GROWCHAIN

Build global maternal and child care industry new ecology based on blockchain

Whitepaper 1.0

2018,01

Content

1 Abstract

Growchain is a decentralized and trustfree maternal-child care application platform based on blockchain technology. It is also the world's first public chain built for children. Growchain is designed to subvert the traditional rules of the maternal-child care industry and build a brand new ecology that is safe, fair, reliable, and dedicated to the global maternal-child care industry.

In this new ecology, blockchain technology will be used to reshape the trust mechanism of the entire maternal-child industry. Blockchain features such as distributed data storage and programmability will be fully applied to product traceability, content copyright certification, big data sharing, and other aspects in the maternal-child industry market, so as to achieve the complete eradication of data fraud, false propaganda, and other issues, which will break the development barrier from industry monopoly for small and medium-sized high-quality brands.

The original intention of the Growchain team is to provide a one-stop and interactive network for maternal-child users around the globe with a focus on safety and transparancy, fair price, scientific content, and privacy protection through the establishment and maintenance of a decentralized maternal-child business platform and the cooperation of high-quality applications and content. Growchain will launch a multi-language version and provide multi-platform support for the global market.

Growchain relies on the diverse needs of a large user base as well as the sharing of big data in the maternal-child industry, which is complemented by each participant. The access right is open to high-quality maternal-child brands and application developers around the world, and smart contract service is provided. In Growchain, all the transfer of value can be achieved through Grow Token (referred to as: GROW).

2 Project Background

2.1 Market Overview

We often refer to products and services for infants and young children aged 0-6 as the maternal and infant market. The main consumers of maternal and infant market is couples who are intended to be parent or are new as parents. The characteristics of consumers determines the depth and breadth of the maternal and infant market.

Maternal and Infant consumption is the major livelihood expenditure of developed countries and most developing countries in the world, and investment on this is also increasing. The maternal and infant population has long-term and high-frequency consumption needs.

Taking China as an example, for the national policy "second child" policy and the upgrade of pregnancy and raising concept in the whole society, the market size of China's pregnant children exceeded 2.5 trillion in 2016, and it is expected to maintain an annual growth rate of 15% in the future. The market size in 2020 will exceed 3 trillion.

2.2 Characteristics of the maternal and infant market

(1)Strong consumption ability

From female pregnancy, a family has entered a strong consumption period: mother's health products, protective clothing, maternity wear, nursing materials, etc.; baby's feeding-bottle, stroller, children's wear, special detergent, toys, etc.; prenatal care, housekeeping service, preschool education service, as well as house purchase, room change, school admission are also included. The birth of a baby is also accompanied by consumption expenditures.

(2) Strong Information demand

Due to lack of childcare knowledge but high requirements for childcare, expectant mothers will generate urgent information needs from early pregnancy, including how to adjust diet and living structure, how to conduct prenatal education, how to prevent children disease, and complex parenting skills etc. In addition, the group has a strong communicating and sharing needs. New mothers have enough time to share pregnancy, parenting experience. Therefore, the communication platform for similar groups is also necessary.

2.3 Pain Points of Maternal and Infant Market

The fast-growing maternal and infant market also reveals some centralized problems:

(1) Opaque production model of maternal and infant products and advertising position from auction, resulting in a great security risk of maternal and child products,serious lack of market trust.

(2) Products with strong brand endorsement occupy a large market share, and get the pricing power. The price of similar products is uneven. Small and medium-sized brands and applications possess high quality creativity, quality and preferential price, however does not have the ability to survive in the competitive market environment.

(3) The leading enterprises keep a large amount of valuable user information and industry data in hand, and the acquisition cost of these information and data is extremely high. There is also the possibility of fraud after the intervention of the third party.

(4) Users can output large amount of valuable and personalized information after clicking and browsing on the Internet, entering personal information, trading products and other activities, which can not guarantee personal privacy is properly protected, and cannot produce benefits.

(5) The copyright awareness is quite weak in the childcare market, which leads to the loss of quality content creators, and existence and emergence of large amount of poor and old quality content in the maternal and infant industry.

2.4 Solution based on Commercial Public Chain

Satoshi Nakamoto created Bitcoin in 2009, announcing the birth of the first generation of public chains. Subsequently, Ethereum has become the second generation of public chain representative for its advantage in commercial application. With the continuous development of blockchain, the third-generation blockchain is revealing its prototypes in the innovation of technology and application.

So similar public chains with Ethereum emerge, which aims to amend and improve the previous public chains, such as small ants (NEO), Quantum (QTUM) and other platforms, which is technically inadequate;At the same time, with the blockchain technology distribution in various industries, blockchain evolving to the flourishing vertical commercialization has gradually become a trend.

It is pleasantly surprised to see that a vertical commercialized public chain has a congenital advantage of precision interaction in a field with a centralized industry pain point. Growchain acts as a gradually expanding blockchain network which focuses on maternal and infant industry, and users, brands, and applications in it directly possess the internal relations commercially, avoid invalid nodes, and directly abandon the irrelevant transaction data in the industry, which makes Growchain itself an ever-growing data ledger in maternal and infant industry.

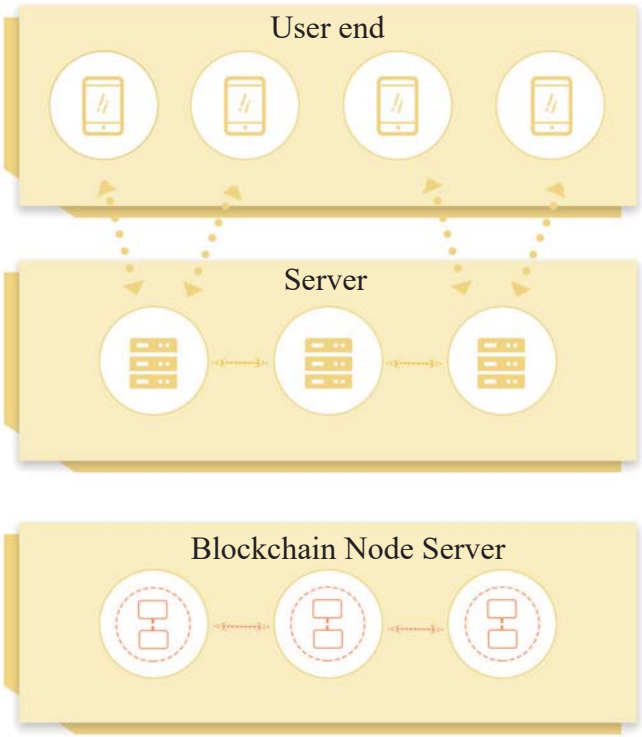
2.5 The vision of Growchain

Growchain will gradually meet the realization of various types of commercial application scenes involved in maternal and infant industry, provide a one-stop maternal and infant platform at the user end, which can satisfy the growth record, growth education , mother and baby social entertainment, maternal and child product transactions and more innovative needs around the future based on the continuous improvement of the underlying technology,

We will continue to propose a series of solutions based on blockchain technology toward pain points in the maternal and infant industries. We will break the original restricted user needs through the creation of better ecological experience in maternal and infant industry, so as to stimulate the generation of more innovative and more interesting needs and push the global mother-baby market toward a healthier direction in rapid development.

3 Technical Structure of Growchain

Growchain is composed of classic 6 frames of blockchain.



