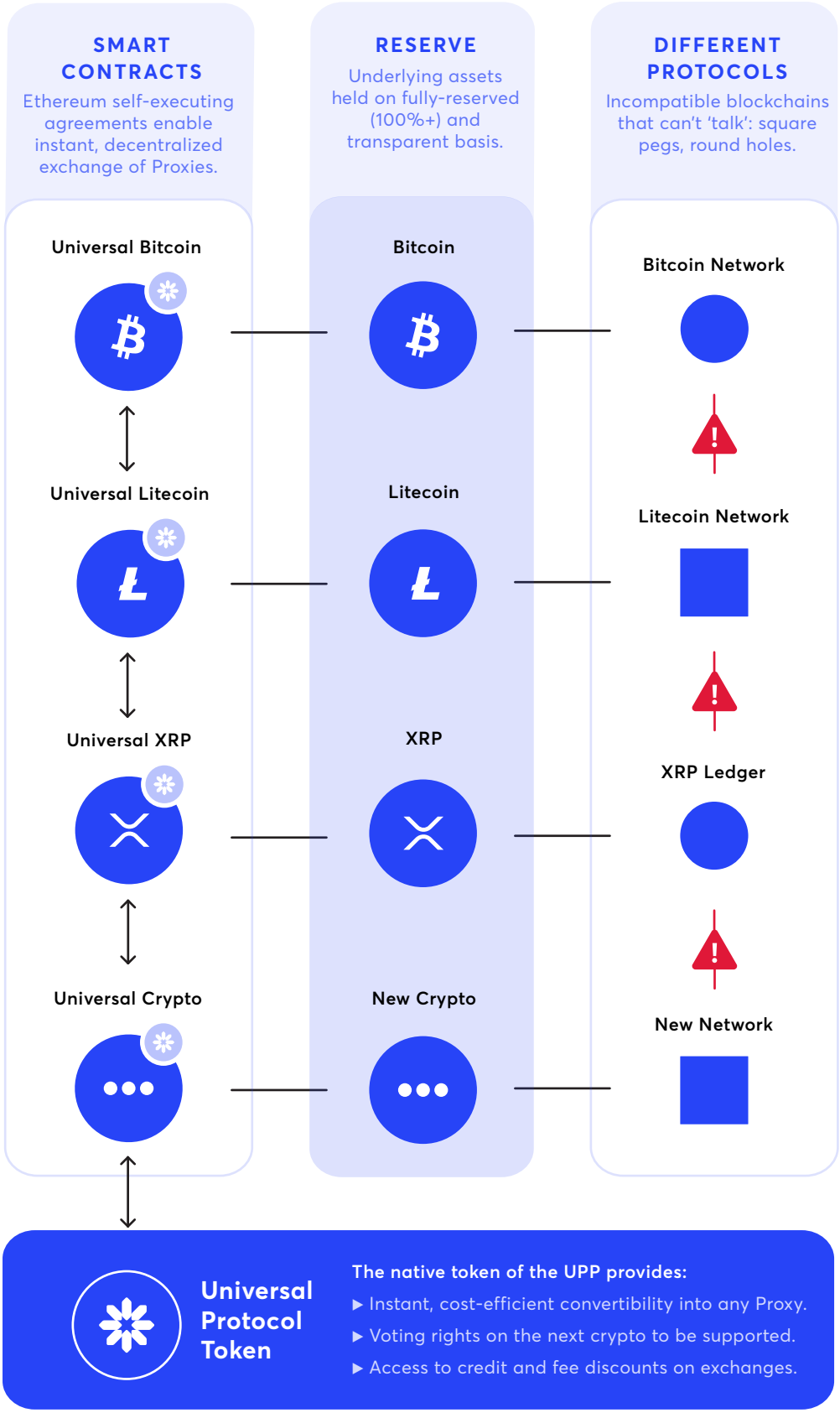


Figure 6.

Universal Bitcoin is convertible into Universal Litecoin in a single step on the Ethereum network.

By contrast, converting BTC to LTC would require a centralized exchange supporting both blockchain networks, and the user to have both a Bitcoin Wallet (to deposit BTC) and a Litecoin Wallet (to withdraw Litecoin). A three-step process involving a withdrawal fee.

The frictionless and cost-efficient exchange in the Universal Bitcoin to Universal Litecoin example is only possible because the Universal Protocol Platform brings together three technologies in a new way, combining on-chain conversion with many of the investor safeguards of mainstream assets.

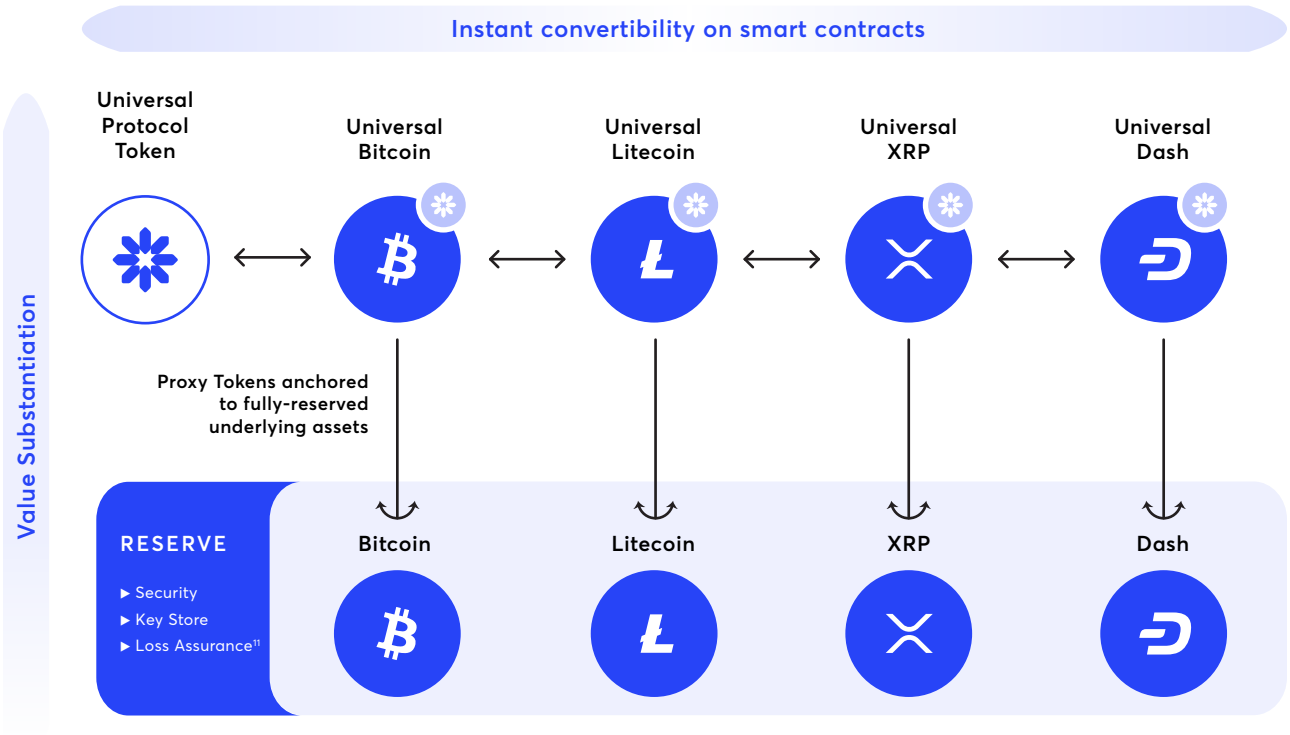
03.1. Smart contracts

The Ethereum blockchain has gained significant traction over the past three years by permitting data and value exchange through self-executing agreements known as smart contracts. Ethereum ERC-20-compatible tokens[9] can convey legal title to a variety of assets, including property and shares, in exchange for payment in liquid cryptocurrencies (and vice versa).

Flexible and extensible, Ethereum has emerged as the dominant blockchain for ICO issuance as a result of the speed and standardization with which new tokens can be created on the network. Given its widespread adoption, Ethereum provides the ideal foundation for the connectivity-led Universal Protocol Platform, although the model is compatible with any other smart contract network.

All Universal Tokens therefore will be Ethereum[10] tokens capable of 'reasoning' with each other, since they are built on the same extension of the ERC-20 Standard.

Layers of protection: users benefit from multiple safeguards



9: For more on ERC-20 see www.investopedia.com/news/what-ERC-20-and-what-does-it-mean-ethereum/.
10: UPP plans to employ a bespoke extension of the ERC-20 Standard to support Proxy Tokens.
11: Alliance Member Uphold has pioneered cryptocurrency loss assurance by providing up to $25MM in aggregate cover against hacking and thefts.

03.2. Reserve functionality

The asset reserve performs a vital function for the Universal Protocol Platform by providing value substantiation for Universal Proxy Tokens. Ensuring each Universal Proxy is fully-backed by a matching asset held in custody, the reserve guarantees intrinsic value and forges a link between the Universal Proxy Token – e.g. Universal Bitcoin – and the underlying asset it represents – e.g. Bitcoin. At the introduction of a new Universal Proxy Token, the reserve buys-in the equivalent value of the underlying asset to match that of the Universal Proxy Tokens to be issued. Later, in the secondary market, the buyer of a Universal Proxy Token is effectively purchasing a validated-claim to an underlying asset held in the reserve.

The UP Alliance expects that the introduction and wide adoption of the platform will serve as the basis for a new 'common language' for blockchain and spark a renewed era of innovation.

This separation between the blockchain token an investor buys (Universal Bitcoin) and the fundamental asset on which it is based (Bitcoin), means that the Universal Protocol Platform can create a more secure way to hold cryptocurrency value. Universal Proxy Tokens are recoverable if their private keys are lost; can be retrieved by third-party beneficiaries, and benefit from a degree of loss assurance.

By way of analogy, the model recalls the security of the gold-backed dollar. For while many people believe that central banks represent a single point of potential failure in an economic system, it's clearly true that the gold held in the vaults of the Federal Reserve to back the US Dollar was much safer than a Dollar bill in someone's pocket.

In a similar way, a Universal Proxy Token is subject to the risks of everyday negligence such as key loss, while the underlying digital asset it represents remains secure in the reserve. As a last resort, users can always redeem Universal Proxy Tokens for the underlying digital assets they represent, in exactly the same way a Dollar bill used to be redeemable for physical gold. (See Section 04.1)

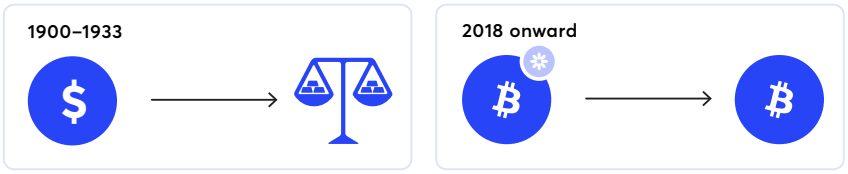


Figure 8: Proxy Tokens can be redeemed for the underlying asset they represent, in the same way the US Dollar used to be redeemable for gold. In 1928, for example, a Dollar was exchangeable for 1.5g of gold.

To accelerate deployment, the Universal Protocol Platform is adopting a digital reserve that has been perfected for value conversion – and asset custody – over many years. The Uphold reserve serves users in 184 countries[12] and has powered more than $3.5bn in customer transactions[13] across eight cryptocurrencies, 24 fiat currencies and four precious metals. Please refer to section 05.3.4 for further information about Uphold, a founding member of the UP Alliance.

Uphold's ledger technology provides an ideal reserve platform for the Universal Protocol Platform because of its unrivalled connectivity to both legacy financial systems and decentralized networks. Providing robust custody procedures for cryptocurrencies and industry-leading transparency, the Uphold ledger publishes the value of its assets in real-time on a publicly-

12: 12th June 2018.
13: www.uphold.com/en/transparency.

verifiable ledger. Uniquely, it holds all customer assets on a fully-reserved basis (100+ per cent) – rather than fractionally like banks – and is continuously applying its decentralized ledger technology to new asset classes.

03.3. Universal Proxy Tokens

Universal Proxy Tokens are an important innovation because they can represent the value of any cryptocurrency (or other asset) and render it accessible and seamlessly convertible through a single blockchain network.

Highly scalable, the Universal Protocol Platform is purpose-built to make tokens representing virtually any asset class convertible on a single network.

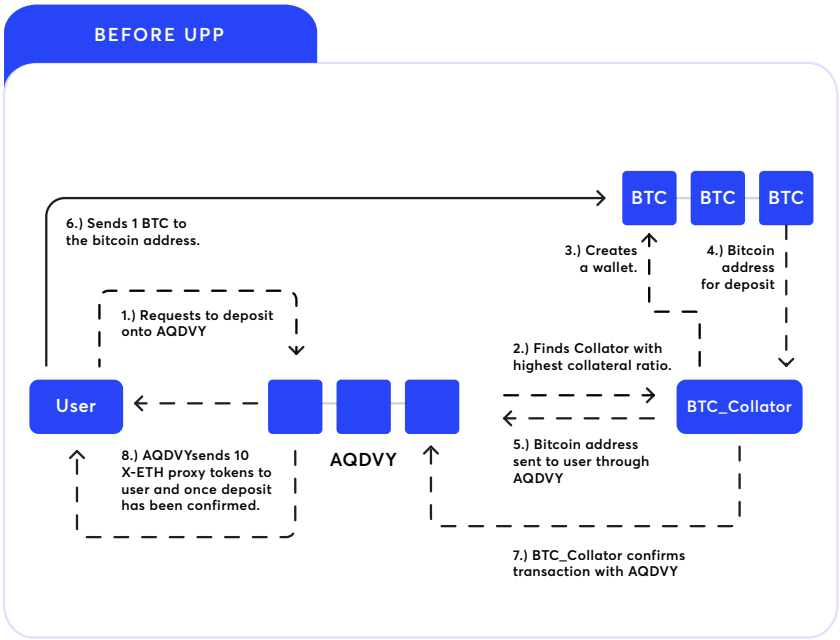
Built on an extension of the ERC-20 Standard, Universal Proxies have embedded smart contracts that use IFTT (If This, Then That) logic to determine the validity of any transaction on-chain. For example, they can interact with the Universal Protocol Platform's issuance contracts [the mechanism by which Universal Proxy Tokens are matched to underlying assets and priced] to calculate how many Universal Litecoins are required to buy one Universal Bitcoin. If the conditions are met, the agreements will execute instant trade and settlement, with the correct number of tokens sent to each party's Ethereum wallet.

03.4. Alternative solutions

There are several ways of solving the interoperability problem between blockchains. Decentralized models, such as cross-chain atomic swaps, allow users to exchange tokens from different blockchains without any centralized authority.

However, these solutions usually rely on each blockchain's individual smart contract functionality and therefore – unlike the Universal Protocol Platform – can't easily scale to connect the hundreds of different blockchains in

Cross-chain value transfer



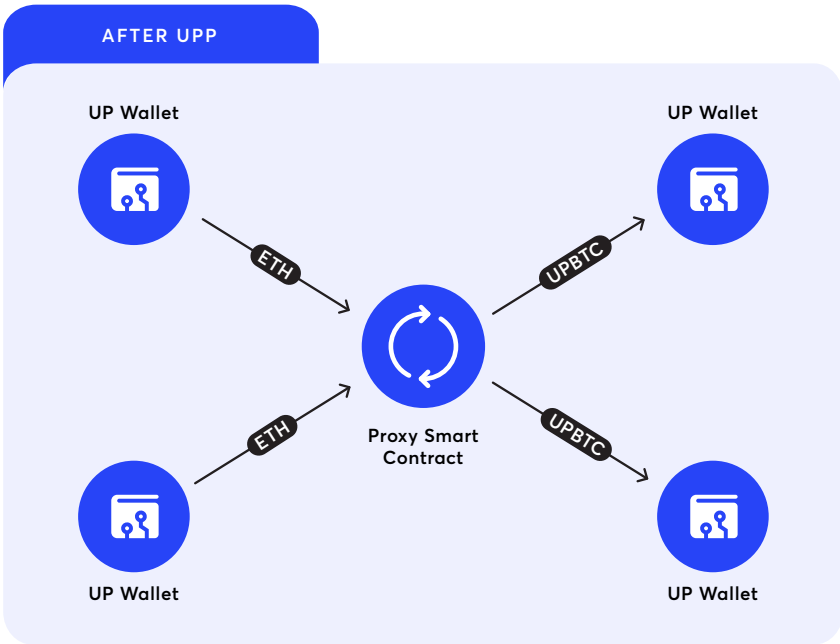


Figure 9: Simplifying the complex: cross-chain value conversion before the Universal Protocol Platform, using atomic swap trading (previous page), and after UPP (above) using smart contracts.

operation. By contrast, Universal Proxies can represent the value of virtually any asset held in the reserve and translate it into the common language of Ethereum. Furthermore, they are easy to produce, being standard ERC-20-compatible Tokens, and also deliver wide connectivity.

