GROWCHAIN

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

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Content

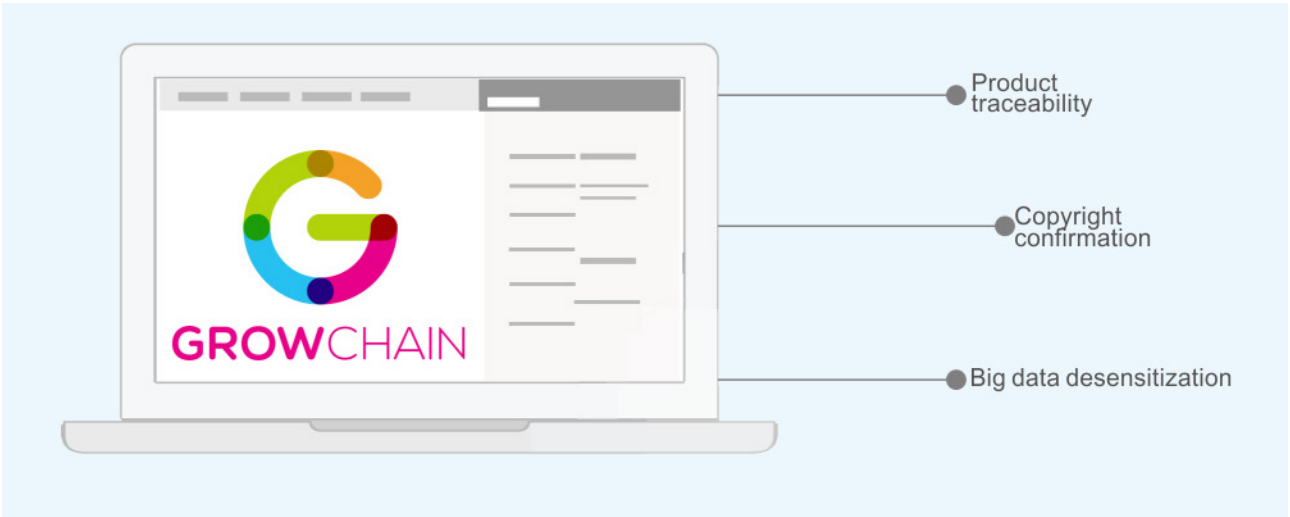
1 Abstract

Growchain is a decentralized and trustfree maternal-child care application platform based on blockchain technology. It is also the world's first vertical public chain for maternal and child industries.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, anonymity and non-disruption will be fully applied to growth files, creation ecology , big data sharing, and other aspects in the maternal-child industry market, and reasonably improve data loss, data forgery, and data leakage.

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, reliable data, rich 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) 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.

(2) 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.

(3) 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.

(4) Opaque production model of maternal and infant products , resulting in a great security risk of maternal and child products, serious lack of market trust.

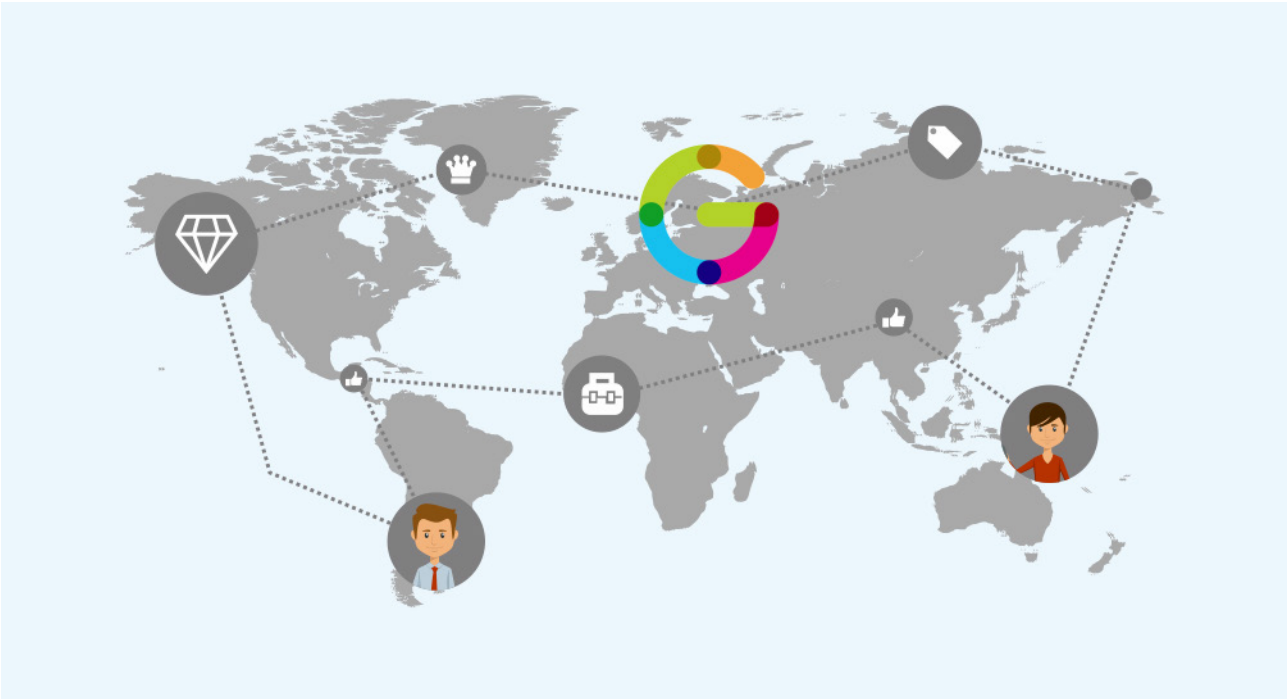
(5) Products with strong brand endorsement occupy a large market share, and get the pricing power. The price of similar products is uneven. Small and medium-sized brands and applications possess high quality creativity, quality and preferential price, however does not have the ability to survive in the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

