FREEOS: Self-Governed, Cooperative Income

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Abstract

The economic management of currency issuance and distribution is currently reliant on central authorities and economic experts. With the advent of blockchain-based digital currencies, a new decentralised means has allowed for the issuance of a currency independently of a centralised authority. Currently, most blockchain-based currencies depend on hard rules, algorithms and proofs to manage the issuance of these digital currencies. These issuance mechanisms are firmly fixed with few —or zero—means to alter the distribution method in a more deliberate, nuanced or responsive fashion.

This paper proposes that the economic mechanisms of currency issuance can be managed through direct democracy utilising a blockchain-based voting system. To ensure that there is consistent engagement, this system proposes to equally distribute the newly minted currency to active subscribers of this system through inflationary means.

Besides controlling the inflation rate, the subscribers will be able to vote on other economic inputs. Thus providing tools to effectively crowdsource the management of this economy. Additionally, live surveys are gathered—that are conditional to vote and therefore receive economic reward. The surveys are designed to provide real-world feedback of the intentions of the greater community. Thus allowing the voting population to make informed choices before voting. This communication method acts as a type of "Anti-Prisoner Dilemma" mechanism that is intended to prevent a "Tragedy of the Commons" type of dynamic from unfolding. Some rules will govern the magnitude of the inputs allowed, depending on the growth and maturity of the economy and subscribers. The mechanisms of this currency system can be utilised by its subscribers, as a self-managed economy, to self-regulate towards a healthy equilibrium.

This model provides a new economic structure for stable, financial, self-governance. This proposal aims to investigate whether the deployment of the model—or any upgrades or variants to the model—may generate sustainable, improved financial outcomes for those that participate.

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Stating the Problem

In the vast history of money, currency has been an entity that is issued and controlled by a central authority. With the advent of Bitcoin it became conceivable that central authorities were not needed —as a clever mathematical approach was encoded into the rules of a decentralised network to issue and distribute wealth.

Bitcoin a Solution to a Financial Crisis

Once Bitcoin matured into a workable, robust solution, a trusted decentralised model of economics emerged. This enabled a Cambrian-like explosion of alternative cryptocurrencies and blockchain-based systems of economics and governance.

Bitcoin—whether the timing was purposeful or not—was created and launched in the midst of the 2008 Global Financial Crisis in which the collapse of the U.S. sub-prime mortgage market and the fractional-reserve banking response created a global recession. Bitcoin happened to be launched in the midst of this financial crisis and benefited from the surrounding economic conditions as an alternative to a centrally managed (or mismanaged) economic system that was mathematically sound and was not controlled by a single entity. Early proponents of cryptocurrencies tended to see Bitcoin as a modern, free-market solution to a new type of trusted finance.

Loss of Trust / Decline of Freedom

The wake of the 2008 Global Financial Crisis, was a time where trust—in our common institutions —appeared to be vastly eroding in the modern world. Digital technologies—once promised to open up and empower the notions of democracy and transparency—had started to become noisy, attention-seeking, fear-inducing and divisive. Social networks—once a tool of collaboration, crowd-sourced news and democratic movements—started to settle towards myopic bubble-chambers where like-minded viewpoints became amplified, and opposing viewpoints were disrespectfully silenced. These developments led to the decline of the once-proposed benefits of globalisation around the world, as insular, ultra-nationalistic views started to predominate. As a result, trust was eroding our digital, economic and political systems—both nationally and internationally.

Economic well-being and freedom continued its steady decline for most global citizens, as wealth became increasingly collected in the hands of a few. Again the effects of rapid, top-driven globalisation were part of the cause, and the countering reaction has been trending towards nationalism and protectionism.

Historically we have experienced the horrors ultra-nationalism and protectionism can result in. An erosion of trust, respect, and connection that has shown to turn disastrous in a blink of an eye.

Few of the arising blockchain projects were able to maintain loyal developer and community involvement once the cryptocurrency bubble collapsed throughout 2018—a decade after Bitcoin

was launched. Much of the community surrounding the blockchain originally became involved as an attempt to reach economic freedom outside of normal restrictions.

Much of the early appeal of cryptocurrencies had been driven by the rise in value many projects have achieved in a short time. Not only has this rise driven excellent financial returns for some investors and traders, it has helped combat many individuals against the forces of inflation and devaluation of nationally-issued fiat currencies. As an attempt to counter devaluation, many long-term proponents of cryptocurrencies have been attracted the concept of a new form of "digital gold" that ties its value to scarcity, network effects, and rising demand.

Despite the overall rise of cryptocurrencies to nearly close in on a total trillion-dollar market capitalisation, many of the coins and tokens are extremely volatile. This volatility is magnified and manipulated by digital trading bots, orchestrated trading cartels and individuals holding large volumes of cryptocurrency and make such investments unreliable for most individuals.

Limitations of Stablecoins

Extreme volatility has driven the need for more stable types of cryptocurrencies—a type called "stablecoins". These stablecoins are typically pegged to high-profile national currencies, such as the United States Dollar, Euro, Yuan, Won or Yen. Until recently, most were centralised and had issues of trust, due to a lack of transparency, but as the need was high these flaws have been largely overlooked.

Since national fiat currencies are not tied to any real-world commodity, there is much concern that these stablecoins will also erode their purchasing power over time, and therefore do not provide confidence as a long-term store of value and may be used only for trading, payments and other short-term activities.

Onboarding stablecoins has proven to be difficult for most common people outside of trading and financial specialists. This is largely due to the friction towards adoption of these stablecoins—a type of fiat-pegged cryptocurrency. These stablecoins need to be purchased using blockchain accounts, which requires management of private keys or high trust in third-parties. Many of these third parties require strong identification proofs such as KYC (Know your Customer) and AML (Anti-Money Laundering) to be in compliance with growing government regulations. Unless an individual was sufficiently motivated (i.e. already involved with cryptocurrencies), there are few reasons to switch to digital stablecoins as a main trading currency for most ordinary individuals.

Universal Basic Income

Recently, a number of projects have attempted to create versions of a Universal Basic Income (UBI) using blockchain solutions. As blockchain-based UBI solutions do not need to be generated through taxes, this characteristic bypasses one of the most prominent concerns of government-backed UBI proposals. Existing blockchain UBI projects have great potential—through incentives—to attract and onboard ordinary individuals to use cryptocurrencies. But they tend to inherit the volatility that

most cryptocurrencies experience. This volatility makes these currencies unreliable as an everyday income stream and greatly limits their adoption.

Few efforts have been made towards a type of blockchain-based Universal Basic Income that provides a relatively stable value in terms of real, purchasing power. As blockchain tools mature—and cryptocurrency economics are better understood—there is potential for a system that has such characteristics to emerge. The model described in this paper outlines a design to create an equitable, stable economic system that can be easily accessed, and has economic benefits for the participants to remain continuously engaged.

Introduction

FREEOS is an enactment of direct democracy as a means of collaborating within a mutually beneficial economy. This novel approach towards an economic system is founded on:

- Decentralised, secure, immutable qualities of the blockchain;
- A sustainable subscription concept to provide a continuous base level of value to the currency;
- Systems designed for fairly incentivising engagement;
- Systems designed to incentivise responsible management; and
- A democratic structure that allows participants (subscribers) to self-govern their own economic interests.

This model introduces an ongoing, immutable system designed to empower the individuals that make up a growing diverse, global, and decentralised community. FREEOS is designed to fairly incentivise the individuals in that community (subscribers) to remain engaged, well-informed, and in a state of continuous cooperation towards the creation of mutual and equitable financial abundance. The FREEOS system is maintained through mechanisms of direct democracy tied to economic tools that allow these subscribers to make decisions for their own collective economic interest.

The Value of Trustless

Blockchain is often described as 'trustless', which conveys the assurance that is given to the underlining cryptographic proofs combined with decentralisation of the network and solid incentive structures that keeps the system in play. The word 'trustless' conveys that trust is so inherent—and 'free'—that the system is practically invisible and do not need to defer to central authorities to ensure that transactions and interactions do not deviate from what was intended or expected.

FREEOS relies on this base blockchain structure, and the 'trustless' characteristics that have been one of the primary attractions of blockchain technologies—driving adoption towards institutions around the word in the fields of finance, business, governance, supply chains, data and many others.

Trust has value; this is often evident when levels of trust are poor thus causing industries to assure, secure, maintain, and enforce trust—often costing more then when trust is common, unconditional and intrinsic.

Part of the value proposition in cryptocurrencies can be attributed to the value that this 'trustless' base level provides. 'Trustless' implies a sense of free, strong, unconditional trust; this in itself can be highly valued concept and may eliminate any doubts about cryptocurrencies having a level of value.

The blockchain distributes trust based on consensus and mathematical proofs instead of giving it to a central authority. This means we create a world without a trusted 'man-in-the-middle'. Instead of trusting a central body such as banks, corporations or government, we trust the distributed system, the algorithm, the code.

Current cryptocurrency projects allow for decentralised transactions to occur, but few offer the means of a decentralised distribution model to be managed by the active participants of that economy. Most distribution models rely on proofs, such as proof-of-work, proof-of-stake—or other variants—to manage the distribution of the digital currency throughout the stakeholders, managers and participants of the economy through a set of rules, coded into the currency's core protocol. This replaces the authority of institutions with the authority of code—or law. The advantages that traditional fiat currencies have to employ dynamic strategies based on real-time conditions become lost in the algorithmic approach of most blockchain-based digital currencies.

As rapid iteration over economic models is one of the emerging value propositions of cryptocurrencies, alternative approaches are valuable. Blockchain economies that include dynamic distribution methods and self-governance may be invaluable to ensure the economy is working for the widest range of participants throughout a variety of economic conditions.

FREEOS builds additional levels of trust by creating a system where the contributions of the subscribers create an ongoing income that is equally distributed amongst all active subscribers. This provides an 'even-playing-field' that is extended to all subscribers equally. Each individual has an equal decision-making influence over the system that is absolutely verifiable and secure.