Application layer: (Dapps) Baby products, Mother and baby content, Maternal and child social

Contract laye: Script code , Algorithm mechanism, Smart contract

Excitation layer: Token distribution mechanism,

Consensus layer: DPOS Consensus

Network layer: P2P,Communication mechanism,

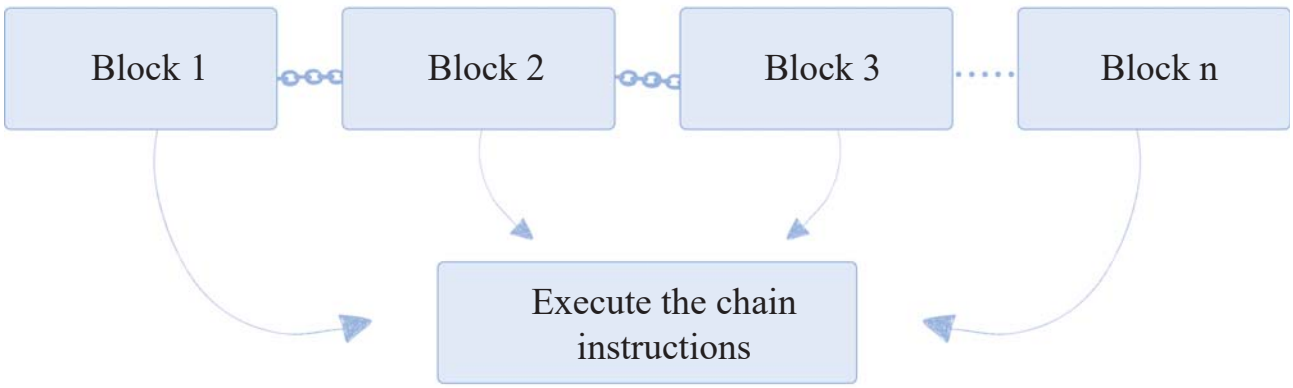
Data layer: Block data, Chain structure, Time stamp, Hash function, Merkle tree, Asymmetric encryption

3.1 Growchain blockchain

Growchain is a vertically integrated public chain for the mother-baby industry + IoT. the storage structure of external ownership accounts and the overall architecture of the chain will be purpose-optimized. Growchain will also have the UTXO script with a chain of command concepts represented in Bitcoin as well as the on-link smart contract feature represented by Ethereum to provide the synchronization-related processing power necessary for each externally owned account. Simultaneously Growchain will also expand its model of smart contracts additionally to meet the business needs of verticalization in the mother-baby industry.

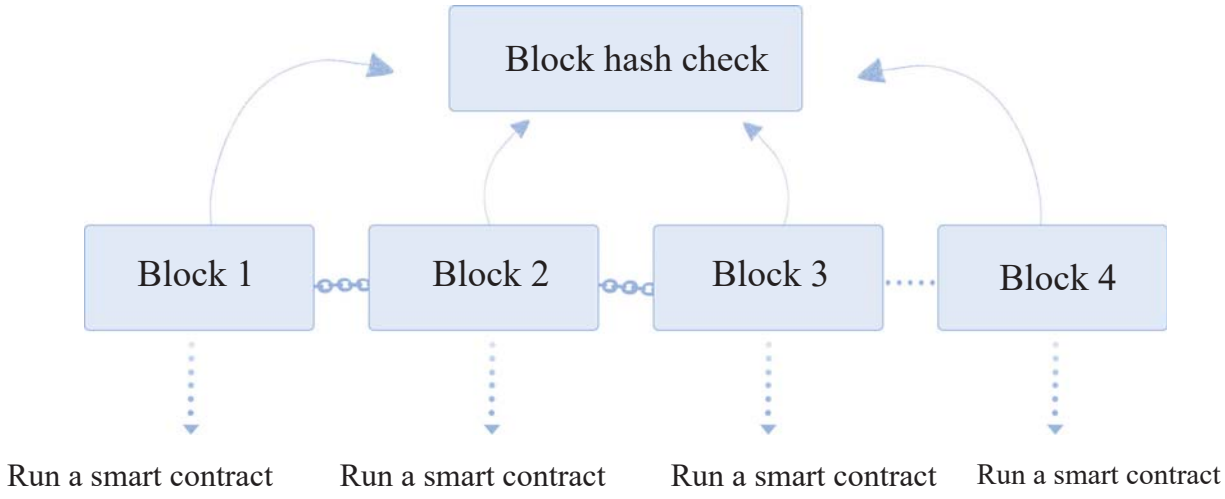
3.1.1 The structure of Growchain's main chain

The first generation of blockchain represented by bitcoin usually performs the transfer and other operations are UTXO scripts executed on the chain instruction concept. The advantage of the UTXO script mode is that all miners in the access chain must execute such instructions, To ensure data synchronization and security on the chain, but this model is not very friendly to the scalability of the chain. Bitcoin execution mode as shown below:



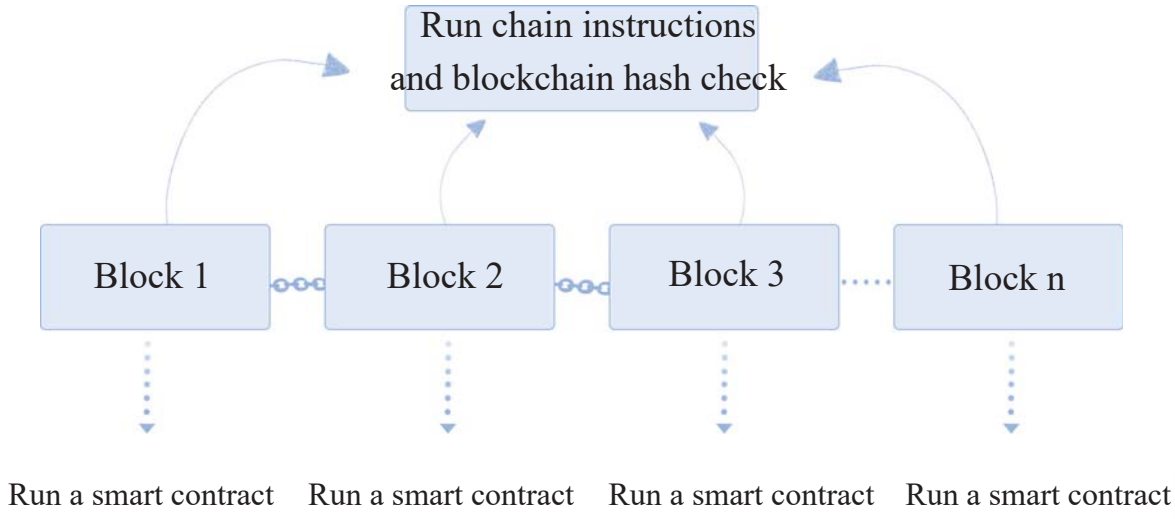
The second-generation blockchain, represented by Ethereum, is usually dominated by smart contract. The benefit of this model is its scalability on the chain, but the disadvantage is that all operations on the chain have to pass the smart contract, and miners fee have to be burned for the operation through smart contract. Thus, inconvenience will be caused when some data synchronization that are necessary and shouldn't use miner fee are conducted.

Smart contract mode is as shown below:



Growchain's main chain will have instruction on the chain and smart contract, and the instruction on the chain will run automatially when the block is generated, to ensure that all users' basic data can be synchronized on the chain when no contract is needed, and compatible with the high scalability of the smart contract on the chain.

Growchain's main chain run as shown below:



3.1.2 The data structure of the common user on the Growchain

Growchain is a verticalized public chain of which will conduct targeted optimization to the storage structure of the common user.

The common user of Growchain will conduct reasonable structure storage for the copyright use of virtual goods, the use of e-commerce platform, the storage of user data. All other data of EOA except the account address can be controlled and monitored by users themselves, to ensure the user data's security and proprietorship.

```
public class User
{
   public UInt256  address;
   public ulong balance;
    ....
   public class Data
   {
        public unit authority;
        userChoose UInt256 targetAddress;
        userChoose unit count;
    }
    public Data[] userDatas;
}
```

Among them, the UserChoose attribute is the privacy permission chosen by the user. For example, if the level is 1, it means "private" and not opening to the public. If the level is 2, it means "public" and opening to the public. In addition, the level can be chosen as 3, which means "protected" and only open to the contract of the transaction.

