SOVEREIGNWALLET
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SOVEREIGNWALLET
SMART CRYPTO WALLET,
MOBILE M.DEX, MUI META-BLOCKCHAIN

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Abstract

SovereignWallet aims to provide self-sovereign finance to all the unbanked people. SovereignWallet is one of first smart cryptocurrency wallets that support Smart Contracts natively. Inside, we created a built-in utility token called MUI. It is a new type of stable token designed to protect and potentially increase its intrinsic value over time with the Algorithmic Central Bank and Treasury System. MUI's Algorithmic Central Bank controls the circulating supply of the token to stabilize the price and protect the value from dropping. MUI's treasury system accumulates the profits from SovereignWallet's decentralized exchange and meta-blockchain services. The accumulated assets of the treasury support the value of the MUI token over time. MDEX Service's mobile decentralized exchange platform, M.DEX, is a custody-free, fixed-rate, with atomic swap exchange. Our long-term goal is to build a programmable meta-blockchain, able to support multiple cryptocurrencies in a single blockchain. This technology will make it easy for everyone to create new coins and pegged stable coins without needing to build a new blockchain. There will be no transaction costs and MUI meta-blockchain will specialize in programming cryptocurrencies instead of supporting arbitrary computations.
TABLE OF CONTENT

Disclaimer

Abstract

Table of Content

1. BACKGROUND
   1.1. Overview of blockchain
   1.2. Evolution of the blockchain technology and 3rd generation decentralized consensus
       1.2.1. 1st Generation blockchain 2nd
       1.2.2. Generation blockchain 3rd
       1.2.3. Generation blockchain
   1.3. Initial Coin Offering (ICO)
   1.4. Tokenization
   1.5. Ether
   1.6. Smart Contract

2. PROBLEMS
   2.1. Universal financial access - mobile crypto wallet and account creation
   2.2. Financial crises: the cases of Greece and Venezuela – value preservation
   2.3. Lack of well-secured and easy-to-use crypto wallet – address the problem
   2.4. The high cost of remittances and lack of a bank account
   2.5. Centralized vs. Decentralized exchanges: the cases of hacking, custody, limited listing capability
       2.5.1. Trust issue
       2.5.2. Hacking
       2.5.3. Custody
   2.6. Volatility and instability of cryptocurrencies
3. AIMS AND OBJECTIVES

4. THE SOVEREIGNWALLET AND M.DEX

4.1. As a cryptocurrency wallet

4.2. Wallet supported features
   4.2.1. Key recovery
   4.2.2. Mnemonic word sequence
   4.2.3. End-to-end encryption
   4.2.4. Application self-protection
   4.2.5. Messages withdrawal
   4.2.6. Application format and operating system
   4.2.7. Cryptocurrencies

4.3. Supported services
   4.3.1. Remittance services
   4.3.2. Secure chat

4.4. MUI Decentralized Exchange: the M.DEX
   4.4.1. Introducing M.DEX

4.5. The MUI Meta-Blockchain
   4.5.1. Features of the MUI Meta-Blockchain

5. THE MUI

5.1. Uses of the MUI as a cryptocurrency

5.2. MUI token minting

5.3. Is MUI a stable and value-proof token?

5.4. Stabilization mechanization
   5.4.1. Value stabilization mechanism
      5.4.1.1. SovereignWallet treasury
      5.4.1.2. The algorithmic central bank (ACB)
   5.4.2. The SovereignWallet governance system
6. PRICING AND INCENTIVE MECHANISM

6.1. Transaction fee
   6.1.1. Two-transaction-based model with the volume of transaction
   6.1.2. Three-transaction-based model with the volume of transaction
   6.1.3. Promo-based transaction model (flat pricing)

6.2. Incentive system for holders of MUI token
   6.2.1. Promotional and special gifts airdrops
   6.2.2. Special airdrop for new users
   6.2.3. Special airdrop for referrals
   6.2.4. Special airdrop for the less privilege or low-income earners
   6.2.5. Special airdrops for heavy users

7. MUI TRADING BOT

7.1. Atomic swap

7.2. The value proposition of the SovereignWallet and the MUI token

8. PREVIOUS PROJECTS AND PATENTS

9. ROADMAP

10. BUSINESS MODEL
1.1. Overview of blockchain

The blockchain is a reliable global digital platform, a trust protocol, and distributed global ledger in which transactions conducted using Bitcoin, Ether or other cryptocurrencies are recorded chronologically, publicly, securely, transparently and immutable. Cryptocurrencies are represented by transactions stored in blockchains that leverage the resources of an extensive peer-to-peer network to verify and approve each cryptocurrency transaction. And once a transaction is recorded on the blockchain, the consensus is established.

SovereignWallet Network uses the Ethereum blockchain technology. The Ethereum blockchain has its own Turing-complete programming language—a fully functioning language—that allows developers to build any new program, except that it is built inside the blockchain. The Ethereum ecosystem is currently the best place to build a decentralized application; it has wonderful documentation and user-friendly interfaces, fast development time, security for small applications, and the ability for applications developed atop the Ethereum blockchain to easily interact with one another. These features of the Ethereum blockchain make it the choice of the SovereignWallet Network.

As a second generation decentralized consensus protocol, the Ethereum blockchain is a self-governing and decentralized application. It can be used for the development of smart contracts and explored to manage digital assets like tokens and digital representation of real-world assets, financial investment, digital financial services, and decentralized autonomous organization (DAO), which is a new way of organizing businesses and any other body like a governance system that comes to an agreement and works together for common good. The DAOs is a virtual entity within the Ethereum blockchain. It facilitates the setting up of the governance system in which the participants could remain anonymous, but interact regularly. Decentralized applications (DAPPs) were innovated to replace centralized management of assets and organization because consensus is decentralized as opposed to being centralized. Therefore, decentralized consensus is a paradigm shift from the centralized consensus, where one central database is used to validate transactions. In any decentralized system upon which blockchain protocols are based, authority and trust are transferred from the central party to a decentralized virtual network, whose nodes continuously and sequentially record all transactions on a public ledger called the blockchain. Each successive block contains a “hash” (i.e. a unique fingerprint) of the previous code. As the Hash key is cryptographically secure, a central intermediary is not necessary for transactions and authentification.

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The SovereignWallet Network project is built on top the Ethereum blockchain. The wallet will be utilized by users for crypto-currency remittance and exchange services through the MUI Decentralized Exchange: the M.DEX. To send and receive crypto-currency using the SovereignWallet, a user will automatically be issued a cryptocurrency address that is similar to a user’s bank’s account, and a digital signature to approve currency payment to that address. The digital signature is implemented using public key encryption technology. The cryptographic algorithm of the public key encryption technology is divided into a symmetric key cryptographic algorithm with the same encryption key being used to create the ciphertext from the plaintext, and the same decryption key used to recover the plaintext from the ciphertext, coupled with a public key encryption algorithm with a pair comprising an encryption key and a decryption key that are different from each other. In the Ethereum blockchain, we apply the Hash Ladder electronic signature, a quantum-resistant encryption algorithm that is in the Metropolis hard fork-to enhance the security of the user’s digital signature.

1.2. Evolution of the blockchain technology the 3rd generation decentralized consensus

SovereignWallet Network’s decentralized exchange M.DEX is being built based on decentralized 3rd generation consensus protocol. It will be designed to be secure, scalable, interoperable, and sustainable. The following paragraphs explain the different generations of the blockchain as it has evolved over the years since its creation. The blockchain technology has evolved over the years through the 1st generation via the 2nd generation to the 3rd generation consensus.

