MANGO Chain

MGP White Paper 1.0.0

Make Interaction more Efficient, Make Finance more Easy

BRICS Foundation

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Summary

The process of asset digitization is inevitable and irreversible, and all human assets will eventually be digitalised. Cryptography digital currency is an investment product, but in the existing market, the value of cryptography digital currency in terms of time span is not reflected at all. In addition to buying low and selling high to obtain the price difference, investors do not obtain the appreciation income of the currency itself, which is actually unreasonable.
To review the development of block-chain in the decade from a global perspective, the topic is more focused on price speculation, the real application has not been implemented, nor has the inherent problems of traditional finance been solved, let alone the advantages of block-chain technology in payment, exchange, storage and efficiency. But block-chain and crypt currencies have unique attributes (including distributed management to ensure that the network is not controlled by a single entity; Open access, allowing anyone with an Internet connection to participate; And secure cryptography, keeping money safe, etc.) actually has great potential to address issues such as availability and creditworthiness of financial services.
Existing block chains lack scalability and crypto currencies are volatile. These factors have so far prevented the widespread use of existing crypt-currencies in the market by under-performing both as a store of value and as a medium of exchange. In addition, some projects seek to undermine existing systems and bypass regulation, rather than innovate in compliance and regulation, to improve the effectiveness of anti-money laundering initiatives. We believe that working with and innovating the financial sector, including regulators and experts across industries, is the only way to ensure a sustainable, safe and credible framework of support for this new system.

Libra inspired us, But we don't think the global stability currency is going to change the world, Instead, we think a more thorough cross-chain financial ecosystem would be a better solution, But we have cited Libra's view of the world and the future to varying degrees, We also wanted to announce our departure in the form of the Libra philosophy question and answer:

As we embark on this journey together, we felt it necessary to share our beliefs with the community in order to understand the cross-chain ecology we plan to build around this initiative:

• we believe that more people should have access to financial services and cheap capital.
• we believe that everyone has an inherent right to control the fruits of his or her lawful labor.
• we believe that open, immediate and low-cost global currency flows will create great economic opportunities and business value for the world.
• we believe that there will be increasing trust in decentralized forms of management.
• we believe that global monetary and financial infrastructure should be designed and

managed as a public good.
• we believe that everyone has a responsibility to help advance financial inclusion, support users who adhere to online ethics, and maintain the integrity of this ecosystem on an ongoing basis.
• we believe that cross-chain is the most appropriate block chain technology direction, providing services for existing block chain users and providing the foundation for future integrated services, perhaps not for us but for others.
• we believe that based on smart contracts and technical rules, financial institutions based on the traditional financial order should be supported to provide services for the ecology, such as Banks, trusts, insurance, notary public, etc
• we see an opportunity in crypt-currencies that provide an intermediary for national currencies.
• we believe that BTC is the foundation of crypt-currencies and we want to provide a 1:1 trusted alternative crypt-currency for BTC.
• we believe that this ecology is open and needs to be built and maintained by more people, so reasonable TOKEN incentives are needed.
• we believe that only technology can be the rule, so we use contracts to write ecological rules; Consensus is the highest value, so we replace centralized governance with community committees; Only profit can stimulate development, so we continue to improve ecological incentives.

MGP uses block chain technology and digital identity to digitize assets, and USES smart contracts to self-manage digital assets to achieve "smart economy" through distributed networks. The resulting technology is a block chain architecture that eventually scales to millions of transactions per second, eliminates user fees, and allows rapid, easy deployment and maintenance of decentralized applications in the context of a regulated block chain.

The mission of MANGO Chain (hereinafter referred to as MGP) is to construct a cross-chain financial ecology with equal responsibilities, information security and underlying stability, and to create a global open node network that serves all people. This white paper Outlines our efforts to build a new decentralized block-chain, smart contract platform, and the evolving financial ecosystem on the chain.

1. Background and Vision

1.1 Public Chain is the Infrastructure of the Digital Economy

Digital economy takes digital knowledge and information as the key factor of production. Taking digital technology innovation as the core driving force, accelerate the reconstruction of the new economic form of economic development. Digital economy is a higher economic form after agricultural economy and industrial economy, and it is also the commanding point in the new round of competition. Block chain is an important chain in the construction of digital economy. At present, the block chain industry is still in the early stage of development, the infrastructure is not yet mature, and the services, applications and business models based on the block chain still have many problems to overcome. In order to seek greater breakthroughs, MANGO will develop the MANGO Chain, an infrastructure Chain suitable for the digital economy.