As a system that consistently gives back more than is asked from—and is built on secure, robust, trusted blockchain technologies—FREEOS intends to extend this invisible 'trustless' concept into the realm of economic self-governance to provide a base of collective and individual financial freedom for all that subscribe to the process.

A Stable, Self-Governed, Cooperative Income

Unlike most proposed Universal Basic Income concepts that assume that taxes gathered by a central governing authority, FREEOS does not rely on taxation to generate value—this concept addresses the most common resistance towards any meaningful, nation-wide deployment of a Universal Basic Income.

Additionally, the tools provided to the subscribers of FREEOS allow the economy to be managed towards a stable value—aligned to real-world purchasing power. With such stability, the FREEOS tokens can be relied on as a currency used in day-to-day financial transactions (trading, payments, income, government taxes, etc.). Additionally, stability in terms of real-world purchasing power

would engender this token with additional trust as a store of value without the worry that the token's value would erode over time.

In many ways, the FREEOS token is an alternative type of Universal Basic Income (UBI) that differentiates between the typical 'hand-out' philosophy often associated with this concept. Instead this version requires responsibility from every individual subscriber, which ends up benefiting every other subscriber. In essence, what is good for the individual is additionally good for the greater community simply through the nature of the systems design.The FREEOS concept extends the traditional concept of UBI in a number of directions, mainly:

- Not generated through the gathering of taxes;
- A stable value created through cooperative self-governance systems empowered by direct democracy;
- Not distributed through, nor reliant on, a central authority to distribute.

Due to these differences, this variant of Universal Basic Income takes on a new term "Self-Governed Cooperative Income" or "SCI".

A Decentralised Voting System on the EOSIO Blockchain

In this paper we have considered a decentralised voting system on the EOSIO blockchain in which voters make decisions that are frequently increasing the supply of FREEOS tokens by a set limit as related to a variable inflation cap—with the limits defined and derived by the growth and maturity of the economic and social ecosystem. These FREEOS tokens are equally distributed to all participating voters at the conclusion of a successful voting iteration as an economic incentive and means of providing liquidity to the wider market. The attractiveness of an ongoing economic incentive is one of the primary mechanisms to bring a healthy valuation to the FREEOS token and thus onboarding new users into the ecosystem to improve the value often derived from network effects.

FREEOS sets out to make voting accessible, habitual and incentivised. This allows consensus to be established—not only in financial matters—but also in any matter involving community opinions.

The governance of FREEOS is inspired by the Swiss style of direct democracy where referendums, discussions and voting can happen on a global scale and where every participant has the opportunity to express their opinion and impact the results.

An immutable, blockchain solution like FREEOS can continue to support the community for as long as the underlining blockchain infrastructure exists. This assurance is an important consideration in building any decentralised solution that is designed to facilitate freedom and collaboration amongst equal peers.

FREEOS As A Grassroots Solution

FREEOS can be considered a grassroots solution that is decentralised, fair and is aligned with the principles of direct democracy to provide an alternative to the centralised, top-down forces of

globalisation. This paper is a report on recent endeavours in designing a blockchain application for empowering direct democracy and communities. Additionally, this paper discusses perceived economic value which can be brought by the development of similar applications.

With blockchain-enabled tools and systems, this project intends to combat the erosion of trust and financial well-being by putting strong tools for community collaboration and economic controls in the hands of the people directly.

The underlining philosophy of this grassroots approach towards economic self-governance is conveyed in the contrast between 'hand-outs' tied to welfare programs (or UBI propositions) and the FREEOS approach—which can be conveyed as a 'hand-in-hand-out'. Instead of a 'top-down' economic solution, this paper proposes a 'bottom-up' economic solution that provides a base of value, evenly, and equitably distributed to provide a sound financial foundation to the entire FREEOS economy.

Adoption towards Ubiquity

With a fair, stable, trustworthy and equitable income stream for all of the subscribers, FREEOS generates a strong incentive motive that should attract individuals to join. Additionally, the chosen EOSIO blockchain-based smart contract platform that FREEOS is built upon has reduced friction to join and use than other blockchain platforms that preceded it.

Additionally, a system of non-fungible blockchain digital Vouchers will be generated by the system. These Vouchers—which include an expiry date—can bypass the subscription fee (once only). Vouchers may be provided to interested parties conditional upon fulfilling certain responsibilities prior. This allows opportunities to educate the public on the basic operations of the blockchain and to have an understanding of the FREEOS mechanisms—as well as how to be a responsible steward of the economy—as a condition to receive a Voucher that provides free entry into the FREEOS system.

Any new subscribers that enter via the Voucher will need to be responsible fiscally and consistently active to ensure that the subscription fee for the next year are held. This additional mechanism—combined with the attraction of an ongoing stable income together with the reduced friction of the EOSIO platform—provides the grounds for a currency that may attract wide adoption.

Ubiquitous adoption will help ensure that this stable digital currency is used more commonly for everyday purchases, payments, and income. Strong usage of the currency encourages the wider community—whether subscribers or not—to create real-world markets that accept and use FREEOS as an everyday occurrence. This will be particularly evident if the subscribers are able use the tools provided by the system to maintain a stable value that corresponds to real-world purchasing power—which they will be continuously incentivised towards stewardship through self-governance.

FREEOS Purpose

With blockchain-enabled tools and systems, the FREEOS project intends to engender economic trust and financial well-being by putting strong tools centred around economic controls in the hands of the people directly through a blockchain-based governance system. This system allows the subscribers of this economy to vote on economic decisions that have been typically delegated to governments and central banks. It is the premise of the project that collaboration and trust creates intrinsic value, and that a well-designed system that facilitates responsible economic stewardship can create wide-ranging economic growth, value and long-lasting benefits for an entire community.

In an earlier parallel of the purpose of FREEOS, Scottish lawyer, James Steuart (1767) once coined the term, 'political economy' and defined its ultimate purpose:

"The great art therefore of political economy is, first to adapt the different operations of it to the spirit, manners, habits, and customs of the people; and afterwards to model these circumstances so, as to be able to introduce a set of new and more useful institutions. The principal object of this science is to secure a certain fund of subsistence for all the inhabitants, to obviate every circumstance which may render it precarious; to provide every thing necessary for supplying the wants of the society, and to employ the inhabitants (supposing them to be free-men) in such a manner as naturally to create reciprocal relations and dependencies between them, so as to make their several interests lead them to supply one another with their reciprocal wants."(Steuart, 1767)

Similarly, FREEOS represents a new goal-driven redesign of a 'political economy', and being a digital, self-contained system on the new institution of blockchain-based platforms, the subscribers and developers can safely test the validity of this system and tweak and iterate upon its rules towards reaching the same goals as James Steuart once conveyed—for all of today's free-people 'to supply one another with their reciprocal wants'.

FREEOS exists to govern a Self-Governed Cooperative Income (SCI) to supply each other with their reciprocal wants as a modern take of this 'political economy'. This modern method intends on accomplishing this goal through looking at systems design with the new paradigms provided by blockchain technologies, incentive structures and token economics. This systems design thinking proposes that a stable, equitable, regenerative, circular economic system can be managed directly by the people—without any central authorities, nor any harsh, unfair rules that lean increasingly towards a "winner-takes-all" approach.

FREEOS proposes that if a large, diverse, and distributed group of people are given secure blockchain-based tools to come to consensus on key economic drivers then this group may be incentivised towards stewardship of a secure, growing and stable economy. Having an increasingly ubiquitous, stable and fair income can provide the foundation for a range of other economic activities, such as trading, income, markets, services etc.

As such, the purpose of FREEOS is to leverage systems design concepts and new technologies to create a globally equitable economic base for all individuals willing to participate in a shared Self-governed Cooperative Income.

The Proposed Solution

To provide empowerment for the community, we propose the FREEOS platform solution.

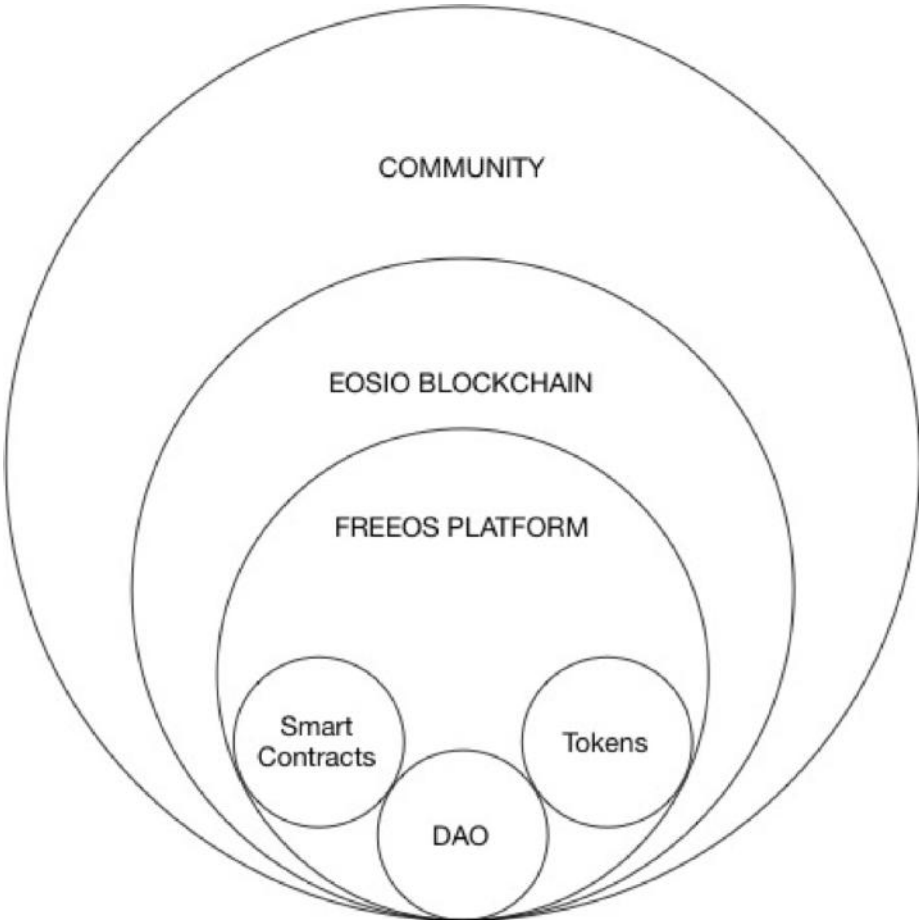

Figure 1. The concept of the FREEOS Platform (Source: Authors).