1.2.1. 1st Generation blockchain

The first generation blockchain runs on Blockchain 1.0 protocol. The bitcoin is the 1st generation cryptocurrency that was the first to successfully create a decentralized blockchain token. The token is scarce and tradable, and users can use it to send and receive digital money without any intermediary or third party involvement. It was just a digital asset or store of value that required a new cryptocurrency every time a user wanted to change into bitcoin.
It lacks smart contract between users and, as a consequence, no terms and conditions guide transactions are conducted on the 1st generation protocols. However, consensus protocol in blockchain 1.0 is based on Proof-of-Work (PoW) model, was primarily used for digital financial transactions’ confirmations. Users could immediately use blockchain 1.0 to send and receive Bitcoin from others. The time lag and the remittance fees were reduced, but the system was not scalable because the bitcoin blockchain is limited to 1MB size. This scheme slows down the network and increases transaction cost. This size invariably limits processing to seven transactions per second, and the minimum of 10 minutes for consensus to be reached, i.e. for new blocks to be added to the chain. However, the transaction fees were 1% of the transaction volume compared those of the financial institutions that charge between 7% to 30%.

1.2.2. 2nd Generation blockchain

The second generation blockchain is an extended version of the first generation and aims to make all transactions on the blockchain easier and more transparent. The second generation blockchain runs on Blockchain 2.0 protocol (the Ethereum protocol- Turing-complete programming language). Basically, Ethereum is the 2nd generation cryptocurrency developed based on a decentralized protocol. It is considered as programmable money, and has been the driving force behind practically every initial coin offering embarked upon to fundraise resources channeled at cryptocurrency development. The Ethereum consensus protocol is based on proof-of-work (PoW) model. The protocol distinguishes between asset and programmable infrastructure and utilizes smart contract to enact the terms and conditions that guide every transaction made on-chain. It expands the blockchain technology to accommodate assets like real estate, gold, oil, etc., in a decentralized market. The limitations of the 2nd generation protocol include lack of scalability, i.e. it cannot handle millions or billion transactions conducted per seconds. It is relatively very slow; the lack of experienced developers resulted in development flaws and hacks; and bad governance experience caused major disagreement and splits that resulted in the creation of other cryptocurrencies like Ethereum and Ethereum Classic, and Bitcoin and Bitcoin cash.

1.2.3. 3rd Generation blockchain

The third generation consensus blockchain aims to solve the problems of scalability and interoperability that are associated with the first and second generation blockchains. The third generation blockchain targets on fostering dynamic and high performance consensus protocols that support scalable transactions processing.
The Cardano Project is an example of a 3rd generation cryptocurrency that was envisioned to solve all the problems associated with the first and second generation of cryptocurrencies and to introduce new concepts and technologies to the cryptocurrency ecosystem. The third generation (there are references to Bitcoin being the first generation and Ethereum being the second generation) uses the weaknesses and strengths of the Bitcoin and Ethereum. The third generation consensus protocol promotes decentralized exchange, decentralized application and exchange of value (payment). The project aims to provide high assurance code or 3rd generation protocol that promotes scalability, interoperability, and sustainability in a decentralized platform, by partnering with the world's top decentralized exchanges and purchase a wide range of cryptocurrencies in our own decentralized exchange.

Blockchain Evolution

Consider a system that can process a million or billions of transactions per second. Such a system will require huge traffic capability, humongous bandwidth, and large storage capability. Scalability suggests that as a system gains more users it gains more resources and more capability. It means that a system can handle millions or billions of transactions per second (i.e., a system has a large transaction processing capability or power). Also, scalability means that a system has an inexhaustible storage capacity (i.e., having more data storage as more users enter the network), and can accommodate a significant bandwidth to run seamless traffic (i.e., network resources).
Scalability enhances the ability of a decentralized system to connect multiple networks together so that they can interoperate to achieve not only efficiency but also consensus. By enabling multiple blockchains to be created at any given time, and making all the blockchains run in parallel, the 3rd generation network or protocol can enhance a system’s ability to handle very large transactions at lower cost as opposed to a centralized system that cannot handle trillions of real-time transactions without incurring cost.

suggests that a decentralized platform can handle different cryptocurrencies and ensures that no one currency rules the cryptocurrency world. An interoperable decentralized system can promote interoperability among cryptocurrencies and between cryptocurrencies and traditional banks.

is the ability of an organization to be able to pay its own bills, runs its project successfully, and manages its assets profitably. The advisory and democratic roles of the governance committee, and the creation of a treasury system where revenue realized as a transaction fee for using SovereignWallet to conduct digital financial services shall be channeled into a decentralized treasury for the sustenance of the project.

What SovereignWallet Network aims to achieve in terms of scalability, interoperability and sustainability are as follows: We will have a hybrid approach to achieve scalability for the time being and utilize private blockchain to achieve high performance and security at the same time. We shall utilize Cardano’s provable security feature to achieve provably secure smart contract development.

i. To achieve interoperability, we shall connect our systems via the SovereignWallet interface to 0x protocol so that we can utilize 0x’s powerful decentralized protocol. 0x is an open and permissionless protocol that allows ERC20 tokens to be exchanged on the Ethereum blockchain. Also, we will be using the atomic swap cross-chain transaction technology to ensure trustless token exchanges.

ii. To ensure sustainability after the ICO, the SovereignWallet Network aims to create a treasury where MUI tokens acquired from the use of SovereignWallet as transaction fees will go to this decentralized treasury.

9 Don and Alex Tapscott. Blockchain Revolution. How the technology behind Bitcoi ns are changing money, business, and the world (2016)
1.3. Initial Coin Offering (ICO)

An Initial Coin Offering (ICO) is a decentralized process by which fund is raised for a new cryptocurrency venture, project, or startup. It is used by new startups to raise funds without going through the rigorous and regulated capital processes required by venture capitalists or banks. Over US$6 billion has been fund raised from the issuance of cryptocurrencies (ICO) from January 2014 to November 30, 2017.\(^\text{10}\)

In an Initial coin offering (ICO), users receive tokens in exchange for another popular digital currency like Ethereum or Bitcoin. Token issued on an Ethereum blockchain are based on ERC20, and are issued via Smart Contracts. The Smart Contract specifies conditions, which include barring the users (organizations or individuals) holding the ICO from creating more tokens than initially specified in the initial contract.\(^\text{11}\)

The tokens themselves do not offer the holder any particular rights or actual equity in the projects that are crowd funded. It allow holders to indirectly participate in the underlying business based on their view of the adoption and the usage of those systems (either at present or in the future) so as to create liquidity and the ability for business owners to fund the development and other costs of their project and bring it to fruition. The token also allows users to access any platforms or features that the developers create in the future that will be included in the token functionality.\(^\text{12}\)

A token could also be a peer-to-peer encryption. When users buy a token of this type, they actually buy private key that comprises 56 characters. This character has its own risk, if not properly managed or protected. This key is securely contained in the SovereignWallet, and cannot be lost, nor hacked. For ICOs hosted on our Meta-Blockchain platform (which will require the use of MUI tokens for payment), the automatic listing of the tokens issued in the ICO will be effected on our partner decentralized exchanges as soon as the purchase transactions are completed on the Ethereum blockchain network.\(^\text{13}\)

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\(^\text{10}\) Elementus.io


\(^\text{12}\) Blockchain Channel: https://medium.com/blockchannel/understanding-the-ethereum-ico-token-hype-429481278f45

\(^\text{13}\) ICO hosted on SovereignWallet will be automatically listed on AirSwap. Listing on KyberNetwork requires a permission from KyberNetwork.
Therefore, SovereignWallet Network aims:

a) To facilitate the ‘proper’ implementation of an initial coin offering (ICO). This will help to enhance the liquidity through the automatic listing of the token from ICOs hosted on our Meta-Blockchain on our own decentralized exchanges and partners, which will help to provide liquidity in primary or secondary cryptocurrency markets.

b) that such issuance shall be an identity based, because wallet address is connected to a user’s identity.

c) that the MUI token can be easily purchased and exchanged through the SovereignWallet interface and be listed on our M.DEX and partner decentralized exchanges in order to benefit the liquidity.

d) to create a value-proof and stable coin – the MUI is designed to maintain stored value at a reasonably stable pattern within our own integrated system.