As a public chain facing the future digital economy, MANGO Chain is committed to building a cross-chain financial ecology with equal identity, information security, and underlying stability, supporting a variety of complex scenarios. Therefore, MANGO Chain will be composed of the following three pillars: a reliable and efficient underlying public chain, a smart contract platform that can be executed across chains, and an open ecological incubation community platform.

1.2. Disadvantages of the Traditional Public Chain

There are many problems of traditional public chain, which are generally based on the specific infrastructure of a certain field. We cannot solve all the pain points, so we can only focus on the technical standards we want to achieve based on this project. MANGO needs to solve a series of broad public chain system problems.

1.2.1 Inherent Problems

1. Incomplete Decentralization

The core concept of the block chain is decentralization, while the public chain is the underlying protocol of the block chain, which builds distributed data storage space, network transmission environment, transaction and computing channel for the block chain, ensures network security by using encryption algorithm, and realizes normal operation of node network through consensus mechanism and incentive mechanism. The decentralized nature promotes the development of network relationships in the direction of flattening,open-source, and egalitarian development of network relationships, but at the cost of scalability, which actually has two effects: low throughput and slow transaction speed. So when it comes to the trade-off between throughput and centralization, most chains choose the high performance side, which means they forgo a higher degree of decentralization. With the increase of block size, required for all nodes in the network storage, bandwidth and calculate force will increase, when reaches a certain critical point, is only a small number of nodes can provide enough support to handle blocks, this brings the risk of centralized, the running mode of the traditional Internet and take us back to trust a handful of big node in the centralized system.

2. Imperfectly Distributed

A distributed system requires a system to measure and value distributed computing power in order to effectively integrate and utilize resources. The current centralized Internet economy cannot bring better application scenarios and business models to distributed computing power, thereby allowing distributed Computing power is targeted.However, the distributed ledger system of the block chain can design an effective and feasible incentive system around distributed computing power, organize idle resources to participate in mining services and node services to generate market value and obtain corresponding rewards, and will stimulate a large number of decentralized Peer-to-peer value exchange scenarios find more and more use for distributed computing power. However, the existing public chain technology cannot support large-scale distributed computing and application scenarios. The serial structure determines the amount of computing it can support and the nodes that can participate in it. They all have ceiling constraints and cannot be distributed. The ideal situation in which the scale of computing power can be arbitrarily adjusted according to the requirements under calculation not only restricts the scalability of the applications supported by the block chain itself, but also limits the scalability of distributed computing power participating in it.

1.2.2 Efficiency

Slow Response speed and Transfer Speed

The existing chains in the market can be roughly divided into two categories according to the trading quota and frequency, one is the transaction of high and low frequency, but the transaction fee is high;On the other hand, high-frequency and small transactions, such as games and social networking, are essential for the large-scale application of block chain.
In other words, high performance (i.e., speed) is the foundation of the chain, especially when the application is running at ten million level. High throughput, high concurrency, stability and security are important factors that determine the user experience. At present, the speed of most mainstream chains is between tens to thousands of TPS, which is difficult to meet the technical requirements of speed and concurrency for large-scale landing applications. Highly decentralized distributed data storage is one of the greatest features of the public chain, but it also brings the disadvantage of low throughput (TPS). Even the most sophisticated chain, the bit-coin block chain, can handle only seven transactions per second, or even fewer during peak periods.

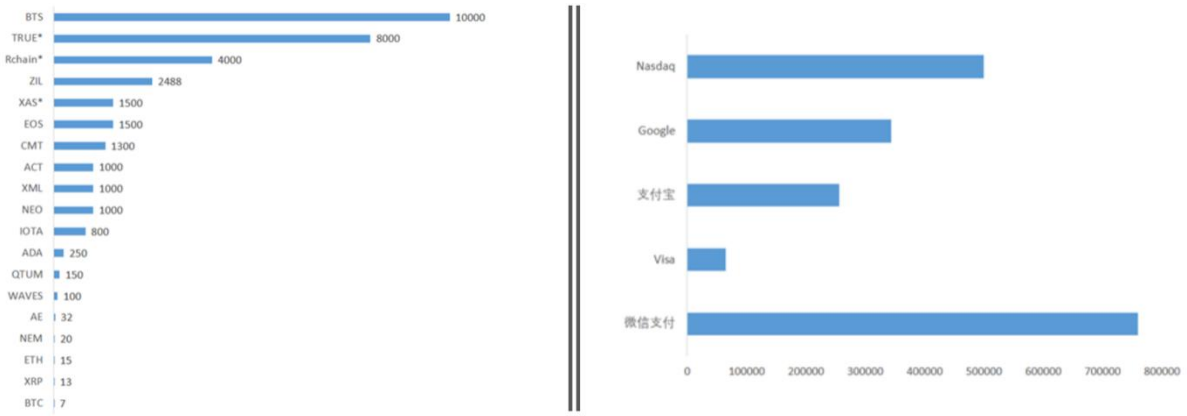

Figure 1Comparison of transaction speed between block-chain projects and traditional projects

As shown in the figure above, especially compared with traditional commercial payment applications, the response speed of block chain projects is still unable to support large-scale

applications, and more exploration and research are still needed in terms of technology and real commercial landing. As the underlying infrastructure for a variety of applications, only the establishment of a high-speed and stable infrastructure chain has the opportunity to breed killer applications.