The Universal Protocol Platform will bring together Universal Proxy Tokens for all major cryptocurrencies on a single protocol, effectively solving the challenge of interoperability in an elegant and scalable way. Furthermore, neither centralized exchanges nor atomic swaps enable users to access tokenized assets other than crypto tokens – such as equities, private equity and real estate.

The Universal Protocol Platform is purpose-built to make tokens representing most asset-class seamlessly convertible on a single decentralized ledger. The process is simple and easy to reproduce. An asset is acquired and held in custody by the reserve, converted into Universal Proxy Tokens at a strict 1:1 ratio, and rendered into a fungible Ethereum unit of value.

04 | User safeguards

04. User safeguards

04.1. Making tokens safer to hold

The Universal Protocol Platform introduces to cryptocurrencies many of the conventional safeguards that people have come to expect from assets in mature financial markets. By making digital assets easier to hold, inherit, recover and convert to intrinsic value, the platform creates a more practical value proposition for the vast majority of people who have yet to participate in the cryptocurrency market.

04.1.1. For retail users

Lost passwords are the number one reason that people contact their banks worldwide[17].

Lost passwords are a nightmare that haunts cryptocurrency users. In fact, there are an estimated 3.79 million bitcoins – totalling nearly $25 billion[14] – in limbo today because the private keys have gone missing, or the owners have passed away without sharing the keys with relatives.

Given lost passwords are the number one reason people contact their banks worldwide, it's not surprising that most investors have shied away from cryptocurrencies. Only 24 million people[15] own a crypto wallet globally compared with 2.9 billion[16] owning a bank account. UPP brings in a second layer of security for digital assets, offering a new level of assurance on an opt-in basis. When users buy Universal Bitcoin [UPBTC], for example, and store it in UP Wallets:

- The underlying Bitcoin is held in custody, like a security held for safekeeping at a custodial firm.
- Copies of the private keys can also be held in custody, allowing users to easily recover them if mislaid. *See 04.2.1 below.*
- The funds become retrievable by predesignated relatives after prolonged periods of account inactivity, the thresholds for which are set by users when they create UP Wallets. *See 04.2.2 below.*

This model of 'hybrid decentralization' means that the Universal Protocol Platform can accommodate users seeking decentralized exchange, or wishing to hold value privately, while simultaneously offering a secure wallet option for the more risk averse. For ordinary users, the enhanced safeguards of the latter represent a big step forward, and one that makes cryptocurrencies significantly more practical and convenient to own.

04.1.2. For institutional users

Financial institutions have been slow to embrace cryptocurrencies, partly owing to the time and cost of integrating different protocols into their technology infrastructures. Faced with the difficult task of deciding which are the winning

14: www.fortune.com/2017/11/25/lost-bitcoins/.
15: www.statista.com/statistics/647374/worldwide-blockchain-wallet-users/.
16: www.amp.uk.businessinsider.com/the-worlds-unbanked-population-in-6-charts-2017-8.
17: For more on bank password loss see http://passwordresearch.com/stats/statindex.html.

protocols at such an early stage of the industry's development, many banks and wealth advisers have chosen not to support cryptocurrencies at all.

The Universal Protocol Platform sets out to resolve this entry-point dilemma by making many sought-after cryptocurrencies accessible and liquid on a single blockchain. After the introduction of UPP, the simple expedient of adding the Ethereum network to a technology stack will allow institutions to access a plurality of blockchain assets in a more secure and convenient way.

Furthermore, the Universal Protocol Platform's versatile architecture allows transactions to take place through centralized exchanges, decentralized exchanges, or through smart contracts on the Ethereum network. This spectrum of choice broadens adoption by appealing to different levels of technical sophistication.

Even if users mislay both their private keys and recovery keys, they can still retrieve their funds.

04.2. Novel safeguards

Universal Proxy Tokens feature innovative safeguards designed to make them significantly less risky to own compared with cryptocurrencies. Provided Proxy Tokens are held in UP Wallets, built-in functionality ensures the tokens are recoverable, inheritable, and directly redeemable for underlying assets.

04.2.1. Recoverability

Losing a private key is a stressful experience for any cryptocurrency holder since it can result in the total loss of funds. Today, when users create

Even if users mislay their private keys, assets are secure and recoverable

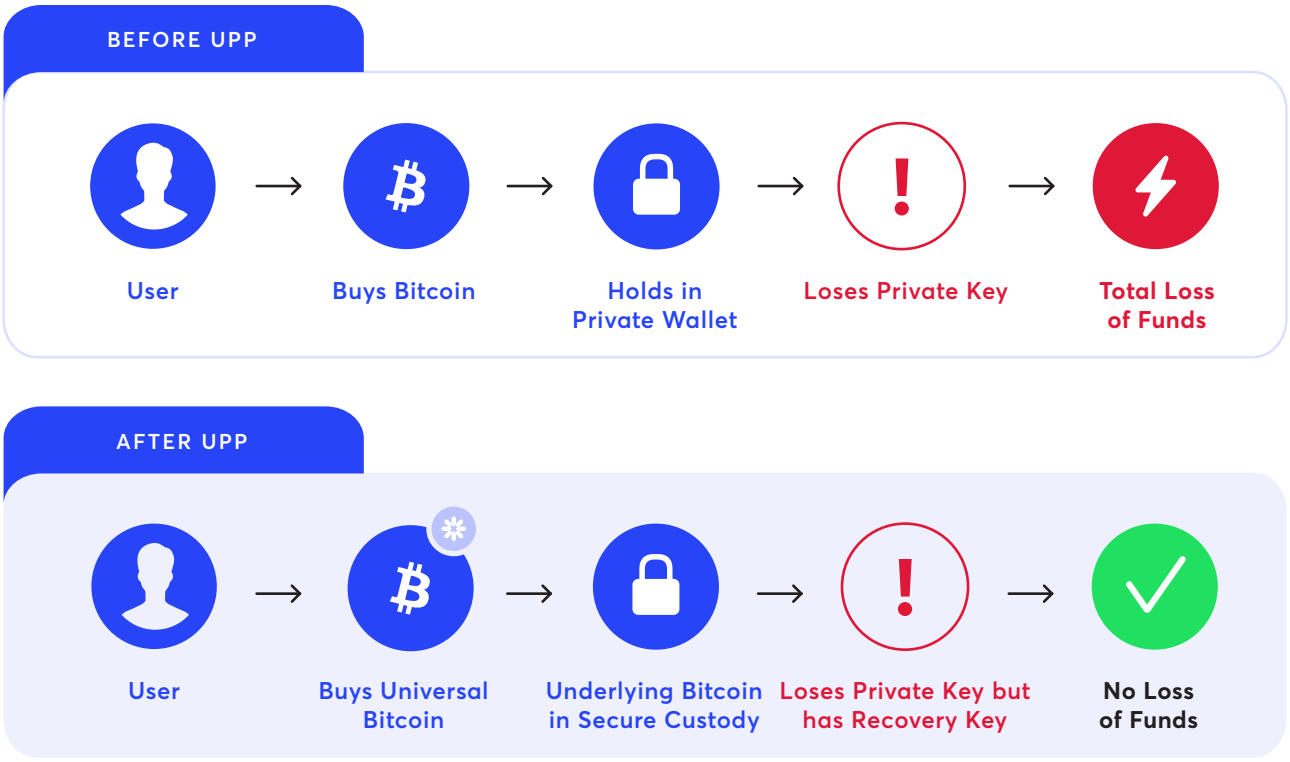


Figure 10.

cryptocurrency wallets, such as Bitcoin wallets, they receive private keys, but while sensible users employ password-manager applications to store them securely, many users just print the keys, or store them on one device. If the printouts are lost, or the device stolen or destroyed, the funds become totally inaccessible, as there is no way to retrieve the private keys.

Hybrid decentralization means that the Universal Protocol Platform can satisfy users seeking to hold value privately, as well as the more risk averse seeking a secure wallet option.

Using patented technology, the Universal Protocol Platform addresses the problem in two ways. First, users receive both private keys and recovery keys when they create UP Wallets. Secondly, the recovery keys are split into three constituent parts held respectively by users, the Universal Protocol Platform and a backup provider (a professional security firm that specializes in the cold storage of crypto keys). Any two parts of a recovery key can recreate the whole key. Consequently, if users mislay their private keys, they can still access their funds by combining their part of the recovery key with that held by one of the other parties. Even if users misplace both their private keys and recovery keys, they can still retrieve their funds by contacting *both* UPP and the backup provider who, together, can recreate the original keys. This distributed key-store technology is an integral part of the UP Wallet and protects users even in unlikely situations.

04.2.2. Inheritability

Making sure that crypto funds are retrievable by the estates of inactive users is a priority if cryptocurrencies are to become a mainstream asset class. Consequently, when users create UP Wallets, they are asked to nominate 'beneficiaries' as well as to set inactivity thresholds, so that, should the worst happen, the right people can be contacted. This alleviates the all-too-frequent situation today where family members are unable to locate the private keys for crypto assets belonging to a deceased relative.

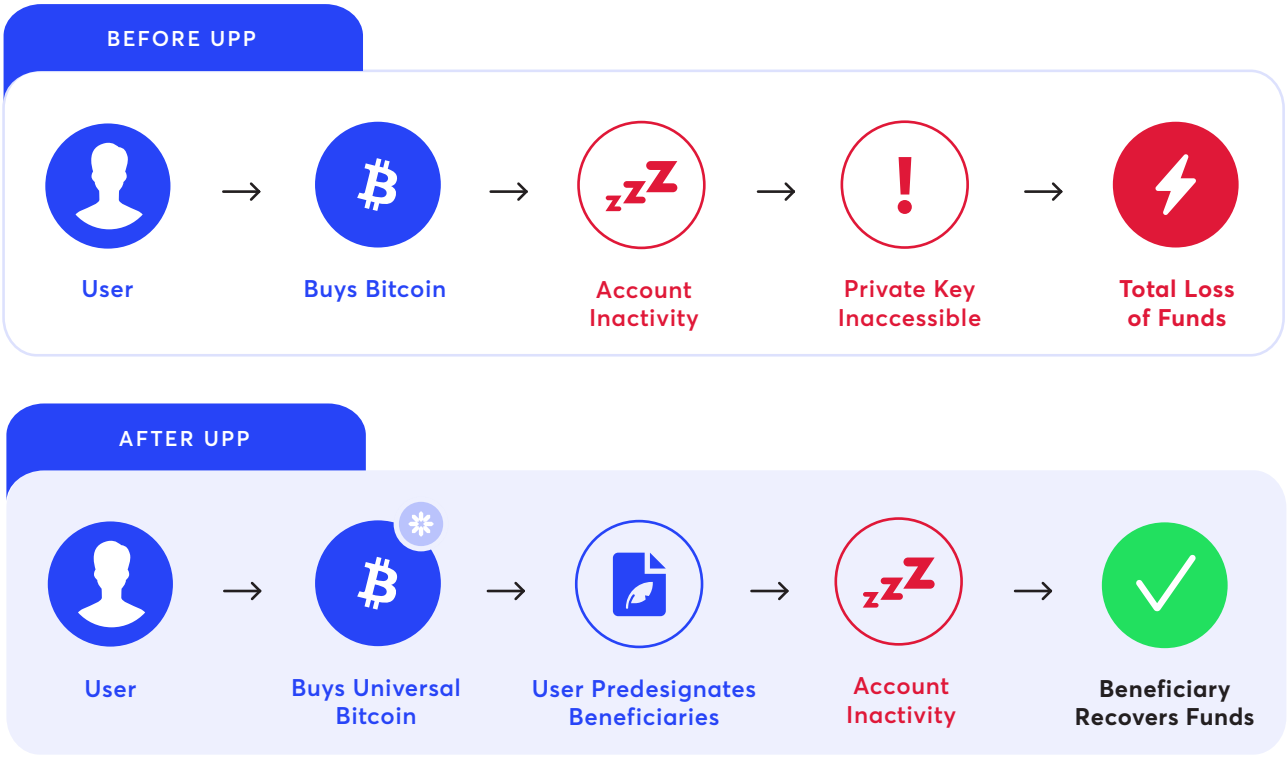


Figure 11: Users have the option to set inactivity thresholds ensuring that assets aren't lost after extended periods of account inactivity when keys can be mislaid.

Recovery keys are split into three constituent parts, held by the user, the platform and the backup provider.

The inheritance function is created in the form of a contract, allowing beneficiaries to 'call' (retrieve) the assets if certain conditions are met.

Like all platform functionality, the feature is optional, so users can decide whether or not they require the additional protection – and central support involved – to mitigate the risks of holding digital assets.

05 | Our vision

05. Our vision

05.1. One platform for all assets

At the core of the Universal Protocol Platform's value proposition is the creation of a simple, compliant, and interoperable platform for trading virtually all asset classes in tokenized form on a single blockchain.

The vision of the UP Alliance *(see 05.2 below)* is that transacting across digital asset platforms should be as easy as navigating across the internet; and its ultimate goal is to develop a fully-decentralized model that enables users to trade tokenized assets 24/7 worldwide, while enjoying all the safeguards expected of mature asset classes.

The vision is to create one platform for trading virtually all asset classes in tokenized, interoperable form, using a single blockchain.

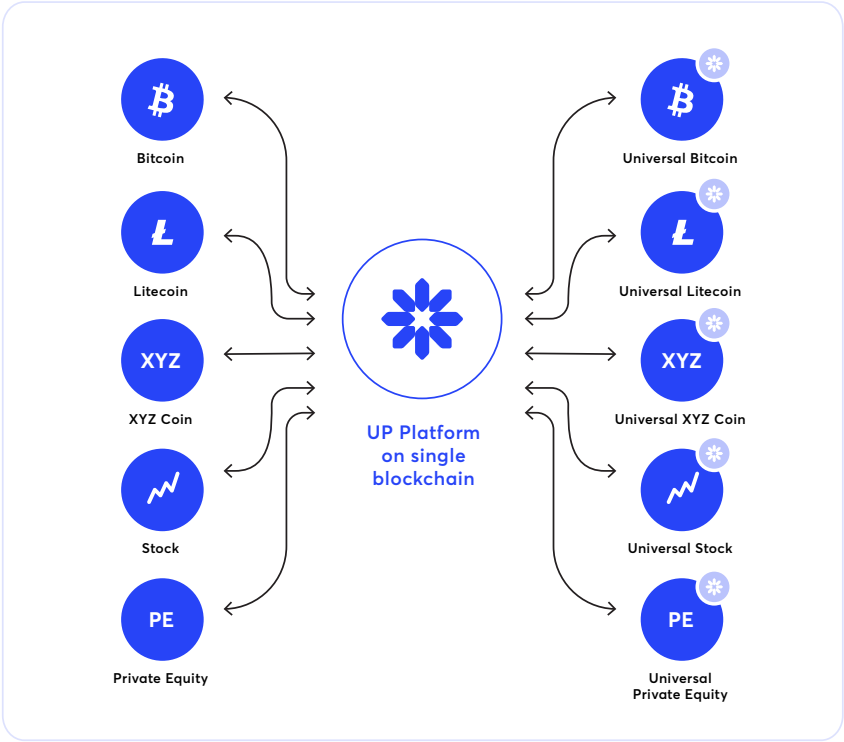


Figure 12: Virtually any asset can be tokenized and made tradeable 24/7 worldwide on the blockchain.