2.4 Solution based on Commercial Public Chain

Satoshi Nakamoto created Bitcoin[1] in 2009, announcing the birth of the first generation of public chains. Subsequently, Ethereum[2] 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 There are two types of projects landing on public chain.One is based on technology landing, as public chain attracts developers to develop smart contracts and dapp development, such as ETH and EOS; The other one is based on certain field commercial applications landing, verticalization is a good direction.

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

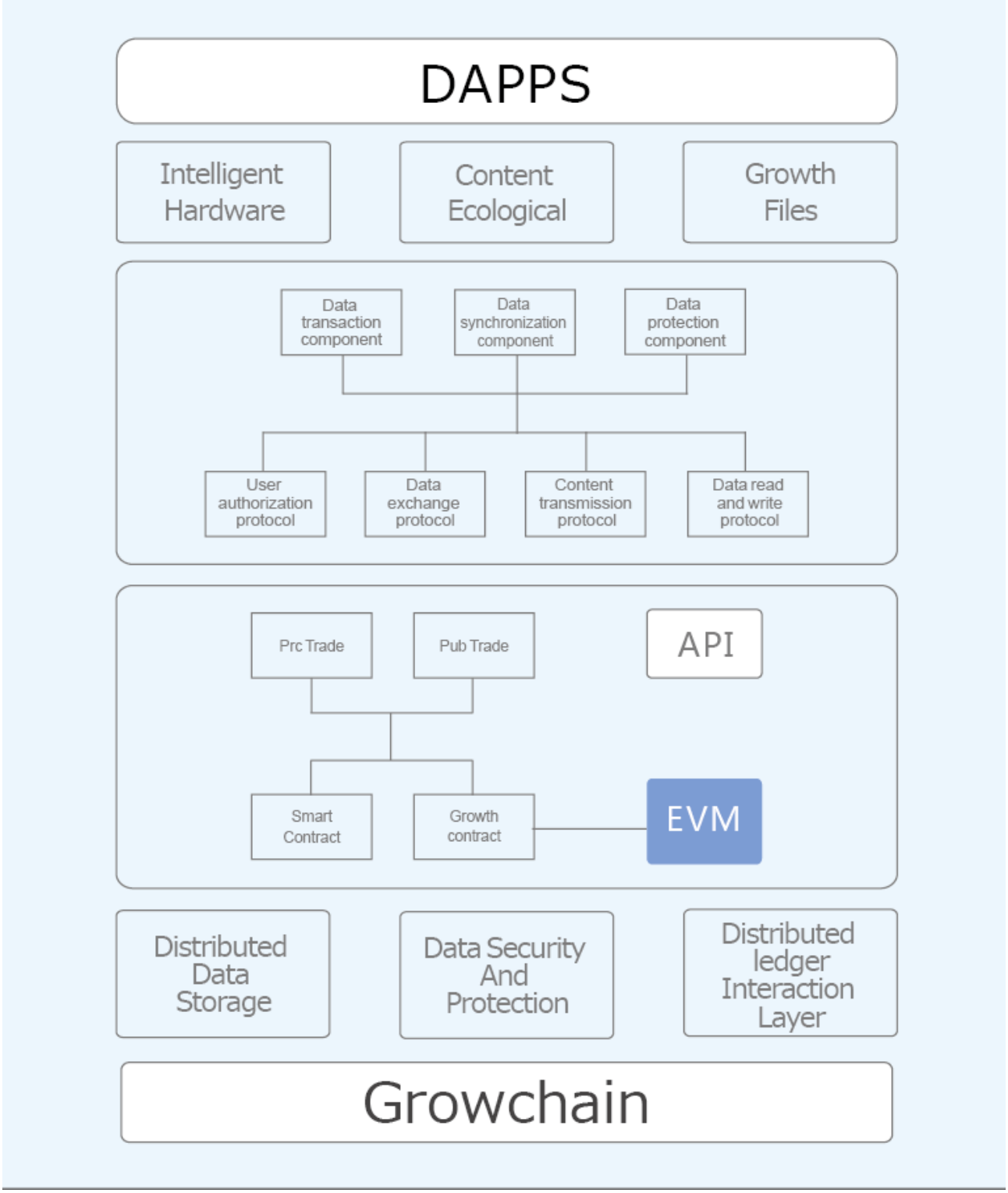
Currently, the technology and ecology of blockchain are quite large. However, there are still few use scenarios for actual landing. Growchain, as a vertical public chain of the maternity and infant industry + IoT, needs to achieve the following goals:

1. The safety of user data
2. User data tradable and data flow
3. Virtual copyright certification
4. Large number of virtual content storage

Based on the above goals, we redesigned Growchain's core underlying interaction modules and key data structures:

1. The underlying interactive architecture of the chain
2. The data structure of external ownership account
3. Decentralized large-scale data storage network module

We chose to use Growchain's smart contracts and decentralized data storage services to provide users with business-oriented services. The “Track” of the blockchain world is clearer and more credible than the real world: Transaction data in the chain faithfully records every transfer between users and “smart contract” is used each time. Next we designed the basic framework of Growchain.
Based on the above requirements, Growchain's data layer and protocol layer architecture are as follows:

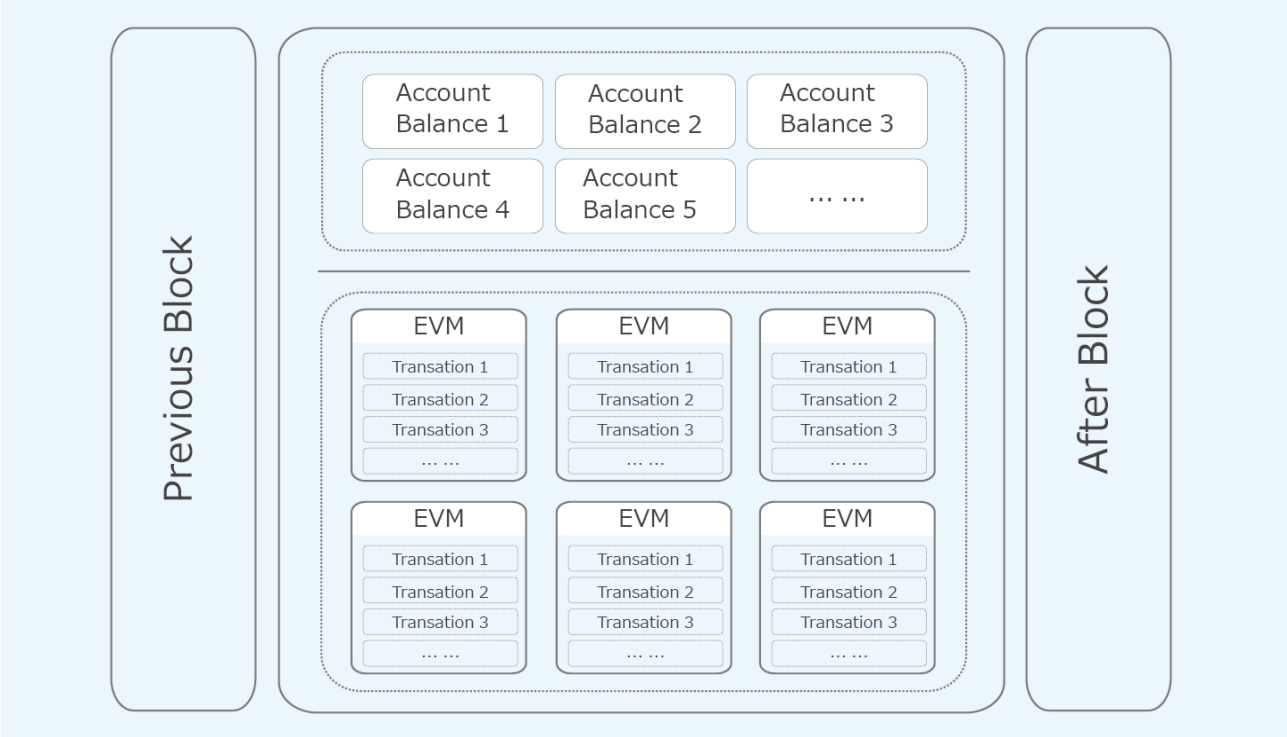


In order to achieve the above framework based on the actual needs, Growchain will also have the UTXO script with a chain of command concepts represented in Bitcoin as well as the on-link smart contract feature represented by Ethereum to provide the synchronization-related processing power necessary for 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 The structure of Growchain's main chain

Growchain's goal is to provide a safe, reliable, and trustworthy service platform based on the records of infant growth. Based on this foundation, Growchain needs to do automatic synchronization in the chain when recording necessary data without manual operation (also no need for miner's fees), and it requires a certain amount of miner's fees when performing transactions, transfers, etc. Therefore, Growchain's main chain will contain chain orders and smart contracts.

Growchain's main chain runs as shown below:



Based on the above requirements and models, the storage structure of Growchain's externally owned accounts will be redesigned.

In addition to the traditional account address, balance and other data, 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. Growchain's external user information structure will add the following:

```
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. 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.

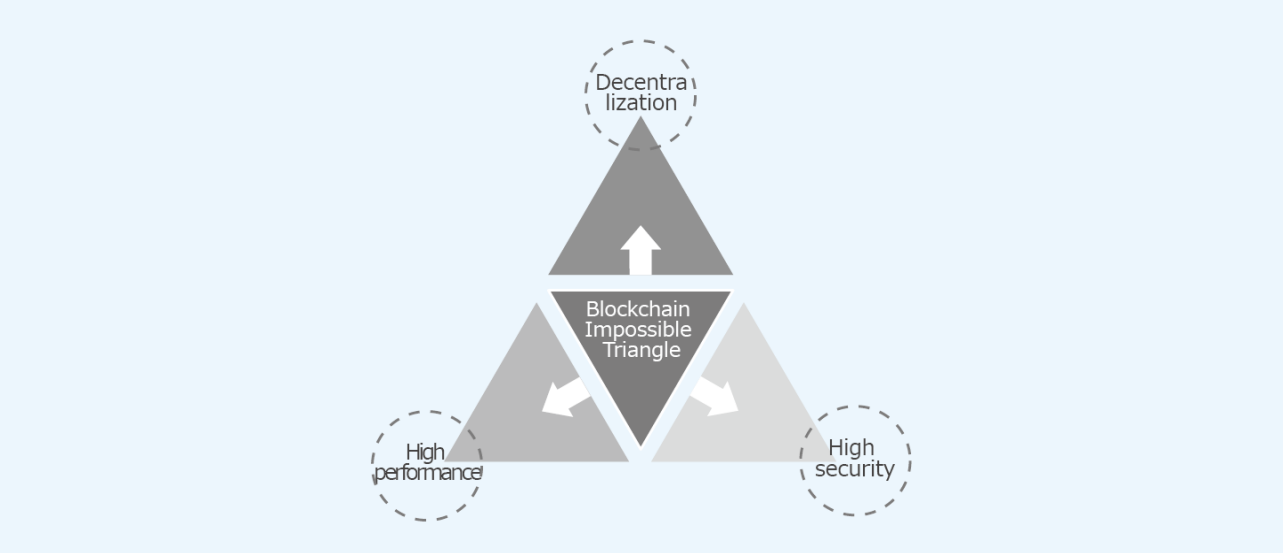
Growchain block data structure is shown below:

```
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 same amount of transaction of the traditional centralized database with a very low cost.

3.2 Growchain's choice and optimization based on commercialized public chains

In blockchain, there is an impossible triangle[12], which means that it is impossible to have security, decentralization, and high performance at the same time.



In order to ensure decentralization and security, Bitcoin sacrifices performance (7TPS). At present, the design of Ethereum is almost the same as BTC. Therefore, it is impossible to support large-scale DAPP applications in terms of performance. EOS focuses on improving performance to enhance scalability, but his multi-threaded processing solution has largely sacrificed decentralization.

Based on the commercial needs Growchain made choices regarding impossible triangle, as shown below:

Blockchain Impossible Triangle

Growchain will put user's security first. Growchain believes that the commercial chain based on commercialization must not be completely decentralized, it will be multi-centered or weak centralized. So to some extent the decentralized character will be sacrificed. The performance of Growchain will continue to be optimized with algorithms.Relative to PageRank[8][9] and NCDawareRank[7] ranking algorithms in the case of large volume, we use

$$S = x_1, x_2, \ldots, x_n$$

$$x_i \in \sum$$

to indicate a flow of transaction which length is N.We used $\sum$ represents a symbol table containing n characters. We used $fs(x)$ to indicate the number of occurrences of the character x in S.We give a constant $0 < \phi < 0.5$ and find all the characters that have appeared in S at least ϕN.That is:

$$I(S, \phi) = \{ x \in \sum \mid fs(x) \geq \phi N \}$$

Easy to know:

$$| I(S, \phi) | \leq 1 / \phi$$

Otherwise within $I(S, \phi)$ the characters in S will appear greater than $\phi N \cdot 1 / \phi = N$. Let us suppose:

$$N >> n >> 1 / \phi$$

In addition, we also assume that: The characters in S came orderly. Because of the limited memory space in the block, we cannot save S . So it provides an algorithm that only needs space, and it can guarantee that the result

$$I^{+}(S, \phi)$$

obtained by the algorithm satisfies:

$$I(S,\phi) \subseteq I^{+}(S,\phi)$$

The algorithm maintains $1/\phi$ counters (occupied $O(1/\phi)$ space), both initialized to zero. In the algorithm, we will assign the free counter (count is 0) to the newly arrived character without a counter. When x_i arrives, there are three situations:

1. If x_i has a counter, its corresponding counter is incremented by one;
2. If x_i has no counter but there is an idle counter (count is 0), then this counter is assigned to x_i and the count is updated to 1;
3. If the previous two conditions are not true, then all counters are reduced by 1.

When all S elements have arrived and are processed, the current owner of all counters is returned, which is denoted as:

$$I^{+}(S,\phi)$$

Here we prove

$$I(S,\phi) \subseteq I^{+}(S,\phi)$$

Assume

$$x \notin I^{+}(S,\phi)$$

In the algorithm, x was eliminated $fs(x)$ altogether. The elimination here refers to

1. When x arrives, it belongs to the third situation mentioned above;
2. The held counter of x is decremented by 1 because of the arrival of other characters.

In either case, at least $1/\phi$ the other characters is erased each time x is eliminated. Therefore, the total elimination of characters is at least

$$fs(x)(1/\phi + 1) \leq N$$

Therefore

$$fs(x) < \phi N \Rightarrow x \notin I(S,\phi)$$

If we allow to read S one more time, then we can find exactly ϕ

$$I(S,\phi)$$

That is, the problem of transaction processing speed can be optimally solved under a fixed block size.

3.3 Growchain's signature abstration

Virtually all virtual currencies use 256-bit ECDSA signatures for security. If two ECDSA signatures use the same random number, the private key will be leaked. Although the client program will avoid this, it is undoubtedly no signature algorithm is absolutely secure. Therefore, the abstract signature layer undoubtedly allows Growchain's security to be upgraded at any time.

(1) Supported signatures and encryption algorithms[19]

The secp256k1 curve[16][17] is the classical and safe curve in ECDSA, and is also the curve most of the crypto currencies use.Therefore, Growchain's encryption and signature defaults to the secp256k1 curve.Sm2[18] is an encryption method specified by the national signature method, so Growchain also supports the sm2 signature. The curve uses Fp256, and the sm2 hash algorithm uses the national sm3.