3.1.3 The block structure of the Growchain

All of Growchain's user data will automatically broadcast to the network on the chain as new blocks appear through instructions on the underlying chain, to ensure that timely data changes and permanent user data storage can be conducted on the chain.
A new block is generated on the Growchain every 15 seconds. The new block is attached to the previous block, and a chain structure is formed. Each block contains all the transaction information generated in the network within 15 seconds, as well as other necessary retrieval and verification information.

```
public class Block
{
        public uint Version;
        public UInt256 PrevBlock;
        public UInt256 MerkleRoot;
        public uint Timestamp;
        public uint Bits;
        public ulong Nonce;
        public UInt160 NextMiner;
        public byte[] Script;
        public Transaction[] Transactions;
}
```

Growchain contains all trading information since its generation, and the ownership and status of all the current asset can be obtained by executing these trading in turn. The decentralization feature of blockchain technology ensures the stability and security of the system; the openness feature of data can ensure the transparency and traceability of the system; Growchain can accomplish the the same amount of transaction of the traditional centralized database with a very low cost.

3.2 Smart Contract and Grow Contract

Growchain supports programming language of turing computable. Growchain provides full-cycle and comprehensive services for any smart contract on the chain, and controls and controls the initiation, review, deployment, application and cleaning of smart contracts. Intelligent contract for the operation of real-time safety monitoring.

3.2.1 Smart Contract

According to Growchain's business needs, Growchain's smart contract is innovative over existing Ethereum based smart contract. It adds a new contract model that uses content and permission attributes of externally owned accounts as the contract exchange content, and the added contract model can effectively improve the efficiency in many aspects, such as contract creation, engagement, implementation etc. At the same time, the life cycle of the new contract model and the transaction process have also been adjusted accordingly to suit different business needs. Growchain's new contract model application will be described later.

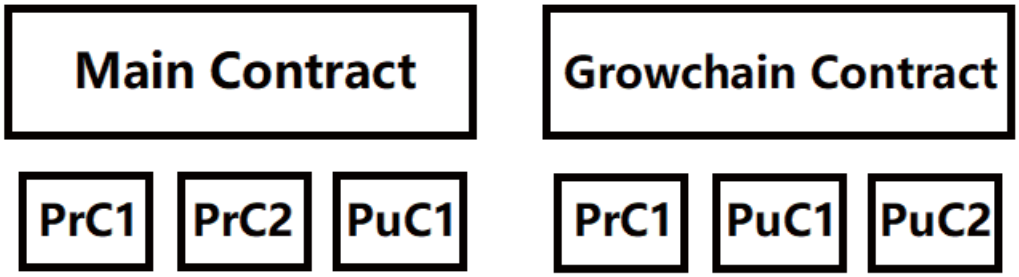
3.2.2 Grow Contract

The private key can be used between users for the signing of smart contract, so as to complete the transfer of digital assets. If the subject matter of the contract is blockchain copyright or digital asset registered on the grow chain, the Grow chain can automatically conduct procedural delivery execution on the chain; if the subject matter of the contract is asset out of the chain, then the contract participants can implement by themselves. Even in the latter case, the Growchain also eliminates the cumbersomeness of signing and keeping a large number of paper contracts, and uses digital signatures to guarantee the non-repudiation of the contract.

Growchain's contracts include smart contract and growth contract.

On the basis of smart contracts, Grow Contract will also introduce blockchain contract that comply with various business logic and business logic in the mother-baby industry, such as trading contract, data service contract, incentive contract, anti-counterfeit contract etc. It will also be compatible with EVM, EVM2.0, Lua, and more virtual machine types. We will release contract programming language based on Javascript. Growchain system can manage the identities of contract participants through smart contract and growth contract, and provide better support for Growchain-based financial services.

3.2.3 Smart Contract Frame



PrC is private contract, PuC is public contract

Growchain’s structure of intelligent contract is a basic smart contract, which is at the same execution level with the growth contract. Smart contract and growth contract are both free for users to create sub-contracts for multiple specific transactions, and the sub-contract's permission level is divided into private and public.

Private Contract is a specific generated trading contract, and it is suitable for 1 to 1 trading model, PrC contract do not have good liquidity, but support P2P personalized contract signing.

Public Contract is also a specific generated trading contract, which is suitable for the N to N trading model.PuC has good liquidity.

3.2.4 Growchain smart contract specific examples

1. It can really realize the mission that users can be in control of their own data, and can cash their data. Enterprises can also take the initiative to obtain users' data through smart contracts, and users' data is no longer the monopoly of big data leading enterprises. For example, a merchant issues a smart contract that uses Growchain Tokens in exchange for users' data. Users only need to agree with the contract content and then can exchange the data they want to expose to the merchant in exchange for token, and the data ownership is still in the users' hands. The merchant can also obtain the data once (or persistently, depending on the content of the merchant contract).
2. The last step for the realization of blockchain IoT ToC end user is that when merchants conduct merchandise sales activities through the blockchain network, merchants simply create a smart contract to sell goods on the chain, and use the commodity name in exchange for Growchain Token. After the buyer agreed to the content of the contract, the merchant will send the commodity out, and record the delivery number into the corresponding smart contract. Users can choose to use the private key for the user to receive goods in order to avoid errors, etc., thus complete E-commerce transactions on the chain.

3.2.5 The contract's performance optimizes the contract's asynchronous calls

Contract creation and contract function calls are both initiated by the transaction (TX). If there is a need to modify the balance of the account during execution, the transaction will be initiated and sent to the lower TX. All of these transactions will be verified at TX and recorded in the underlying blockchain. This kind of process has the following advantages:

A. The transaction in TX layer is not affected by the contract.
B. The contract-related transactions in TX layer save the contract code and status in Metadata way, and the specific state of the contract corresponds to contract related functions call and parameters. TX layer state hash needs to ensure information consistency.
C. Contract layer execution is performed by multiple contract nodes. contract contract validator, Optimized PBFT algorithm is adopted to perform separately and conduct consensus.

D. Each contract node uses VM execution code, and the contract node saves the contract execution storage. The implementation speed of the contract dealing with the current Ethereum and other imitative smart contract in fragmentation is subject to consensus algorithm, and can not meet the business needs. In Growchain, the way to execute smart contract is achieved through fragmentation technology. Smart contract server can be configured at runtime to handle the smart contract in different parts. The handling capacity of the entire system can be 10 times to 100 times faster than the traditional way.

In the Growchain design, in order to meet the needs of the real business environment, the system performance needs to be improved through a variety of techniques.

A.Read/write Splitting: The optimization shall be conducted according to the requirements. The read-only part is optimized according to the read-only part. The write-only part is optimized according to the write-only part to improve the response speed for input demand.

B. Business splitting: The demand is pushed to different underlying business servers according to different transaction addresses so as to reduce the burden of communication between the underlying servers.

C. Fast Trading: Growchain provides a fast trading layer built on Common Solutions (CTS), and can provide a fast transaction response time. Different from verifying each node in CTS, a cache is added in the fast transaction layer. The verification node participating in the fast transaction saves the wallet address to be modified in the cache. In this way, the verification node can quickly determine whether a transaction request can be quickly responded, and will count the received reply within a certain period of time, and conduct operation of zero tolerance. This means that if either node returns to false, the transaction will not succeed. The verification node is returned to the user, showing that the transaction failed. If all the reply nodes are true, and the reply proportion is greater than the system set value.