1.4. Tokenization

Tokenization releases the power of decentralization. Tokenization suggests that any asset that has value can be issued and represented by ERC20 compatible token on the Ethereum Network, (i.e., an asset has been successfully represented on Ethereum). This suggests that we can utilize the ERC20-compatible token for our transactions instead of the asset. For instance, when a token is issued for every cryptocurrency, the token can be used for transaction instead of the cryptocurrency itself. Theoretically, therefore, a token can be used to represent the value of anything. Asset utilized for tokenization includes tangible assets (i.e. real estate, stocks, bonds, cash (fiat currency); intangible assets (i.e. patents, copyrights, carbon credits, brand name etc.; and fungible assets (i.e., gold or oil). When tokens are backed by an asset or liquidity, they strengthen the value of the token.

One of the value propositions of the SovereignWallet Network issued token, is that tokenization not only incentivizes and provides the owners of the token the opportunity to use it to pay for transactions conducted in the SovereignWallet ecosystem but enhances the stability and “value-protection” of the MUI token. Our tokens are backed by the robust integrated model of operation of the SovereignWallet Network platform.
1.5. Ether

SovereignWallet utilizes the Ether (ETH), the Ethereum native token as a medium of exchange between the MUI token and other Alt-tokens. This is because Ether is widely used for decentralized applications (Dapps), exchanging, exchanges, and digital payments. Also, the growing popularity of the Ethereum with the use of its powerful smart contract among developers and users make Ether the choice for the base cryptocurrency and medium of exchange on the SovereignWallet ecosystem. Considering that as long as Ethereum is used for applications and smart contracts, the ether will hold some “intrinsic” value beyond mere speculation, we are of the view that the utilization of such a widely accepted cryptocurrency as a vehicle of channeling funds, will make our platform attractive, adaptable and utilizable for conducting digital transactions such as exchanges and remittances.

1.6. Smart contract

Smart contracts are written programs, codes or solution used to deploy commands on the blockchain network. These commands affect the way and how data is stored, represented or handled in the Ethereum block-chain network. However, once a code is deployed to execute a specific command on the Ethereum network, it cannot be modified.15

In the SovereignWallet integrated M.DEX interface with other decentralized exchanges, sending and receiving cryptocurrencies are done with Ether, and all transactions are enabled through built-in smart contracts to make the system trustless. The central strength of Ethereum is the adoption and utilization of smart contracts, which provides the capabilities to use blockchain ledger extensively. With this capability, the SovereignWallet interface can deliver trustless services at reasonably short time intervals and low and affordable fees.

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15 Don and Alex Tapscott. Blockchain Revolution. How the technology behind Bitcoins is changing money, business, and the world (2016)
2.1. **Universal financial access - mobile crypto wallet and account creation**

Over 2 billion people in the world lack access to financial services and transaction accounts, but over a billion people had access to the mobile telephone network. The global mobile penetration figure is expected to rise to 2.87 billion users by 2020.\(^6\) This suggests that mobile phones are likely to be utilized as a digital platform to create transaction accounts for those who currently do not have bank accounts, and to extend mobile financial services to them. This will facilitate the easy deployment of mobile cryptocurrency/digital wallets to the underbanked and unbanked population of the world. Specifically, mobile cryptocurrency wallet will help to facilitate unlimited opportunities for people to create transaction accounts, send and receive funds, and universally access digital financial services.

Furthermore, universal financial inclusion holds substantial benefits for the individuals. Previous studies show that when people are involved in a financial system, they are empowered to start and expand their businesses, invest in education, manage risk, and absorb financial shocks. Therefore, access to accounts and payment mechanisms increases savings, empowers people, and boosts productive investment and consumption. It provides access to funds, which significantly impacts consumption, employment status, and income. Governments, international organizations including the G20, and the World Bank Group have found that digitizing payment is one of the primary key ingredients that can drive financial inclusion. Therefore, digitizing payments and remittances will enable people with active accounts to enjoy more benefits from financial inclusion. It will allow them to make transactions more easily, affordably and securely.\(^7\) We believe that digital currency can promote individuals’ economic empowerment by facilitating greater account ownership and asset accumulation, as well as enabling confidentiality and convenience, which is required to access financial services.\(^8\)


\(^7\) https://datacatalog.worldbank.org/dataset/identification-development-goal-dataset

\(^8\) https://datacatalog.worldbank.org/dataset/identification-development-goal-dataset
Therefore, SovereignWallet Network aims to:

a) create a safe and secure messenger-style SovereignWallet that will facilitate the creation of a cryptocurrency account.

b) facilitate remittances of cryptocurrencies by users just like sharing of instant messages, and exchanges at relatively low transaction fees.

e) partner with existing cryptocurrency service providers in various countries to ensure possible conversion of our MUI token into local fiat currencies. The mechanism will entail that the MUI is utilized to purchase the Ether, and the Ether acquired is converted into the fiat currencies of those countries. For instance, when we are venturing into other markets, we may plan to partner Cardano and other recognized service providers. This will facilitate the adoption of SovereignWallet application in other countries.

2.2. Financial crises: the cases of Greece and Venezuela – value preservation

Since 2007, Greece has been experiencing economic turmoil occasioned by heavy Euro debt. The country’s Eurozone debt rose to 320 billion Euro, making the value of the Greece’s local currency to be weak and unable to sustain the purchasing power of the people against the Euro. This financial crisis resulted in the government placing a stringent capital restriction on the flow of bank deposits. As a result, the primary concern of Greeks is how they can maintain their value so as not to be further affected by the crisis. However, they could preserve their value by investing in less volatile assets like real estate, precious metals, precious stones, and collectibles.

What they need is a store of value that is safe from confiscation and theft, and has the same properties as money, but can be purchased with cash. And cryptocurrency provides them with such an opportunity to preserve their value. This is because the digital nature of cryptocurrency allows anyone who owns a private key to have full ownership of it as money. This makes a cryptocurrency a secure store of value against the threat of confiscation and theft that any financial debt crisis can cause. A cryptocurrency, like the MUI and the MUI token, is a superior store of value with moderate volatility but has low ease of confiscation, high portability, high divisibility, and high security.
For example, to buffer the effect of the financial crisis in Greece, we understand that the Greeks to use the Bitcoin as a store of value to safeguard their actual money and preserve their value. The report reveals the increasing citizens’ participation and activities regarding the utilization of the cryptocurrencies as superior stores of value. Similar participation is reported about other European countries such as Greece 50%, Ireland 36.36%, Portugal 73.47%, and Spain 10.24%).

Similarly, Venezuela’s national currency is losing value at a catastrophic inflation rate of close to 2000%. Thousands of Venezuelans have begun to turn to use cryptocurrency to guarantee the little value left of their increasing worthless national currency. For example, people are now using cryptocurrencies to pay for groceries, medical bills, and even honeymoon. Employers are turning to utilize cryptocurrencies to pay employees’ wages. Unaffected by financial crisis, therefore, cryptocurrencies give users an alternative to black market worthless government currency exchanging.

With a value-proof and stable token, like the MUI token, the SovereignWallet Network aims to issue a digital money/cryptocurrency token that can serve as a store of value for users in nations that are hit by any financial crisis to leverage upon to preserve their value against any economic crisis, and seek to sustain the value of their money.

2.3. Lack of well-secured and easy-to-use crypto wallet – address the problem

A cryptocurrency wallet is generally software that is used to securely store, send and receive cryptocurrencies through the management and utilization of private and public cryptographic keys. A cryptocurrency wallet holds a user’s addresses, and provides a friendly interface for conducting digital financial transactions, track balances of cryptocurrency holdings, view what fees to pay to implement desired transaction(s), and to receive notifications of confirmations of transactions conducted on the Ethereum network.