(2)The signature format on Growchain is as follows:

```
signature
{
    uint8 signType;
    uint8 v;
    uint256 r;
    uint256 s;
}
```

The signature algorithm type is indicated by the different value of signType. The signType space will support up to 256 algorithms and can even prevent quantum computer attacks.

3.4 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.

3.4.1 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.

3.4.2 Grow Contract

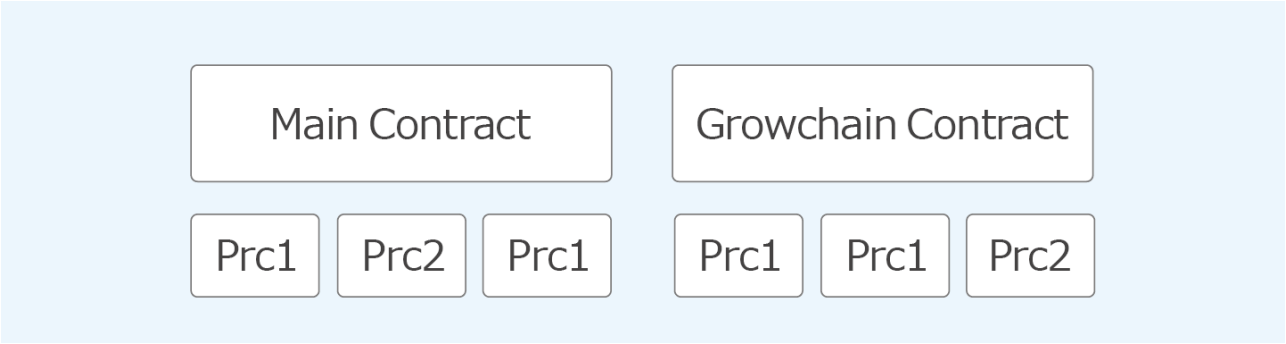
The private key can be used between users for the signing of smart contract, so as to complete the transfer of digital assets. If the subject matter of the contract is blockchain copyright or digital asset registered on the grow chain, the Grow chain can automatically conduct procedural delivery execution 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 Grow 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.

3.4.3 Smart Contract Frame

Growchain's structure of intelligent contract is a basic smart contract, which is at the same execution level[20] with the grow contract. Smart contract and grow 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.

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.

3.5DPOS consensus mechanism

The current mainstream consensus mechanisms are POW[3], POS[4], DPOS[10][11], and BFTP etc. At the present stage, the Casper[3] protocols of Peercoin[5] and Ethereum[2] both adopt the PoS[13] consensus algorithm.Growchain will adopt DPOS[10] (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. The core node ranking index is the most studied concept in the field of network science in the past decades[6].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[11] 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 thecompetition 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.

3.6 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.

3.7 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

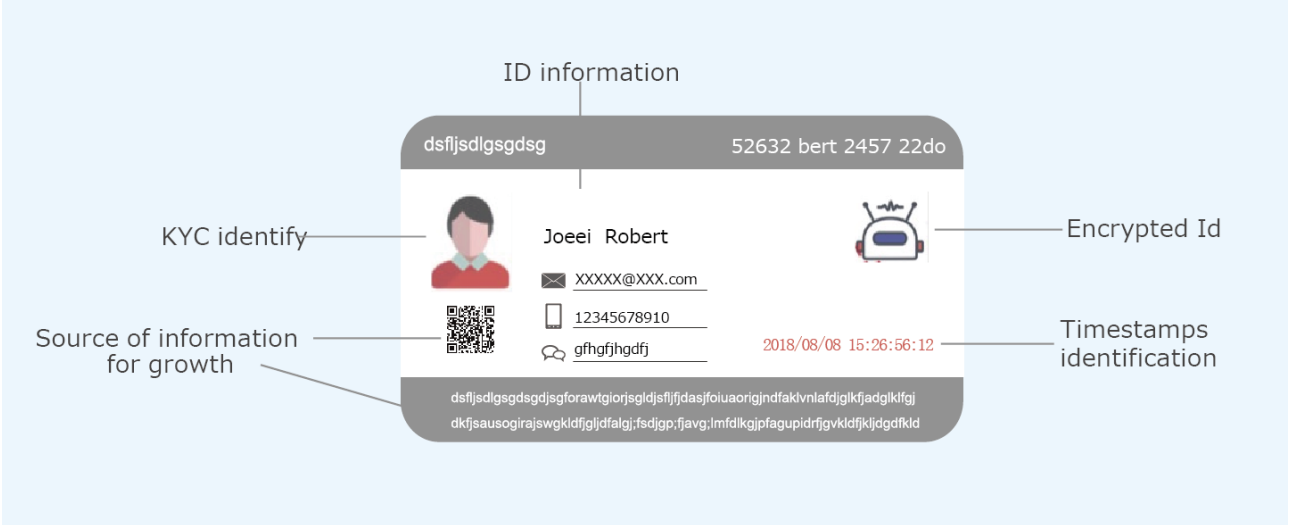
As a commercial public chain in the vertical market, Growchain will provide a series of innovative applications around maternal and child care based on blockchain features, such as decentralization, distributed trust, anonymity and non-disruption.

4.1 Digital Growth Files

After a child is born, the user can create a digital ID for the child on 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 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 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 constructions 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 behavior 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 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.

4.3 Intelligent hardware Layer Service

Growchain allows access of intelligent hardware 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[14][15]. 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 Intelligent hardware products have excellent compatibility.