Three Key Aspects: Tokens, Smart Contracts, and FreeDAO

The design of the FREEOS platform—in essence—contains three key aspects:

FREEOS Tokens

The FREEOS token which is an EOSIO token that is initially airdropped (AirClaim) as a part of a community-driven initiative to provide liquidity within the EOS ecosystem for micro-payments, tips, donations, and ordinary transactions. Token ownership also represents a stake, subscription, or membership, in the community of active subscribers.

Smart Contracts

EOSIO Smart Contracts provide the foundation to the FREEOS system. These smart contracts encode the rules of governance and finance on this decentralised platform in an immutable and verifiable way. This helps provide trust that the systems of direct democracy, and financial incentive

mechanisms cannot be tampered with and can be fully verified at all times. With no central location, this system cannot be compromised due to political or financial pressures.

The FREEOS smart contracts enables a community-driven economic platform empowered by direct democracy as proposed by Kelsey (2018). For the first time in history, the governance of an economy would truly be in the direct hands of the people.

FreeDAO

FreeDAO as the distributed and decentralised governing which develops, maintains, and is sustained by the Self-Governed Cooperative Income model that is represented by the entire FREEOS platform. The community governance of this body is realised by a Distributed Autonomous Organisation (DAO), a novel emerging organisational form where an organisation is self-sustained and created by its members, where rules are also embedded in smart contracts (blockchain software).

FreeDAO is an organisation (Figure 1) that governs itself through automated code and distributed consensus mechanisms (Hüllmann, 2018, May; Jentzsch, 2016). A DAO should have an incentive system that aligns its actor's interests to make them work towards a common goal (Hüllmann, 2018, May).

Community Engagement with dApps

The FREEOS platform sits on the already existing, and thriving, EOSIO blockchain platform that supports decentralised applications (dApps) and the creation of unique tokens that are custom-fit for these applications.

The subscribers engages with the dApps that make up this platform through their secure EOSIO accounts and may also purchase, or sell compatible tokens on one of the many existing exchanges (some of which are decentralised and also hosted on the EOSIO, and other blockchain platforms).

Self-Governed Distribution

The distribution of FREEOS currency is designed to reward each subscriber equally and has structures to mitigate against duplicate accounts (Sybil Attacks) that may otherwise compromise the principles of equality and fair equity. As the issuance of FREEOS currency is conditional upon active participation of each subscriber—as well as consensus in the voting process—the distribution entirely depends on the mechanisms of self-governance.

Another item of note is in the unique governance that this model represents. Within the FREEOS platform governance is intended to be fairly distributed and transparent as opposed to other cryptocurrencies where changes to protocols often create tensions within the community—potentially jeopardising the value and usage of the digital asset. Notably, Bitcoin has developed a distributed system over time, but has also resulted in a highly centralised governance dynamic that has controlled many of the decisions and directions of the platform (Pappalardo et. al., 2018).

Providing Network Effect, Community, and Regulation

Generally, the dynamic of these components provides:

A. A core set of interactions and enablers for the networking effect. This is provided by the FREEOS Decentralised Application (dApp, implemented by Smart Contracts Fig. 2).

B. Create a community of subscribers. The incentive model of FREEOS intends to attract a highly motivated, active and loyal group.

C. Additional regulatory features preventing platform degradation, and introducing new functionalities. This will be one of the responsibilities of FreeDAO.

Platforms tend to provide the infrastructure enabling value creation (Fig. 3). According to Choudary (2015), standard businesses are built up around a core value which leads to optimising processes flow from production to consumer. Conversely, platforms optimise the flow of value and currency within their ecosystem that may be comprised of producers and consumers. A digital business platform—in which FREEOS has some parallels to—provides the following characteristics (Choudary, 2015):

- "Plug-and-play" for participants, which encourages open participation (Fig. 3).
- Governance (mostly by access control, information sharing, and token issuance filters written in the smart contract code) by the subscribers. Additionally governance in the development, maintenance, and marketing by the FreeDAO body).
- Facilitation of interactions among participating parties (internal and external). Incentives bringing participants to the platform.

Digital platforms are competitive on their ability to create, keep, and maintain interactions among members. FREEOS is designed to be a highly liquid, community-driven and evenly distributed token within the EOSIO ecosystem that supports it. Also, FREEOS is designed to be a currency that has economic controls that are directed by the subscribers via tools of direct democracy.

Subscribers Receive Self-Governed Cooperative Income (SCI)

With this ability of subscribers to self-govern the economy of FREEOS via direct democracy, it also fulfils an important function—of a Self-Governed Cooperative Income. Stable sources of income is likely to be increasingly relevant as the world moves towards greater levels of disruption (pandemics, climate-based catastrophes, automation, etc.). Although there have been many recent, prominent calls to adopt Universal Basic Income, today's society has very few meaningful examples to draw upon.

Typically, this is because there is resistance to the idea of gathering taxes to pay for such an endeavour. With the inflationary model adopted by many cryptocurrencies, there is a new model for gathering funds to accomplish needed goals. FREEOS is structured similarly, allowing measured inflationary systems to create an ongoing distribution of funds to the entire community of subscribers. Instead of a central bank controlling this type of inflation, FREEOS puts the measured controls directly up for voting. A series of transparent voting segments occur to allow the subscribers to know what the common consensus and sentiment before the final, critical vote of

action are taken. As a result, FREEOS is more than simply a cryptocurrency, it is a practical economic tool of the people, and by the people.

Unique Subscribers and Sybil Attacks

The subscription fees acts as a partial, financial deterrent to mitigate against individuals obtaining an unfair share of the rewards through the creation of multiple accounts—either through bots or farming techniques. This is not likely enough to stop individuals that have the financial backing to create excessive returns on their investment by managing multiple accounts to receive multiple payments. This type of attack on the network, commonly called a Syblil Attack, is solved through financial deterrents in most Proof-of-Stake and Proof-of-Work blockchains. Since FREEOS wishes to allow equitable entry and reward, these types of 'proofs' are not entirely sufficient for this Self-Governed Cooperative Income project.

To address this aspect—and to mitigate further—a number of additional methods are in the works but are not mentioned in this whitepaper to help ensure preparations are not taken in advance to counter the proposed mitigations.

For this version of the whitepaper (in which there will be additional versions to come that provide more detail on security, and further details of the system), it will only be mentioned that this aspect has been deeply considered, and a decentralised system that manages trust levels is considered as a primary method, with more traditional, established methods working as backup and complimentary solutions to combat the problem of multiple-accounts per individual.

FREEOS Fundamental Use Cases

The two, fundamental use cases for FREEOS are:

1. As a trading currency
    - In particular as a currency to pay FREEOS annual membership subscription, and
2. As a store of value.

The key to both use cases is the relative stability of the currency. FREEOS is designed with features and tools to assist the subscribers in managing the true, purchasing-related stability of the token's price. These features are designed to prevent volatility, maintaining the currency's value over time. A non-volatile value to the FREEOS currency would help differentiate the currency from many other cryptocurrencies, that are typically only useful for either one of these use-cases. But not both.

Fiat currencies tend—over time—to erode in purchasing power. And therefore, provide few prospects to be used as a true, long-term store of value. Through the subscription fees, and direct democracy mechanisms, FREEOS has characteristics that are designed to reduce volatility, and maintain the value of the token over time. By reaching relative, real-world stability, the token can be used freely for purchases and trading. As the value is tied to purchasing power the token can also be used to weather any local, or global, financial storms.

In the FREEOS design, the aspects of stability—in terms of purchasing power—are accomplished through the following dynamics:

A. Equitable, and evenly spread distribution.
   - Most of the currency is held within the distributed FREEOS community of Subscribers. This makes it difficult for high-value traders to undercut the FREEOS value on the open market.

B. Regular weekly distributions of currency are conditional on participation.
   - As people value their time, this provides value to the currency gathered and obtained through their efforts and attention.

C. Strong incentives to join, but limited access to tokens required for entry.
   - Coupled with the evenly distributed holdings of the Subscribers, this dynamic has strong potential to keep demand level and consistent.
   - If demand is high, the use of alternative non-FREEOS tokens for entry, helps establish a comparable value of the native FREEOS token. Non-FREEOS tokens can also provide a relief valve for any price pressure on FREEOS. This helps regulate the price towards stability.

D. Active Subscribers govern the entry price into the system for all non-FREEOS coins.
   - This provides a pegged floor to the price in general.
   - Subscribers are incentivised to keep the price stable—in terms of real-world purchasing power to ensure they can use the currency for common transactions.

E. Existing, active Subscribers govern the subscription fees, in FREEOS.
   - This will require existing Subscribers to save part of their allocated FREEOS tokens to pay the next year's subscription.
   - Set limits prevent upcoming subscription costs from being out of reach for the current Subscribers and ensures costs do not exceed profits.

F. Subscribers govern the inflation rate, within set limits modified by population-based growth factors.
   A. Subscribers may couple this with other controls to create dynamics that keep the value of the token maintained.

G. Subscribers govern the selling of other cryptocurrencies in the reserve pools to assist in stewardship over any strong dips in the price of FREEOS.
   A. This counters price drops with a short-term demand for FREEOS on the open market, to help prevent the price from dropping suddenly.

H. Population-based modifiers to the inflation rate
   A. Incentivises the Subscribers to encourage population growth—increasing the distribution and burning of the currency—when new subscriptions paid in FREEOS are then eliminated from circulation permanently.

I. Population-based tiers that set the upper entry price limits of non-FREEOS coins.
   A. Higher price of entry indirectly influences the lower floor of the price of FREEOS.
      A. This has potential to provide additional levels of stability to the value of FREEOS to counter potential inflationary devaluation.