The Universal Protocol Platform provides the foundational architecture to make this a reality, introducing a highly-integrated asset conversion ecosystem that enables anyone to easily access and convert different forms of digital value, while having the choice of using either decentralized or centralized trading venues.

The platform enables a myriad of new blockchain functionalities beyond the limitations of existing networks, including increased cryptocurrency connectivity, spendability, and security.

Similar to the way Web 2.0 changed digital commerce for millions of banks, businesses, and individual users, the Universal Protocol Platform empowers a new generation of digital transactors by combining easy onboarding to

the cryptocurrency world with seamless integration between legacy financial institutions and decentralized platforms. Consequently, the Universal Protocol Platform can be thought of as one of many essential components of client infrastructure needed for the creation of Web3[18].

While the Universal Protocol Platform is initially designed to support integration with applications on Ethereum, in practice the platform can run on any blockchain network that supports smart contracts. The model enables the creation of many previously unattainable exchange pairs (e.g., Universal Bitcoin to Universal Private Equity), expanding user choice far beyond that of offerings available now on centralized or decentralized exchanges.

The first Proxy Tokens to be launched will be UPUSD and UPBTC in March 2019. The UP Alliance then plans to launch UPEUR in Q2 2019, and will then determine the sequence of new Proxy Tokens through regular polling of UPT holders.

05.2. The UP Alliance

A coalition of cryptocurrency companies and blockchain pioneers, the UP Alliance seeks to accelerate the adoption of blockchain as a mainstream financial technology by making digital assets more accessible, secure and convenient to own.

Universal Proxies can be redeemed directly for the underlying assets they represent, providing a second layer of assurance to holders.

Focused on achieving greater interoperability between blockchains and increased connectivity with legacy financial systems, the UP Alliance aims to strip away the mystique and perceived difficulty of cryptocurrency ownership and liberate the underlying benefits of the technology for more people: namely, the instant, peer-to-peer, transfer and exchange of value worldwide, with diminished need for centralized counterparties.

The UP Alliance is the beneficiary of a Singaporean trust entity ("Trust"), under independent management and control, with a Council drawn from UP Alliance members making decisions about the strategic direction of the Universal Protocol Platform. Initially, it will use technology licensed from Uphold, a UP Alliance member, to create two building blocks of Universal Protocol Platform architecture: a substantiating reserve for the ecosystem and a Coin Foundry to mint Universal Proxy Tokens for cryptocurrencies and other assets.

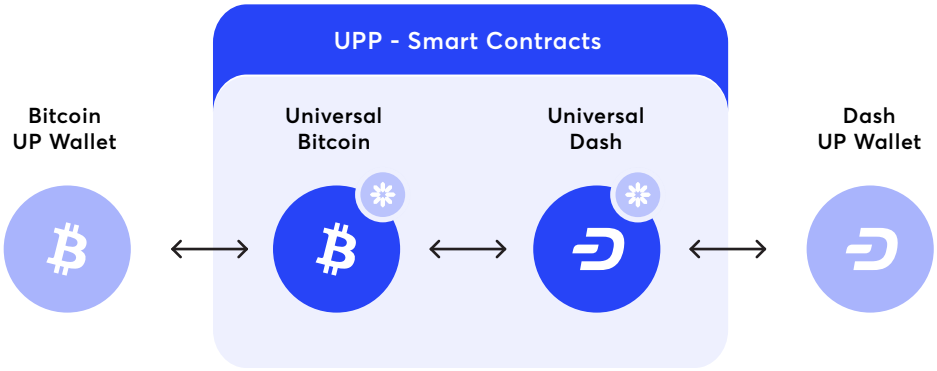


Figure 13: Proxy Tokens are seamlessly convertible on the Ethereum network making it easy to switch between exposure to Bitcoin and Dash in a single step.

18: For more on Web3 see http://gavwood.com/web3lt.html.

The Universal Protocol Platform's technology stack enables seamless exchange between incompatible blockchains much earlier than many people thought possible.

No single, central authority controls the UP Alliance Trust, which is run for the benefit of the ecosystem by the coalition of companies that provided initial funding. Dedicated to advancing the cause of blockchain technology, the UP Alliance believes that decentralization alone is worthless if it means that users are likely to have their assets stolen. The UP Alliance introduces a small measure of opt-in oversight in order to offer users basic safeguards for their crypto holdings.

The issuer of UPT and Universal Proxy Tokens, Universal Protocol Pte. Ltd., a Singapore company, and the Trust are run on a not-for-profit basis and any profits from the Universal Protocol Platform will be used to reimburse UP Alliance members, to buy back UPT, or given to environmental charities, in mitigation of blockchain's energy intensity, and charities supporting Economic Inclusion.

While the UP Alliance will adopt new technologies as they emerge, the initial technology stack makes it possible to offer seamless conversion of different cryptocurrencies on a single blockchain in 2019 – a facility that many in the industry thought was years away from realization.

05.3. Founding members

05.3.1. Bittrex

BITTREX INTERNATIONAL

Bittrex is a global leader in the blockchain revolution. The Seattle-based company operates the premier U.S.-based blockchain trading platform, designed for customers who demand lightning-fast trade execution, dependable digital wallets, and industry-leading security practices. Bittrex believes in the potential of blockchain and its ability to provide groundbreaking solutions. To promote innovation in the industry, the firm is working with teams around the world to advance new, inventive tokens that could potentially transform the way goods, services and operations are managed globally.

05.3.2. Blockchain at Berkeley

BLOCKCHAIN AT BERKELEY

Blockchain at Berkeley brings together a diverse team of individuals, ranging from computer scientists to business leaders, to research and develop blockchain technology. While still in its infancy and often misunderstood, blockchain offers the potential for increased security, efficiency and accountability in many industries. By positioning itself as the bridge between academia and industry, Blockchain at Berkeley helps contribute the knowledge, education and training this rapidly-evolving space requires. Through its consulting division, Blockchain at Berkeley is playing an important part in the execution of many complex industry-based projects.

05.3.3. CertiK

Founded by active professors at Yale and Columbia, CertiK has rapidly become the leading blockchain security service provider, delivering state-of-the-art cybersecurity solutions to some of the largest blockchain projects across all major protocols. CertiK expands upon traditional testing methods by applying Formal Verification to its static analysis module, which mathematically proves the absence of some of the most frequent and critical vulnerabilities that have plagued the blockchain space.

05.3.4. Cred

Cred is a decentralized lending ecosystem providing access to credit, anywhere and anytime, through the Ethereum blockchain. Cred partners with crypto exchanges, stablecoin providers (e.g. Maker DAO), third-party identity verification data providers (e.g. uPort) and licensed financial institutions (e.g. banks, asset managers). Cred users will receive compliance, value substantiation, and loan recovery benefits through the Universal Protocol Platform, as well as the opportunity to create novel lending pairs.

05.3.5. Uphold

Integration with Uphold will accelerate the adoption of the Universal Protocol Platform by bringing broad connectivity to traditional banking systems and allowing users to convert digital assets seamlessly into alternative forms of value, including fiat currencies. Uphold offers services in 184+ countries, across eight cryptocurrencies, 24 fiat currencies and four commodities. The firm specializes in frictionless exchange of different forms of value and cross-border remittance. Since its launch in 2014, the San Francisco-based firm has powered more than US$3.5bn in digital transactions.

05.3.6. Brave

Brave is on a mission to fix the web by giving users a safer, faster and better browsing experience – while building support for content creators through a new attention-based ecosystem of rewards. The Brave Browser blocks website trackers and removes intrusive internet advertisements, while improving online privacy by sharing less user data with advertisers. More than a browser, Brave is a new way of thinking about how the web works. Brave is open source, and built by a team of privacy-focused, performance-oriented pioneers of the web, founded by the inventor of Javascript and co-founder of Mozilla, Brendan Eich. Not a member of the Council.

06 | Universal Protocol Token

06. Universal Protocol Token (UPT)

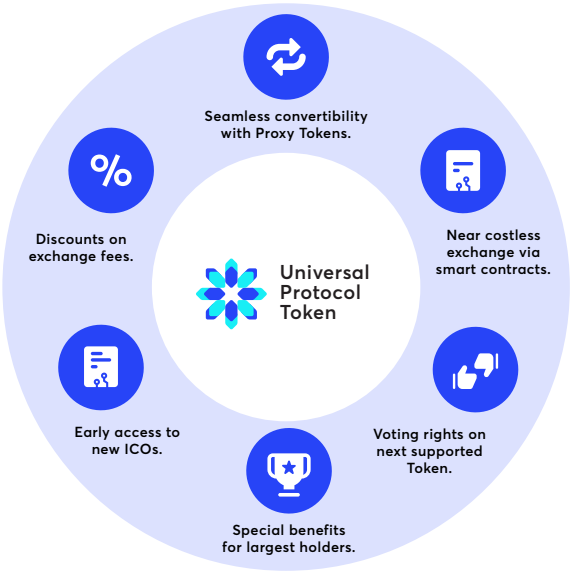


Figure 14. The benefits of holding Universal Protocol Tokens.

UPT is the most cost-effective way to buy Universal Tokens representing any cryptocurrency, or other tokenized asset.

The native token of the Universal Protocol Platform ecosystem, UPT represents the most cost-effective and convenient way to buy Universal Tokens since it shares their ERC-20 compatible protocol. This enables the seamless conversion of UPT into any Proxy Token on chain.

Users must hold UPT in order to perform Universal Proxy transactions on the blockchain because all trading fees are payable in UPT only.

UPT will be listed on centralized and decentralized exchanges alike, and may be converted into any Universal Proxy at the prevailing market rate. In essence, UPT plays the role of the most cost-effective gateway into the tokenized asset ecosystem, while simultaneously being the medium that facilitates transactions and collects fees within the UP Platform.

The fungibility of the Universal Protocol Token means that diversifying a digital currency and asset portfolio has never been easier, since UPT acts as a seamless hedging device, enabling users to move between asset classes with speed and dexterity in response to changing market conditions.

06.1. Benefits

06.1.1. Cost-effective access to Proxy Tokens

Universal Tokens will be priced for mass adoption in order to create a vibrant, liquid ecosystem. Users can buy any Universal Proxy using the underlying asset it represents fee-free, except for gas costs.

This means that Bitcoin holders worldwide can easily buy Universal Bitcoin, and access all of its additional safeguards, utility, and spendability - for a nominal charge.

Holding UPT is the most cost-effective way to trade Universal Bitcoin (or any other Universal Proxy)

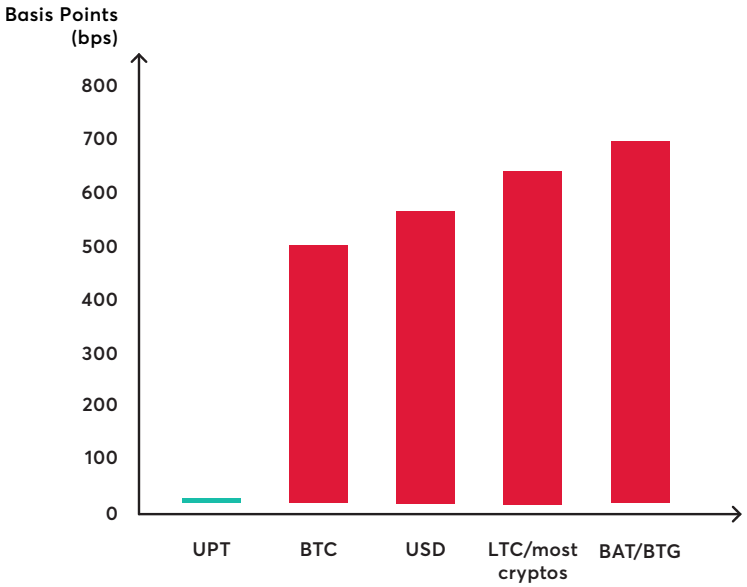


Figure 15: Holding UPT dramatically reduces the cost of selling Universal Tokens.

Conversion into Universal Bitcoin, or other Universal Tokens, from non-native assets are subject to standard Exchange fees.

The Universal Proxy 'wrapper' makes the value of any cryptocurrency more 'transactional' as well as more secure.

Where holding UPT delivers significant cost savings is on the sale of Universal Tokens. If users hold no UPT, they will pay 500 bps to reflect the added value of the UP 'wrapper' during the period they held the token. But if they hold 10 per cent or more of the transaction value in UPT, exit fees are just 5 bps.

The Universal Proxy Token wrapper enhances the value of any underlying digital asset by making it more secure, spendable and transactional. Users can take out loans against Universal Tokens, for example, and access liquidity without having to sell the underlying asset.

Users must hold UPT when trading Universal Tokens on-chain, as all fees are collected in UPT.

While the universal accessibility and transparency of the UP ecosystem will ensure fair market access for all, participants in the UPP ICO will enjoy the most cost-effective trading capability for Universal Tokens.

06.1.2. Governance and voting rights

UPT holders will form an influential community that will help to determine how the Universal Protocol Platform is run. For example, the community will decide which assets are to be supported next through regular polling, with votes allocated based on the amount of UPT users hold.

As a result, a further benefit of the Universal Protocol Platform is that the digital assets it supports will reflect the collective wisdom of a sophisticated 'crowd' of market participants. The asset portfolio is therefore likely to consist of more credible tokens, offering significant investment potential.

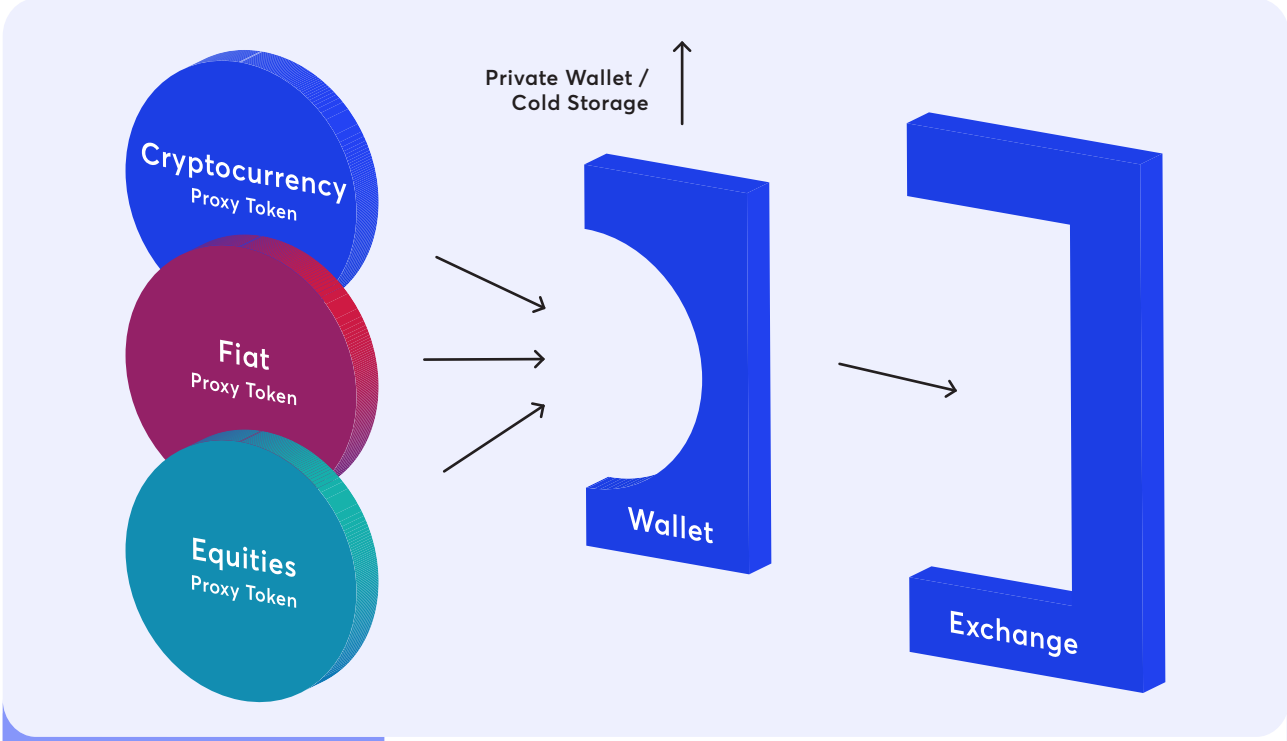
06.1.3. Additional benefits

If users hold UPT in the wallet of any integrated exchange, such as Uphold, they automatically become community members of the Universal Protocol Platform and are entitled to tiered benefits, including early access to coin offerings; polling opportunities on new assets; and access to crypto-collateralized loans.