Different kinds of wallet that are available in the cryptocurrency industry today, but the management of their addresses have been a major concern. For instance, in a desktop wallet, cryptocurrencies can be lost if the wallet files become hacked or when the private key is deleted. In online or web-based wallets, key information/data stored online allows users to protect themselves against the risk of mistakenly deleting their private key from their computer. Although easy-to-use, yet it is perceived as not secure.
because of the concerns that this method allows users to surrender the control of their private keys to the host providers. Hardware wallets are less vulnerable to being compromised than desktop or mobile wallets. They have secured devices designed to store users’ private keys, but are difficult to use, and when the password is lost or the hard wallet is lost, it might be difficult to retrieve. The mobile wallet is secure, and relatively easy-to-use. However, such mobile wallet should be able to run on android and iOS.22

The SovereignWallet app is a messenger-style smart mobile cryptocurrency wallet that provides various cryptocurrency-related services and among other things, aims to promote financial inclusion. It allows people to create their accounts from their mobile smartphones. Besides the complex cryptographic address, SovereignWallet app utilizes an identity based address, where a user’s identity is connected to its wallet address. The SovereignWallet app also serves as a mobile interface that enables every SovereignWallet app user to undertake quick cryptocurrency exchanges through the implementation of M.DEX, remittances, and for ICOs hosted on our platform, the benefit of the automatic listing of these tokens that will facilitate liquidity in the primary or secondary market. Messages shared between friends in SovereignWallet app messenger are also protected with end-to-end encryption. SovereignWallet and the Smarts Contracts are fortified with Self-Protection and Zero-Knowledge Encryption to protect users’ crypto assets. It is easy and very secure to use, and can handle various transaction activities. There is no fear of users losing or mistakenly deleting their private keys.

2.4. The high cost of remittances and lack of a bank account

Another problem that people and migrants face everywhere is the high cost of remittances across international boundaries. International remittances are important sources of income and support for migrants’ families. In 2014, the World Bank Group reports that 250 million migrants remitted a total sum of US $583 billion to support over 700 million families. And US$436 billion of that amount went to developing countries. Sadly, the remittance fees with respects to countries are exorbitantly high. For instance, it cost 10% to remit US$200 to Latin America, and even higher to send money to Africa.23 Besides the explicit costs of sending and receiving money across international borders, hidden costs in foreign exchange transactions may significantly affect a user’s decision in respect of the channel to use.
Another problem associated with remittances is the time it takes to complete a remittance transaction through traditional and conventional channels. Cash transfer is heavily regulated, and the identity of a customer has to be verified before any financial services can be offered and delivered to him. If the means of identification of a customer is not issued by the government, it may be even more difficult for such a customer to access a financial service.²⁴

SovereignWallet Network’s digital remittance service offers a better solution to these problems, and provides efficient, quick, secure, and trusted digital remittance services to customers at lower fees per remittance.²⁵ All that a user needs to do is to download the SovereignWallet application, sign up to create a wallet, invite friends to download the SovereignWallet app too and enjoy relatively low remittance fees.

2.5. Centralized Vs. decentralized exchanges: the cases of hacking, custody, limited listing capability

In a centralized network, authorization resides with the central entity, but in a decentralized network, authorization resides with all the participants in the network. Decentralization depicts the value for which the blockchain and cryptocurrencies were envisioned, but centralization is in conflict with the values of the blockchain. In a centralized exchange, transaction fees are higher because it covers both the costs of accessing and exiting the blockchain platform. However, decentralized exchanges are cheaper, because it is a peer-to-peer connection, from wallet to wallet, without third parties involved. Also, centralized exchanges can conduct fiat (i.e. USD, SGD etc.,) to cryptocurrency transactions and vice-versa, but the decentralized exchanges can only perform cryptocurrency to cryptocurrency transactions for now due to regulatory reasons.

The SovereignWallet app is a mobile interface that has its own decentralized exchange platform, the M.DEX, connecting the users to other decentralized exchanges. Therefore, all the transactions and information routed in M.DEX will be done through a peer-to-peer protocol. By using this scheme, authority is entrusted to the peer-to-peer network of hundreds of independent nodes instead of a centralized exchange.


What makes SovereignWallet app unique as a decentralized interface to other DEXs?

2.5.1. Trust issue

In January 2018, the major North America Cryptocurrency Exchange, and the fifth largest in the world, Kraken, shut down for an exceptionally long maintenance outage. The unprecedented shut down fueled anxiety among the users for the singular reason that their funds were solely controlled by Kraken.\(^{26}\) In a centralized exchange, the private keys to access users’ cryptocurrencies are not kept with them, but with the centralized exchange. With the occurrence of any problem or a breach in the centralized system, there are high possibilities in the loss of all the users’ cryptocurrencies. Thus, cryptocurrencies are highly volatile assets, constantly exchanged on primary or secondary markets. An over 24-hour downtime can mean major losses for the users in terms of opportunity costs. Although the public-key is cryptographically protected, yet once a private wallet key is compromised, one’s funds are gone forever. Therefore, if a single exchange controls cryptocurrencies that are worth billions of dollars in funds and the keys to unlock them, it is considered a target for those interested in defrauding the system.\(^{27}\)

In a decentralized exchange (DEX), this kind of shut down cannot prevent continuous exchanging. It happens because a decentralized exchange platform, such as Airswap and OmiseGo run with the Ethereum network. The Ethereum Network uses Smart Contracts or a combination of smart contracts and payment channels to facilitate real-time cryptocurrency exchanging.

Therefore, SovereignWallet app is implementing our own M.DEX, to interconnect to other DEX platforms to guarantee continuous service. The system is transparent, lacks intermediaries, is trusted and immutable.

2.5.2. Hacking

It is easy for hacking, identity theft, fraud, phishing, malware, ransomware activities to be orchestrated against a centralized exchange with probability of a success. The world’s first Bitcoin exchange, Mt. Gox was hacked in February 2014. The exchanges lost 850,000 Bitcoins to the activities of hackers and became insolvent, and many of their customer lost their investment and bitcoins.\(^{28}\) In 2016, the second biggest centralized Bitcoin exchange, Bitfinex, was hacked, and 120,000 units of cryptocurrency Bitcoins worth US$ 72 million at that time was stolen.\(^{29}\) Specifically, the Bitcoins were taken from users’ segregated wallets. The worst hit was Youbit, that declared bankruptcy after being hacked for the second time in December 2017.


\(^{27}\) https://medium.com/herdius/decentralized-vs-centralized-exchanges-bdecda191f767

\(^{28}\) https://www.coindesk.com/category/companies/exchanges/mt-gox/ [accessed on May 3, 2018]

\(^{29}\) https://en.wikipedia.org/wiki/Bitfinex_hack
In decentralized exchange, this is not possible because safety measures are built in the Ethereum blockchain network with no single point of failure. The DEX's provides confidentiality, authentication, and non-repudiation to all activity. In DEXs, the consequences of any reckless behavior are isolated to such an actor. Until now, two cases have been recorded, involving Parity MultiSig and CoinDash. In 2017, a vulnerability was discovered in the protocol of the smart contract of Parity MultiSig wallet version 1.5+, that allowed a hacker to steal 150,000ETH, worth about US$30 million. Also during CoinDash's ICO, Ether worth US$ 7 million was taken by an unknown hacker who had access into the system and replaced the address of the website with a fake one so that the Ether tokens sent into the hacker's own address. Also, during the development of the DAO, the DAO lost Ether worthing US$50 million, which was subsequently recovered through a hard fork method.

SovereignWallet Network is offering its users a sovereign wallet that promises self-sovereign and secure finance. This capability is conceptualized in the SovereignWallet app - a Messenger-style cryptocurrency wallet, with it's own native M.DEX. The app is fortified with cold wallet-level security, which is based on machine-learning user authentication, and the advanced 3rd generation encrypted chatting technology. It has built-in self-protection, and zero-knowledge end-to-end encryption that makes it insusceptible, inaccessible, and impenetrable to many hacking activities, as the owners will have their private keys and can make direct transactions with complete privacy.

### 2.5.3. Custody

Custody is a process in which cryptocurrencies are kept in the custody of a centralized exchange to be exchanged on behalf of their owners. The risk and rewards remain with the owners, while the exchange platform is responsible for selling or distributing the cryptocurrencies. This scheme is very limited, considering if there is no available buyer, the exchange might have to continue to hold the cryptocurrency in the trust up until a buyer is found. In the case of any hack, the cryptocurrency is gone. The SovereignWallet's M.DEX is custody-free and secure, and exchanges are done on a peer-to-peer basis. Such exchanges are organized by smart contracts, and only the owners will have access to their own private keys and can make direct transactions with complete privacy. With all data and funds secured and owned by the users, there is no single point of failure.
2.6. Volatility and instability of cryptocurrencies

To incorporate all the features of a traditional currency, such as scarcity, fungibility, divisibility, durability, and transferability into a digital currency, and to utilize it as a medium of exchange, as a unit of account and as a store of value, such digital currency should be more stable than Bitcoin or gold. The current value of cryptocurrencies often experience regular high fluctuations rising or falling by about 25% in a single day, and occasionally rising to over 300% in a month. Price volatility of Bitcoin (BTC) and other cryptocurrencies is unprecedentedly too high, making them unsuitable for everyday usage. Therefore, there is a need to stabilize cryptocurrencies to eradicate these barriers in order to widen the acceptance and usage of them.