J. Since Subscribers are incentivised to increase population, keeping the entry price at a reasonable level helps onboard users.
      A. Tug-of-war mechanics that keep the price relative to real-world purchasing power while keeping the entry price reasonably affordable.

K. Burning of all FREEOS tokens paid for the entry price.

A. This deflates the circulating supply of FREEOS consistently every week to mitigate against potential inflationary devaluation.

L. Burning of all FREEOS bought using the assets from the reserve pools.

A. This provides a sharp deflationary aspect to FREEOS when triggered, that can amplify the large purchase on the open market to counter any strong dips in the market.

(For a more detailed explanation of A to P above see the section on FREEOS: Dynamics and Systems).

Since the community of subscribers utilises the above dynamics to govern conditions that may

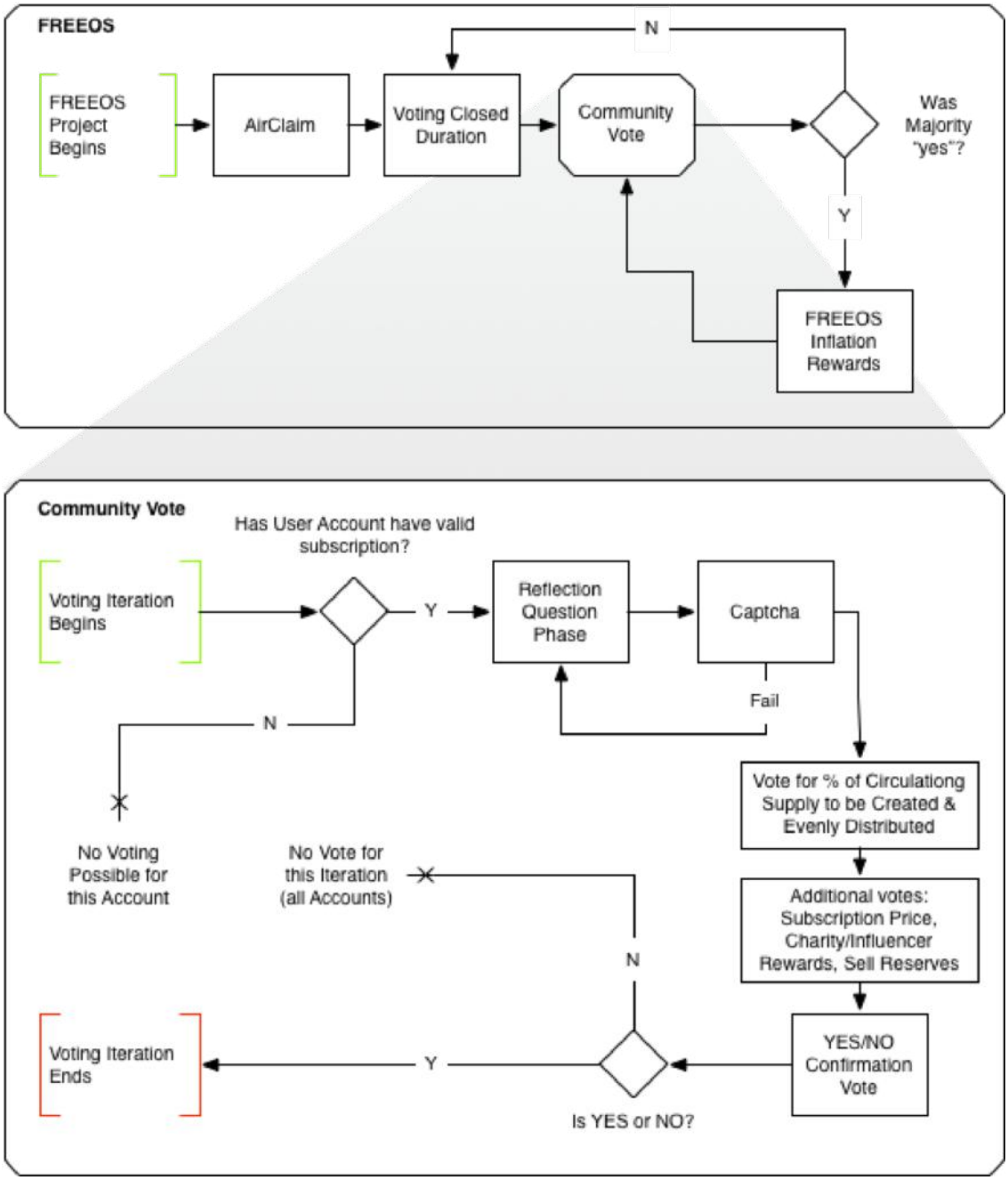

Figure 2. Principles of the economic voting DAPP (Source: Authors).

influence the value of the FREEOS token, and since the subscribers can personally ascertain what

their daily purchasing power represents, the potential for the active subscribers to maintain price stability—in terms of real-world purchases—is high.

Maintaining the value of the token ensures new subscribers have the ability to enter, and gives these new subscribers assurance that the economic system is stable and trustworthy.

The Primary Model

FREEOS, as a model of a Self-Governed Cooperative Income, is comprised of a number of systems and forces working in tandem. In a basic form, these include the following:

1. the modern cryptocurrency market economy (that has resulted since the rise of Bitcoin, and other altcoins since 2008, including many centralised and decentralised exchanges),
2. a programmable smart contract platform capable of deploying and running custom tokens and custom smart contracts to create secure, transparent, globally distributed, decentralised systems (For this project, the EOSIO platform has been chosen to represent the first iteration of this concept),
3. the FREEOS Decentralised Application (dApp) deployed to the EOSIO platform,
4. the FREEOS token, also deployed as a native token on the EOSIO platform,
5. The FREEOS voting community of subscribers, accessing the voting dApp via their unique EOSIO accounts and issued FREEOS tokens equally for their successful participation per voting iteration.

Global Cryptocurrency Market

Since the early experiment of Bitcoin in 2008, the cryptocurrency market has exploded worldwide to become an industry worth nearly a trillion in USD value. This has created a healthy, dynamic and robust global economic ecosystem resulting in a massive rise in development and economic interest at individual, corporate and governmental levels. As a result, the current cryptocurrency market provides enough of a healthy ecosystem for FREEOS to endure—and ideally thrive.

EOSIO Blockchain Platform

Widely considered one of the most scalable blockchain platforms for the deployment and execution of smart-contract code, EOSIO has risen to become one of the most active blockchains in terms of user activity and developer interest leading up to 2020. EOSIO utilises the Delegated Proof of Stake model of verifying block production, which operates on the basics of democratically voting for reliable block producers to secure the network and to ensure transactions and smart-contract code are executed as intended. As an open, programmable platform EOSIO is capable of allowing developers to create custom logic for decentralised applications (DAPPS) and custom tokens that can be freely traded, given and shared in a cryptographically verifiable manner (as they inherit the qualities of the underlying EOSIO platform). These inherited capabilities allow FREEOS to be issued as both a DAPP and a token on this popular and accessible platform.

FREEOS DAPP

The FREEOS dApp is a web-based application that includes connections to a series of smart-contracts deployed on the EOSIO blockchain. Access is conditional upon having an EOSIO account, as well as having paid the annual subscription fee which is required for security, economic stability, and sustainable development and maintenance requirements.

The FREEOS dApp's design intention is to facilitate community governance and management of its economy— including the issue of currency—not through delegation or an algorithm, but through direct democracy and attempts at equal representation within its community-collaborative-economics and community-collaborative-governance.

In a direct democracy - voters are directly involved in decision making. This may take place at a different level of organisation of the community, village, city, or nation. The direct democracy may be defined as (Switzerland Direct Democracy, 2019): "form or system of democracy giving citizens an extraordinary amount of participation in the legislation process and granting them a maximum of political self-determination." Few modern examples of direct democracy exist, although they are becoming increasingly common in blockchain-based communities: Barcelona (Spain) – frequent consultations and voting are in the direction of city development, wide consultations on the architecture of the new building, etc., organised by the City Council.

- Barcelona (Spain) – frequent consultations and voting are in the direction of city development, wide consultations on the architecture of the new building, etc., organised by the City Council.
- The second example coming from the blockchain platform is direct voting on EOS producers (Sigman, 2018) where a whole community selects indirect voting 21 the most trusted block producers.
- Third, a massive example is Switzerland with its smooth systems of referenda on a different scale and different levels (BBC News, 2016; Pugh, 2016; Schiener, 2015). According to Bewes (2017), Swiss people understand referendums. Referendums can be on any topic:

"So, the Swiss know all about yes and no campaigns (even divisive ones) and their after-effects. Those effects almost never include resignations, elections, fake news and general chaos." And "If it loses a vote, the Swiss government doesn't collapse, and ministers don't flounce out. And they certainly don't call a general election. They go back to the drawing board and start again to find a solution that is acceptable to the majority of the population."

The FREEOS direct democracy dApp is designed to solicit a number of questions from the subscribers to display and reflect back as a dashboard as a precondition to voting—and therefore currency distribution. These questions are structured to provide a wider understanding of how the subscribers views the current economic health and direction and is intended as a means to invoke a sense of responsibility and stewardship amongst the wider group.

The primary voting mechanism is to agree on an inflation rate within set limits as provided by a series of rules designed to prevent over-inflation. Other economic controls may appear over time to govern the subscription fee costs for each currency type excepted, the exchange of non-FREEOS tokens for FREEOS to provide stewardship over the open-market valuation of the token, the limits

of onboarding marketing mechanisms, and the distribution of charitable rewards automatically generated every voting iteration.

The voting mechanism—in turn—includes a process that is intended to reduce "Prisoner Dilemma" (e.g. Singhal, et. al., (2018, pp. 108)) types of scenarios, or "Tragedy of the Commons" (e.g. van Andel & Volont (2019)). The votes are constructed in a series of questions that give the community the widest insight on how the next (potential) community reward is to be structured. Only when the aggregated results of the community decisions are visible, will the final vote—to proceed or not proceed with the next reward—occur.