UPT is one of the first digital assets to be accepted by Cred as collateral for loans, for example, which means that holders can borrow in fiat currencies against their UPT, or establish 'long' positions in other 'cryptocurrencies' by taking out native loans. A big step forward for the industry, this means that UPT will be one of the most spendable and transactional of digital assets.

In a continued spirit of democratizing access, the Universal Protocol Platform will offer the 100 largest individual holders of UPT access to 'pre-sale' terms on any ICOs offered through the platform, which are typically more favourable than those offered to purchasers in the public sale tranche

The benefits of Proxy Tokens depend on where users decide to hold them



Benefits

Proxies

- Convertibility.
- Economic value of underlying asset.
- ERC20–compatible.

Native Detachable Wallet

- Recoverability function.
- Inheritability function.
- UPP Voting on next proxy.
- Different compliance thresholds depending on nature of inserted token.

See 07.5

Exchanges: e.g., Bittrex, Uphold

Up to specific exchanges:

- Discounts on trading and loans.
- Access to pre-sale terms on new ICOs.

Figure 16. Proxy Tokens can be held in private Ethereum wallets, or UP Wallets, which can also offer temporary delegate authority to centralized exchanges.

06.1.4. Exposure to a wide array of assets

The 100 largest individual holders of UPT will qualify for pre-sale terms on ICOs, further democratizing access to investment opportunities.

When users purchase UPT, they are effectively buying discounted access to any tokenized asset issued through the Universal Protocol Platform – now or in the future – from tokenized cryptocurrencies to tokenized real estate. Virtually any asset can be turned into Universal Proxy Tokens.

While the initial focus is on cryptocurrencies, the most exciting applications are likely to be illiquid asset classes such as private equity and real estate, which are currently out of reach for many investors.

07 | Universal Protocol Platform

07. Universal Protocol Platform

07.1. Value proposition

The Universal Protocol Platform allows users to buy exposure to virtually any cryptocurrency – or other tokenized asset – on a single blockchain, and in a secure and highly-convertible form.

For the first time, cryptocurrencies become easy to access and cost-efficient to exchange, but equally important, UPP makes digital assets practical and spendable through extensive integration with legacy banking networks and fiat currencies. For many users, the ability to exchange tokens and seamlessly withdraw funds into cash at a bank account – in a single step – will be one of the most attractive benefits.

Universal Tokens have the potential to open up elite asset classes and democratize access to financial investments.

Since the Universal Proxy model is highly scalable – almost any asset in the platform's central reserve can be tokenized (split into equal, tradeable units of ownership) – the framework has applications far beyond cryptocurrencies.

By opening up formerly elite asset classes, such as private equity and private debt, to broader participation through liquid and affordable Universal Tokens, the Universal Protocol Platform has the potential to democratize access to financial investments.

Blockchain technology is still at an early stage of development and requires a hybrid model like the Universal Protocol Platform to accelerate adoption; a model that facilitates decentralized exchange combined with many of the investor safeguards of traditional financial assets. This spectrum of choice means that not only early adopters and technophiles can easily access cryptocurrencies, but also mainstream investors who have yet to participate.

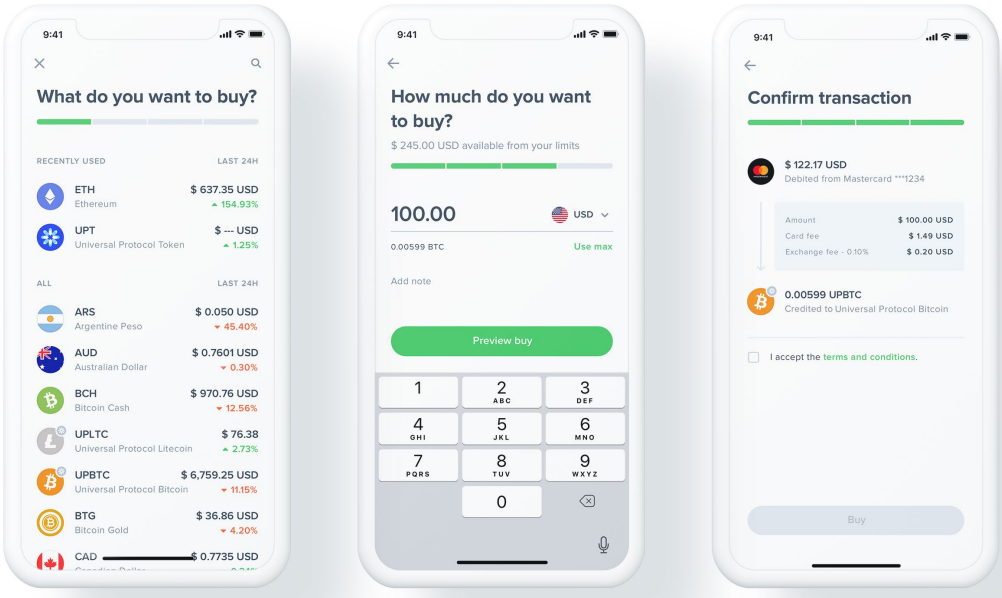


Figure 17: How UPT and Proxy Tokens may be listed at Uphold, an Alliance member, which also offers seamless conversion to fiat currencies.

07.2. Minting Proxies

To accelerate adoption, blockchain technology requires a hybrid model that combines decentralized exchange with conventional investor safeguards.

The Universal Protocol Platform uses smart contracts to issue Universal Tokens at a fixed 1:1 ratio with matching assets in the platform's reserve. In other words, for every Universal Bitcoin issued on the primary market, a 'real' Bitcoin is acquired and held in reserve to substantiate its value. As a result, any Universal Proxy can be redeemed for the underlying asset it represents at any time.

Value substantiation occurs on the primary market when a user purchases a Universal Bitcoin by either depositing 1 BTC, or 1 BTC's worth of another asset with an integrated exchange, which in turn transfers it to the reserve. At that point, the reserve issues a request to the UPBTC contract to mint one Universal Bitcoin.

For the request to succeed, a segregated and whitelisted fulfilment entity, the Reserve Manager, must either acquire and place in custody a 'real' Bitcoin to substantiate the new Universal Bitcoin, or confirm that an unencumbered Bitcoin is already available in the reserve to back the transaction.

As soon as the Reserve Manager confirms that a matching 'real' asset has been acquired for the reserve, the minting request can be fulfilled and the new Universal Bitcoin sent to a user's wallet.

This strict separation between 'request entities' and the 'fulfilment entity' – both of which can send function calls to the issuing contracts for every Universal Proxy – ensures the financial soundness of the Proxy Token ecosystem.
The model creates a rules-based system administered by smart contracts guaranteeing that every Universal Proxy is 100% backed by a reserve asset. By immutable design, the supply of a Universal Token can never exceed that

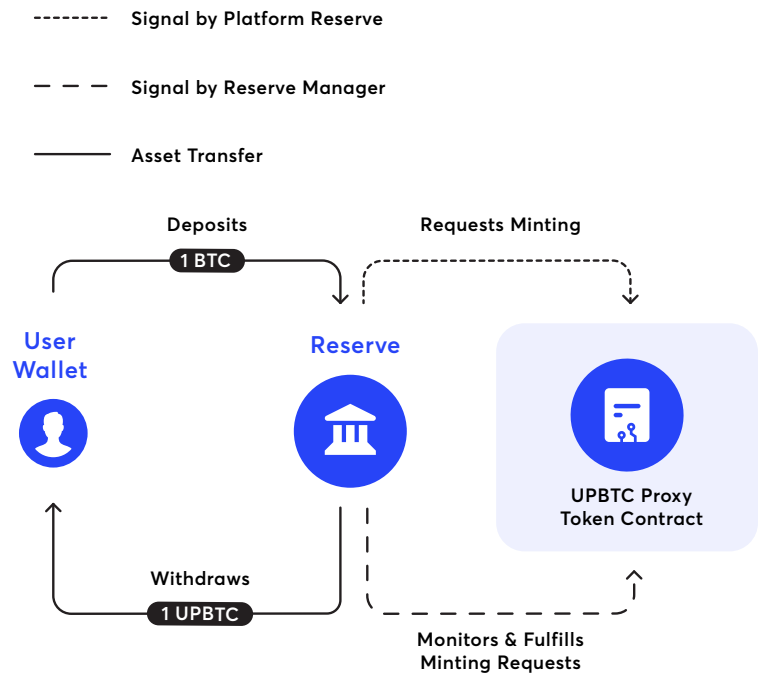


Figure 18: Smart contracts ensure that Proxy Tokens are issued at a strict 1:1 ratio with reserved assets.

of the equivalent underlying reserved asset it represents. If an underlying asset cannot be acquired for substantiation (because none are available on the market, for example) any minting request will fail.

This conceptual anchor underpins the stability of the Universal Protocol ecosystem and differs from a number of Web3 financial platforms, which have been shown to run undercollateralized reserves, making them financially unsound and unsustainable.

The Universal Protocol Platform maintains the financial integrity of its Proxies through a rules-based system administered by smart contracts.

To provide complete transparency for all users, the Universal Protocol Platform will publish the reserve holdings – and related transaction-histories – for every Proxy Token on the public blockchains of the underlying cryptocurrencies. In addition, the reserve will be audited on a bi-annual basis and all integrated exchanges will be given access to the audit reports.

07.3. On-chain conversion of UPT into Proxy Tokens

UPT holders can buy Universal Bitcoin (and all other Proxy Tokens) using smart contracts on Ethereum to facilitate trustless and cost-efficient on-chain conversion.

The reserve facilitates the transaction by supplying bid and ask pricing for all UPT trading pairs to the Exchange contract. A 'freshness' parameter for pricing, and certain reserve protection measures, also determine the feasibility of any transaction.

To buy Universal Tokens with UPT, the user calls the Exchange contract stating the value of Proxy Tokens they wish to buy. The Exchange contract calculates

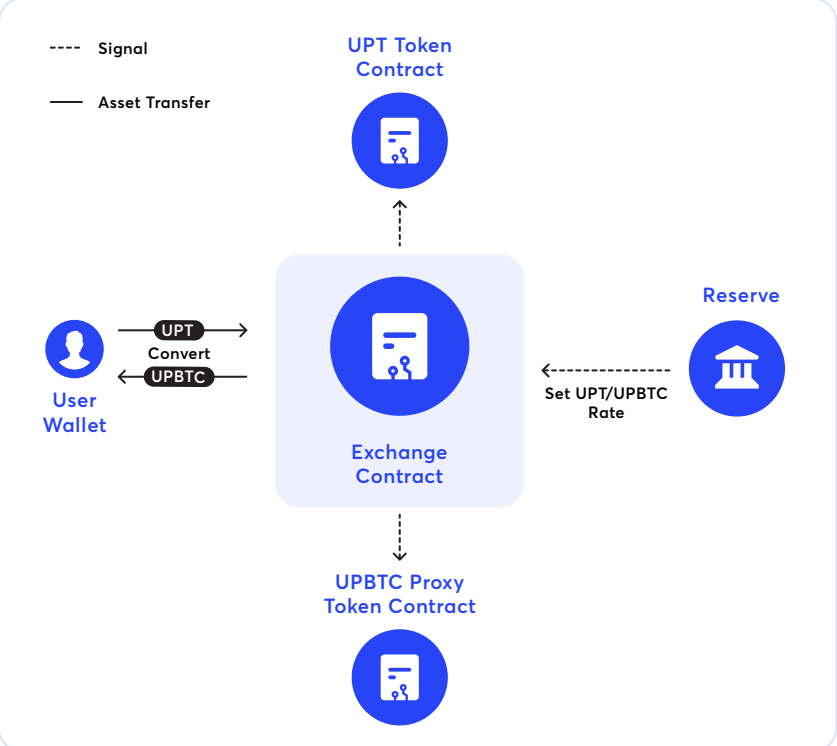


Figure 19: UPT is convertible into Proxy Tokens on chain without centralized or decentralized exchanges.

the amount of UPT required based on the current rate for the specific trading pair. The UPT is withdrawn from the user's wallet, and the Exchange contract instructs the Proxy Token contract to send the right amount of Proxies to the user's wallet. On-chain or off-chain conversion of any Proxy Token requires payment in UPT, which means users need to hold sufficient UPT to cover both the desired transaction, plus the commission involved. Conversion of UPT into Proxy Tokens will be possible as soon as UPT is listed on exchanges.

To provide sufficient liquidity for on-chain conversion, a float of substantiated Proxy Tokens (already-matched 1:1 with reserve assets) is created at the introduction of every Proxy Token.

07.4. Converting Proxy Tokens

Proxy Tokens representing various forms of value can be exchanged in three ways, each suiting different levels of technical sophistication. Conversion can take place through:

- On-chain smart contracts.
- Decentralized exchanges.
- Centralized exchanges.

07.4.1. On-chain smart contracts

On-chain conversion is likely to be an important method of exchanging Proxy Tokens initially because it will take time for exchanges to list Proxy Token Trading Pairs. The mechanics of exchanging Universal Bitcoin for Universal Litecoin (for example) on-chain closely resemble those of exchanging UPT for Universal Bitcoin outlined above. The only difference is that the Exchange contract will calculate the rates for UPBTC to UPT and UPT to UPLTC.

Users must hold UPT, the native token of the Universal Protocol Platform ecosystem, to pay commission fees for on-chain conversions.

The agreed amount of UPBTC is then transferred from the user's Ethereum wallet to the Exchange contract, which then instructs the Universal Litecoin contract to send UPLTC back to the user's wallet, with UPT collected as a fee as part of the conversion process.

07.4.2. Decentralized exchanges

Decentralized exchanges [DEXs] operate on smart-contract networks such as Ethereum. Unlike centralized exchanges, they do not require the parties in a transaction to transfer their funds to a central ledger, although there is a brief window where the funds are controlled by the DEX smart contract.

DEXs run order books and use smart contracts to match buyers and sellers of assets. For example, if one user is trying to buy UPLTC and another trying to sell UPLTC, both broadcast a message to the network stating the price they will accept. As soon as their prices are matched, the DEX instantly settles the trade on-chain.

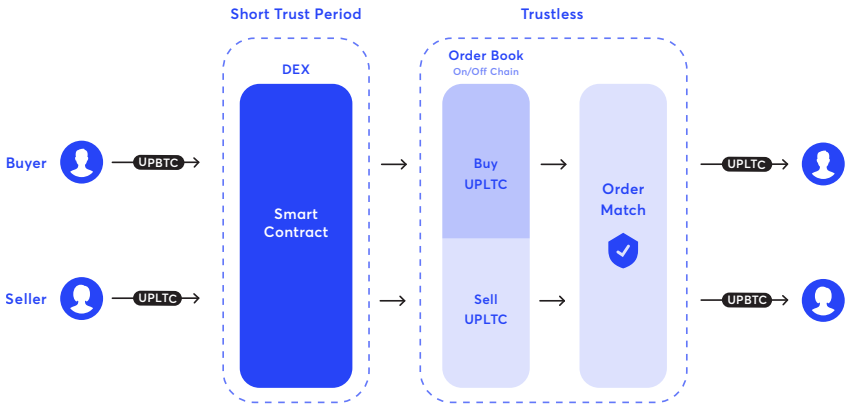


Figure 20: conversion of Universal Bitcoin into Universal Litecoin through a DEx.