A slight change in the demand of any cryptocurrency may induce unprecedented levels of changes in prices, and affects users’ abilities to utilize it for viable purposes. If the price of a cryptocurrency is not stable, it will be difficult to utilize it in the credit and debt market. This is because it will attract a large premium as a buffer against price risk in the event that any future contract payment is based on cryptocurrency. Owing to these negative impacts that such price instability has on cryptocurrencies, its utilization is limited.

SovereignWallet Network created a “value-proof” and stable token that avoids large fluctuations in value by utilizing a combination of stabilization tools. We’re achieving token stability and value-protection through a three-pronged approach, which includes what we believe are first-of-its-kind automated tools: an Algorithmic Central Bank (ACB), the SovereignWallet Network Governance system and the SovereignWallet Network treasury.

33 Jose I. Orlicki (2017). A Stable Coin with Pro-rated Rebase- ment and Price Manipulation Protection

34 David Ernest. Hard Problem in Cryptocurrency

35 Same authors and paper as 11 above.
The SovereignWallet Network was founded with the vision and mission to connect everyone to a low-cost financial service by creating a broad digital network that can be used by all, including those in the underdeveloped countries who are living below the poverty line, and those who do not have basic access to financial services or bank accounts. In pursuit of the realization of this noble vision, the SovereignWallet app is a platform created to empower users who live below the poverty line, and those who seek to be financially stable and comfortable to take control of their own financial situation, by having a tool that helps make them “self-sovereign” financially.

Currently, the SovereignWallet Network is investing in creating its SovereignWallet app, associated with the M.DEX and in the future, the MUI Meta-Blockchain for users to reach a "self sovereign finance." This scheme will serve not just as a means of conducting digital financial services, but also as an avenue for protecting value not only for crowd funders, but also to users. Through this platform, users will have the opportunity to participate in our project through the purchase of our MUI token. In addition, the SovereignWallet Network will utilize the SovereignWallet app as an interface to enable users to conduct exchanges at relatively low fees.

1. To create a smart mobile cryptocurrency called Sovereign-Wallet.
   a) that, the SovereignWallet shall be utilized as a mobile messenger-style cryptocurrency wallet for remitting and exchanging cryptocurrencies on the peer-to-peer basis at low transaction fees between users on the identity-based mechanism.

2. that SovereignWallet shall facilitate the sharing of instant messaging between users.

3. that SovereignWallet will be an easy-to-use wallet to send and remit digital money for self-sovereign-finance.

4. To enable the proper implementation of ICOs by other token issuers that is identity-based and benefits from the ease of purchase of tokens offered through the SovereignWallet interface to token holders.
   a) that the MUI shall be a stable, and value-proof token.
   b) that the MUI token can serve as a store of value and safeguard against the risks of confiscation, theft, and deflation to fiat currency.
   c) that MUI token is backed with the robust business model that supports the operation of the platform behind the SovereignWallet,
3. To ‘decouple’ the fiat-collateralization model associated with ICOs, and create a self-recycling stable token model that leverages upon a combination of stabilization tools including the Ethereum-based smart contract, and Algorithmic Central Bank (ACB), as well as on the decision of the Governance System. The ACB will algorithmically adjust the Token volume, to avoid significant fluctuations from its intended value. This mechanism is based in ‘The Quantity Theory of Money’, and affirms that the money supply and price level have a direct proportion to each other, meaning that a high supply of money, the price will decrease, or vice-versa.

4. To airdrop MUI tokens representing a percentage of annual transaction fees from the use of the SovereignWallet app as follows:
   
   a) to create efficient services that are targeted at meeting the needs of the less privileged. In the long-term, we plan to establish a foundation for this purpose or utilizing existing foundations that channel their resources to meeting the needs of the privileged.

   b) The MUI token received as transaction fees shall be recirculated as part of the token stabilization mechanisms.

   c) Payment for the token initially is done with Ether. Ether shall be converted to fiat currency to implement these value-added services as a reward package for loyal users of SovereignWallet app and the MUI token.

These mission and objectives are what SovereignWallet Network passionately seeks to actualize to put smiles on the faces of every user all over the world. Join us to build a service-oriented ecosystem that preserves value through your participation in the SovereignWallet Network initial coin offering (ICO).
SovereignWallet is a messenger-style cryptocurrency mobile wallet that incorporates a banking grade security chat, associated with the usability of the 3rd blockchain technology. Now, we are integrating our decentralized exchange platform, the M.DEX. Following the on-going work of integrating Ether in the platform, SovereignWallet expanded the services to accommodate other cryptocurrencies as we move forward. Currently, the wallet added support for more than 10 wallets.

We provide a chatroom for the group and peer-to-peer instant messaging. The wallet is for implementing cryptocurrency remittances and exchanges through M.DEX. The exchange service is built upon a hybrid on-chain and off-chain protocol, being one of the first custody-free platforms in the market, with fixed rates, user-friendly and fast decentralized exchanges via atomic swap technology.

The wallet features a global ledger that records all peer-to-peer transactions securely, transparently, traceable, irreversibly, and incorruptible. It also utilizes identity-based protocol that binds a user’s identity to his or her wallet address coupled with user verification mechanisms to perform checks to ensure compliance with the regime relating to KYC (Know Your Customer), AML (Anti-Money Laundering) and CFT (Combating the Financing of Terrorism) as conditions designed to create transparency in cryptocurrencies transactions. Figure 2 summarizes its features.

4.1. As a cryptocurrency wallet

SovereignWallet is a mobile app used to securely store, send and receive cryptocurrencies through the management of private and public cryptographic keys. It provides an interface to track balances of cryptocurrency holdings and other automated functions, like the fees per transaction. These aspects make it readily available and easily accessible, providing a convenient way to use cryptocurrencies on a daily basis.

As a wallet, it is composed of the MUI native token and 10 other wallets. The initial version will require users to use Ether to pay for every transaction conducted in the wallet, while later versions will utilize the MUI token for the same purpose. Both MUI and Ethereum wallets in the SovereignWallet app are activated by SovereignWallet to conduct its ICO (Initial Coin Offering) and the distributions of the MUI token. The MUI token shall be used for any kind of transaction on the SovereignWallet app including remittances and payment of transaction fee.

4.2. Wallet supported features

Figure 2 summarizes the features that SovereignWallet app supports. The MDEX is currently being concluded to give users the opportunity to trade in decentralized exchanges.

4.2.1. Key recovery

In the event that a user loses the smartphone or have it broken, SovereignWallet app has the capability to recover the private key of the user’s cryptocurrency wallet. What the user needs to do is to sign in to his account through another smartphone to recover the private key. The recovered information is zero-knowledge encrypted with a user’s password and pin, and then stored securely on the SovereignWallet Network server. A user’s private key can also be recovered from the 24 mnemonic words generated upon creation of the private key.
4.2.2. Mnemonic word sequence
The incorporation of the HD feature in SovereignWallet app enables the encoding of a private key into mnemonic word sequence (also referred to as a ‘seed’). Mnemonic is a collection of multiple words that represent the private key in user-friendly format. These two innovations in Sovereign-Wallet work together to make it possible to easily backup the entire wallet, simply by remembering a single paraphrase and migrating the wallet file to another provider or phone.

4.2.3. End-to-end encryption
All messages are encrypted with encryption keys generated during the chat. Besides, the chat history cannot be retrieved when the server is hacked because no information is stored in the SovereignWallet server to recover the encryption key for encrypted chat messages stored in the server.