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;

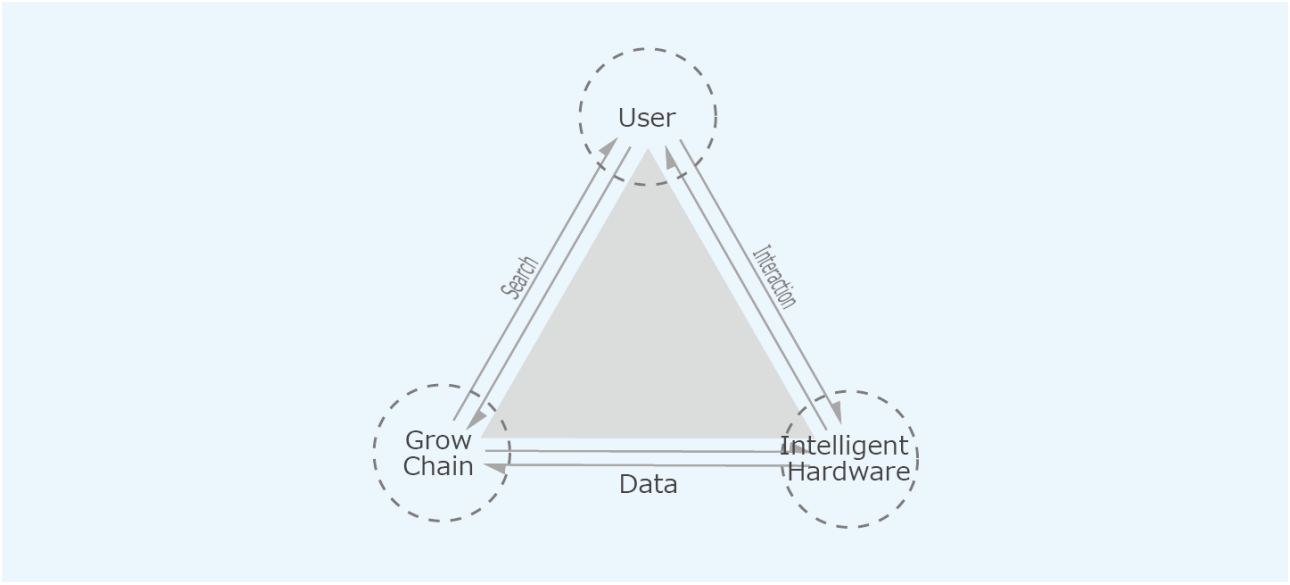
b. Data encryption protection and verification mechanism;

c. Convenient and stable billing and payment.

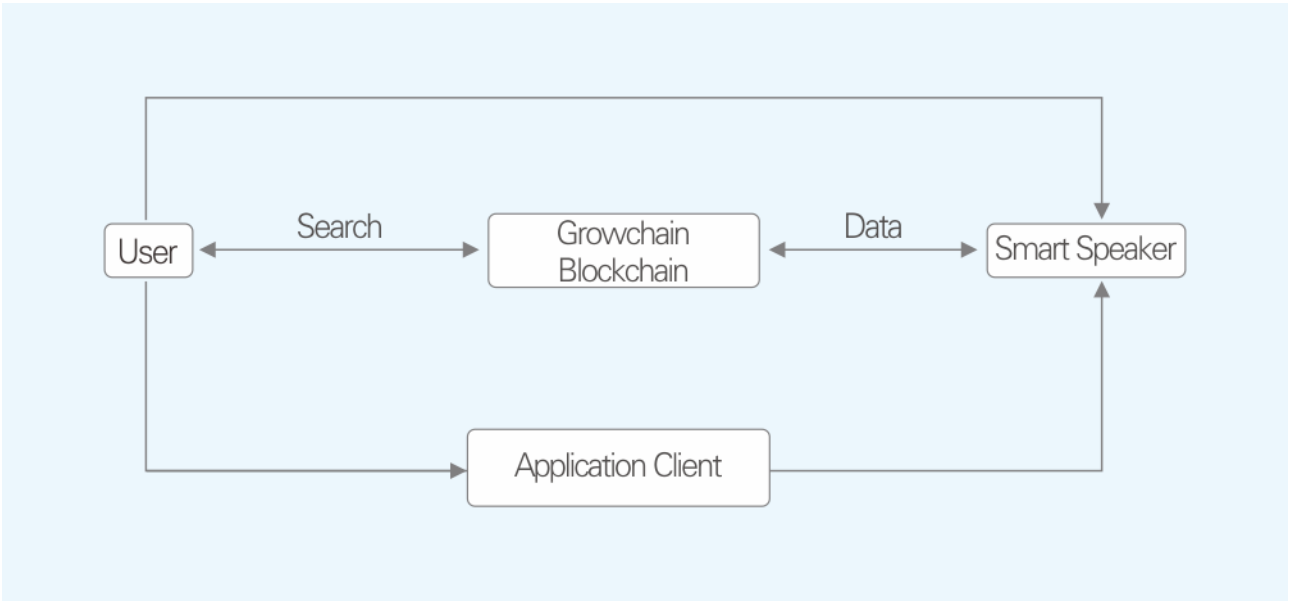
Growchain established a new intelligent hardware business model of the maternal and infant industry base on blockchain through the feedback of user needs. People hope that intelligent hardware can assist with the given rule logic and complete various applications with commercial value.

Growchain can be used to build a distributed network of intelligent hardware that enables secure and efficient interaction and communication among devices, and implements complex business logic.

Growchain provides layer services for intelligent hardware. It can connect smart hardware products such as smart speakers and smart watches specifically designed for the maternal and infant industry through application.