07.4.3. Centralized exchanges

Many users will prefer to convert Universal Tokens – such as Universal Bitcoin and Universal Litecoin – through conventional exchanges. Here the funds must be transferred from the parties' individual crypto wallets to the exchange's central ledger.

The Universal Protocol Platform makes the process seamless because the UP Wallet is detachable, meaning it can directly connect to an exchange such as Uphold and temporarily delegate control of its assets to the exchange.

The UP Wallet can connect to an exchange and temporarily delegate control of its assets to facilitate a trading session.

During a trading session, the funds are under the control of the exchange to facilitate seamless transactions, and ensure that buy and sell orders can be matched through a synthetic extension of the proprietary order book.

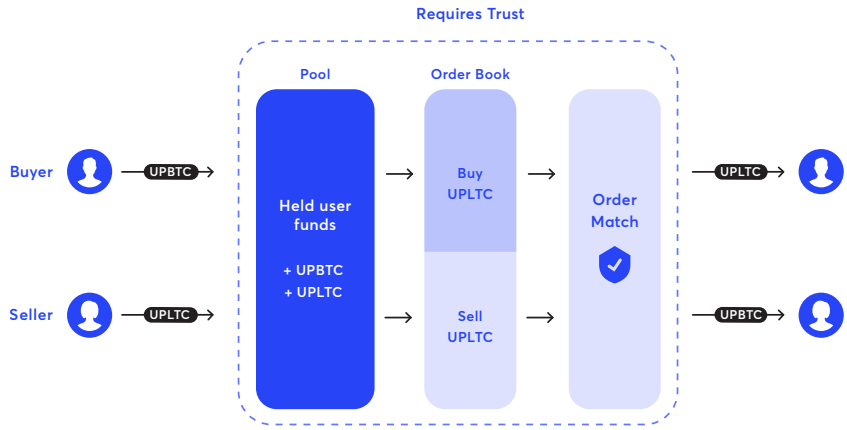


Figure 21: The conversion of Universal Bitcoin to Universal Litecoin through a centralized exchange.

07.5. The UP Detachable Wallet

The Universal Protocol Platform offers a smart contract wallet that not only holds value, but also confers additional functionality on Universal Tokens, such as the security features in *User Safeguards*, the access to credit in *Use Cases*, and the ability to seamlessly connect with exchanges described below.

Fully detachable, the wallet provides users with a far wider range of trading and custody options for cryptocurrencies than previously available, facilitating self-custody and decentralized transactions at one extreme, and 'delegation' of control to centralized exchanges, at the other.

Used in conjunction with centralized exchanges, the UP Wallet enables users to easily withdraw their assets into self custody after a trading session. This addresses a common problem with centralized exchanges where users forget to withdraw their assets after a trading session and thereby expose them to unnecessary risk. Working in conjunction with a DApp, the UP Wallet can also provide users with a list of compatible exchanges, and automatically approve or disapprove transactions during trading sessions.

07.6. Redemption of Proxy Tokens

Any Proxy Token can be redeemed for the underlying asset it represents on-chain at any time, meaning that Universal Bitcoin, for example, can be exchanged for Bitcoin in a single step (providing the user has a Bitcoin Wallet). This allows users to access underlying value easily and cost-efficiently.

The Proxy Token model thus enables users to hold cryptocurrency value in a more secure and convenient form, with the facility to revert to the underlying digital asset instantly. Should users need to interact with e-commerce sites that accept payment in Bitcoin, for instance, they can rapidly convert Universal Bitcoin into Bitcoin without having to use an exchange.

The UP Wallet enables users to easily withdraw their assets into self-custody after a trading session at a centralized exchange.

To redeem Universal Bitcoin, users deposit one UPBTC into the reserve via an integrated exchange or on-chain redemption. The reserve then places the UPBTC into 'escrow' and issues a request to the UPBTC contract to burn the Token. The Reserve Manager monitors burn requests and fulfils the transaction by transferring one 'real' Bitcoin out of the platform reserve to the user's Bitcoin Wallet, while sending the escrowed UPBTC to a burn address.

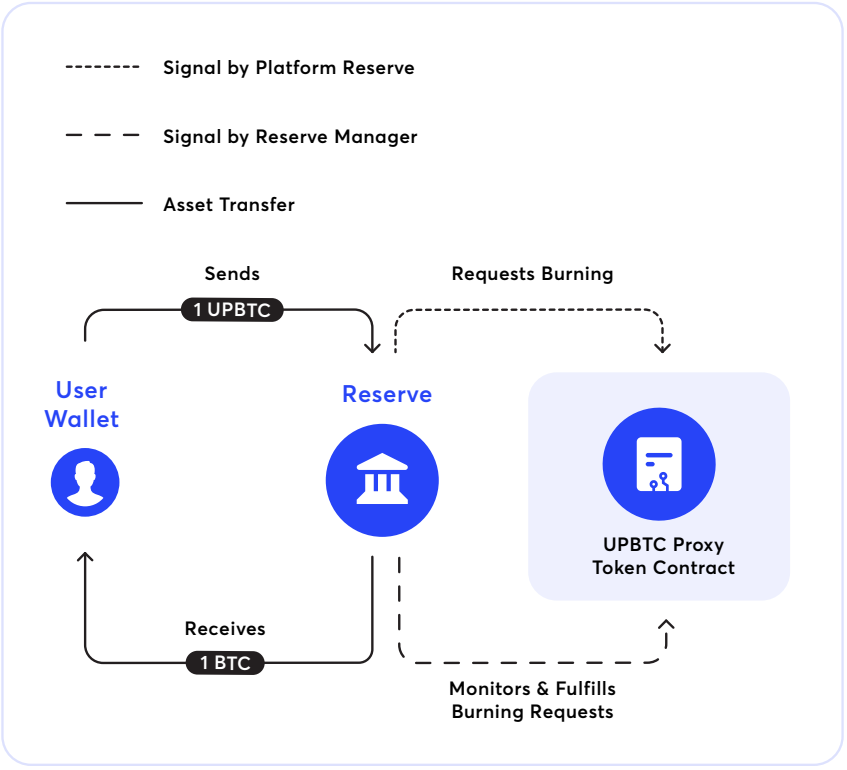


Figure 22: Proxy Tokens can be redeemed for the underlying assets they represent on-chain.

Here the Proxy Token is held as an unsubtantiated Proxy Unit at a publicly-viewable address, which adds another check and balance into the system and offers users an additional layer of transparency.

By flooding the ecosystem with daylight in this way, the UP Platform reassures users at every step that there is an immutable 1:1 ratio between the Proxy Tokens in circulation and the 'real' assets held by the reserve to substantiate their value.

07.7. Proxy Token protocol

The UP Platform proposes to extend the widely-used Ethereum ERC-20 Standard by creating a Universal Token Standard that has built-in support for minting and burning the global supply of Proxy Tokens.

Each Proxy Token will have its own contract responsible for issuing and redeeming Proxies at a fixed 1:1 ratio with the underlying reserve assets in custody. In addition, an Exchange contract will facilitate on-chain conversion between Proxies, as well as supply bid and ask pricing for each trading pair.

The architecture features a request system designed to ensure 'church and state' separation of privileges between predesignated and whitelisted 'Requesters' and 'Fulfillers' of function calls to Proxy Token contracts.

A request to mint a Proxy Token may come from an integrated exchange, for example, but can only be fulfilled by the platform reserve confirming the custody of a matching asset. This segregation of responsibilities is designed to guarantee the financial integrity of the UP ecosystem by creating a set of checks and balances.

07.8. Universal Dollar/Euro: transparently-substantiated stablecoins

The Universal Protocol Platform will issue 'stablecoins' for the U.S. Dollar and Euro, digital representations of two of the world's most stable fiat currencies. Backed 1:1 by U.S. Dollars and euros held in accounts in the United States and Europe respectively, Universal Dollar and Universal Euro will introduce new standards of transparency for the asset class.

The Universal Dollar and Universal Euro are pursuing a wider remit as the world's first stablecoins purpose-built to win the trust of mainstream users. Eschewing the 'blackbox' of other stablecoins, they flood the substantiation process with daylight by conducting the process on-chain. Every underlying 'custody' transaction is published on the Ethereum blockchain. The model adopts a 'trust me because I show you' rather than 'trust me because I tell you' approach.

Generally, stablecoins provide a digital representation of U.S. Dollars held in U.S. bank accounts and were designed to act as a 'safe haven' in closed-loop digital trading platforms, providing traders with frictionless access to the stability of fiat in systems that do not support conversion to traditional currencies. U.S. Dollar assets issued by UPP are held in banks located in the United States with the intention that they be eligible for FDIC 'pass-through' deposit insurance, subject to the Standard Maximum Deposit Insurance Amount per FDIC regulations (currently $250,000 per member) and other applicable limitations.

The Universal Protocol Platform employs this transparent system of minting in order to demonstrate that all its stablecoins are pegged on a 1-to-1 basis to an equal amount of 'hard currency' held in reserve bank accounts. For example, when a new Universal Dollar is minted by the deposit of a 'real dollar' into the reserve account of Universal Protocol Platform via an integrated exchange, the underlying transaction is assigned a unique identifier, plus the date, time and custody location of the underlying asset.

This identifier is published on the Ethereum blockchain and provides a clear audit trail for the precise dollar or euro funding underpinning every Universal Dollar/Euroissued – allowing true on-chain reserve asset lookup and discovery. The integrity of collateralisation process is expected to be inspected by an audit firm quarterly.

The integrity of the code that governs the on-chain 'minting and burning' process has been verified by CerTiK – the firm the US government uses to secure military drones.

In addition to transparency, Universal Protocol Platform's stablecoins will provide consumers with many of the protections they take for granted in other investments. Universal Dollar and Universal Euro are designed to behave like mature financial assets.

The Universal Dollar and Universal Euro 'wallets' will offer users 'opt-in' user safeguards of the UPP, including:

- **Key recovery**: Users can recover funds should they lose their Private Keys. The key will be split into multiple shares and the corresponding address embedded into the wallet. When two out of three constituents (wallet owner and one of the third parties) agree to recover the shares, the assets can be 'called' from the lost wallet.

- **Inheritability**: Users can nominate beneficiaries who may 'call' the assets after prolonged account dormancy. The exact period of dormancy and the address will be configured during wallet instantiation.

- **Detachability**: Users can 'delegate' control over their assets to a centralized exchange in order to facilitate a temporary trading session. After a session, the user can immediately take back custody and hold them in the safety of their private wallet, thus reducing exchange risk.

07.9. Reproducibility

While the Universal Protocol Platform initially runs on the Ethereum network, in practice it can operate on any Turing-complete scripting language[19], allowing integration with smart-contract platforms including EOS, NEO, Qtum, and others. This makes it versatile and adaptable. When cross-chain interoperability is scalably achieved, this optimally positions UPP to create a liquid, convertible, and integrated proxy token marketplace.

19: For more on Turing-complete scripting see http://wiki.c2.com/?TuringComplete.

08 | Use cases

08. Use cases

08.1. Financial institutions

Many financial institutions would like to offer cryptocurrencies as an asset class to their clients[20] – but few can cope with the custodial, technical and security challenges. Different cryptocurrencies sit on distinct blockchains, each requiring bespoke support.

The Universal Protocol Platform provides a single standard for all Universal Proxy Tokens, allowing financial institutions to write business logic once and have it work for all supported cryptocurrencies.

With the Universal Protocol Platform, financial institutions will be able to write business logic once, and have it work for all cryptocurrencies.

As the industry moves towards the tokenization of fiat, commodities, and equities, it will soon afterwards embrace illiquid investments, such as private equity and fine art. For financial institutions, the opportunity to offer customers affordable and convenient access (tokens are tradable instantly, 24/7, worldwide) to a broader array of assets is likely to prove irresistible, especially as it will deliver significant cost savings in infrastructure and portfolio management.

There are already signs that major banks such as HSBC and Barclays may support a broader array of cryptocurrencies and incorporate them into wealth management offerings. The advent of a single protocol to access all cryptocurrencies will only accelerate that process.

08.2. Developers and exchanges

Today, when exchanges such as Uphold choose to add a new cryptocurrency, the decision represents an enormous technical undertaking, resulting in weeks, if not months, of work.

As most cryptocurrencies sit on distinct blockchains, writing the business logic and integrating the system has to be performed on a one-off basis, tailored to the individual protocol. This is a slow, laborious, and vastly expensive exercise.

The Universal Protocol Platform will dramatically streamline the process. An exchange will simply have to support Ethereum in order to list a vast array of tokenized assets supported by UPP – without any further integration.

Users are set to benefit, too, as exchanges will be able to provide a wider range of digital assets at lower cost. Similarly, developers of decentralized exchanges and other Web3 infrastructures will reap efficiencies as a wider array of assets become supportable with less infrastructure and fewer resources.

20: https://www.bloomberg.com/view/articles/2018-04-18/barclays-hints-at-a-crypto-future-expect-big-banks-to-follow.

08.3. Lending

Cryptocurrencies are not easy to spend or use in everyday life, diminishing their appeal as a mainstream asset class. The Universal Protocol Platform facilitates the introduction of credit, which allows users to borrow in fiat currencies against the value of cryptocurrency holdings.

A big step for the industry, the advent of credit means that users can separate purchasing decisions from divestment decisions, and no longer have to sell Bitcoin (for example) to fund daily life if temporarily short of cash. No-one wants to sell a valuable, fast-appreciating asset for a routine purchase.

The Universal Protocol Platform solves the '$3MM pizza' problem: users can borrow against their crypto holdings instead of having to sell them.

By enabling cryptocurrency loans, the Universal Protocol Platform solves the '$3MM pizza' problem. Users can borrow against their crypto holdings instead of having to sell – something that until recently was impossible.

Mainstream lenders have been unwilling to loan against cryptocurrencies owing to the difficulty of securing the collateral. Pledged Bitcoin, for example, could simply 'vanish' overnight to another address beyond the reach of the lender, and become impossible to recover in the event of default.

Universal Proxy Tokens solve the problem by giving lenders security over the underlying collateral. Through 'delegate' rights – a feature of the Proxy Token Standard – borrowers can give lenders (co)-control over an agreed amount of Universal Proxy Tokens, allowing lenders to pull the tokens should the loans not be repaid. During the term of a loan, the pledged collateral may not be spent or used outside the closed-loop system agreed with the lender.