The node handles the transaction request normally, and hands the transaction over to other nodes during the CTS consensus stage to complete the consensus and write it into the blockchain. All nodes clear the contents in all the volatile lists after the new consensus block is completed. In this way, the transaction requests submitted by the user can be quickly responded. Especially in the case of implementation, users can quickly get the transaction result. The verification node is responsible for writing the final transaction into the blockchain.

3.3 DPOS consensus mechanism

Growchain will adopt DPOS (Delegated Proof of Stake) Consensus Mechanism, ie, Share Authorization Proof Mechanism (or entrustee mechanism) - to vote by each node holding Growtoken to generate a certain number of consensus nodes based on the current network scale Take turns taking accounting (mining), these consensus nodes have the same rights for each other. However, if the consensus node can not perform its duties within any given time, it will be removed and the system will once again initiate a poll to elect a new consensus node instead.

The DPOS algorithm is divided into two parts: selecting a group of block producers and scheduling the production.

Reputation systems and a frictionless, real-time voting mechanism to create a community of limited trust. Participating members of a group have the right to create a block, add it to the blockchain and prevent untrusted participants from joining. These trusted participants decide to create blocks by random allocation, and each round will be changed.

Because the number of witness locations is limited (usually an odd number), witnesses compete against each other for bookkeeping. If witnesses take the initiative to reduce the revenue they receive, they can attract more votes and, likewise, the cost of securing the network will be maintained to a reasonable level through the competition between witnesses. At the same time, malicious witnesses will be quickly voted out for their own evil behavior.

The DPOS Consensus Mechanism effectively avoids nodes that are not beneficial to the ecological development of Crowchain and allows the distribution of rights and benefits without consuming excess calculations.

3.4 Token Incentives

Growchain, as a commercial public chain, must pass the economic tactics inspired by GROW. Each transaction on Growthchain consumes a certain amount of toxins simultaneously as an incentive to package the transaction data at the consensus node. At the same time, in order to promote the rapid growth of Growchain in the early stage, we will provide certain tokens for the users, premium applications or brands that have joined Growchain and passed the information verification certification in the early stages of the project. Holding tokens can not only get the basic service of issuing blockchain such as smart contracts, but also become the node of rights and interests and participate in the voting.

The introduction of GROW Token Incentives enables node maintainers to be able to get token tokens while maintaining the security and authenticity of the books, and outstanding smart contract writers can also get token incentives. As a result, Require a fee to make it significantly more costly, and the theft of a token against Growchain would be significantly less valuable because of the impact it had on the blockchain.

3.5 Open the application interface

Growchain offers a series of underlying data access and interactive interfaces of multi-language, and also supports multi-language integration and function extention, to allow merchants to quickly access their applications on Growchain.

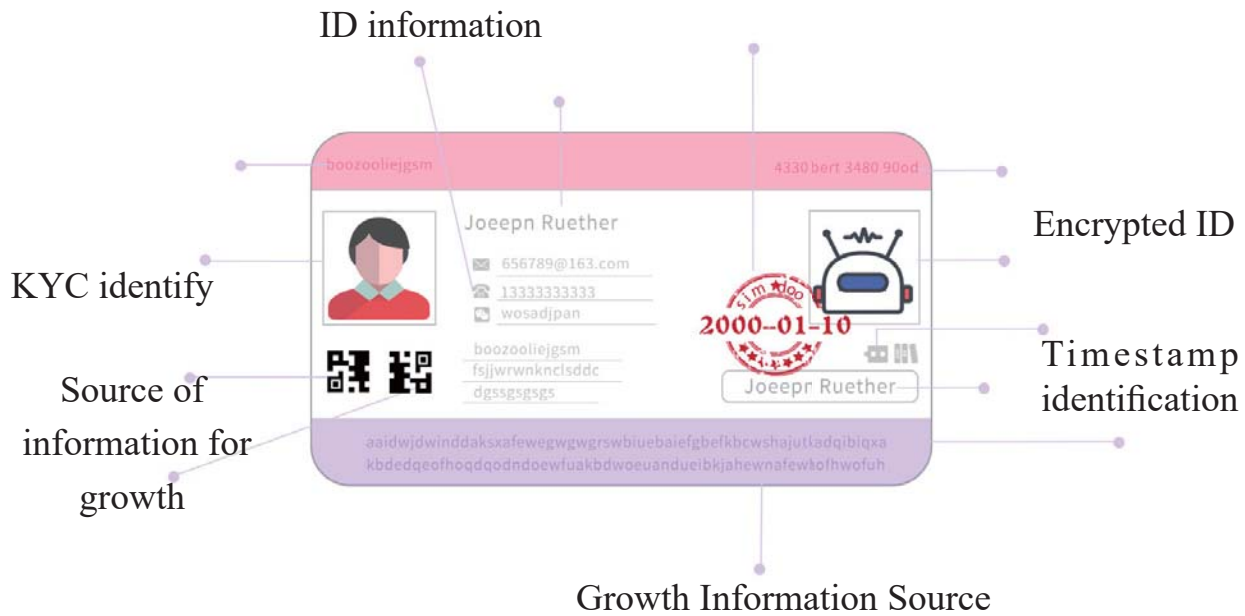
4 Applications

As a commercial public chain in the vertical market, Growchain will provide a series of innovative applications around maternal and child care based on blockchain features, such as decentralization, distributed trust, tracebility and programmability.

4.1 Digital Growth Files

After a child is born, the user can create a digital ID for the child on the Growchain platform. The ID will be the beginning of a digital growth file, that will never be tampered with and lost after it is verified with encryption and a unique timestamp. As the pass of time and the growth of the child, every data generated by the child on the Growchain platform will be recorded in the growth file and can be viewed any time, such as listening to a nursery rhyme, drinking a milk powder of some brand etc.

On the Growchain, anyone and organizations can launch a user contract, and complete transactions related with user data and user interactions. The user's consumption preferences data may be the core of all parties to build their own algorithms. Based on a contract, the user can selectively choose to open their own data dimensions, and the data disclosure can help users obtain bonuses and tokens of relevant applications. The data ownership belongs to the user.



Growchain will manage according to the entire life cycle of file data. It will adopt technical means, such as file fingerprint, distributed identification, fragmented storage, rapid sharing, security control, etc. It covers many steps, such as filing, storage, utilizing, sharing, handing over and destruction, so as to promote the security system and sharing mechanism contruction of the file management.
It has the following characteristics:

a. Anti-fraud: build the file “fingerprint” to prevent the file content maybe tampered with;
b. Anti-hacker attacks: The file identification information is stored in fragmentation, and can be verified randomly, which leaves the hackers no fixed attack target.
c. Simplifying the file use procedures: establish a sharing mechanism through the platform to simplify administrative procedures;
d. Traceable: the sharing exchange records based on the file information, and the file management industry behavior of any time can be checked.
e. Controllable: The illegal sharing and exchange behaviour can be prevented and warned.

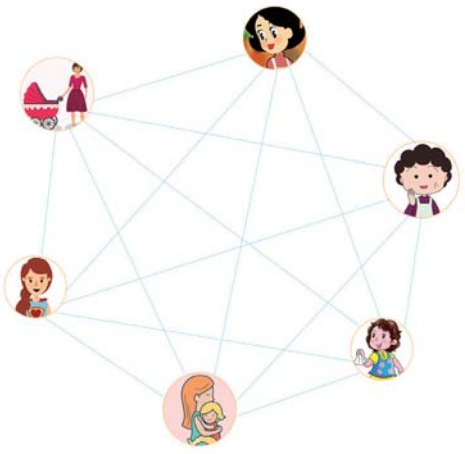
Additionally, in aspects of school enrollment, Growchain has acquired the elementary education authorization from the United States of America (including kindergarten,primary school,junior high school,high school), which includes the course education from kindergarten to K12. The credit mechanism cooperation can be proved through online education blockchain. Children can take the course of top schools in United States at home, which can assist the realisation of participating in the SAT and attending American universities directly.