1.2.3 cost

(1) High transfer fees

BTC consumes $2 billion in electricity annually, ETH $430 million in electricity annually; The annual Gas fee of BTC is about USD 30 million, and the annual Gas fee of ETH is about USD 20 million. It is not difficult to see that the Gas fee can only bear a fraction of the electricity fee. (digiconomist.net, 2019)

From the perspective of the development of various mainstream public chains, the transaction cost of block chain system has been decreasing. However, as shown in the figure below, it is obvious that the hardware and software cost of distributed bookkeeping is higher than that of centralized bookkeeping, but it must be far lower than the total cost of centralized bookkeeping. Through the relative centralization, the transaction cost of the chain has been significantly reduced. In order to cover the high transaction costs, the block chain industry is constantly looking for high-profit industries and larger commercial landing. To reduce the transfer fee, the key is to reduce the cost of chain operation.

(NervosNetwork, 2019)

Figure 2 Comparison of transfer fees between mainstream block-chain projects and centralized systems

（2） High Cost of Operation and Maintenance

No matter how the traditional public chain system is designed, its IT cost must be higher than the centralized system. A widely accepted view in the industry is that the operating cost of the public chain system is the sum of its coin inflation and transaction costs, which means that the cost of maintaining and protecting the public chain is positively related to the ability of the public chain to resist censorship and external intervention Yes, the higher the cost of the

public chain, the stronger the security of the public chain.
For example, in Bit-coin, miners maintain and protect the block chain, and rewards are issued in two ways:
1. Inflation (seigniorage)
2. Transaction costs. When the block rewards decrease, the cost of protecting the network will be transferred to transaction costs, and improving network security will further increase transaction costs. In other words, the more profits a miner gets, the more secure the network is.
As can be seen from the chart below, the monthly operating costs of the three major currencies are calculated by using the daily average price of (number of new issues in token currency + daily transaction fee) * daily average price.

(NervosNetwork, 2019)

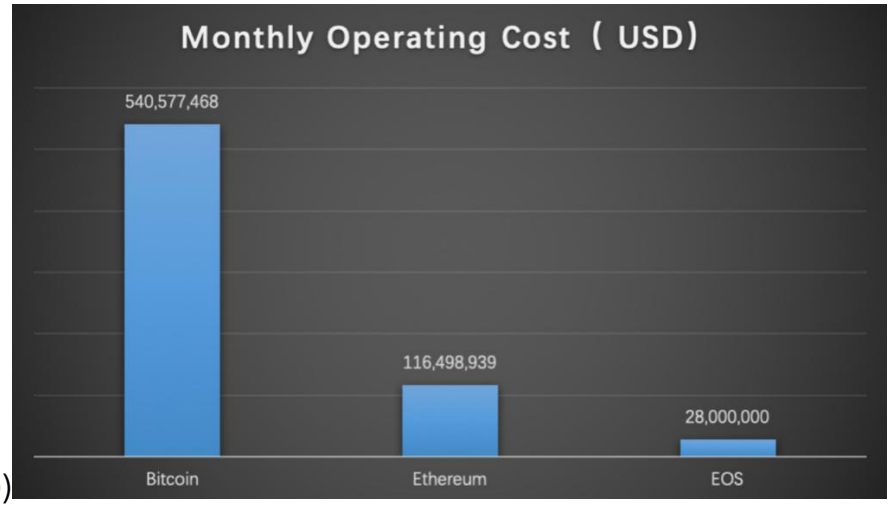

Figure 3 Overview of monthly operation and maintenance costs of mainstream block-chain projects

1.2.4 Security issues

1. Some Data is Exposed Indefinitely, Lacking Privacy

Data privacy is the bottom line for individuals and organizations concerned about privacy and personal rights, as well as certain industries that involve a large number of trade secrets and interests. Building a robust, trust-less system is also the vision and expectation that block chain has so many advocates clamoring for. On the face of it, block chain technology seems to be a perfect solution to this problem, since block chain transactions do not require binding identity information, and anyone in the world can create an anonymous wallet and trade with it. The problem is that we use a common, easily traceable ledger. Transactions are recorded and stored in the public in the books, and only connected with account address composed of Numbers and letters, because there is no binding user real information, so misleading unable to track the entity for the individual and ensures the privacy, ignoring the current public chain transmission and storage of data are publicly observable facts, such as intelligent all details in the contract, including the sender, receiver, transaction data, execute the code, and storage condition.
This so-called "pseudo-anonymity" that guarantees privacy is in fact the last and only layer of secrecy that stands in the way of privacy. Once someone finds a connection, all privacy disappears. This also breaks the block chain transaction completely anonymous this major

premise.