Proxy Tokens make crypto loans possible by providing secure collateral

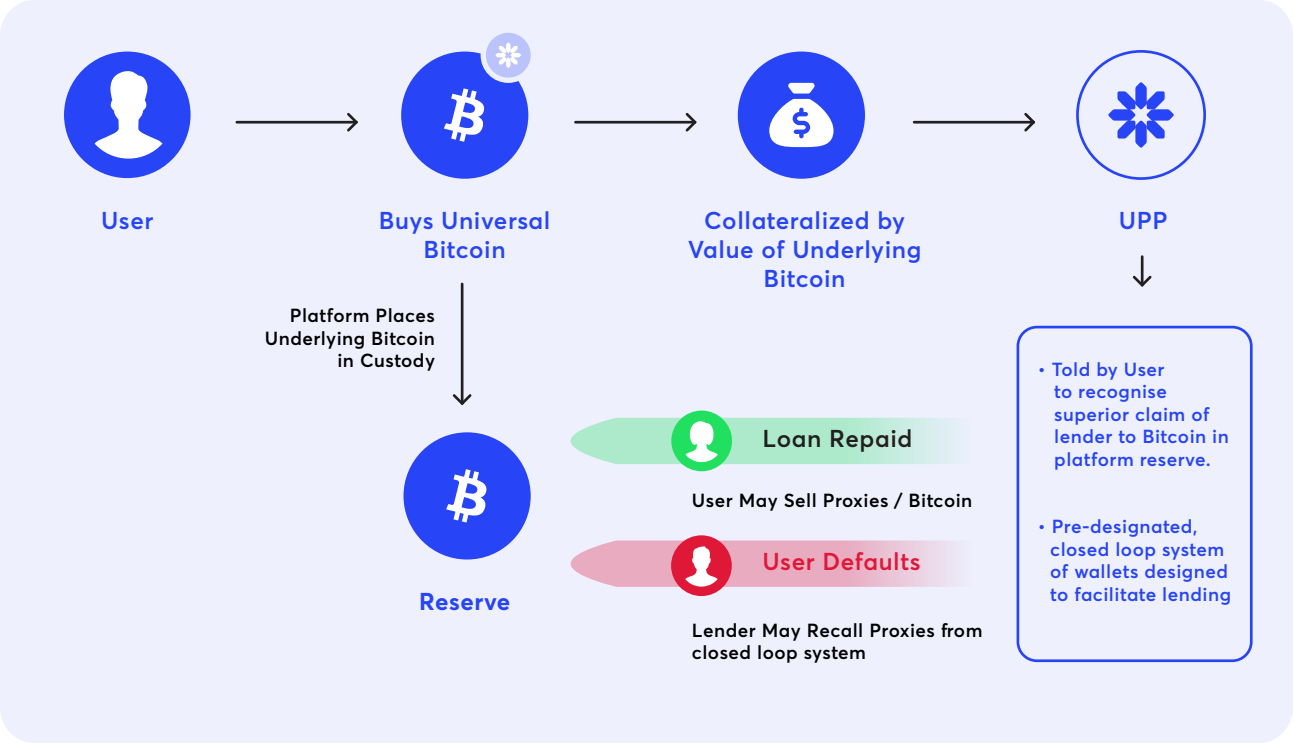


Figure 23.

To protect themselves from sudden devaluations, lenders may look at the 180-day trailing average of volatility for an individual cryptocurrency to determine the amount required as collateral for a loan.

In this way, credit is an important way of integrating cryptocurrencies into the mainstream financial ecosystem, rendering digital assets more practical and convenient to own. Unlike some other forms of collateral, cryptocurrencies have 24/7 market pricing, which also makes them easier to value and better suited to lending applications.

08.4. Payments integration

Many users want to spend cryptocurrencies or non-domestic fiat currencies when shopping online. Using a UP Wallet, users can shop at integrated e-commerce sites that accept certain currencies (whether digital fiat or crypto) and pay using a currency stored in their UP Wallet.

The UP Wallet helps to make digital value more spendable and useable through seamless integration with fiat currencies and legacy banking networks.

Furthermore, the Universal Protocol Platform makes cryptocurrencies and other digital assets seamlessly exchangeable with 24 fiat currencies, enabling users to fund accounts (or withdraw funds) through ACH[21]/SEPA[22] banking rails, as well as debit/credit card networks.

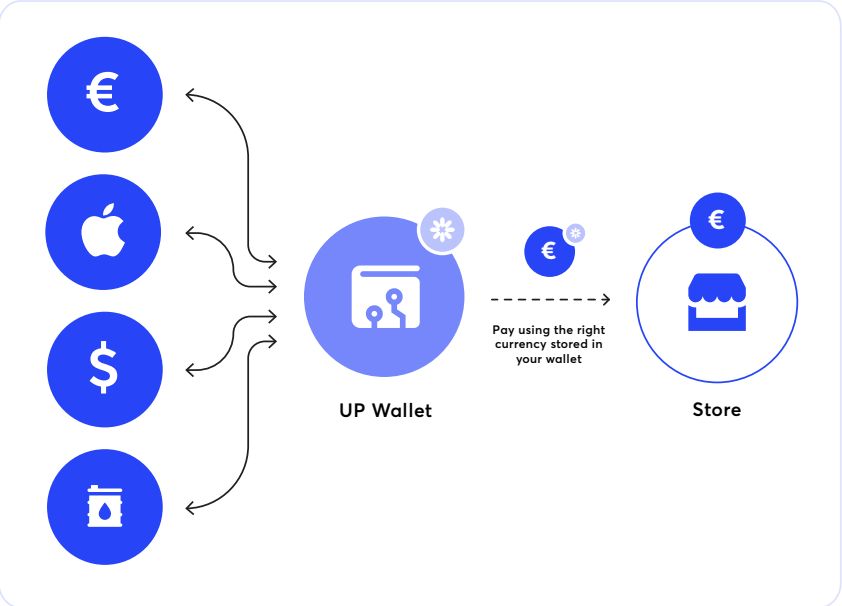


Figure 24: Online shoppers can buy from integrated e-commerce sites using any digital asset in the UP Wallet, making cryptocurrencies more useable and spendable.

By integrating legacy financial systems and decentralized blockchain networks, the Universal Protocol Platform is likely to make cryptocurrencies more accessible and enticing to the vast majority of investors who have yet to participate.

21: For more on ACH see https://www.nacha.org/news/what-ach-quick-facts-about-automated-clearing-house-ach-network.
22: For more on SEPA see https://www.ecb.europa.eu/paym/retpaym/html/about.en.html.

Universal Proxies can be recalled by the lender in the event of default in a closed loop system, providing a secure form of collateral.

08.5. Cred: an example of decentralized credit

A decentralized lending ecosystem, Cred facilitates crypto-to-crypto and crypto-to-fiat loans. Today, due to lack of interoperability, loans as simple as BTC-ETH are not supported on decentralized credit platforms. Furthermore, outstanding loans at such venues lack compliance and recovery procedures.

Leveraging the Universal Protocol Platform's unique technical capabilities, Cred provides crypto-lenders with security and compliance guarantees enabling them to issue loans to an array of borrowers.

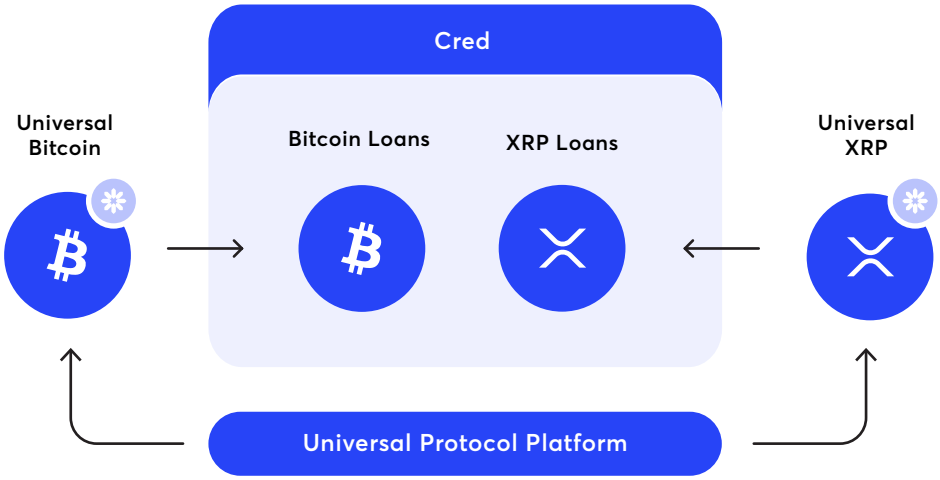


Figure 25: Crypto-to-crypto loans become easier since they can be secured by the lender's superior claim to the underlying assets in the central reserve.

Universal Proxies are used to collateralize loans and give lenders superior claims to the underlying value, up to an amount equivalent to the outstanding loan.

During the term of the loan, Universal Proxy Tokens are placed in a closed-loop system with the lender, which means the lender can 'recall' the Proxies from the borrower should the loan default. This could, over time, lead to loan reinsurance, which would revolutionize the industry.

The Universal Protocol Platform aims to spur the growth of an ecosystem of entirely new lenders that can integrate with the Cred Protocol and make decentralized crypto-to-crypto loans a reality.

08.6. How different participants in the financial system benefit from the Universal Protocol Platform

Institutional investors

- Seamless asset conversion.
- Access to multiple digital assets on one blockchain.
- Voting on assets to be supported.
- Easier technical integration.

Retail investors

- Easy access to crypto assets.
- 24/7 worldwide trading and liquidity.
- Enhanced security and user safeguards.
- Leverage.

DApp providers

- Cross-platform functionality.
- Lower cost of integration.

ICO startups

- Creative freedom.
- Global relevance for native tokens.
- Greater potential for innovation.

Exchange partners

- Dramatically streamlined integration of new coins.
- Increased trade volume and fee income.
- Easy convertibility.
- Credit opportunities.

UPT holders

- Seamless, instant conversion into any Proxy Token.
- Preferential access to ICOs.
- Trading discounts.
- Voting on assets to be supported.
- Trading discounts on certain exchanges.

Financial institutions

- Access to a wide range of asset classes.
- Easy integration of crypto into existing offerings.
- New revenue and engagement opportunities.
- Leverage.

Everyone

- Access to credit.
- More convenient access to cryptocurrencies/other assets.
- Leverage.
- Enhanced security and user safeguards

Figure 26.

09 | Revenue model

09. Revenue model

The Universal Protocol Platform will earn revenues from certain added-value user activities. All fees are payable in UPT only. Chargeable activities include

- Trading fees for on-chain transactions.
- Voting on the next asset to be supported by the platform.
- Minting Proxy Tokens.
- Redeeming Proxy Tokens.
- Asset recovery calls.

Trading fees

The Universal Protocol Platform will receive fees from every transaction involving Proxy Tokens on the Ethereum Network. The fees will be collected automatically by smart contracts in UPT. As UPP adopts a volume-based revenue model, the fees will be a tiny fraction of those charged by centralized exchanges per trade.

Polling

UPT holders can participate in polls for the next cryptocurrency – or other asset – to be supported by the platform. Polling is expected to take place fortnightly, and the result of each poll will result in a new Proxy Token being issued. UPT holders will pay a small fee to participate in the poll.

Minting Proxy Tokens

UPP may charge certain issuers listing fees for supporting their native Tokens and making them compatible with the Ethereum ecosystem of DApps, decentralized exchanges etc, and thus more accessible and investible.

Redemption of Proxy Tokens

Users can instantly exchange any Proxy Token for the underlying asset it represents through smart-contract conversion on the Ethereum network. A small fee in UPT is sent to the platform for facilitating the transaction.

Asset recovery

When users call the recovery function to retrieve their private keys, UPP charges a small fee to make the service commercially viable; the backup provider needs to be paid, as well as Ethereum network fees. Similarly, calls to the inheritance function also incur fees.

10 | Roadmap

10. Roadmap

2018 **Q2**

Idea generation

Legal advice, recruitment of UP Alliance Members, White Paper.

2018 **Q3/Q4**

Platform set up

Code production and audit, UPT Private Sale Tranche 1.

2019 **Q1**

UPT Private Sale Tranche 2 + ICO

Launch of UPBTC, UPT, UPUSD; March 29th 2019: UPT distribution

2019 **Q2**

UPEUR

2019 **Q3**

UPT Token Convertible to 3+ Additional cryptocurrrencies

Integrated with exchange & derivative platforms.

2019 **Q4**

Voting infrastructure enabled for new UPT Tokens

Voting & Governance introduced to UPP, users able to vote on additional currencies. Leaderboard established, staking introduced, UX completed.

2020

Recoverable / Inheritable / Tokenization of Assets

Recoverable & Inheritable fully functional, 2nd layer of truth in effect on smart contract platforms. Wrapper completed, partnerships/integration with exchanges & other infrastructure components finalized. UPP ecosystem completed.

Figure 27.

11 | Token distribution

11. Token distribution

The UPT Genesis Contract will mint 10,000,000,000 UPT tokens.
The distribution is expected to be as follows:

▶	5,400,000,000	Universal Protocol Alliance Partners
▶	351,250,000	Stakeholders
▶	300,000,000	Ecosystem Partners
▶	1,999,750,000	Treasury
▶	1,949,000,000	Token Sale Purchases

11.1. Token sale

The UPT token sale will take place in private and public tranches. The Universal Protocol Platform team intends to distribute a portion of the tokens among a number of key stakeholders, strategic partners, and value-added users to rapidly set up and scale the UPP ecosystem.

11.2. Public purchase phase

Public purchase phase The Universal Protocol Platform team will be conducting a four-week public token sale in March 2019. During this period, UPT will be sold at a rate of ($0.01 USD/UPT).

Tokens will be distributed and activated shortly after the raise with immediate usability on the Universal Protocol Platform. Public purchasers will be required to go through standard KYC/AML procedures, and will be able to purchase UPT using ETH, BTC, bank wire and other methods.

11.3. Private purchase phase

Ahead of the public token sale, the Universal Protocol Platform team is engaging in a private sale to key stakeholders and strategic partners, in order to incentivize participation in the ecosystem. Tokens sold during this period will be subject to various lock-up schedules.

At a Glance:

Universal Protocol Token	
Public Sale Date	March 2019
Price	$0.01 USD = 1 UPT*
Token Lockup	Treasury: 5 years (rolling) Stakeholders: 3 years (rolling) Alliance Partners: 3 years (rolling)
Offering Restrictions	The Universal Protocol Tokens will be offered only outside of the United States to non-U.S. persons, pursuant to the provisions of Regulation S of the U.S. Securities Act of 1933, as amended ("Securities Act"), or in the United States to "accredited investors" as defined in Rule 501(a) of Regulation D under the Securities Act. The Universal Protocol Tokens will not be registered under the Securities Act, and therefore may not be offered or sold in the United States absent registration or an applicable exemption from the registration requirements. As a result, there are substantial restrictions on the transferability of the Universal Proxy Tokens. Generally, the Universal Protocol Tokens may not be transferred within the United States or to a "U.S. person" unless such transfer is made to an "accredited investor" in compliance with the Securities Act, and may only be transferred in a transaction outside the United States to non-U.S. persons. Retail investors in China may not participate, nor may residents of any countries which prohibit the sale of digital assets or cryptocurrencies or who are located, organised or resident in a country or territory that is the subject of country-wide or territory-wide sanctions (including, without limitation, the Democratic People's Republic of Korea, the Democratic Republic of Congo, Eritrea, Iran, Libya, Somalia, South Sudan, Sudan, and Yemen).

Figure 28.

*Exact rate may change according to the value of ETH upon token sale launch.

11.4. Use of proceeds

Initial Technology Set Up (50%)

- Development of core technology.
- License of technology and patents.
- Royalty-free use of various licenses and patents.

Engineering and Development (35%)

- Core platform development.
- Infrastructure, such as integration gateway, open APIs, DApp
- Personnel costs.

Marketing (5%)

- UP adoption campaign.
- Recruitment of key influencers.

Legal and Regulatory (5%)

- Fees for legal and regulatory compliance.
- Acquisition of regulatory licenses for certain jurisdictions.

Operations and Administration (5%)

- Personnel costs.
- Administration costs/working capital in the near-term.
- Acquisition of physical space.

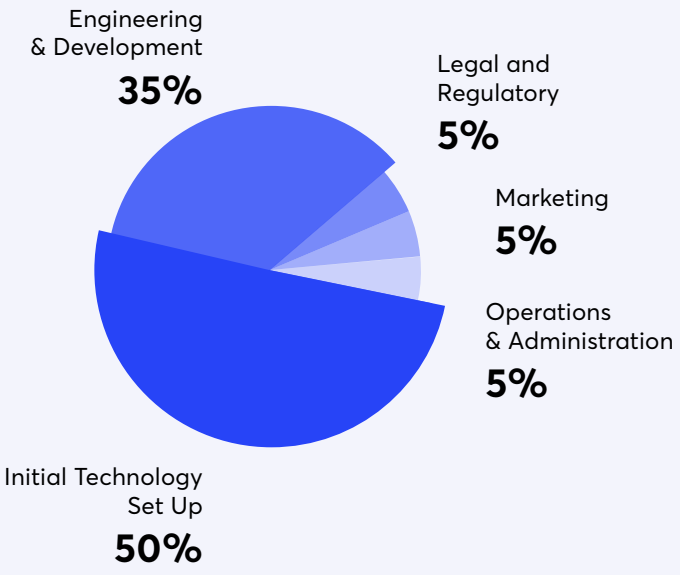


Figure 29.