4.2 Growchain's social features

The current social network is a centralized structure, creating content by users, setting rules by social networking sites, Store content, distribute content The interaction between users through the center of the social network to achieve, the use of social networks to communicate and maintain interpersonal relationships, access to friends, dynamic content, hot content and other social networks as a service provider masters the user generated data and By analyzing these data, accurate advertising recommendations, and thus benefit.

And Growchain social features are:
(1) do not record and store any personal information
(2) do not push accurate advertising to users

With its well-established anonymity and the ability to broadcast live broadcasts across the entire network, mothers can gain access through their child's digital ID and use the social capabilities Growchain provides - complete with no personal identification information A social network of mothers is free to conduct social activities such as daily sunbataging, experience counseling, Tucao interaction, etc., and more professional counseling and counseling through rewarding tokens.



Growchain Social Network allows users to run nodes on their own devices to access networks, nodes and sections Real-time interconnection between points, user information stored in encrypted form nodes in the network to form a distributed cloud. According to the blockchain technology, the data is redundantly stored and the data can only be viewed by the person who has mastered the secret key. The internet compensation will be provided to users who make storage and computational contributions. In addition, it is also used to create and maintain content household incentives.

In this way, it establishes a totally different mode of operation from traditional social networks:The control over data and information is returned to the individual and provides incentives to the contributing users. One such mode is to ensure the safety of personal data, the second is through systematic mechanisms to stimulate everyone to do more contribution. Network here a time, is no longer a central hub, but a simple platform, a user can point to point to pay Mutual platform.

4.3 Growchain's ecology for maternal and child care

Growchain will provide copyright certification, dissemination and tracing services to content creators in the field of maternal and child care, including but not limited to video copyright, music copyright, software anti-counterfeiting, digital content copyright confirmation and software traceability, etc. Creators from idea creating to content-trading, everything is verified and algorithm certified to produce a non-tamperable publicly searchable digital intellectual property right certification. The entire process is recorded on the blockchain, enabling the complete elimination of piracy. This certification can be a voucher for content transactions on Growchain. Users or merchants can use tokens to ask content creators to authorize content access or copyright purchases.

On Growchain, once a work is uploaded it will have its own "finger print" and automatedly declare its copy right to the world. In addition, Growchain established direct payment mechanism to realize the loyalty bounty score allocation and buy-back. Real-time billing based on the smart contract-realized automatic profit allocating without intermediaries, making the transaction completely transparent, enabling a real payback of profits to content creators.

Apart from this, Growchain takes three digital trading modes - Content booking model, time sales model, distributor model to diversify the obtaining and using of digital goods. In this process, based on community-based management, Growchain adopts the loyalty score distribution and redemption mechanism of the e-commerce platform, allocates benefits automatically based on the smart contract to enable real-time settlement, allowing the creators to maximize the profit, providing a fundamental solution for digital product copyright protection and trusted trading.

4.4 Tracible Maternal and Child Care Product industrial chain

Supply chain is a complex structure composed of logistics, information and capital, which connects suppliers, manufacturers, distributors, retailers and users in the industry. The blockchain technology as a large-scale collaboration tool, is perfect for supply chain management.

A maternal and child care product, from the supply, manufacture, distribution to retail the entire process can be carried out on Growchain. Growchain can real-time align each part of the originally independent operation. Each node can automatically pay as long as the corresponding conditions defined by smart contracts are fulfilled, saving significant labor costs and time, and makes the entire process trust-free. The entire process of a product from the raw material to the shelves and then to the end-user is recorded on Growchain, ensuring the traceability, safety and reliability of the product.

There is a great volume of interaction and collaboration among different participation on a supply chain. The various types of information generated during the operation of the entire supply chain are stored in their respective systems superlatively, and the information flow lacks transparency. This brings about two kinds of serious problems: First, because the information is not transparent and not consistent, the participants can not accurately understand the status and problems of the related issues, thus affecting the efficiency of the supply chain. Second, when a dispute arises between the parties, prove with evidence and debt collection is time-consuming, even in some cases unfeasible. With the rapid economic globalization, enterprises expand their markets in an ever-increasing range. Therefore, the logistics links in supply chain management often feature multi-regions and cover long-time span, therefore problems like fake and pirated products are difficult to completely eliminate.

First of all, Growchain makes data transparent and open to all parties involved in the transaction, resulting in a complete and smooth flow of information throughout the supply chain, ensuring that all parties involved are aware of problems in the operation of the supply chain system in a timely manner. They can find targeted ways to solve the problem, thereby enhancing the overall efficiency of supply chain management. Second, the untamperable characteristics of the data on blockchain and the existence proof of the timestamp can be well applied to solve the disputes between the participating parties in the supply chain system, so that it can be easily proved with evidence and debt collected. Finally, the untamperability and the traceability combined helps eradicate fake and shoddy problems in the supply chain commodity circulation process.

In addition, Growchain can help to solve the financing problem of small, medium and micro enterprises on the supply chain. In recent years, China's logistics and supply chain has been on the fast track of development. A number of logistics companies with strong logistics management capability is taking off.

However, most of the enterprises on the logistics supply chain are small, medium and micro enterprises. Enterprises generally have a low credit rating. Many enterprises do not get credit rating and cannot obtain financing loan from banks or financial institutions. The blockchain technology applied in the logistics industry, make the logistics goods information become valuable, thus help solve the above problems. Growchain can attach value to and capitalize goods with logistics data. Confirmation of sole ownership of the goods makes goods along the logistics chain tracible, checkable and non-tamperable to capitalize the logistics information. With Growchain, funds can be efficiently and quickly introduced into the logistics industry, improving the business environment for SMEs.

4.5 Provide Base Layer Service for IoT

Growchain allows access of IoT devices and applications in the maternal and child care area. On the one hand, Growchain can store a large volume of IoT data in distributed manner. The agent node responsible for ledger-keeping (mining) will complete the data processing and network maintenance. On the other hand, the vertical maternal and child care blockchain network for the same vertical IoT products have excellent compatibility.

(1)Lower operational cost of IoT with Growchain

With the further application of IOT technology, large-scale IoT management and maintenance will bring enormous cost to manufacturers, operators and end users. Currently, the IoT data all concentrate into a single central control system. As the connected devices grow exponentially, the cloud server clusters are unable to provide good data storage and exchange services.

Growchain provides peer-to-peer direct connection to transmit data. The entire network need not to introduce big data center to synchronize the data and manage control. Growchain can provide the following 3 aspects of support.

a. Architecture for distributed data transfer and storage ;

b. Data encryption protection and verification mechanism;

c. Convenient and stable billing and payment.

(2) Growchain enhances privacy protection in IoT

The maternal and child care industry is particularly privacy- sensitive. With the development of the Internet of Things industry, the centralized service architecture is widely questioned in terms of user privacy protection. Maternal and child care IoT devices transmit camera-recorded video and microphone-recorded call signals to the central server, and the central server is responsible for all monitoring data and control signal forwarding. Operators may sell user privacy data to advertising agencies for big data analysis for profit to enable personalized recommendations on user behavior and preferences. This violates the basic rights of IoT device users, hindering the combination of maternal and child industry with the Internet of Things.

Growchain provides a decentralized solution for IoT enterprises. The data is not controlled by a single cloud service provider. All transmitted data is encrypted strictly. User privacy will be protected safe and secure. Users can utilize the value of data instead of to be exploited by the operator.

(3) The new business model based on the blockchain

The new business model based on the blockchain

can respond to user needs. It is expected that IoT devices can coordinate with each other under defined rules and logic to complete a variety of commercial applications. However, under the current framework, it is difficult for the Internet of Things to achieve self-governed collaboration and effective transactions. Growchain can be used to build a distributed network of smart devices that can interact and exchange securely and efficiently to achieve complex business logic.