4.2.4. Application self-protection
The chat application provides self-protection. It has the capability to detect any hacking activities targeted at the operating system (OS) and to keep the application safe from every threat of external hacking aimed at stealing the data related to user’s private key and other secret information.

4.2.5. Messages withdrawal
Wrong messages can be withdrawn by simply deleting it from the device. Once deleted, it is automatically deleted from the server.
4.2.6. Application format and operating system

SovereignWallet app is available as mobile application. Users can only use their smartphones to access, download, and use the SovereignWallet app. It supports Android and iOS mobile devices only.

4.2.7. Cryptocurrencies

Currently, the SovereignWallet added support to Ethereum (ETH), AirSwap (AST), 0x Protocol (ZRX), OmiseGo (OMG), Augur (REP), Golem (GNT), Kyber-Network (KNC), Status (SNT), TenX (PAY) and TrueUSD (TUSD). This will be expanded to accommodate other cryptocurrencies as the development on the cryptocurrency wallet progresses and more collaborations with other decentralized exchanges are sealed. Ether is used as the base cryptocurrency. To purchase the MUI token, users need to change their cryptocurrencies into Ether and use the Ether to buy the MUI token.
4.3. Supported services

Figure 3 reveals what services the SovereignWallet app will be able to provide. The SovereignWallet Network aims to provide remittance and exchange services. The interface will be connected to decentralized exchanges, and we plan to offer additional services.

4.3.1. Remittance services

The SovereignWallet Network shall provide remittance services to users at the launch of the SovereignWallet app. The provision of this service will help the SovereignWallet Network to circumvent the huge transaction fees that conventional banks do charge users for remittance services, and provides remittance services to users at low transaction fees. This could be done directly or indirectly as our project progresses.

SovereignWallet Network will utilize its SovereignWallet app to provide a peer-to-peer remittance service to the users. For example, if Kim and John use SovereignWallet app as their cryptocurrency wallet, they can send and receive cryptocurrency to and from each other using the wallet interface. If Kim wants to send some money to John in South Africa, Kim can do two things: first, he can buy some MUI and send it to John via the wallet; second, if he already has some MUI in his wallet, he can transfer some to John, but John must also be using the SovereignWallet app. This kind of remittance service will attract relatively low transaction fee depending on the volume of cryptocurrencies sent and received through the interface, and due to lack of hidden charges that are usually incurred from the involvement of traditional remittance intermediaries. Currently, the SovereignWallet app has been developed to be utilized to carry out peer-to-peer remittance service on top of the Ethereum blockchain.
As part of its future business plan, Sovereign Wallet Network aims to utilize the Sovereign Wallet app interface to provide a “back end” transfer services for small remittance operators, like the remittance shops, without dealing directly with their individual customers. The business model will require the remittance shops to buy MUI token and sell it in the cryptocurrency market in their respective countries. For example, if John wishes to send US$300 to his mother in another country through a remittance shop or any other service provider at relatively low transaction fees and without delay, all the remittance shop needs to do is to buy some MUI token from Sovereign Wallet Network and send it through the Sovereign Wallet interface to the other country. In that country, the remittance shop can change the MUI token into Ethereum and sell it to obtain fiat currency, and remit the equivalent amount of US $300 less transaction fees to John’s mother. By using our platform, the remittance shop would not need to charge high service fees to recover its costs.

4.3.2. Secure chat

The Sovereign Wallet app is a messenger-style cryptocurrency wallet that incorporates a 3rd generation secure messenger with an in-built peer-to-peer and peer-to-group chatbots for exchanging instant messages.

Also, the mobile app interface is a gateway to other decentralized applications and services that we will partner. The social networking service runs off-chain and is designed to attract the average smartphone users. Users can use the app chatbot to send and receive instant messages and cryptocurrencies. A notification of the completion of the transaction on the Ethereum blockchain is received as a pop up bots.
4.4. MUI Decentralized Exchange: the MDEX

4.4.1 Introducing M.DEX

The M.DEX is the first mobile decentralized exchange and offers the best tools for exchanging cryptocurrency in the market. It provides a custody free environment that allows users to trade directly between wallets, without having to trust any entity with your personal assets and information. The trading bot inside the M.DEX will evaluate the trends in integrated exchange platforms to give the best rates and options to users. The MUI Treasury will accumulate the profits from the M.DEX trades and the MUI Meta-Blockchain project that will be implemented in the future.

In this business model, the SovereignWallet interface acts as the gateway to other third party decentralized exchanges that users can trade cryptocurrencies through. This service will provide fixed-rates.

The trades will be made through a pioneering Atomic Swaps technology. This technology will be one of the first to be implemented within an inter-blockchain platform and will guarantee high performance and direct trades between cryptocurrencies and tokens, without intermediaries and the risk of one party defaulting on the trade.

With the connectivity of the M.DEX trading platform, other decentralized markets will be incorporated into our platform and will facilitate the possibility of users easily finding counterparts to trade their cryptocurrencies. These structures will provide great incentives to help the liquidity increase and grant benefits for all participants on the platform. Currently, M.DEX service is provided by MDEX Service Limited.

These successful partnerships are mechanisms to provide a more transparent and self-governing environment for all the users.
Figure 3. Supported services

- READY
- COMING SOON
4.5. The MUI Meta-Blockchain

4.5.1 Features of the MUI Meta-Blockchain

MUI Meta-blockchain is a programmable blockchain that will be able to support multiple cryptocurrencies in a single blockchain. This technology will make it easy for everyone to create new coins and pegged stable coins without needing to build a new blockchain.

Meta-Blockchain Mainnet

SovereignWallet will develop a Meta-Blockchain Mainnet that can program and operate several cryptocurrencies in the form of a DApp in a blockchain, establishing an Algorithmic Central Bank and an Algorithmic Crypto Exchange Bank linked to it. The Meta-Blockchain is designed to be light enough to run on mobile applications. Notably, the network data and ledger data flow will be minimized by the light structure. By isolating the currency issuance protocol from the ledger consensus protocol, it will be possible to stabilize the value of the coin by controlling the circulating volume of the coin, while the Proof-of-Service protocol ensures the continuity of the network by giving incentives to the nodes that have made substantial contributions to the network. In the Meta-Blockchain, anyone can create their own coin, preempting the need to develop custom mainnet when issuing the cryptocurrency version of the local government or a country’s national currency. In this system, it will be possible to deposit coins with proven value, such as Bitcoin, as a collateral coin in the Algorithm Crypto Exchange Bank, and issue a meta coin that is 100% reserve, crypto-peggedcoin. Profits from this coin conversion service will again support the stable value of MUI token (and in the future MUI coin). Based on these functionalities and services, it will be possible to maximize profits through mobile atomic-swap exchanges and mobile payment services.

Meta-Blockchain Services

The MUI Meta-blockchain will allow the minting of lightweight meta-bitcoin on SovereignWallet, that will be 100% pegged to Bitcoin. The SovereignWallet’ ACB will provide a service to convert Bitcoin to meta-bitcoin and vice-versa. The MUI Meta-Blockchain will make it easy for everyone to mint a new coin or to convert their token to coin. Thus, the MUI ACB will provide the minting and conversion service. The profits from these services will be accumulated to the treasury and the net wealth of the treasury will support the value of MUI token, that will become the exchange token of M.DEX and the master-coin of MUI meta-blockchain.
MUI is the name of the token that SovereignWallet Network is issuing as part of its ICO. MUI stable token owners will be able to keep their purchasing power, as it is designed to keep the value and consequently will have an appreciation of value over time, without risks or losses caused by the high volatility like other cryptocurrencies. The MUI Token protection mechanism will safeguard the assets and will empower the users.