12 | Team

12.1. Founding team members

Dan Schatt

Chairman

Dan is the Co-Founder and President of Cred, a decentralized lending platform and protocol built on the Ethereum blockchain. He is the former general manager of financial innovations and mobile at PayPal and the author of *Virtual Banking, A Guide to Innovation and Partnering*, Dan received his MBA and MIA from Columbia University.

Juan Pablo Thieriot

Strategy & Operations

J.P. Thieriot has founded and co-founded a number of companies in the real estate, agriculture and technology sectors, including Uphold. Prior to becoming an entrepreneur, J.P. worked for nine years at the technology investment bank Hambrecht & Quist, where he was responsible for the formation and management of the firm's Latin American activities.
J.P. received a BA from Yale University.

Tiago Ribeiro

Engineering

As the co-Chief Technology Officer at Uphold, Tiago is responsible for solving mission-critical problems and designing scalable systems while following best engineering practices. Before becoming part of Uphold's founding team in 2014, Tiago was Lead Engineer at Seegno, a digital media company focused on combining great design with technology that he co-founded in 2008. He has a Masters Degree in Computer Science from Universidade do Minho, PT.

Rui Marinho

Architecture

Rui is a software engineer by day, a security engineer by night and a network engineer at weekends. This blend of interests has allowed him to plan and build large-scale infrastructure at Uphold where he serves as co-Chief Technology Officer. In 2008 he co-founded Seegno, a digital agency focused on bootstrapping technology products. He has a Masters Degree in Engineering from Universidade do Minho, Portugal.

Pedro Branco

Lead Software engineer

Pedro is a software engineer with a passion for blockchain technology.
A highly experienced engineer, Pedro joined Uphold in 2016 and is responsible for blockchain network integration, together with designing and implementing scalable solutions to industry-renowned standards. He has a degree in Computer's Science from Universidade do Minho, PT.

Francesco Matteini

Regulatory & Compliance Guru

Francesco Matteini is the CEO of InnReg and specializes in providing compliance and operations expertise to innovative companies in highly-regulated markets. He has set up and managed compliance platforms to support products in the trading, investing, lending and tax management spaces, including the first social media platform for active traders. From 2005 to 2012 he was Chief Compliance Officer at startup online brokers TradeKing and Zecco. He holds an MPA from Harvard University's Kennedy School of Government and a JD in commercial law from Italy's Università degli Studi.

Simon McLoughlin

Financial Guru

Simon runs Uphold Labs, the R&D unit that incubates scale innovations for the digital money platform. Prior to Uphold, he founded IIN, a capital introduction platform, which has placed approx. $13 bn for institutions (at September 2018). He also started a US broker dealer and was an early investor in VC firm Future Planet Capital. He holds a Masters Degree from Cambridge University.

Daniel Araújo

General Manager

Daniel has an extensive background in technology, banking and financial services. At Uphold, he oversees reserve management. Directly responsible for strategy and operations, he develops and monitors control systems that assure reserve asset holdings. Specializing in operational risk, Daniel also looks after Uphold's relationships with Exchanges. He has a BSc in Economics from Universidade do Minho, Portugal.

Pavel Paramonov

Econo-Physicist

Pavel is a co-founder of Ternary Intelligence, where he developed a proprietary market instability detection methodology rooted in the science of complex systems. He holds a Doctoral Degree in Physics and Engineering, and completed Post-Doctoral research at Georgia Tech. Prior to co-founding Ternary Intelligence, Pavel served as a university faculty and had also undertaken entrepreneurial endeavors in biotechnology. He has a track record of building computational models that integrate theory-based and data-driven approaches, with academic publications totaling over 1000 citations.

Maxim Rokhline

Chief Product Officer

Maxim is the Chief Product Officer at Cred, a decentralized lending platform on the Ethereum blockchain. Prior to Cred, Maxim was the SVP of Financial Services at Tradeshift, global B2B Commerce Network, where he led development of the financial technology unit servicing large enterprises, global supply chain and trade finance banking. Maxim's experience encompasses product strategy at Merchant e-Solutions; mobile payments development at Intuit; global core payments least-cost routing and analytics at PayPal and internet banking for Wells Fargo. Maxim received his BA in Economics from CSUH and BA in Music from Moscow Conservatory.

12.2. Advisory Board

Brendan Eich

CEO, Brave Software

Brendan Eich serves as the President and Chief Executive Officer at Brave Software Inc. He is widely recognized for his contributions to the Internet revolution. Brendan was co-founder of Mozilla Corp. and served as its Chief Technology Officer from August 2005 until April 2014. He recruited the founding team when Mozilla spun out of AOL in 2003 and led the technical effort that built and launched the award-winning Firefox browser. In 1995, he invented JavaScript (ECMAScript). He holds a BSc in math and computer science from Santa Clara University and an MSc in computer science from the University of Illinois.

Greg Kidd

CEO, globaliD

Greg Kidd is the CEO of globaliD and the co-founder of Hard Yaka, a principal investment firm based in San Francisco, California. He has served as an advisor and investor for numerous startups in the exchange space including Shift, Ripple and 3taps, and previously Square and Twitter. Formerly, Greg was a director at Promontory Financial and a senior analyst for payments at The Board of Governor of the Federal Reserve, as well as a Senior Associate at Booz Allen. He holds Masters Degrees from Yale and Harvard Universities.

Lu Hua

CEO, Cred

Lu Hua is the co-founder and CEO of Cred, a decentralized lending platform and protocol built on the Ethereum blockchain. He is the former China Head of Core Payment and US Head of Global Banking Platform at PayPal. He co-founded moKredit, a leading digital credit services company in China, which serves more than 30 million users. He holds an M.Sc in Engineering from the University of British Columbia and a B.Sc in Engineering from Zhejiang University.

Adrian Steckel

CEO, OneWeb

Adrian Steckel is the Chief Executive Officer of OneWeb, one of the world's largest satellite-based wifi projects. Mr. Steckel was the CEO of iUsacell, one of the largest wireless carriers in Mexico until 2015 when it sold to AT&T in a $2.5 billion acquisition. In 2005, TV Azteca (one of the two largest producers of Spanish-language television programming in the world) named Mr. Steckel as President and CEO of Azteca America, the company's wholly-owned broadcasting network focused on the U.S. Hispanic market. Before being appointed CEO, he served as CFO of Azteca America for three years. Mr. Steckel holds a BA in Business from Yale University.

Appendices

Glossary

- **Blockchain:** An immutable, distributed ledger designed to store transaction information, asset ownership, and other relevant data.
- **Centralized exchange:** conventional exchanges, such as Bittrex or Poloniex, that manage a person's capital (and private keys) and facilitate trading. They require delegation of custody and control of assets in order to trade.
- **Cryptocurrency:** Digital currency that employs cryptographic encryption techniques to regulate the generation of units of currency and to verify the transfer of funds, operating independently from a central authority.
- **Decentralized Application (DApp):** An application run by many users on a decentralized platform (like Ethereum, EOS, etc.)
- **Decentralized exchange (DEXs):** A new technology, DEXs facilitate cryptocurrency trading on a distributed ledger. Such exchanges shift back control of funds and trades to the user, and eliminate the single point of failure represented by a centralized exchanges.
- **Detachable wallet:** The UP smart-contract wallet that not only stores value but also confers additional functionality on any Universal Proxies held in it, such as key recovery. Connectable to centralized exchanges, the wallet can enable seamless trading at conventional venues by giving exchanges temporary 'delegate' rights to move assets. After the session, the wallet can be detached allowing the user to take back custody of the assets.
- **Digital Asset:** Any financial asset that can exist in the digital world. This includes: cryptocurrencies, tokens, fiat, commodities, securities etc.
- **Inheritability:** A UP Wallet feature that enables users to list 'beneficiaries' and account inactivity thresholds so that their crypto assets can be easily retrieved by their relatives should the user pass away.
- **Interoperability:** The ability for blockchains to exchange and make use of information across incompatible protocols. Essential for cross-platform conversion.
- **Proxy Units:** ERC-20 compatible units held in Ethereum vaults with no value because they are not yet substantiated by underlying assets in the reserve.
- **Recoverability:** A UP Wallet feature that permits users to recover lost keys and withdraw funds to a private wallet.
- **Smart Contract:** Self-executing agreements that complete the trustless execution of transactions. Can process information and transfer value.
- **Token:** Digital units of value that permit users to interact with products, platforms, and applications on blockchain networks.
- **Universal Protocol Platform (UPP):** The technologies that together provide users with interoperable conversion of cryptocurrencies and tokenized assets: namely, the Coin Foundry, Universal Proxies, and reserve (supplied under licence).
- **Universal Protocol Token (UPT):** The native token of the Universal Protocol Platform ecosystem, which represents the payment mechanism for on-chain conversion, as well as the least expensive way to buy Universal Proxies.
- **Universal Proxy Tokens:** Digital tokens representing substantiated value based on underlying assets held by the platform's reserve.
- **Web3:** A major movement toward decentralized client/server infrastructure. An attempt to move back towards "fat" clients with superior user experience.

Important Notice

This Whitepaper in its current form is being circulated for general information and to invite feedback only on the Universal Protocol Platform as presently conceived, and is subject to review and revision by the directors, the advisors, and/or the legal advisors of the Token Vendor. Please do not replicate or distribute any part of this Whitepaper without this note in accompaniment. No part of this Whitepaper is intended to create legal relations between a recipient of this Whitepaper and the Token Vendor, or to be legally binding or enforceable by such recipient against the Token Vendor. An updated version of this Whitepaper may be published on a date to be determined and announced by the Token Vendor in due course.

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While we make every effort to ensure that any material in this Whitepaper is accurate and up to date, such material in no way constitutes the provision of professional advice. The Token Vendor and its affiliates do not guarantee, and accepts no legal liability whatsoever arising from or connected to, the accuracy, reliability, currency, or completeness of any material contained in this Whitepaper. Participants and potential holders of Tokens should seek appropriate independent professional advice prior to relying on, or entering into any commitment or transaction based on, material published in this Whitepaper, which material is purely published for reference purposes alone. For the purposes of this Whitepaper, "affiliates" of the Token Vendor mean (i) any other person directly or indirectly controlling, controlled by, or under common control with, the Token Vendor, (ii) the entity developing and operating the Universal Protocol Platform; and (iii) the UP Alliance.

The Tokens will be issued as a cryptographic token. The Tokens are not intended to constitute, and should not be construed to constitute, securities of any form, units in a business trust, units in a collective investment scheme or any other form of investment in any jurisdiction. This Whitepaper does not constitute a prospectus or offer document of any sort and is not intended to constitute an offer of securities of any form, units in a business trust, units in a collective investment scheme or any other form of investment, or a solicitation for any form of investment in any jurisdiction.

This Whitepaper does not constitute or form part of any opinion or any advice to acquire, sell, or any solicitation of any offer by the Token Vendor to acquire any Tokens, nor shall it or any part of it, or the fact of its presentation, form the basis of, or be relied upon in connection with, any contract or investment decision.

No person is bound to enter into any contract or binding legal commitment in relation to the acquisition of Tokens and no cryptocurrency or other form of payment is to be accepted on the basis of this Whitepaper.

Any agreement between the Token Vendor and you as a participant in the Token Sale, and in relation to any purchase of Tokens, is to be governed by a separate document setting out the terms and conditions (the "Token Sale Terms") of such agreement. In the event of any inconsistencies between the Token Sale Terms and this Whitepaper, the former shall prevail.

PLEASE NOTE THAT THE TOKEN VENDOR WILL NOT OFFER OR SELL TO YOU, AND YOU ARE NOT ELIGIBLE AND YOU ARE NOT TO PURCHASE ANY TOKENS IN THE TOKEN SALE IF:

- YOU ARE A CITIZEN, DOMICILED IN, OR A RESIDENT OF, OR LOCATED IN AN EXCLUDED JURISDICTION, UNLESS YOU ARE A U.S. QUALIFIED PERSON;
- YOU ARE INCORPORATED IN, OR OPERATE OUT OF, AN EXCLUDED JURISDICTION; AND/OR

- YOU ARE OTHERWISE PROHIBITED OR INELIGIBLE IN ANY WAY, WHETHER IN FULL OR IN PART, FROM PARTICIPATING IN ANY PART OF THE TOKEN SALE,

(COLLECTIVELY, "EXCLUDED PERSONS").

For the purposes hereof:

"Excluded Jurisdiction" means (i) jurisdictions with strategic anti-money laundering / counter-financing of terrorism deficiencies most recently identified by the Financial Action Task Force at http://www.fatf-gafi.org/countries/#high-risk (last accessed on [18 September] 2018); (ii) jurisdictions in which designated individuals and entities are identified by the Monetary Authority of Singapore for the purposes of regulations promulgated under the Monetary Authority of Singapore Act (Chapter 186) of Singapore, the United Nations Act (Chapter 339) of Singapore or the Terrorism (Suppression of Financing) Act (Chapter 325) of Singapore; (iii) the People's Republic of China; (iv) the United States of America; and (v) any jurisdiction in which the Token Sale is prohibited, restricted or unauthorised in any form or manner whether in full or in part under the laws, requirements or rules in such jurisdiction.

"U.S. Qualified Person" means a person who is an "Accredited Investor" as defined in Rule 501(a) of Regulation D under the U.S. Securities Act of 1933, as may be modified, amended or supplemented from time to time.

No regulatory authority has examined or approved of any of the information set out in this Whitepaper. No such action has been or will be taken under the laws, regulatory requirements or rules of any jurisdiction. The publication, distribution or dissemination of this Whitepaper does not imply that the applicable laws, regulatory requirements or rules have been complied with.

There are risks and uncertainties associated with the Token Vendor and its affiliates and their respective business and operations, Tokens, the Token Sale, and the Universal Protocol Platform. Please refer to the section entitled "Risks and Disclosures" set out in this Whitepaper.

This Whitepaper, any part thereof and any copy thereof must not be taken or transmitted to any country where distribution or dissemination of this Whitepaper is prohibited or restricted.

No part of this Whitepaper is to be reproduced, distributed or disseminated without including this section and the following sections entitled "Disclaimer of Liability", "No Representations and Warranties", "Representations and Warranties By You", "Cautionary Note On Forward-Looking Statements", "Third Party Information and No Consent of Other Persons", "Terms Used", "No Advice", "No Further Information or Update", "Restrictions On Distribution and Dissemination", "No Offer of Investment Or Registration" and "Risks and Uncertainties".

Disclaimer of liability

To the maximum extent permitted by all applicable laws, regulations and rules, the Token Vendor or any of its affiliates shall not be liable for any indirect, special, incidental, consequential or other losses of any kind, in tort, contract or otherwise (including but not limited to loss of revenue, income or profits, and loss of use or data), arising out of or in connection with any acceptance of or reliance on this Whitepaper or any part thereof by you or any person to whom you transmit any part of the Whitepaper to (whether authorised or unauthorised by any of the Token Vendor or any of its affiliates).

No representations and warranties

None of the Token Vendor or its affiliates makes or purports to make, and hereby disclaims, any representation, warranty or undertaking in any form whatsoever to any entity or person, including any representation, warranty or undertaking in relation to the truth, accuracy and completeness of any of the information set out in this Whitepaper.