FREEOS Token

Air Claim

The FREEOS Token is issued on the EOSIO platform, and is minted upon voting iteration—outside of the initial supply which is pre-minted at the start for the free "AirClaim" model of distribution to jump-start the economy. This is based on the commonly used "airdrop" mechanism that is often employed to widely distribute coins to users. An airdrop is an event during which a crypto project distributes its coins to its users (Ali Raza, 2018).

Minted Upon Voting Iteration

As the FREEOS Token is primarily minted upon voting iteration, the inflation amount is dependent on the initial amount generated in the AirClaim. A number of inflationary controls are built-into the system to help the users self-regulate, and means of removing tokens from circulation are also included in the economic controls as methods of countering inflation.

FREEOS Subscribers

The FREEOS subscribers is a globally diverse and distributed group of individuals that have made an economic choice to engage with this economy through associated system of smart contracts, voting systems, economics, and governance presented in a decentralised application. Likely to include blockchain enthusiasts at the start, the goal is to widely distribute this dApp into the hands of a wider market.

FREEOS Voting System

The FREEOS subscribers are required to engage and vote weekly to continue to receive the weekly issuance of newly-minted FREEOS tokens. Additionally, a portion of an individual's annual FREEOS issuance needs to be retained as an annual subscription cost to re-enter the economy. This helps to ensure that the incentives for automated "bots" to infiltrate the economy remains low, and provides a reasonable value to new subscribers to enter and receive ongoing rewards. It also helps to ensure that responsible subscribers remain in the economy that have basic financial management skills, as they have a responsibility over the collective economic stewardship.

Most importantly, the subscription cost also provides a base level of value associated with the system and token to help mitigate against volatility. Coupled with the voting systems, this helps the subscribers steer the economy towards stability in terms of real-world purchasing power.

As the voting behaviour creates the dynamics that ensures that there is a robust, healthy, stable and vibrant economy, it is considered to be the most important factor in this model.

In the new system (mostly represented by the digital platform paradigm e.g. Choudary (2015)) value co-creation is enabled by technology (e.g. digital platform network effect). The customer creates value (often by networked relationships with other customers) and this process creation is supported by the relationship's ("outside-in" or "platform business model") with product or service provider.

As such, over time additional features and improvements to the user experience and onboarding pathways will be critical in ensuring that this economy remains sustainable and viable in the long-term.

Model Dynamics

The entirety of the FREEOS Model works with each of its components to create a series of dynamics that support a social and economic ecosystem which includes self-regulating mechanisms to help ensure a healthy and sustainable outcome.

The existence of robust and liquid cryptocurrency markets allows for a healthy free market value to be assigned to the FREEOS token, and allows for easy onboarding for new users to pay for the FREEOS subscription cost, as well as a means for FREEOS voters to convert some of their tokens to other cryptocurrencies, or national fiat currencies. This existing ecosystem creates the base conditions and incentives for this economy to remain sustainable.

Additionally, the secure and decentralised smart contract base layer provided by the EOSIO blockchain allows the rules and mechanisms to be employed in a secure way, engendering trust in the model and process of FREEOS. This system will not be controlled by any central entity, nor hosted in any single location, allowing the project to exist in borderless way that is independent of any nation's political leanings, corporate interests or other threats. This allows the community to feel secure that this project will sustainable and reliable.

The voting dynamics also provides the means for this economy to be vibrant, dynamic and healthy by engaging participation governed by both self-interest and the informed intentions and will of the subscribers in response to the current economic conditions. The voting dApp provides a chance to become an informed, responsible steward of a shared cooperative economy as a digital commons.

The FREEOS token works as an incentive, a store of value, a mechanism of economic control, and a currency amongst the FREEOS subscribers. Based on EOSIO, it shares the same characteristics and healthy marketplace that any token on the EOSIO blockchain already enjoys.

All of these elements work with a live community of active subscribers making decisions through voting. The economic success of this project will be shared amongst the subscribers making a strong incentive for the subscribers to nurture and maintain the economy's growth and health in a sustainable way over time.

The dynamics come from these main systems and how they interact and self-regulate. Over time, tweaks and iterations to the model may be required, which is possible using the underlining EOSIO programmable smart contract platform.

FREEOS: Dynamics and Systems

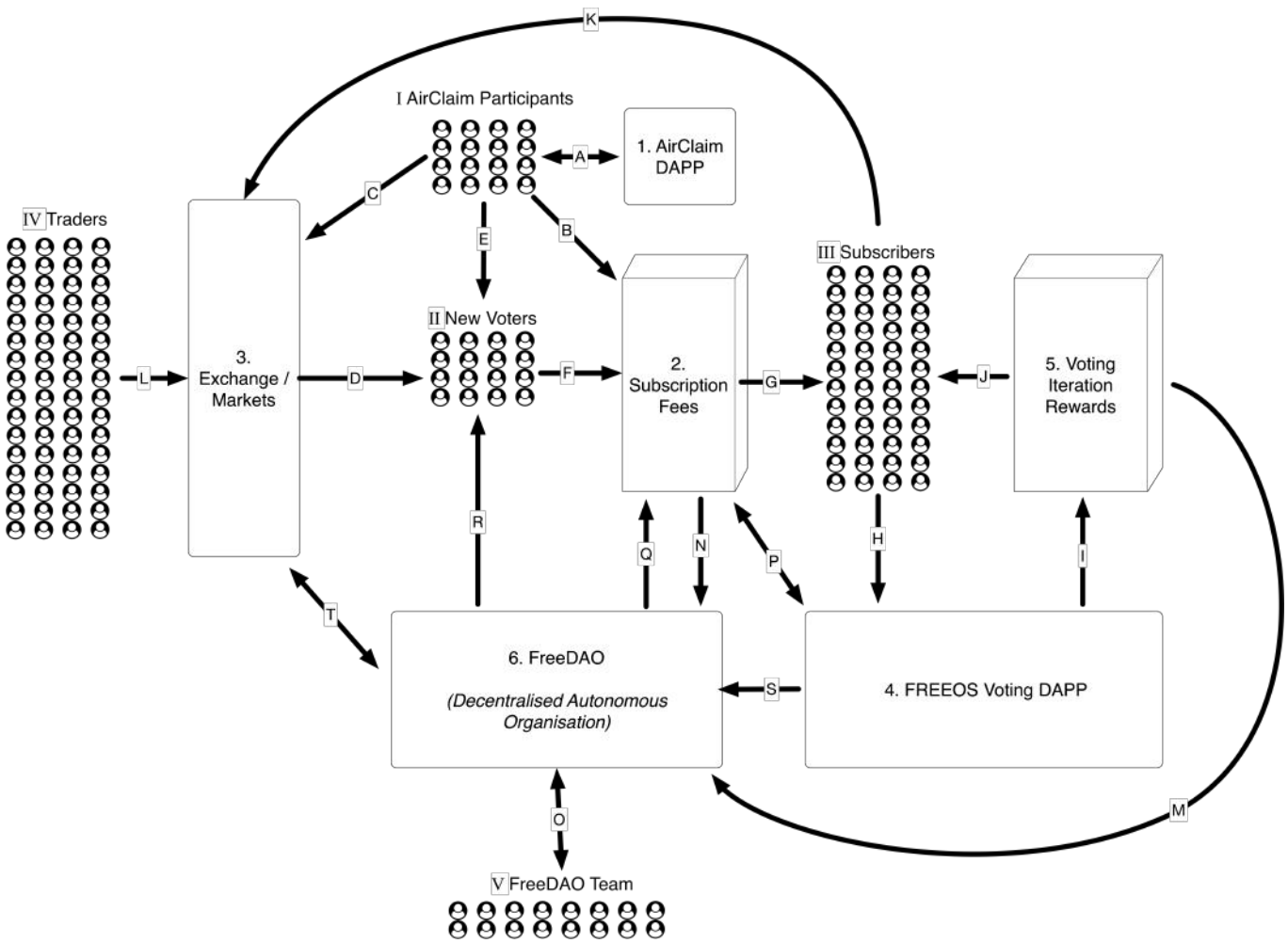

Figure 3. The factors shaping the FREEOS token value and system dynamics (Source: Authors).
Note: "New Voters Incoming" through AirClaim, Vouchers or buying tokens externally.

FREEOS, as a model (Fig. 3), is comprised of several systems working in tandem. These systems include six primary components, five types of community forces, three tokens, and a number of dynamics that are expected to play out in this system:

Six Primary Components

The context where the FREEOS dynamics work with their components are described (Fig. 3). by:

1. The AirClaim dApp (Fig. 3) that is designed to distribute the initial FREEOS tokens to jumpstart the economic forces and gather interest in FREEOS. This is designed to have weekly claiming opportunities by any AirClaim participants—each claim cascading to reward the participants exponentially more FREEOS tokens per week. One condition of claiming is that half the previous week's FREEOS is required to exist in the participant's wallet in order to claim the next week's reward. This creates potential for the token to be undergoing increasing demand by latecomers who wish to participate—thus engaging the early economy and ideally creating a strong marketing effect. Additionally, this AirClaim model is intended to help distribute these initial FREEOS tokens widely, helping create a distributed and decentralised system.
2. Subscription Fees (Fig. 3) are part of the key to this system. These annual fees allow voters to enter and participate in the FREEOS ecosystem and obtain a passive income through weekly voting. The subscription cost barrier helps with the security of the system, as well as provides a value of obtaining entry. Subscription Fees can be in FREEOS, in EOSIO-based coins (including stablecoins), in or in Vouchers—the three primary tokens of the system. The subscription fees are set to be a fraction of the annual rewards and therefore the next year's subscription fee can be saved towards. In a virtual way, this simulates the purchasing of mining equipment in the Bitcoin ecosystem, where miners would require investments in new hardware purchases over time. Subscription fees paid in FREEOS are destroyed, helping provide a counter-inflationary system, while part of any subscriptions paid in EOSIO-based coins or stablecoins are accumulated in a community-controlled reserve pool.
3. Exchange Markets (Fig. 3) consist of the modern cryptocurrency market economy that has resulted since the rise of Bitcoin, and other altcoins since 2008, including many centralised and decentralised exchanges. These markets provide liquidity and allow tokens to have an on-ramp and off-ramp to buy (directly or indirectly) from fiat currencies or to sell into fiat currencies. The supply and demand forces provides a non-zero price for many cryptocurrency tokens which—for FREEOS—helps ensure incentives to participate in this system and to receive ongoing rewards thus providing additional demand for this token.
4. the FREEOS Voting Decentralised Application (dApp) deployed to the EOSIO platform (Fig. 3), provides the voting mechanism that allows the community economic controls over their own system. This dApp allows users to vote on three primary economic controls: the inflation rate (within limits), the annual subscription costs (within limits), and the signal to sell reserve currency (in EOSIO-based coins or stablecoins) for FREEOS to help mitigate any sudden downward price movement. Upcoming (non-MVP) features may allow for voting to distribute to charities, and social media influencers to help onboard new users into the community.
5. Voting Iteration Rewards (Fig. 3) are conditional, but equitable rewards that are distributed equally amongst all active voters in every week's voting iteration phase. The majority of these rewards go to the voters directly, with a smaller percentage reserved for FreeDAO—the developers and maintainers of this system—that operates as a Decentralised Autonomous Organisation. The voting community votes on the weekly inflation rate that is capped—the capped rate increases depending on the measured growth of the active voting community.
6. FreeDAO (Fig. 3) is the Decentralised Autonomous Organisation that is composed of the founders, the development team, and any supporting members. FreeDAO receives fees from this system actively through the subscription fee, and voting iterations. FREEOS tokens coming to FreeDAO are often converted into time-limited Vouchers which can be used as an alternative to pay for an annual subscription. FreeDAO may give, sell, or re-sell these Vouchers for revenue as well as any promotional requirements to bring attention to FREEOS at large. FREEOS tokens that comes to FreeDAO may be sold for other EOSIO-based tokens and stablecoins to pay for development costs. FreeDAO can set and withdraw the EOSIO-based coins and stablecoins used as a subscription alternative, but does not have the ability to directly set the subscription fee, besides

any lower and upper cap. The rights to set the actual subscription fee (within the range of the caps) is reserved for the FREEOS community.

Five Types of Community Forces

Also of note are a number of community forces (Fig. 4) which are projected to have considerable influence on the system:

I. The AirClaim Participants (Fig. 3) are expected to be savvy cryptocurrency users that understand the value of airdrops and are likely to look into the system to see how they can get maximum rewards. The system depends on such users to kickstart the economy in the beginning, although a more diverse voter profile is ultimately desired to help bring FREEOS to a wider demographic.

II. New Voters (Fig. 3) are expected to hear about FREEOS after the main Voting dApp is launched and may come from many different avenues. Some will come from the cryptocurrency world, hearing about the passive income opportunities. Others are expected to be onboarded as new users to blockchain in general through FreeDAO's promotional workshops that give vouchers to workshop participants. Others are expected to come through charities and social media influencers who are incentivised—through community voted rewards—to onboard their user base to encourage further voting. By encouraging diverse avenues, it is hoped that knowledge of FREEOS and its benefits will spread widely.

III. The Subscribers (Fig. 3) will be a group of distributed individuals employing simple voting controls and receiving feedback mechanisms to collaborate and contribute towards a shared economic commons. By encouraging a weekly—incentivised— habit of voting, it is hoped that this community will be active, cohesive and strong. Additionally it is expected that this community will—over time—start to take an active interest in fundamental economic stewardship. These voters will have control over the Subscription Fee (within limits).

IV. Traders (Fig. 3), and their trading platforms, will provide a place for FREEOS voters to sell part of their earnings—which may be of value for those wishing to enter the system. Additionally, this will often be the source of any EOSIO-based tokens that may also be used to pay for the Subscription Fees. This market also provides FreeDAO with a place to sell their earnings to obtain fiat currency for operations. Also, when the community votes to release any reserves, these reserves are exchanged for FREEOS (this FREEOS is then destroyed) in order to help mitigate against any sudden price drops.

V. The FreeDAO Team (Fig. 3) is actively developing, marketing, championing and maintaining FREEOS. This team is bound by the rules of the smart contracts that make up the FreeDAO system to help organise and make critical decisions. FreeDAO's mission is to create tools of collaboration and digitally distributed commons that work towards greater levels of freedom. FREEOS is one of many potential systems to deliver on these goals.

FREEOS Community Dynamics

A series of dynamics (Fig. 3) fuelled by the system components, communities and the three digital assets (FREEOS, EOSIO-based coins/stablecoins, and Vouchers) are projected to enact various situations, economic activities and pressures to keep this system active, self-sustaining and resilient:

A. AirClaim Participants (Fig. 3) get into the weekly habit of claiming their increasing rewards to a maximum cap (designed to be twice the amount of FREEOS required for paying the initial Subscription Fee). This is currently designed to occur over many weeks (not yet determined) before starting the main FREEOS Voting dApp system.

- The first AirClaim will require the user to lock a certain amount (not yet determined) of EOSIO-coins and/or stablecoins to help mitigate against Sybil Attacks. This needs to be locked for the duration of the AirClaim period.

- Each AirClaim participant needs to ensure they hold, or repurchase half of their previous week's claim of FREEOS to be eligible for the next claim.
- Those that have come in late may purchase FREEOS on the open market to make up for any weeks missed so far. This may cause greater demand for FREEOS on the open market.
- One aspect, not directly shown (Fig. 3) is that FreeDAO receives an equal amount of extra-minted FREEOS conditionally upon each claim made during the AirClaim process. This enables FreeDAO to have early funding for promotion, development and funding during this process.

B. Subscription Fees To Vote. Once the AirClaim has completed its duration, many participants should now have more than enough FREEOS tokens to pay the required Subscription Fees to vote in the main FREEOS system and receive their conditionally active voting rewards.

C. AirClaim Participants Trade FREEOS. Some AirClaim participants may wish to sell or buy FREEOS tokens on the exchanges.

- Some individuals may be wishing to obtain enough FREEOS tokens to catch up with missed weeks, as mentioned prior. As this amount increases towards the end of the AirClaim phase, this may increase demand for FREEOS tokens.
- Some individuals may wish to sell the half of their FREEOS tokens that is not required for the subscription fee.
- Some individuals may wish to sell all of their FREEOS tokens to simply make a profit off the AirClaim without intending to be voters in the main FREEOS system.
- Some traders may also decide, on their own accord, to accumulate and hold FREEOS tokens for speculation purposes. This is not advised, condoned, or encouraged by FreeDAO, but simply is a statement that acknowledges this possibility.

D. New Voters Purchase Tokens For Subscription Fees. Most new Voters are expected to be purchasing their Subscription Fees from the exchange.

- It is projected that many New Voters will be interested in the passive-income, UBI-like qualities driven primarily by self-interest.
- Other voters may be primarily interested in participating in this novel, globally distributed governance model that applies direct democracy over an economic system.

E. Giving Out Tokens To Future Subscribers. As AirClaim participants can receive, at least, twice as many FREEOS tokens required for the Subscription Fee, some may give these tokens to friends, family or even strangers to help onboard these users to become voters in the FREEOS ecosystem.

F. Can be Paid in Three Ways:

- EOSIO-based coins and/or stablecoins (fee is managed, within limits, by the FREEOS community, while the types of coins, and rules around the min and the max caps are initiated by FreeDAO),
- FREEOS tokens (fee is managed, within limits, by the Subscribers after the initial start),
- or a single Voucher (provided by FreeDAO).

G. New voters become active subscribers. Once a subscription fee is paid, the New Voters that become Active Subscribers that have permissions to participate in the FREEOS voting process for a year, thus earning any rewards that arise from this collective activity.

- When New Voters become Subscribers, this rise in population results in a smaller share of the iteration rewards—this is countered by increasing the inflation cap based on population to compensate for this smaller share.

H. The Active Subscribers can vote, weekly, on a number of economic decisions.

- Voters can vote on the weekly inflation rate (within limits derived from the current population growth of the Subscribers).
- Voters can vote on the FREEOS token Subscription Fee cost (but not less or more than thresholds based on the current average per-user reward payment—designed to ensure there is some friction to entry, but does not impede users to save for next year's Subscription Fees).
- Voters can vote on the EOSIO-based coins and/or stablecoin subscription cost (per coin). Coins may have min/max caps assigned (per coin), as well as active voting population tiers —set by FreeDAO and encoded into the smart contract—to unlock higher max caps (important for stablecoins to help ensure newcomers can afford to enter the system).
- Voters can signal for a certain amount of reserve EOSIO-based coins and/or stablecoins to be sold to buy FREEOS tokens (these FREEOS tokens are later destroyed) to help limit price drops. This is managed by FreeDAO manually until automated replacement systems are developed post-MVP development stage.
- Post-MVP, voters will be able to vote for a percentage of the weekly vote to go towards charities, and another percentage of the weekly vote to be distributed towards social media influencers that are helping promote the FREEOS ecosystem. This helps the FREEOS community to onboard a variety of diverse Subscribers—even those who are new to blockchain and cryptocurrencies.
- Additionally, to unlock the voting (and therefore the rewards), the community engages in a series of survey questions related to the perception of the current economic health that are reflected back to the community.
- Weekly Voting Iteration Rewards Are Minted and Temporarily Reserved for Distribution:
- Five percent is reserved for FreeDAO.
- Two and half percent is reserved for charities that wish to engage with the FREEOS ecosystem (this will be directed to FreeDAO until the voting system is developed and charities onboarded).
- Two and half percent is reserved for social media influencers (this will be directed to FreeDAO until the voting system is developed and influencers onboarded).
- Ninety percent is reserved for the Subscribers that had engaged with the survey questions and the voting this particular week. This will be divided and distributed equally and automatically.

I. The weekly voting rewards are transferred equally to active subscriber. The weekly voting rewards, reserved for the Subscribers, are transferred equally to each subscriber which has engaged in the voting process for this week.

J. Trading part of weekly earnings for fiat currencies. Some subscribers may sell part of their weekly earnings on the free market to convert—ultimately—to global fiat currencies such as USD, Euro, Yen, Yuan etc.