5.1. Uses of the MUI as a cryptocurrency

The MUI shall be utilized for paying us for all transactions conducted within the SovereignWallet ecosystem as follow:

a) as transaction fees for sending and receiving digital money between users.

b) as transaction fees for the exchange of cryptocurrency on M.DEX platform.

c) as a medium of exchange within the SovereignWallet ecosystem.

d) as service fees for minting new coins or tokens on MUI Meta-Blockchain platform.

e) as service fees for generating Meta-Blockchain version of pegging coins from existing cryptocurrency.

f) as transaction fees for coin and token exchanges on MUI Meta-Blockchain Platform

With the implementation of the MUI Meta-Blockchain, MUI will be the master-coin of MUI Meta-Blockchain node. Transaction fees earned from M.DEX and Meta-Blockchain services will be accumulated on MUI treasury to protect the value of MUI token and in the future MUI coin.

5.2. MUI token minting

The SovereignWallet Network will be the only responsible for the minting of MUI. This decision will be taken by the the Sovereign Governance System. Some of its duties include the rate of issuance, the price of the token, and how users should pay for subscription and utilization of the SovereignWallet app remittance and exchange services.
5.3. Why is MUI a stable and value-proof token?

The primary target of the SovereignWallet Network is to pioneer a cryptocurrency token that is value-proof and stable. The MUI token, designed to be a stable token with features such as a store of value, a medium of exchange, and unit of account. The Token stability will be possible by the control mechanism of the Algorithmic Central Bank (ACB), created to algorithmically adjust the Token volume and avoid fluctuations from its intended value.

To increase the MUI Token value-proof over time, SovereignWallet is implementing its decentralized exchange (M.DEX) to provide a secure, scalable, interoperable, and sustainable platform, with intuitive and easy-to-use features.

The Sovereign Treasury will accumulate all the profits from the M.DEX trades and the MUI Meta-Blockchain services that we will implement in the future. These profits will support the value of MUI token over time. This scheme aims to provide a fully integrated system to preserve the stability of the MUI Token.

Therefore, MUI stable token owners will be able to keep the purchasing power, meaning that its value will consequently have an appreciation of value over time, without risks or losses caused by the high volatility like other cryptocurrencies.

With these features fully implemented, the MUI token can confidently be utilized as a store of value, especially for people whose fiat currencies have been weakened by inflation or hyperinflation. Some countries like Greece, Argentina, and Venezuela shows that cryptocurrencies serve as digital money, but also a store of value, as they can be a safeguard from confiscation. Also, such digital currency should serve as a medium of exchange, which cannot be hindered by any manipulation of government monetary policies.

Therefore, the MUI token is designed to have a store of value with moderate volatility that will increase gradually over time, high portability, high divisibility, and high security, but with low confiscation risks.
5.4. Stabilization mechanism

Price volatility of Bitcoin (BTC) and other cryptocurrencies are at record highs making it challenging to rely on them for everyday usage. As a result, to maintain the value and avoid the fluctuation of prices of main cryptocurrencies, it was necessary to create a cryptocurrency with the potential market without the vulnerability of the other cryptocurrencies, associated with a need of practical use in a permanent scale without carrying huge risks.

SovereignWallet Network will utilize the ACB, the SovereignWallet Treasury and the Governance system (Figure 4) to not only stabilize the value of MUI token in the market but to regulate its volume in the market to prevent it from degrading its value in the long run.

5.4.1. Value stabilization mechanism

As part of SovereignWallet's effort to stabilize the value of the MUI token, the following scheme is designed to avoid the high fluctuation of prices.

5.4.1.1. SovereignWallet Treasury

Immediately after the MUI token sales, every unsold token will be withdrawn using Smart Contracts and sent back into the Sovereign Treasury for safekeeping. Every unsold token after each phase of the MUI token sale shall be resold to the public at
5.4.2. The SovereignWallet governance system

The SovereignWallet Network will implement an automated governance system to work autonomously on a trust-less basis. The Governance System will balance the emission of new tokens, including the rates of issuance and price, as well as other measures to regulate the volume of tokens in circulation in the exchanges.

The SovereignWallet Treasury may also implement other measures from time to time to control the circulation of the tokens.

5.4.1.2. The Algorithmic Central Bank (ACB)

The SovereignWallet Network utilizes the operations of a Smart Contract-based Algorithmic Central Bank (ACB). The ACB will help to regulate and protect from speculative tendencies of 'pump' and 'dump' activities. Also, the ACB will autonomously regulate the volume of the MUI tokens in the market.

Therefore, if the numbers of tokens is drastically reduced, the ACB will release more tokens, or vice-versa. The ACB will adjust the volume and store them in the Sovereign Treasury.

To prevent unprecedented sharp fall or rise in prices of the MUI Token, the ACB acts as a protection from excessive price volatility. By these activities, the ACB will maintain the stability of the value of the token and resist the depreciation of the value.

As SovereignWallet Network progresses with its SovereignWallet development and operations, other similar procedures shall be explored to ensure a stable and value-proof MUI token.

5.4.2. The SovereignWallet governance system

The SovereignWallet Network will implement an automated governance system to work autonomously on a trust-less basis. The Governance System will balance the emission of new tokens, including the rates of issuance and price, as well as other measures to regulate the volume of tokens in circulation in the exchanges.
6.1. Transaction fee

This is the cost of conducting cryptocurrency remittances and exchanges on the SovereignWallet app. The charges for every transaction conducted through SovereignWallet such as remittance and exchanges of cryptocurrencies, shall be adjusted from time to time as the rate of utilization increases to reflect the cost of operation of the SovereignWallet Network.
6.2. **Incentive system for holders of MUI token**

The SovereignWallet Network will utilize a certain percentage of the transaction fees that it earns in the form of MUI token. These airdrops will be used as incentives for MUI token holders.

It is expected that as the volume of transactions within the SovereignWallet ecosystem will grow gradually and, consequently, the transactions fees will also increase. With this growth, it will correspondingly increase the value of the network. These airdrops will be implemented by the Smart Contract to make the process trustless.

6.2.1. **Promotional and special gifts airdrops**

The SovereignWallet Network will utilize a certain percentage of its ICO as promotional and special gifts airdrops. These special airdrops are special and promotional benefits to the users who've had downloaded the SovereignWallet app and registered successfully in SovereignWallet Network, have purchased MUI tokens, and engaged in various activities using the SovereignWallet interface.
These people will receive incentives randomly as the number of transactions grows. They will be selected by random processes, not on the basis of the quantity of token that they hold. These incentive will be done periodically as the Smart Contract dictates. The conditions set in the smart contract may include:

a) Any token holder who constantly increases the amount of MUI token in their SovereignWallet may benefit from such airdrops periodically.

b) Token holders who are active on the SovereignWallet interface may benefit from airdrops periodically.

c) Users who hold the MUI token for a longer period of time may benefit from airdrops periodically.

d) Other variables can be considered as incentives geared at increasing the SovereignWallet users’ base, such as geographical locations, users interests, preferences, the volume of transactions, etc.

6.2.2. Special airdrop for new users

The SovereignWallet Network will establish a certain percentage of the MUI tokens that it holds as treasury tokens in the ICO to airdrop for promotional purposes, targeting to attract new users to download and use the SovereignWallet. The airdropped MUI Tokens will be held in the new user’s SovereignWallet.

Every new user who downloads the SovereignWallet app and register successfully under the KYC (Know Your Customer) in the SovereignWallet shall enjoy the bonus MUI tokens.
6.2.3. **Special airdrop for referrals**

The SovereignWallet Network will earmark a certain percentage of the MUI tokens that it holds as Treasury tokens in the ICOs for airdrop to encourage existing users to introduce and refer new user into the SovereignWallet ecosystem. This will increase network effects on every users, and boost awareness of our smart wallet. Users who refer or introduce new users to the network, shall also receive a quantity of MUI token airdropped into their wallet for every referral that they make.

6.2.4. **Special airdrop for the less privileged or low-income earners**

The SovereignWallet Network will airdrop a certain percentage of the MUI tokens that it earns as transaction fees to reward the less privileged and low-income earners. This airdrop is expected to be channeled through solid foundations to meet the needs of the less privileged, the poor, and the low-income earners who are living below the poverty line. This special airdrop will target the regions of the world with a concentration of people that are living below the poverty line, as specified by the World Bank Group.