2. If the Number of Data Nodes is Not Enough, it is Easy to be Attacked by Dust.

The first standard of the public chain is the number of nodes. The international technical standard is that a thousand decentralized nodes that cannot be controlled at the same time can be called public chains. This is one of the reasons that Bit-coin and Ethereum are accepted by the industry. The core of decentralization lies in the node mechanism. A truly distributed accounting node must have enough nodes to participate, because a sufficient number of nodes represent credibility and cannot be tampered with in order to achieve sufficient decentralization to prevent evil among nodes, such as dust Attack and so on. Therefore, the joining and exiting of nodes should be free to enter and exit in accordance with the rules, and the threshold of the nodes should be low enough to allow more data nodes to participate. Active participation of community members is also the core spirit of the block chain.

3. Higher Security

In the traditional public chain design, the calculation and storage of the computing layer are not separated. Most public chains use the Gas mechanism to balance the computing power of the main network. There are actually two problems with this design. One is that the computing resources of the main network are not separated. As a result, the uneven distribution of computing power may lead to network congestion, and even DAPPs with less computing power cannot be executed; the second is that the contract behavior and transaction behavior are not separated, thereby creating the possibility of wallet theft.
The public chain's system security needs to be improved all the time, including attacks from external entities (denial of service attacks, DDoS, etc.), attacks from internal participants (impersonation attacks Sybil Attack, collusion attack Collusion Attack, etc.) and component failures and computing power Attacks, double spend attacks, transaction and contract loophole defense mechanisms, identity and anonymity, database security, etc., and even fight against quantum computing to solve various privacy leaks, frauds, and transfers.
The public chain in the digital economy era will face more users, and it must meet higher standards in security auditing, security architecture, compiler security optimization, virtual machine security design, contract security template and other aspects to meet users' requirements for security.

1.2.5 Regulatory Issues

1. Anyone can participate Anonymously, Lack of Corresponding Strategies for Supervision

The feature of block chain centralization makes many public chains or projects inevitably put in the opposite of centralization, which is indeed the operating mode of social subjects nowadays. The mode that everyone can participate anonymously also stimulates the generation of insecurity to some extent.
The ultimate use of block chain technology must be to solve social problems and improve production efficiency. In order to achieve the popularization of commercial applications and the promotion of social value, the architecture design of the public chain must consider how to solve the conflict and friction with the centralized traditional regulatory agencies and how to integrate with the centralized society in the real world.
Up to now, in the field of traditional public chain research and development, or even the whole block chain industry, there is no safe way to upgrade, and there is also a lack of formulating

and maintaining legal provisions and reference standards for regulatory governance, which still needs the support and participation of more developers, professional legal practitioners and other relevant people.
The concrete implementation situation unclear, because there is no authority in the environment in the center of the standards is difficult, but the regulation has already begun to hit all areas actively, and will be more and more strictly, in this case, more to ensure that would not appear any degree of concentration and block chain for a new problems and challenges in the industry.

2. The Reward System is Chaotic and Manipulable

The incentive mechanism is called the core driving force of the block chain. Its purpose is to integrate the value of all stakeholders in the system as rewards to encourage participating nodes to participate in the block verification work. A sound reward mechanism, like bit-coin, should satisfy the incentive feedback quickly, continuously, and will not be terminated for any reason, and always maintain the positive incentive, so that all nodes can spontaneously maintain the healthy and orderly operation of the whole public chain network system. The incentive mechanism of block chain provides a new idea for many developers and gives rise to many different incentive mechanisms. In order to get more nodes involved, many mechanisms violate the original intention of incentives, holding the right of rewards in their own hands instead of taking the maintenance of the whole chain as the first priority, which makes the market full of chaos.