Representations and warranties by you

By accessing and/or accepting possession of any information in this Whitepaper or such part thereof (as the case may be), you represent and warrant to the Token Vendor as follows:

- You agree and acknowledge that Tokens do not constitute securities of any form, units in a business trust, units in a collective investment scheme or any other form of investment in any jurisdiction;
- You are not an Excluded Person;
- You are not a citizen or resident of any jurisdiction in which either the purchase of, receipt, or holding of Tokens is prohibited, restricted, curtailed, hindered, impaired or otherwise adversely affected by any applicable law, regulation or rule;
- None of you or (in the case of a corporation) any of your subsidiaries (if any), any of your directors or officers nor, any of your employees, agents or any other person acting on behalf of you or any of your subsidiaries is an individual or entity that, or is owned or controlled by an individual or entity that:
  - Is listed by the Monetary Authority of Singapore (**"MAS"**) as designated individuals or entities defined in the respective regulations promulgated under the Monetary Authority of Singapore Act (Chapter 186) of Singapore, the United Nations Act (Chapter 339) of Singapore or the Terrorism (Suppression of Financing) Act (Chapter 325) of Singapore or such other law, regulation or rule as may be prescribed by the MAS from time to time;
  - Is the subject of sanctions administered or enforced by Singapore, the United States of America (including without limitation the U.S. Department of the Treasury's Office of Foreign Asset Control), the United Kingdom of Great Britain and Northern Ireland, the European Union or any other Governmental Authority (collectively, **"Sanctions"**);
  - Is located, organised or resident in a country or territory that is the subject of country-wide or territory-wide Sanctions (including, without limitation, the Democratic People's Republic of Korea, the Democratic Republic of Congo, Eritea, Iran, Libya, Somalia, South Sudan, Sudan, and Yemen);
  - Has engaged in and is not now engaged in any dealings or transactions with any government, person, entity or project targeted by, or located in any country or territory, that at the time of the dealing or transaction, is or was the subject of any Sanctions; or
  - Is otherwise a party with which the Token Vendor is prohibited from dealing under laws applicable to you;
- None of: (i) you; (ii) any person controlling or controlled by you; (iii) if you are a privately-held entity, any person having a beneficial interest in you; or (iv) any person for whom you are acting as agent or nominee in connection with your participation in the Token Sale is a senior foreign political figure, or any immediate family member or close associate of a senior foreign political figure, as such terms are defined below.

A **"senior foreign political figure"** is defined as a senior official in the executive, legislative, administrative, military or judicial branch of a government (whether elected or not), a senior official of a major political party, or a senior executive of a foreign government-owned corporation, and includes any corporation, business or other entity that has been formed by, or for the benefit of, a senior foreign political figure.

"Immediate family" of a senior foreign political figure typically includes such figure's parents, siblings, spouse, children and in-laws. A "close associate" of a senior foreign political figure is a person who is widely and publicly known to maintain an unusually close relationship with such senior foreign political figure, and includes a person who is in a position to conduct substantial domestic and international financial transactions on behalf of such senior foreign political figure.

- If you are affiliated with a non-U.S. banking institution (**"Foreign Bank"**), or if you receive deposits from, make payments on behalf of, or handle other financial transactions related to a Foreign Bank, you represent and warrant to the Token Vendor that:
  - The Foreign Bank has a fixed address, and not solely an electronic address, in a country in which the Foreign Bank is authorised to conduct banking activities;
  - The Foreign Bank maintains operating records related to its banking activities;
  - The Foreign Bank is subject to inspection by the banking authority that licensed the Foreign Bank to conduct its banking activities; and
  - The Foreign Bank does not provide banking services to any other Foreign Bank that does not have a physical presence in any country and that is not a regulated affiliate;
- You agree and acknowledge that this Whitepaper does not constitute a prospectus or offer document of any sort and is not intended to constitute an offer of securities of any form, units in a business trust, units in a collective investment scheme or any other form of investment in any jurisdiction, or a solicitation for any form of investment, and you are not bound to enter into any contract or binding legal commitment, and no cryptocurrency or other form of payment is to be accepted, on the basis of this Whitepaper;
- You acknowledge and understand that no Tokens should be construed, interpreted, classified or treated as enabling, or according any opportunity to, token holders to participate in or receive profits, income, or other payments or returns arising from or in connection with Tokens or the proceeds of the Token Sale, or to receive sums paid out of such profits, income, or other payments or returns;
- You agree and acknowledge that no regulatory authority has examined or approved of the information set out in this Whitepaper, no action has been or will be taken under the laws, regulatory requirements or rules of any jurisdiction and the publication, distribution or dissemination of this Whitepaper to you does not imply that the applicable laws, regulatory requirements or rules have been complied with;
- You agree and acknowledge that this Whitepaper, the undertaking and/or the completion of the Token Sale, or future trading of Tokens on any cryptocurrency exchange, shall not be construed, interpreted or deemed by you as an indication of the merits of the Token Vendor and its affiliates, the Tokens, the Token Sale, and/or the Universal Protocol Platform;
- The distribution or dissemination of this Whitepaper, any part thereof or any copy thereof, or acceptance of the same by you, is not prohibited or restricted by the applicable laws, regulations or rules in your jurisdiction, and where any restrictions in relation to possession are applicable, you have observed and complied with all such restrictions at your own expense and without liability to the Token Vendor and/or its affiliates;
- You agree and acknowledge that in the case where you wish to acquire any Tokens, Tokens are not to be construed, interpreted, classified or treated as:
  - Any kind of currency other than cryptocurrency;
  - Debentures, stocks or shares issued by any person or entity;
  - Rights, options or derivatives in respect of such debentures, stocks or shares;
  - Rights under a contract for differences or under any other contract the purpose or pretended purpose of which is to secure a profit or avoid a loss;
  - Units in a collective investment scheme;
  - Units in a business trust;

- Derivatives of units in a business trust; or
- Any form of investment;

- You are legally permitted to participate in the Token Sale and all actions contemplated or associated with such participation, including the holding and use of Tokens;
- The amounts that you use to acquire Tokens were not and are not directly or indirectly derived from any activities that contravene the laws and regulations of any jurisdiction, including anti-money laundering laws and regulations;
- If you are a natural person, you are of sufficient age and capacity under the applicable laws of the jurisdiction in which you reside and the jurisdiction of which you are a citizen to participate in the Token Sale;
- You are not obtaining or using Tokens for any illegal purpose;
- You have a basic degree of understanding of the operation, functionality, usage, storage, transmission mechanisms and other material characteristics of cryptocurrencies, blockchain-based software systems, cryptocurrency wallets or other related token storage mechanisms, blockchain technology, and smart contract technology;
- You are fully aware and understand that in the case where you wish to purchase any Tokens, there are risks associated with the Token Vendor and its affiliates and their respective business and operations, Tokens, the Token Sale, and Universal Protocol Platform;
- You bear the sole responsibility to determine what tax implications a purchase of Tokens may have for you and agree not to hold the Token Vendor, its affiliates and/or any other person involved in the Token Sale liable for any tax liability associated with or arising therefrom;
- You agree and acknowledge that neither the Token Vendor nor its affiliates are liable for any direct, indirect, special, incidental, consequential or other losses of any kind, in tort, contract or otherwise (including but not limited to loss of revenue, income or profits, and loss of use or data), arising out of or in connection with any acceptance of or reliance on this Whitepaper or any part thereof by you;
- You waive the right to participate in a class action lawsuit or a class wide arbitration against the Token Vendor, its affiliates and/or any person involved in the Token Sale and/or with the creation and distribution of Tokens; and
- All of the above representations and warranties are true, complete, accurate and non-misleading from the time of your access to and/or acceptance of possession this Whitepaper or such part thereof (as the case may be).

Cautionary note on forward-looking statements

All statements contained in this Whitepaper, statements made in press releases or in any place accessible by the public and oral statements that may be made by the Token Vendor or its directors, executive officers or employees acting on behalf of the Token Vendor (as the case may be), that are not statements of historical fact, constitute "forward-looking statements". Some of these statements can be identified by forward-looking terms such as "aim", "target", "anticipate", "believe", "could", "estimate", "expect", "if", "intend", "may", "plan", "possible", "probable", "project", "should", "would", "will" or other similar terms. However, these terms are not the exclusive means of identifying forward-looking statements. All statements regarding the Token Vendor and/or its affiliates' business strategies, plans and prospects and the future prospects of the industry which the Token Vendor and/or its affiliates are in are forward-looking statements. These forward-looking statements, including but not limited to statements as to the Token Vendor and/or its affiliates' prospects, future plans, other expected industry trends and other matters discussed in this Whitepaper regarding the Token Vendor and/or its affiliates are matters that are not historic facts, but only predictions.

These forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause the actual future results, performance or achievements of the Token Vendor and/or its affiliates to be materially

different from any future results, performance or achievements expected, expressed or implied by such forward-looking statements. These factors include, amongst others:

- Changes in political, social, economic and stock or cryptocurrency market conditions, and the regulatory environment in the countries in which the Token Vendor and/or its affiliates conduct their respective businesses and operations;
- The risk that the Token Vendor and/or its affiliates may be unable to execute or implement its business strategies and future plans;
- Changes in interest rates and exchange rates of fiat currencies and cryptocurrencies;
- Changes in the anticipated growth strategies and expected internal growth of the Token Vendor, its affiliates and/or the Universal Protocol Platform;
- Changes in the availability and fees payable to the Token Vendor and/or its affiliates in connection with their respective businesses and operations or in the Universal Protocol Platform;
- Changes in the availability and salaries of employees who are required by the Token Vendor and/or its affiliates to operate their respective businesses and operations;
- Changes in preferences of users of the Universal Protocol Platform;
- Changes in competitive conditions under which the Token Vendor and/or its affiliates operate, and the ability of the Token Vendor and/or its affiliates to compete under such conditions;
- Changes in the future capital needs of the Token Vendor and/or its affiliates and the availability of financing and capital to fund such needs;
- War or acts of international or domestic terrorism;
- Occurrences of catastrophic events, natural disasters and acts of God that affect the businesses and/or operations of the Token Vendor and/or its affiliates;
- Other factors beyond the control of the Token Vendor and/or its affiliates; and
- Any risk and uncertainties associated with the Token Vendor and/or its affiliates and their respective business and operations, Tokens, the Token Sale, and the Universal Protocol Platform.

All forward-looking statements made by or attributable to the Token Vendor and/or its affiliates and/or persons acting on behalf of the Token Vendor and/or its affiliates are expressly qualified in their entirety by such factors. Given that risks and uncertainties that may cause the actual future results, performance or achievements of the Token Vendor and/or its affiliates to be materially different from that expected, expressed or implied by the forward-looking statements in this Whitepaper, undue reliance must not be placed on these statements. These forward-looking statements are applicable only as of the date of this Whitepaper.

Neither the Token Vendor and/or its affiliates nor any other person represents, warrants, and/or undertakes that the actual future results, performance or achievements of the Token Vendor and/or its affiliates will be as discussed in those forward-looking statements. The actual results, performance or achievements of the Token Vendor and/or its affiliates may differ materially from those anticipated in these forward-looking statements.

Nothing contained in this Whitepaper is or may be relied upon as a promise, representation or undertaking as to the future performance or policies of the Token Vendor and/or its affiliates.

Further, the Token Vendor and/or its affiliates disclaim any responsibility to update any of those forward-looking statements or publicly announce any revisions to those forward-looking statements to reflect future developments, events or circumstances, even if new information becomes available or other events occur in the future.

Third party information and no consent of other persons

This Whitepaper includes information obtained from various third party sources (**"Third Party Information"**). None of the publishers of Third Party Information has consented to the inclusion of Third Party Information in this Whitepaper and is therefore not liable for Third Party Information. While reasonable action has been taken to ensure that Third Party Information has been included in their proper form and context, neither the Token Vendor nor its directors, executive officers, and employees acting on their behalf, has independently verified the accuracy, reliability, completeness of the contents, or ascertained any applicable underlying assumption, of the relevant Third Party Information.

Consequently, neither the Token Vendor nor their directors, executive officers and employees acting on its behalf makes any representation or warranty as to the accuracy, reliability or completeness of such information and shall not be obliged to provide any updates on the same.

Terms used

To facilitate a better understanding of Tokens being the subject of the sale conducted by the Token Vendor, and the business and operations of the Token Vendor and/or its affiliates, certain technical terms and abbreviations, as well as, in certain instances, their descriptions, have been used in this Whitepaper. These descriptions and assigned meanings should not be treated as being definitive of their meanings and may not correspond to standard industry meanings or usage.

Words importing the singular shall, where applicable, include the plural and vice versa and words importing the masculine gender shall, where applicable, include the feminine and neuter genders and vice versa. References to persons shall include corporations.

No advice

No information in this Whitepaper should be considered to be business, legal, financial or tax advice regarding the Token Vendor and/or its affiliates, Tokens, the Token Sale, and/or the Universal Protocol Platform. You should consult your own legal, financial, tax or other professional adviser regarding the Token Vendor and/or its affiliates and their respective business and operations, Tokens, the Token Sale, and the Universal Protocol Platform. You should be aware that you may be required to bear the financial risk of any purchase of Tokens for an indefinite period of time.

None of the advisors engaged by us has made or purports to make any statement in the Whitepaper or any statement upon which a statement in the Whitepaper is based and each of them makes no representation regarding any statement in the Whitepaper and to the maximum extent permitted by law, expressly disclaims and takes no responsibility for any liability to any person which is based on, or arises out of, any statement, information or opinions in, or omission from, the Whitepaper.

No further information or update

No person has been or is authorised to give any information or representation not contained in this Whitepaper in connection with the Token Vendor and/or its affiliates and their respective business and operations, Tokens, the Token Sale, or the Universal Protocol Platform. If given, such information or representation must not be relied upon as having been authorised by or on behalf of the Token Vendor and/or its affiliates. The Token Sale shall not, under any circumstances, constitute a continuing representation or create any suggestion or implication that there has been no change, or development reasonably likely to involve a material change in the affairs, conditions and prospects of the Token Vendor and/or its affiliates or in any statement of fact or information contained in this Whitepaper since the date hereof.

Restrictions on distribution and dissemination

The distribution or dissemination of this Whitepaper or any part thereof may be prohibited or restricted by the laws, regulatory requirements, and rules of any jurisdiction. In the case where any restriction applies, you are to inform yourself about, and to observe, any restrictions which are applicable to your possession of this Whitepaper or such part thereof (as the case may be) at your own expense and without liability to the Token Vendor and/or its affiliates.

Persons to whom a copy of this Whitepaper has been distributed or disseminated, provided access to or who otherwise have the Whitepaper in their possession shall not circulate it to any other persons, reproduce or otherwise distribute this Whitepaper or any information contained herein for any purpose whatsoever nor permit or cause the same to occur.

No offer of investment or registration

This Whitepaper does not constitute a prospectus or offer document of any sort and is not intended to constitute an offer of securities of any form, units in a business trust, units in a collective investment scheme or any other form of investment, or a solicitation for any form of investment in any jurisdiction. No person is bound to enter into any contract or binding legal commitment and no cryptocurrency or other form of payment is to be accepted on the basis of this Whitepaper.

No regulatory authority has examined or approved of any of the information set out in this Whitepaper. No such action has been or will be taken under the laws, regulatory requirements or rules of any jurisdiction. The publication, distribution or dissemination of this Whitepaper does not imply that the applicable laws, regulatory requirements or rules have been complied with.

Prevailing language

The English language version of this Whitepaper is the only official version in force. If there is any inconsistency between this Whitepaper and other translations of this Whitepaper, the English version of this Whitepaper shall prevail. You acknowledge and agree that any translation you may have reviewed or which may have been made available to you is for your reference only and are not certified by the Token Vendor or its affiliates. Names of any laws and regulations, governmental authorities, institutions, natural persons or other entities which have been translated into English and included in this Whitepaper and for which no official English translation exists are unofficial translations for your reference only.

Risks and uncertainties

Prospective purchasers of Tokens should carefully consider and evaluate all risks and uncertainties associated with the Token Vendor and/or its affiliates and their respective business and operations, Tokens, the Token Sale, and the Universal Protocol Platform, all information set out in this Whitepaper and the Token Sale Terms prior to any purchase of Tokens. Further details of the risk factors relating to participating in the Token Sale and the Token Vendor will be set out in the Token Sale Terms. If any of such risks and uncertainties develops into actual events, the business, financial condition, results of operations and prospects of the Token Vendor and/or its affiliates could be materially and adversely affected. In such cases, you may lose all or part of the value of Tokens.

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