The following is the specific implementation architecture of the smart speaker. Decentralized store data in Growchain is used to transfer data, connecting users, smart speakers, and APP clients to provide smart hardware layer solutions for smart speakers.

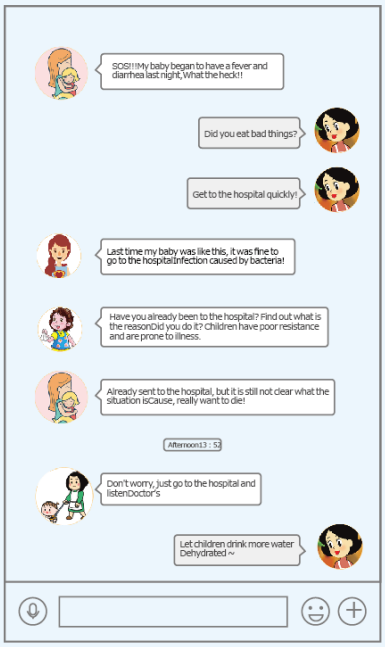


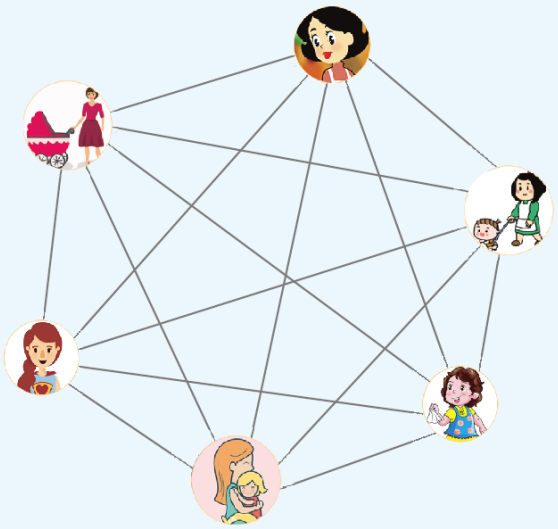
4.4 Growchain's social features

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.





5 Growchain Economic Model

5.1 Token Issuance Plan

GROW TOKEN(Code：GROW)total allotment 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 2 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.

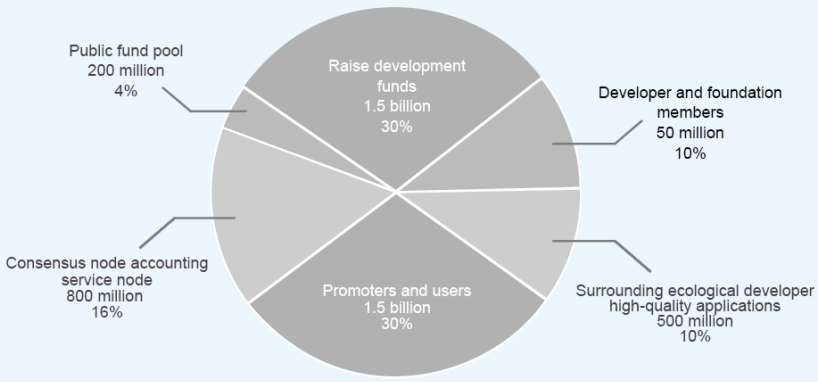
0.5 billion(10% of the Total Volume)is bounty for Growchain developers and foundation members.

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.