K. Trading allows new subscribers to pay the entry fee. Trading will allow others to accumulate enough FREEOS tokens to pay the entry fee while others may purchase simply to speculate.

L. Five percent of voting iteration goes to FreeDAO's operations. As five percent of the voting iteration goes to FreeDAO's operations, ensuring that FreeDAO has the operational costs to continue development, maintenance, marketing etc. This voting iteration share exists to ensure FreeDAO has reasonably liquid operational costs even during times when FREEOS tokens are the dominant source of the Subscription Fees. FreeDAO may sell these on the open exchange, privately, or send to the smart contract structured to burn (destroy) FREEOS and generates Vouchers (Vouchers minted depend on the current population tier, which also has an influence on the upper max cap for any stablecoin subscription fees). Note: that this is the same smart contract

code that is utilised when a New Voter decides to pay the Subscription Costs in FREEOS, which also generates Voucher(s) and destroys the FREEOS tokens in the process.

M. FreeDAO Also Receives Ninety Percent Of EOSIO-based Subscription Fees, which works as a source of liquid operational funds. FreeDAO does not pre-mint FREEOS tokens for itself, and therefore does not sell FREEOS tokens to investors hoping to speculate from a dramatic rise as many cryptocurrency projects do in a token sale (Initial Coin Offering, or ICO). Any potential investors may—instead—receive an ongoing portion of FreeDAO's monthly revenue until certain targets are met.

N. FreeDAO tokens act as shares, and voting rights. FreeDAO members hold FreeDAO tokens that act as shares, and voting rights in the organisation.

- As FreeDAO is only paid if FREEOS is active and healthy through either the five percent voting rewards, or Subscription Fees (paid to FreeDAO by EOSIO-based coins, stablecoins or Vouchers) this incentives FreeDAO to help ensure a thriving, healthy economy continues to develop.
- FreeDAO uses Vouchers as a tool to help onboard new users to the FREEOS ecosystem through various means. This can be a useful tool to onboard new users to cryptocurrencies, as well as those who may not be able to afford the Subscription Fee of the FREEOS ecosystem—if the dynamics cause the price to rise to levels that are out of reach for some.

O. FREEOS Subscribers vote on price of subscription fee. All subscribers can vote on the price of the subscription fees (within limits).

- The Subscribers may lower the Subscription Fee, relative to the EOSIO- coins and/or stablecoin price to encourage New Voters to spend FREEOS tokens.
- Lowering the FREEOS Subscription Fee helps the community decide on when they prefer FREEOS to be bought, spent and destroyed in order to onboard New Voters.
- Raising the FREEOS Subscription Fee ensures that the EOSIO-based token is preferred, which then has the added benefit of adding to the reserve pool which may be voted later to purchase FREEOS on the open market (and immediately burn these FREEOS tokens upon purchase) as a community tool to help provide stewardship over sudden price drops.
- The lower limit can only be the equivalent of three weeks of the average voting rewards (per individual) in the last six months. This is to ensure that the cost to enter has a reasonable barrier to discourage automated bots, as well as encouraging subscribers to save towards—and therefore value—the subscription.
- The upper limit can only be the equivalent of fifteen of the average voting rewards (per individual) in the last six months. This it to ensure that the Subscribers do not need to save a substantial amount of their earnings just to pay the next year's Subscription Fee.
- EOSIO-based tokens that have a floating value, and may be volatile (such as the EOS native token), are likely not to have min and max caps. Subscription fee costs are likely to be managed by the community's discretion purely.
- EOSIO-based stablecoins are typically tethered to a fiat value. Since having this fixed as an upper ceiling and lower floor in relation to the price of FREEOS has an indirect stabilising factor to the price, it is more important to have a min and max cap. Since the community may be tempted, out of self-interest, to increase the price to indirectly provide a higher value to FREEOS, which may limit new users to enter, the maximum cap will be raised by reaching certain population-based milestones set in fixed tiers. These tiers will also have a corresponding multiplier on the number of Vouchers that can be minted and distributed to FreeDAO. This has an effect to help ensure that onboarding users is valuable to both the FREEOS community and FreeDAO, and both entities are incentivised to grow the community.

P. FreeDAO Can Add Or Remove EOSIO Coins, Caps and Tiers. FreeDAO only has the ability to add or remove EOSIO-based coins and stablecoins as well as introduce caps and tiers (or not). This has value for the following dynamics to take place:

- FreeDAO may wish to collaborate with users of other projects that may have their own tokens. This provides value to these other tokens as there is an additional way to spend them, and it also introduces this project to the FREEOS community.
- A diversity of coins coming into to FreeDAO as well as the reserve pool of FREEOS, can offset risks in volatility.
- The ability to pull tokens based on scandals related to those tokens helps mitigate any associated risks, and to discourage poor behaviour from any potential partner projects.
- The ability to pull fiat currencies based on mismanagement of economic forces helps protect the FREEOS community and the FreeDAO group from any sudden drops in a fiat currency that may arise in the future—in the unlikely scenario that such an event occurs.
- The ability to create lower limits/caps and upper limits/caps to any fiat-backed EOSIO-based stablecoins helps to create a psychological floor and ceiling to the price. As the community may wish to vote near or at the upper limit to help ensure FREEOS is valued accordingly, population-based tiers help encourage the community to onboard new users to unlock greater tiers of potential value for FREEOS.

Q. FreeDAO issues vouchers to onboard new FREEOS Subscribers. Vouchers represent a wild card concept in this system, which are exclusively provided to FreeDAO and used to help onboard New Voters.

- Vouchers expire after a year from creation and represent a non-fungible token type.
- Vouchers may be given away freely. Often this will be done when the FREEOS system is rewarding FreeDAO well enough to cover operations.
- Vouchers may be sold. This may occur when FreeDAO has a temporary liquidity crisis.
- Vouchers may be bundled with additional training (such as a workshop) to help incentives and onboard new users to the ideas of blockchain, decentralised governance and cryptocurrencies.
- Vouchers may be re-sold to onboarding companies, groups, organisations worldwide, who then sell at a market rate (and may be required to provide training on FREEOS principles and operations to maintain this relationship).
- Vouchers may be used as prizes for marketing efforts to help bring attention to FREEOS in general.
- As Vouchers are not as liquid of an asset (exchanges are likely to not want them due to their expiry date), it takes effort for FreeDAO to turn them into value. This also ensures that FreeDAO does not flood the market with Vouchers thus disrupting the other Subscription Fee types and potentially hurting the FREEOS system.
- Vouchers help mitigate any risks that the price of FREEOS, and therefore the subscription fees, may rise out of the range of most people (as happened with early masternode-based projects such as DASH). FreeDAO will be minted more Vouchers as higher tiers are voted in, and FreeDAO may use these Vouchers to ensure new Subscribers can still enter (as FreeDAO is incentivised to encourage).

R. FREEOS Subscribers can vote to sell reserve EOSIO-based coins for FREEOS tokens. FreeDAO may be signaled and given permission, by the Subscribers, to sell a portion of the Reserve Pool which has been accumulated by the ten percent of EOSIO-based coins and stablecoins over time.

- These EOSIO-based coins and stablecoins will be used to purchase FREEOS on the open market to help assist the price.

    - This process will be manual, at first. FreeDAO will immediately enter the purchased FREEOS tokens into the smart contract designed to burn these tokens (and generates Vouchers for FreeDAO in the process).
    - In a future update, this process is intended to be automated through immutable smart contracts.

S. FreeDAO Encourages Listing Of FREEOS Tokens On Exchanges. FreeDAO attempts to maintain a healthy relationship with Exchanges, to help encourage the listing of FREEOS tokens.

    - This helps FreeDAO and the FREEOS community to have more liquidity for any revenue generated, and for the economic mechanisms employed in the system to play out effectively.

The above items create a dynamic where a community of active subscribers is rewarded for successfully engaging in the voting process as per the economic rules set by the FREEOS smart contract system employed on the EOSIO blockchain platform. Engaging in this system is optional, yet the rewards are conditional upon successful participation.

Summary

The subscribers of this financial system have the tools to provide stewardship and help self-regulate the economy towards real-world purchasing power. The ideal result for this system is to have a relatively stable currency that is useful for common use cases such as trading and payments without active subscribers worrying about erosion of purchasing power when the currency may be individually required to function as a store of wealth.

FREEOS proposes a new type of financial system including a number of uncommon characteristics:

- Subscription-based, providing a foundational value to the system, and the currency;
- Borderless (Universal), equitable distribution;
- Democratically self-governed cooperatively by the Subscribers;
- Adaptable to market conditions due to crowd-sourced democratic feedback loops, applied to economic levers, that are secured by immutable, blockchain code;
- Ability to stabilise around real-world purchasing power;
- Levels of trust that can almost be taken for granted (trustless/highly trustable). This is due to mature, blockchain technologies that are transparent, immutable and verifiable;
- Incentives designed to attract and retain Subscribers.

The intended result of these characteristics—working together in tandem—is a stable income for the subscribers actively and consistently participating in this system.

As these systems are encoded into immutable smart contracts in a distributed global blockchain platform, the FREEOS subscribers will have access to a secure and trusted set of tools to govern and grow a fair and equitable financial system that is not constrained by borders or boundaries.

Mechanisms have been designed to help the subscribers self-regulate the price valuation of the currency, while keeping the subscribers engaged and incentivised to remain active within the system. These same incentives help attract new subscribers, which helps strengthen the ecosystem

to become more useful, ubiquitous, stable. The direct democracy mechanism—in particular—helps ensure the system is fair, equitable and gives each subscriber confidence, empowerment, and trust.

This results in a system that is similar to Universal Basic Income, but is not provided as a type of tax-derived hand-out from an external authority—instead it is co-managed by the collective subscribers participating in the system. To differentiate these essential qualities, we call this system a Self-Governed Cooperative Income and intend on releasing this system for interested parties to join and participate in openly.

Conclusion

FREEOS is a Self-Governed Cooperative Income that is universally accessible, trustable and equitable, without relying on taxation. This income is accessible to those willing to subscribe and actively help provide stewardship over the economic system towards stability in terms of purchasing power. This is achieved through the interplay of direct democracy, strong incentive mechanisms, blockchain technologies, and existing market forces.