6.2.5. **Special airdrop for heavy users**

The SovereignWallet Network will also earmark out of its treasury tokens special airdrop for heavy users who regularly utilize the SovereignWallet interface for regular remittances and exchanges. Users who transact in millions of volumes of cryptocurrencies daily shall periodically be rewarded with special incentives, airdrops and or tokens. However, the offers will be subject to certain conditions that shall be implemented by the Smart Contracts.
The SovereignWallet will have a trading bot account that are incorporated in the wallet. The MUI trading bot is used for cryptocurrency exchange, and remittances. The Bot account will serve as an interface for connecting users to other decentralized exchanges for service utilization. The wallets connect users with other agents in the Sovereign-Wallet ecosystem (see figure 5).

### 7.1. Atomic Swap

The trades in our platform will be made through Atomic Swaps, a pioneering technology that raises the evolution of exchange to a high level. The Atomic Swap technology will be one of the first to be implemented in blockchain platforms and will guarantee high-performance and direct trades of different types of cryptocurrencies and tokens, without intermediaries and the risk of one party defaulting on the trade.

The SovereignWallet Network will enable a swap of the MUI token with other cryptocurrencies by listing the MUI token on M.DEX and partner decentralized exchanges. To purchase the MUI token, it will be necessary to have the equivalent amount of Ether to exchange to the amount of MUI indicated for each trade. The SovereignWallet Network plans to collaborate with more exchanges in the future. Currently, we have partnership with MDEX Service for the implementation of M.DEX.

The M.DEX trading platform with the Atomic Swap technology is expected to be completely integrated by the first semester of 2019.
Figure 6. Flow process

MUI is credited into your MUI Account

From MUI Account buy MUI

Sovereign Treasury

Smart Contract

User sources for Ether on his/her own and transfer same into his Ethereum account in the SovereignWallet app

Already have Ether in other wallet

Buy Ether from Market On-Chain

Buy Ether from trusted party - Off-Chain

Smart contract check Ethereum account to verify if users have any Ether to buy MUI and effect transaction if there is ether in the Ethereum account

Smart contract transfers equivalent MUI into user’s MUI account and transfer payment (Ether) into the Sovereign Treasury

Autonomously controlled by smart Contract to make the Token distribution process trustless
7.2. The value proposition of the Sovereign-Wallet and the MUI token

a) SovereignWallet app is convenient, fast, secure, the first phase in delivering an ecosystem of blockchain solutions that have the potential to touch millions. We’re already working hard on completion of smart wallet centered blockchain ecosystem.

b) With SovereignWallet app, your cryptocurrencies are safe. The SovereignWallet app is fortified with application self-protection and machine-learning user authentication.

c) With SovereignWallet app, cryptocurrencies sent or received will not be lost. Such transactions are identity-based.

d) With SovereignWallet app, a 3rd generation mobile messenger-style cryptocurrency wallet, users can send and receive cryptocurrencies like sharing instant messages.

e) With SovereignWallet app, users enjoy network benefits. Users can enjoy lower transaction fee when they invite others to use it. The more friends you have on the ecosystem, the more network effects you can enjoy.

f) With the MUI token, the users’ value and assets are better preserved compared to fiat currency. The MUI token is a store of value and a safeguard from inflation, confiscation, and theft.

g) Through the app, we will have our own decentralized exchange (M.DEX), with custody-free and Atomic Swap technologies, as well as fixed-rates.

h) The MUI token can only be bought through the SovereignWallet app.

i) The SovereignWallet app provides the transaction value. The transaction fee to send and receive MUI and Ether is free if the user holds a minimum of 1000 MUI token in the wallet.

j) You also earn free airdrops when you download our SovereignWallet app and register the KYC with SovereignWallet Network to use the app, and each time you introduce new friends and family members to do same.

k) You also enjoy network effects, such as the more people you introduce, the more benefit you enjoy by ways of reduced transaction fees.
The SovereignWallet team has vast experience in security and software market. Before starting the SovereignWallet project, we already were an organized and well-established company with a long-standing history in software solutions. The history shows we have the knowledge and experience to create the adequate structure for the SovereignWallet project.

Our prior successively completed projects and patents includes the following:

a) 10-2016-0149064 METHOD FOR OPERATING APPLICATION PERFORM-ING SECURITY FUNCTION AND CORRESPONDING APPLICATION

b) 10-2016-0032906 METHOD OF SECURING APPLICATION WITH SELF PROTECTION

c) KR 10-1905771, PCT/KR2017/000204 SELF DEFENSE SECURITY APPARATUS WITH BEHAVIOR AND ENVIRONMENT ANALYSIS AND OPERATING METHOD THEREOF

d) 10-2015-0189743 METHOD FOR MANAGING DIGITAL CONTENTS AND METHOD FOR VIEWING DIGITAL CONTENTS USING APPLICATION

e) KR 10-1694947 METHOD OF OPERATING CHATTING APPLICATION, CHATTING SERVER, AND CHATTING SYSTEM, 2015


g) KR 10-1664391, MEETING MANAGEMENT METHOD USING APPLICATION AND OPERATION SERVER

h) KR 10-1591503, PACKAGE APPLICATION INCLUDING SELF DEFENSE SECURITY MODULE AND METHOD THEREOF, 2014

i) KR 10-1594317, PACKAGE APPLICATION INCLUDING SELF DEFENSE SECURITY MODULE AND METHOD THEREOF, 2014
2017.11
Started pre-sale of Mobile DEX Utility Token, MUI

2018.02
Launch Mobile Ethereum Wallet, Sovereign Wallet

2018.06
MUI Wallet

2018.06
MUI ICO 1st Phase

2018.09
MUI ICO 2nd Phase

2018.09
0miseGo CMG, AirSwap AST
0x Protocol
ZRX Wallet

2018.10
TenX PAY, Status SNT,
TrueUSD TUSD, Kyber Network KNC,
Golem GNT, Augur RIP Wallet

2018.11
MUI ICO Final Sale

2018.11
Pundi X NPXS, Raiden Network RDN, Holo
HOT Wallet

2018.12
AirSwap Integration

2019.01
Affiliate Metaps Partnership
Bitcoin Wallet

2019.04
M.DEX Launch

2019.07
Establish M.DEX in Uzbekistan

2020.07
MUI Meta-Blockchain Testnet Launch

2021.01
MUI Meta-Blockchain Mainnet Launch
SovereignWallet app is developed to offer security, ease-of-use, flexibility, compatibility and high value-added services, such as its own decentralized exchange platform (M.DEX) and, in the future, the MUI Meta-Blockchain. These are some of the features we are providing SovereignWallet's users:

a) Identity-based transfer and remittance service. Instant Messaging Service with banking grade security.
b) Decentralized exchange services through M.DEX, a custody-free, wallet to wallet exchange platform with fixed-rates for fair trades.
c) Interface to other decentralized exchanges partners and peer-to-peer trading networks.
d) Support of MUI, Ethereum, OmiseGo, 0x, AirSwap, Kyber-Network, Augur, Golem, TenX, Status, TrueUSD, and many other cryptocurrencies coming soon.
e) Enabling the ‘proper’ implementation of ICOs hosted on our platform. In the future, the development of the MUI Meta-Blockchain will make it easy for everyone to create new coins and pegged stable coins without the need to build a new blockchain.
f) Multilingual support: English, Korean, Japanese, Vietnamese, Portuguese and Chinese (traditional and simplified) available, and other language support coming soon.

Check below some information about the utilization of the SovereignWallet and MUI token:

a) Ether must be used to purchase of the MUI token and it is currently pegged at 1 ETH to 2500MUI (i.e. 1 MUI ≅ 1/2500ETH).
b) The Sales of the MUI token shall be conducted in phases and periodically.
c) Once the MUI token is completely used, payment for services provided for using the SovereignWallet shall be made. If a user wishes to send any other cryptocurrencies through Sovereign-Wallet, the must have a minimum balance of 1000 MUI tokens in the wallet. For now, the service fee for MUI remittance in the SovereignWallet app is free, except gas fees for Ethereum blockchain (transaction fees or gas), which is charged by the Ethereum Network and not SovereignWallet.
d) The MUI tokens shall be transferred between users, but SovereignWallet Network shall have no obligation to redeem them.