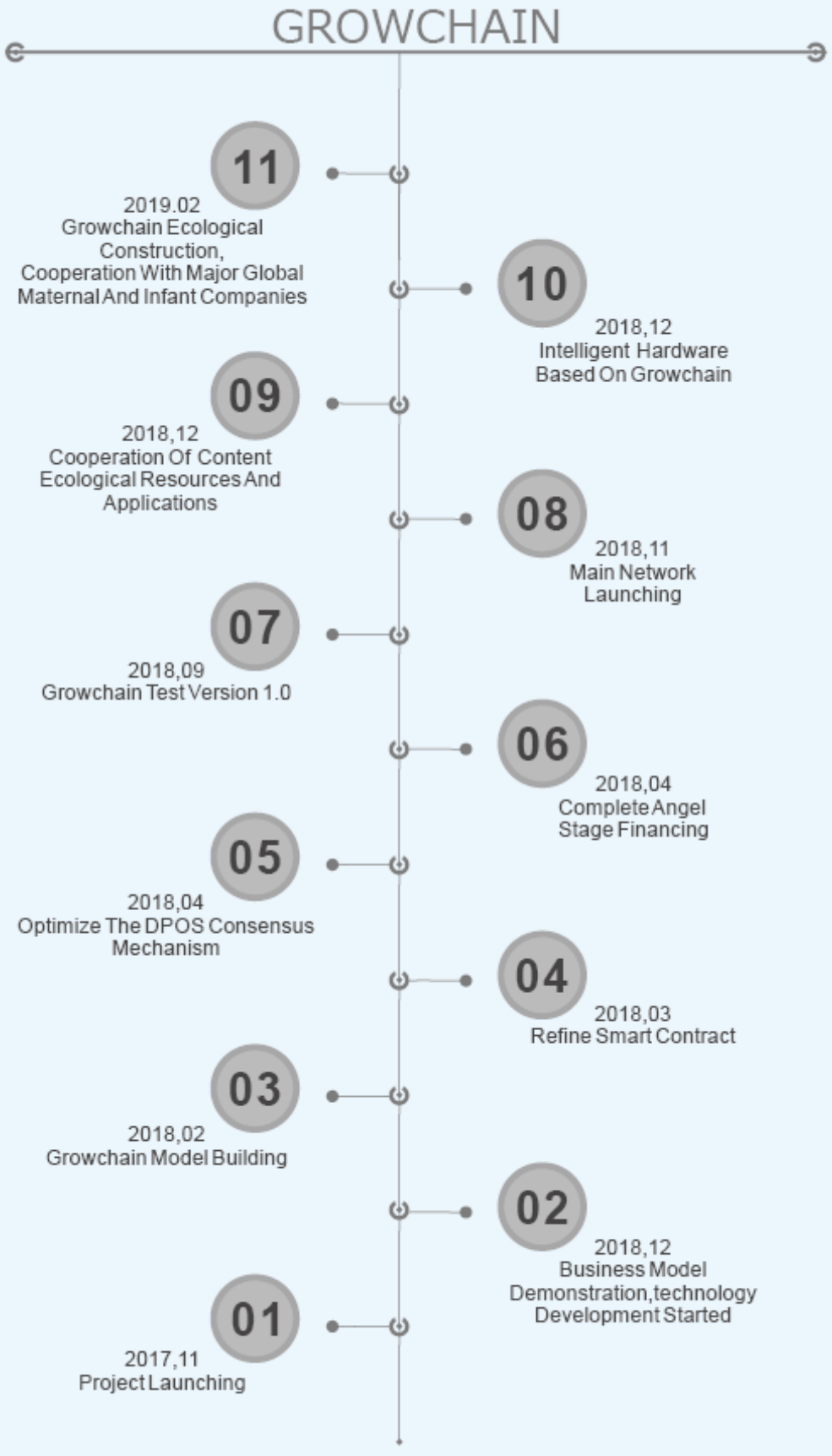


Growchain Distribution Map

5.3 Fund Distribution

Categories	Percentage	Percentage Details
Technical development	25%	Reward for the technical development team and the recruitment expenses of expert developers. Intellectual property and copyright protection.
Business development	50%	Business application launching, project assisting, personnel training, project sharing and promotion, publication, communities establishing
Market and legal service	10%	Incentivize the communities' operation contributor and expenses for legal service.
Foundation operation	15%	Foundation daily operation, transportation, office-running, finance, human resource needs etc.

6 Growchain Roadmap



7 Team

Core Members

CEO 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.

CTO 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.

COO 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).

CFO 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.

Market Manager 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 Leader Rocky Hogan

Master of Business Administration of Business School of University of Witwatersrand in South Africa.Former Citibank senior manager in Asia Pacific region responsible for retail business with extensive market experience.

Cornerstone Investment

Pusu Capital was established in July 2015, headquartered in Shenzhen, Their branches located in Shanghai, Hong Kong, Europe, and the United States. As of now, Pusu Capital has initiated more than 20 private equity funds and manages over 8 billion RMB. Their asset management scale is over 10 billion RMB.

Great Western Venture Capital focuses on education, energy, resources, organic agriculture, IT,new media, healthcare, advanced manufacturing, etc. The company aims to invest in leading companies with first-rate brands .Their Investment covers the initial stage, growth stage, maturity stage, and Pre-IPO stage companies with millions of RMB.

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

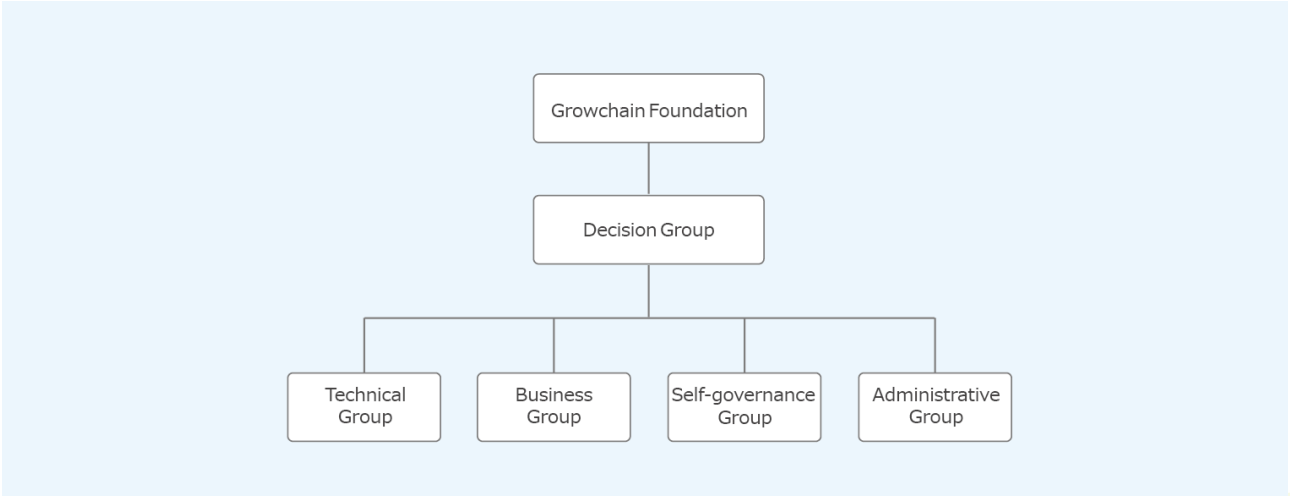
8.1 Growchain Foundation

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.

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