The FREEOS system intends to create a foundation for financial stability and freedom, for those willing to participate. FREEOS also represents an innovative economic experiment—a new model of finance. This FREEOS experiment gives an indication of whether this economy—or any similar model—has lasting merit.

Appendix

Growing Interest in Decentralised Technologies

Nowadays interest in decentralised technologies—such as blockchain—has grown. This growing interest has been reflected in the growing number of high-profile conferences (e.g. OECD (2019) and United Nations (2017)) around the World. From the other side rapid technological changes have brought great concern, especially as synergistic and disruptive effects make an impression of a lack of control over these technologies, social, and environmental progress (Cao, Shuyan, et al 2017; Casino, F, Dasaklis et. al., 2018) and build up a sense of instability around a very sensitive topic—economic forces. Amongst proponents of blockchain and other decentralised technologies part of the attraction of these disruptive technologies are conversely related to a rise in perceived societal issues:

- Job instability as jobs appear increasingly threatened by AI and automation which has led to the popularity of universal basic income (UBI), mostly seen as a method of keeping a based level of peace and prosperity within society.
- Financial crises—often “fixed” with inflationary tools such as “quantitative easing”, negative interest rates, national debts, selling rights to national resources and assets.
- Increased lack of trust in national currencies and growing trust in other forms of storing values (e.g. gold, bitcoin, etc.).
- Anxiety over future economic, health and ecological crises.

- Political crises and unease over politicians in the periods between the elections. Lack of people's interest in participation in various forms of democracy.
- Eroding sense of community, no longer identified nationally, territorially, or culturally, frequently broken and divided by dynamics within social media—a near-ubiquitous growing force in many people's perceptions and identity.

Decentralised technologies have shown great potential to bring about new, fair financial models, governance, and transparent forms of self-regulated communication channels. As a result, trust in such systems have been growing as systems are proven to endure and thrive.

Migrating Trust Towards Distributed Systems

For much of human history, there has been a struggle between centralisation and decentralisation, with organisations and governments asserting power and control over the people. Distributed, decentralised technologies may restore the balance in this struggle. Free markets and methods of exchange existed in ancient communities which became built up around a token exchange facility (a marketplace for product exchange, coin issue authority, and finally taxing authorities). According to Gillick (2020) "cryptocurrencies will play in the move from a world operating beyond capacity in the pursuit of exponential growth to a steady-state of growth and greater financial independence."

Enthusiasm towards "trustless collaboration" is especially evident in a report published by the United Nations Development Program and the company Blockchain, which states that "the decentralised, transparent, verifiable nature of [blockchain] means we can trust people and organisations precisely because trust is no longer an issue (Blockchain Company, 2018; Chen, et. al., 2018)." Blockchain is about the elimination of requiring explicit trust.

Blockchain—The Internet Of Value

Blockchain can be seen as an evolution in trust and value management. The current Internet of Information (e.g. Photos, Text, etc.) becomes the Internet of Value (Money, Intellectual Property, Trust, Consensus etc.) (Tapscott, 2016).

"… blockchain is creating significant waves of disruption in industries, processes and business models revolving around the centralisation of trust. This is far broader than just cryptocurrencies; this technology offers the potential to create autonomous corporations, change the nature of border control and identity management and otherwise disrupt agents reliant on being the central source of truth (Blockchain, 2016)."

According to Pisa (2018), the number of organisations examining blockchain technology is growing (Aste, et. al., 2017; Al-Saqaf & Seidler, 2017). It is noted that organisations like the World Bank with a Blockchain Lab and 15 United Nations entities examining the adaptation of blockchain solutions (APEC, 2016; Grech, 2017; Herian, 2018; Lee, David, et. al., 2018). Also, the Inter-American Development Bank and USAID among several nonprofit humanitarian organisations examining blockchain to aid distribution (Manski, 2017; Nikolakis, et. al., 2018; Pisa, 2018). As this technology is still considered to be in an early stage of development, risk-adverse individuals, companies and groups may yet profit from any potential of "the first-mover advantage" to tap into the growing value of such trusted networks.

The Blockchain Platform Perspective

As recent pressures from within society, economics, and politics can become extremely overt, stressful and overwhelming, solutions are sought so that "businesses and societies can find approaches that will move forward all three goals: environmental protection, social wellbeing, and economic development—at the same time" (Hawken, 1993; Business, 1992).

In the modern era, societal volatility often bring about changes (Choudary, 2015 Sept., pp. 122) that can impact and evolve the very design of the business model based on the nature of the challenges facing each industrial era (Table 1). While traditionally organised companies create and push value out to the consumers, the platforms or business ecosystems in the blockchain world are often based on entirely new models and structures that have potential to be highly disruptive to prior models and paradigms. One of the disruptive aspects of blockchain is that external producers and consumers may exchange value and consensus with each other remotely, directly, instantly, and in an entirely trusted manner.

Another disruptive aspect—often considered counterintuitive—is that a blockchain platform is composed of a set of core, trusted interactions among the subscribers. These trusted interactions—performed repeatedly—create value from the platform alongside market forces combined with a so-called "network effect".

Of note, "the unique feature of network effects is that the value one user experiences potentially increases as more people or organisations use the same product or service and as more complementary innovations appear" (Consumano, 2015). This seemingly creates value out of "thin air" and was originally considered suspicious until the market matured and such value was repeatedly generated by an ongoing line of unique cryptocurrencies and blockchain platforms.

New technologies leading to the more decentralised corporate organisation very often based on social enterprise concepts e.g. "community-driven corporate organisation and governance" (Fenwick & Vermeulen, 2018). This change—toward agile organisations—has already been underway for quite some time.

Universal Basic Income (UBI) on the Blockchain

Universal Basic Income (UBI) is a solution proposed to create an unconditional economic base within society with several different variants (Al-Saqaf & Seidler, 2017; De Wispelaere, Jurgen, and Stirton, 2004). A recent drive, for such a system, has been driven by the rise of automation currently set to disrupt many future industries at levels never experienced before in any other industrial era. According to Scott Santens (2018) technology—instead of creating better jobs in place of jobs destroyed—ends up displacing vast amounts of workers and does not always ensure stable and meaningful jobs are put into place.

There are several approaches in the world coming from different countries and directions to create a kind of basic income, mostly as a means of social aid. For example, Nordic countries (Cecchini & Lavigne, 2014), South Africa (Biyase, 2007), and the elimination of poverty in the USA (Harvey, 2006).

An promising possibility for blockchain is in providing a social support system in developing countries such as India. Despite efforts toward building new forms of authentication and there is strong potential that blockchain will be used to create nationally-sanctioned versions of UBI throughout the world (Rajan & Prasad, 2008 pp. 115-133; Prasad, 2008, pp. 115).

Matt Orfalea (2019) points out the following factors having an impact on UBI popularity:

- Milton Friedman (1964) claims that individuals know best how to spend money for their own sake than any government bureaucrat.
- For example, in the US there are many separate individual programs. Welfare in the US is a complex maze of 126 separate anti-poverty programs. A case can be made that this results in wasted government spending limiting the amount of money delivered to the people in need.
- The welfare bureaucracy erodes the full amount of money provided for welfare.
- Many nationally-sanctioned welfare programs punish people for working. If you take a job and increase your income you lose your benefits. This becomes a de-incentive to return, or enter, the workforce.
- Friedman wrote, "The program should be designed to help people as people not as members of particular occupational groups or age groups or wage-rate groups or labor organisations or industries." In other words, a program that is guaranteed to all citizens is preferable to the current programs that divide us up into subcategories (for example (Steensland, 2006)).
- With a guaranteed—but basic—income, the profit motive remains intact and everyone is still free to earn as much more as they are willing to work for.

Many modern thinkers, such as Scott Santens (2018) believes that "It's Time for Technology to Serve all Humankind with an Unconditional Basic Income".

Utilising blockchain, Universal Basic Income has unique characteristics that are unique over centrally issued UBI solutions. Due to the creation of value, based on the open markets and network effect, a blockchain-based UBI solution may generate value for the token receivers simply based on the popularity of the solution.

Additionally, as blockchain is not constricted to physical borders, any UBI solution on the blockchain fits the "universal" moniker far more aptly. Blockchain-based UBI solutions may not need to receive consensus within bodies of governance. Individuals may simply participate without any permission required.

DAO: A New Organisational Structure on the Blockchain

A DAO (Decentralised Autonomous Organisation) is a new kind of organisational structure built on blockchain. For example, Olpinski (2016) defines a DAO in the following way: "DAOs are the software-based mechanisms for aligning economic incentives over the internet by distributing risks & rewards among people that share a common economic goal but don't know each other" and "self-governing organisation under the control of an incorruptible set of business rules".

Another definition is coming from McKie (2019): "An organisation that runs autonomously, in a decentralised manner, that functions without the need for centralised parties to make decisions for the organisation to grow, to be profitable, or *physically* exist to serve its overall purpose."

Theoretically, a DAO should be more efficient due to shifting governance from human responsibility to software code (Hüllmann, 2018, May). Additionally, a DAO may be unstoppable and non-localised, which may be an advantage in situations where freedoms are restrained.

Table 1 – Conventional Organisations versus DAOs (Source: (Hüllmann, 2018, May).

	Conventional Organizations	DAOs
Ownership	• Owned by shareholders. • Shares are either publicly or privately traded	• Owned by token holders • Anyone can participate
Consensus Mechanisms	• Employees that are more senior to others make decisions	• Distributed decision making leveraging collective intelligence
Transparency	• Depending on the specific firm but there are always information asymmetries	• Fully transparent and therefore no information asymmetries
Autonomy & Trust	• Actors can betray each other (hidden action)	• "trust-less" system
Agency cost	• Agency problems occur everywhere every day	• Eliminates agency cost
Hierarchy	• Often pyramidal	• No hierarchy
Governance Rules	• Set by upper management • Can be disregarded	• Immutable code • Self-executing

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