(4) Growchain Services IoT Consensus Design

In the IoT application environment, each sensor and microcontroller node does not undertake ledger-keeping (consensus) work, encrypts and transmits data only, and broadcasts the data as a transaction to the entire network. This is verified by the consensus node in Growchain, which serves the purpose of clearing transactions. The consensus nodes do not save the users' data, so there is not data leaking risk.

4.6 Growchain Application Display

GROW wallet

GROW Wallet supports multiple cryptocurrency (BTC \ETH \ LTC \ ETC \ EOS and dozens of mainstream digital assets) Send and receive, store, and exchange of different currencies.

Intelligent hardware

Intelligent hardware combines AI with blockchain technology to record baby growth information on Growchain. As information keeps growing, intelligent hardware will evolve to meet more needs from the babies.

Bulu Baby

Bulu Baby through copyright certification, token incentives, etc., to attract high-quality content creators to publish works on the platform. Users can also purchase content with GROW token.

Bulu Mall

In Bulu online-mall, users and businesses use GROW tokens for point-to-point purchases. The transaction process is safe, transparent and trustworthy.

5 Growchain Economic Model

5.1 Token Issuance Plan

GROW TOKEN(Code：GROW)total supply is 5 billion and remain permanent. Among this, 4 billion is generated(accounts for 80% of the total)at one time. The rest 20%, that is 1 billion, is generated along with each new block.

First year(the actual blocks is from 0-2millionth block), each block generates 80 GROW. The second year(the actual blocks is from 2 millionth block to 4 millionth block)each block generates 70 GROW. By parity of reasoning, decrementing 10 GROWs each year until decreasing to 10 new GROWs per block in the 8th year; keeping 10 GROWs from each block until the 44 millionth block after about 22 years, when total GROW reaches 5 billion, then stop generating GROW along with the new block.

According to the release curve, 83.2% of GROW will be created in the first year. 90.4% of the GROW will be created in the first 4 years and 96% of the GROW will be created in the first 12 years.

5.2 Token Distribution Plan

The one-time generated GROW is divided into two parts. The first 1.5 billion is rewarded to the contributor and supporter proportionately.

The second part is managed by Growchain Foundation is used to support the long-term development, operation and ecology development. This part of Grow is locked up initially and can be unlocked after Growchain network is operational for half a year. This part of Grow won't be traded on the market but only used to support Growchain project.

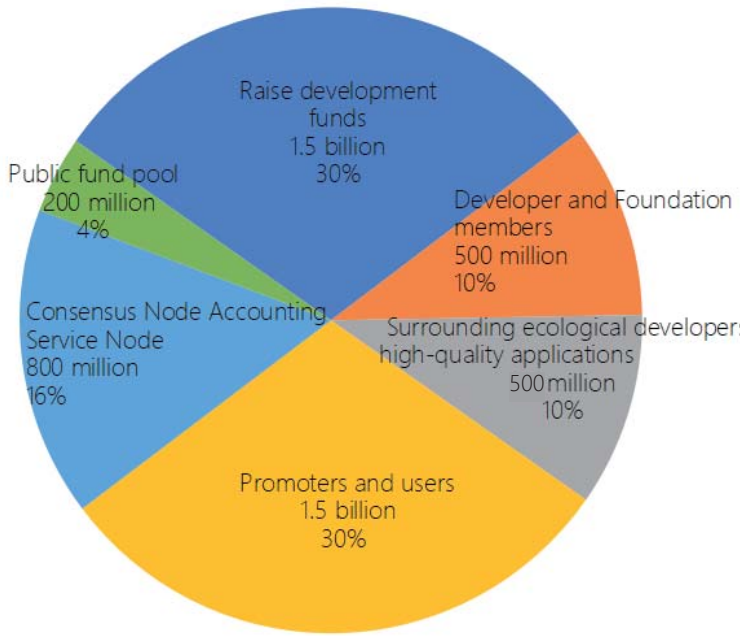
0.5 billion(10% of the Total Volume)is bounty for Growchain developers and foundation members.

0.5 billion(10% of the Total Volume)is bounty for Growchain ecology developer, quality application and brands.

1.5 billion(30% of the Total Volume)is for incentivizing Growchain promotor and users.

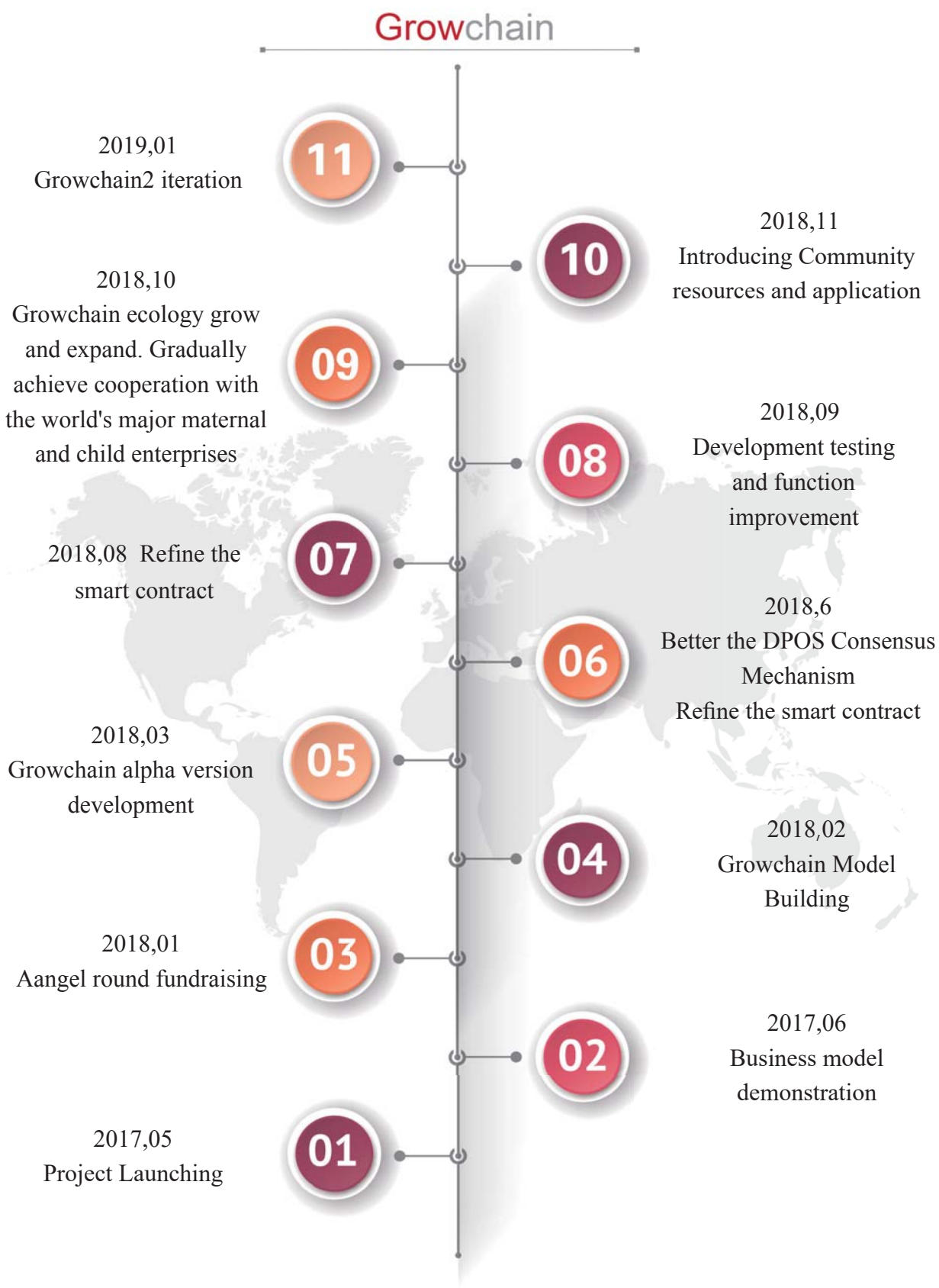
Apart from the Grow that is used to incentivize the promoters and users of GROW, the GROW used every year in principle should be less than 0.2 billion.

80% of the GROW generated along the new blocks are rewarded as an incentive to nodes providing consensus ledger-keeping and 20% is remitted as a charitable fund to the Growchain Community Pool managed by the Growchain Foundation.



GROW Assign the view

6 Growchain Roadmap



7 Team

Core Members

Henry Schellhorn

Henry Schellhorn is an associate professor of mathematics at Claremont Graduate University's Institute of Mathematics Sciences and academic director of the Financial Engineering Program at the Drucker School of Management. Schellhorn worked as a quantitative analyst in private industry and as a principal research engineer at Oracle Corporation. Schellhorn has served as an associate editor for the Journal of Applied Mathematics and Decision Sciences and as referee on several other prestigious finance, mathematics, and operations research publications. He has organized or co-organized symposiums on a range of topics, including Interest Derivatives, Energy and Energy Derivatives, and Financial Mathematics.

Allon Percus

Dr. Allon Percus is a professor of mathematics at Claremont Graduate University's Institute of Mathematics Sciences. His research combines discrete optimization and statistical physics, exploiting physical models and techniques to study the performance of algorithms on NP-hard problems. He developed the method of Extremal Optimization and has led several interdisciplinary project teams at Los Alamos National Laboratory. His research has received funding from the Air Force Office of Scientific Research, the National Science Foundation, the Department of Energy, and Southern California Edison, among others.

Yi Feng

Yi Feng is the Luther Lee Jr. Memorial Chair in Government at Claremont Graduate University. At CGU he has also served as provost and vice president for academic affairs (2006–2011) and as dean of the Division of Politics & Economics (2003–2006). His areas of concentration are international political economy, public policy analysis, and quantitative methodology. Following his undergraduate and graduate work in China with an MA degree in English, Feng obtained several graduate degrees from the University of Rochester, New York, including an MA and PhD in Political Science, followed by an MS in Public Policy Analysis. Since then, he has served in many professional appointments, including as the general program chair for the International Studies Association Annual Conference (Hawaii, 2004–2005) and as editor of International Interactions, a premier journal in international studies (2001–2005).

Thomas Willett

Thomas Willett is the Horton Professor of Economics in the Department of Economic Sciences at Claremont Graduate University and the Robert Day School of Economics and Finance at Claremont McKenna College. He is also director of the Claremont Institute for Economic Policy Studies. His research specializations include international and monetary economics, behavioral finance, political economy, international financial crises and analysis of national and international economic policies. He has previously taught at Harvard and Cornell universities, and served as a senior economist on the President's Council of Economic Advisers, as director of international research at the US Treasury, and as a visiting researcher at the International Monetary Fund.

Issam A. Ghazzawi

He is the Professor of Management and the Sam Walton Fellow at the University of La Verne. He is the director of REACH Business Camp. Professor Ghazzawi has more than 20 years of executive management experience. He served on various organizations' channel advisory board, including Lexmark International, Inc.; Microsoft Corporation; Targus; and Lenovo USA. Additionally, he served as an advisory board member for ITT Tech of San Bernardino, CA, and a member of the board of directors for the United Cooperatives of Ontario "UCO", Canada's largest cooperative group located in Toronto, Canada. Currently, he is a member of Enactus USA Faculty Advisory Committee. He was appointed to the Editorial Review Board of the Journal of Organizational Culture, Communications and Conflict (JOCCC), Journal of Case Research and Inquiry, and the Journal of the International Academy for Case Studies (JIACS). He started the University of La Verne's Enactus team in 2006 (enactus.org), served and still serving as its adviser and as a Sam Walton Fellow.

Asia Pacific

Xue Bingjie

President of Greater West Investment Fund Chairman Greater China Venture Capital, Bachelor of Law , Northwest University of Political Science and Law. EMBA Renmin University of China. Former vice president of Hongmeng Cartoon Group, Former President of Blue Cat Animation Group. He has presided over the investments, listing and M&A of Shaanxi Guoli, Bolun Shares and dozens of other domestic and foreign enterprises. He is a prominent advocate of the integration of culture and technology + financial development in China. He has been engaged in maternal and child care industries for more than ten years.

Liang Fei

Chairman of Pusu Capital. China's famous investment banker. MBA, The Chinese University of Hong Kong, EMBA, Tsinghua University, He founded Pusu Capital, growing from 2 billion to 10 billion in 3 years under his leadership.

He has presided over the listing of dozens of companies like Borun Shares Co., Sichuang Jinding Co. etc. He focus on investment in big health, new energy, new materials,New technology, children's education and other areas.Net was invested by the star investor Mr Xu Xiaoping.

Lu Pnegyu

At present he is the vice president of Pusu Capital, responsible for IT division and investing sector in the direction of IT. He holds a bachelor's degree in communications engineering, master degree of information security and cryptography from Huazhong University of Science and Technology. He participated in the development of the National 863 Project "Chaos Cipher Algorithm" and obtained national commercial password authentication. He has worked for Huawei Technologies for more than ten years and has served as chip development engineer, product manager, director of strategic planning and Huawei Public Cloud Solution Director. He has extensive experience in R&D, management, strategic planning and market development. He also has accumulated deep experience in semiconductors, cloud computing, and big data.

Wang Shiyu

Chairman of Fuguofumin Fund, a famous Chinese investment banker, industry expert. He served as head of Investment Banking Department of Wantong Group, presided over hundreds of enterprises restructuring, restructuring, listing, mergers and acquisitions work. He wrote the book International M & A and China’s Integration: The Sixth M & A Wave, arguing that "China must be internationalized and China's economy must Be Globalized”.

Gao Yueci

Master of Finance, Renmin University of China, A well-known financial channel moderator, a senior financial media expert, a professional investor. He worked in CCTV’s Channel 10, the Science and Education channel. He was a moderator of many well-known financial TV programs such as CBN,

Hubei Satellite TV and Guangdong Satellite TV. With many years of secondary market and primary market investment experience in cultural industries. He is currently the general manager of Dongkai Investment Group and the executive director of Dong Capital Research Institute

Cheng Jun

Former Vice Director Dong Capital Research InstituteExecutive Secretary of China Top 100 Summit Forum, Chief Investment Officer of North Gulf Innovation and Development Investment Fund (Guangxi Provincial Government Fund), with a total fund management of 40 billion yuan. President of Huafu Innovation Investment Management Co., Ltd., Partner with Oriental Huifu, Instructor of China Venture Capital Plan Competition.

European and American Partner

World Blockchain Organization

WBO is a non-governmental organization registered with United Nations Department ofEconomic and Social Affairs.

8 Foundations and co-directors

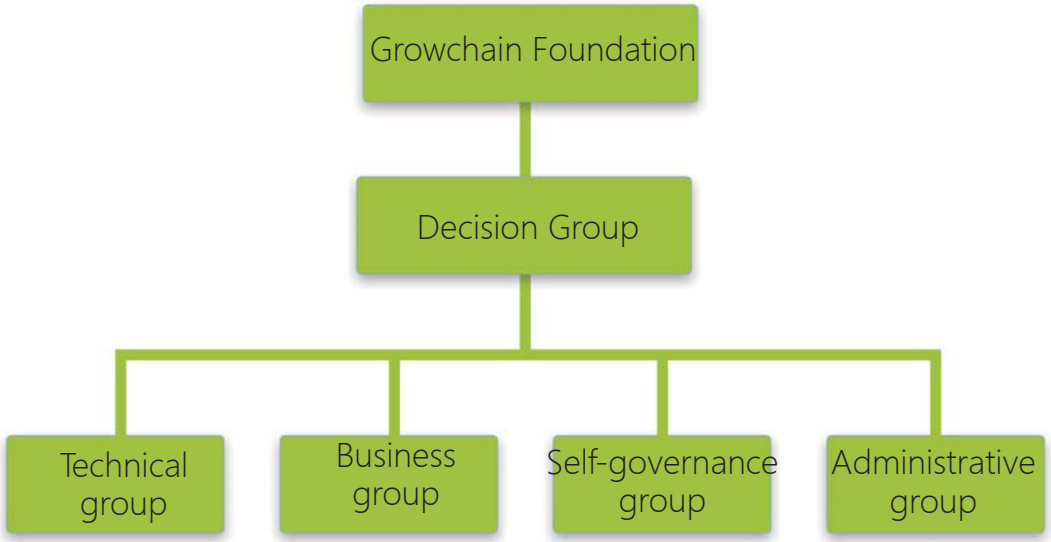
8.1 Growchain Foundation

Growchain Foundation will focus on the establishment, maintenance and promotion of Growchain and promote the rapid and healthy development of the new ecology based on Growchain.

The Growchain Foundation consists of decision-making committee and the sub-committees: technical committee, business committee, self-governing committee and administrative committee under the decision-making body. The governance framework includes operational procedures and rules for routine work and special situations. When starting the foundation, the decision-making committee is formed with the Growchain core developers and operational members, a total of 6 people for a 3-year-term.

The next term decision-making committee will be chosen from the communities according to indicators such as the number of tokens held, activity and contribution. 100 community representatives are to be voted the second round to form new policy-making committee. The selected person will make important and urgent decisions on behalf of the Growchain Foundation and will need to receive a credit investigation during his tenure

Growchain Foundation members must maintain a high standard of credibility and business ethics, comply with the relevant laws and regulations and industry self-regulation principle; provide transparent financial management. Growchain will invite internationally renowned third-party auditors to audit and evaluate Growchain Foundation's use of funds, Cost, profit distribution etc. Growchain will unreservedly publishing the third-party review and result.



8.2 Director Cooperation

Growchain foundation has achieved director cooperation with World Blockchain Organization.

World Blockchain Organization (WBO) is an non-governmental organization registered with United Nations Department of Economic and Social Affairs.

It is jointly founded by UNOPS, WFP, UNDP, UNICEF, UN Women, UNHCR, UNDG, World Federation of Free Trade Zones, Caribbean Free Trade Zones, Caribbean Institute of Blockchain industry, WOGC -- World Organization of Governance & Competitiveness for the UNSDGs, Keynote Events.

Growchain Foundation will encourage and promote the development of the blockchain jointly with the UN World Blockchain Organization and build a blockchain friendly society.

9 Risk Declaration

Growchain is an innovation in the maternal and child industries and exploration of blockchain technology. There are policy, legal and market uncertainties for investors and the Growchain platform that need to be minimized. Meanwhile we can seize the chances to grasp the opportunities the risks imply.

9.1 Legal and Regulation Risks

Legal and regulation risks refer to the possibility that Growchain may encounter risks of non-compliance with local laws in the process of fund raising and conducting business and the operation hereby cannot go on. Growchain is an international project which serves the global market. All of Growchain's operations are subject to laws, regulations and regulatory requirements of the local jurisdiction. According to statistics, 40% of the 246 countries surveyed globally have no restriction on the transaction and use of digital assets, 3% are restricted markets, 4% define it as illegal and the remaining 53% remains to release more information about digital assets.

In response to this risk, Growchain's legal team pays close attention to the policies of all countries, welcome supervision by the authorities and plans ahead of schedule to comply with relevant regulations. Growchain will employ lawyers to ensure compliance with legal requirements when raising funds and conducting business in certain jurisdictions. At the same time, to comply with local laws and regulations, GROWCHAIN ecology may not be able to provide service in some areas.

9.2 Market Risk

Market risk refers to the risk that the Growchain is not accepted by the market or by not enough users, resulting in the stagnation of business development.

In response to this risk, the Growchain team relies on its wealth of experience in commodities, internet of things and other fields to identify and resolve market pain points and rapidly incubate the platform ecology and generate profits.

9.3 Technical Risk

Technical risk refers to the problem with the base layer technologies of Growchain ecology, which results in Growchain ecology being unable to fulfill its functions, and the risk of key data being tampered or lost.

In response to this risk, Growchain ecology's blockchain development team will develop and refine the Growchain ecosystem using a framework that is already user-approved and validated.

9.4 Capital Risk

Capital risk refers to the risk of significant loss of project funds, such as: stolen funds, loss of funds, depreciation of reserves, etc.

In response to this risk, Growchain adopts a multi-signature purse + cold storage approach to avoid possible technical capital risks. In addition, the operational team has rich experience in the financial services industry and risk control. The loss does not occur as long as liquidity in the market fluctuates within 50%.

10 Supplementary Explanation

Except as expressly provided in this white paper, we will not make any extra statement or warranties regarding GROW token. Each participant that receives GROW tokens use the Growchain platform and GROW tokens in accordance with the information disclosed in this whitepaper.

Disclaimer

The Foundation hereby disclaims any liability for the following circumstances:

(1) Anyone violates money laundering, terrorist financing or other regulatory requirements in a jurisdiction;

(2) Anyone who participates in an activity in violation of any statement, warranty, obligation, contract or other requirement under these terms, and the resulting failure and failure to retrieve their payment or purchase a GROW token.

(3) Growchain platform development fails or delists, resulting in failure to deliver GROW tokens to purchasers;

(4) The postponing or rearranging of Growchain platform, resulting in the failure to reach the expected milestone.

(5)Platform's source code error, fault or other dificiencies.

(6) Any troubles, crashes, rollbacks or hard forks during the running of Growchain platform;

(7) Growchain Platform or GROW tokens not fulfilling any particular purpose or unsuitable for any particular purpose;

(8) Failure to fully disclose in real time any information about opening up the platform

(9) Any party divulging, losing or destroying the private key of his / her GROW wallet;

(10) aGROW tokens are classified by or deemed a currency, security, commercial paper, negotiable instrument, investment or other terms that may be prohibited, regulated or subject to certain laws by any government, quasi- government, authority or public agency;

(11) List or exit GROW tokens in any encrypted asset exchange;

(12) Anyone circulates GROW token

(13) Growchain platform's applications, smart contract and other apps.

(14) Any risk factors disclosed in this plan for any damage, loss, claim, liability, penalty, cost or other adverse effect related to that risk factor.

Taxes

Participant hereby declare he will undertake and pay any taxes due to holding, using, purchasing and acquiring GROW tokens in compliance with the jurisdictional law and regulations. Each participant holds liability for the non-payment, the less payment, the improper Payment, or overdue payment of any applicable tax, all fines, claims, penalties, liabilities or otherwise. The Company does not make any suggestion or statement about the tax intentions of any participant.

No Exemptions

The Company's failure to require or enforce any of the terms strictly complied with the Participants or the Company's failure to exercise this Agreement do not indicate a waiver of the rights of the Company or reliance on any such terms or rights.

Any expressed waiver by the Company of any of the conditions or requirements of this plan does not constitute a waiver of any obligation or obligation to comply with the provisions in the future.

Divisibility

If any part (wholly or partially) of this paper is illegal or invalid under any jurisdiction law, it shall not affect the validity of any other term in the jurisdiction nor affect the terms‘ legitimacy or validity of any other jurisdiction.