1.2.6 Scalability issues

The architecture of digital assets is not suitable for DAPP in many aspects, mainly in two aspects:

1. Not easy enough to use
Block chain technology integrates many technologies in computer, network, encryption and other fields. These technologies are highly professional for ordinary users, such as private key, public key, address, encryption algorithm, consensus mechanism, public chain and other terms, which are enough to make ordinary users retreat. Even if the user is willing to learn, he has to go through a lot of tedious steps to actually use the relevant application. For example, if a user wants to use a DAPP based on smart contract, he must first do several things:

First, he should get a wallet address and private key, and know how to use the wallet address and save the private key correctly.

Second, he must somehow get the ETH before he can transfer the ETH to the wallet address of DAPP. This process is very complicated for the block-chain and often requires a long enough wait (more than a week) before the user can actually use the DAPP. The use of block-chain-based DAPP should be the same as that of traditional DAPP. After downloading from the App-store, users can use the APP for free or at a very low cost.

2. Single application scenario

All Dapp applications on digital assets can only share one main chain. Dapps cannot build their own sub-chains, cannot customize their own consensus algorithms, and cannot choose the optimal configuration according to business needs. This has led to digital assets currently being issued There are few business application scenarios that can be supported, which is not conducive to the construction of DAPP ecology.

1.3 Traditional Smart Contract Issues

In addition to the inherent disadvantages of the traditional chain, the traditional smart contract also has many problems. A smart contract is a computer protocol designed to digitally facilitate, verify, or enforce the negotiation or performance of a contract and to allow trusted transactions to be executed without a third party.

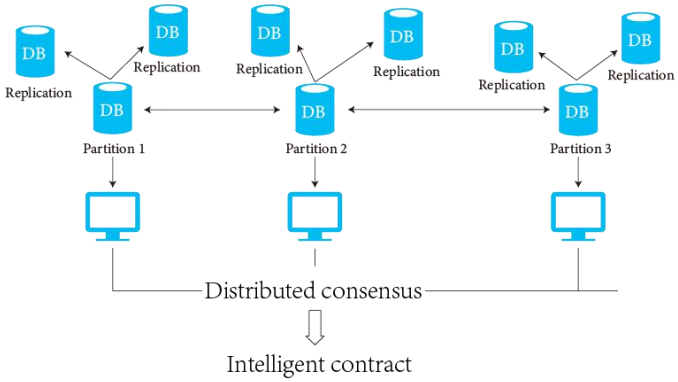

Figure 4 Schematic diagram of traditional smart contract process

Traditional smart contracts have the following problems:

1. Contractual issue: based on execution rules, the scenario of digital currency transaction is too simple, resulting in extremely simple execution rules, which are still far from the contract in our real life. In real business and life, we need more and better contract rules and systems, especially for the financial sector, where the complex side represents security and flexibility

2. Input credibility problem: there is no such thing as a fully Turing contract, and the input of parameters is manual. There is no guarantee that the source of the input parameters will be reliable or tampered with.

3. Predictor reliability problem: the predictor is the only way for data interaction between the smart contract and the external environment. The external data as input parameters of the smart contract flows into the smart contract program through the predictor. It is only through a predictor that you can determine whether your status in the virtual world is the same as in the real world, and whether your performance of the contract is the same. Essentially, you still need to trust the data flowing into the predictor to be objective and accurate, which goes against the idea of smart contract trust.

4. Cross-chain model or technological breakthrough of smart contract: in the future, block chain technology will be applied in more fields. From currencies to commodities, from property contracts to equity certificates, more assets or data information will be able to be tokenized and traded and managed in the block chain system. With the increase of transaction volume and the expansion of demand diversity, muti-chain parallelism is bound to become a trend. Therefore, cross-chain technology is essential to support the information exchange and asset transfer of different block chains, as well as the efficiency and scalability of the system.

5. Self-certification automatic security issues: therefore, it is necessary to build an smart contract automated verification platform to ensure the security of contract applications.

1.4 Desertification of Traditional Public Chains

The existing public security chain is generally lack of ground application, only committed to solve the technical problems, after the development of the desertification is a normal situation, which is actually a waste of human resources, material resources and financial resources consumed in the early stage, therefore, public security chain ecology is an urgent need.

Since its birth, the public chain has been defined as an infrastructure to provide secure, stable and powerful services for upper-level applications. Many chain builders see the imagination and future possibilities of the chain, but do not think clearly who the chain is built to serve, and finally become a platform for issuing COINS.

In addition, the performance of the public chain is mainly reflected in the three aspects of decentralization, expansion performance and security. The previous technology cannot perfectly solve the balance among the three, favoring one party must sacrifice the other party, and various technical defects in the development will limit the DAPP developed on the chain. Therefore, on the premise of compliance and legality, the public chain must be a distributed platform with relatively transparent operation mechanism and fair consensus mechanism, and a safe and widely applied ecological environment.

1.5 MGP Vision

MGP's vision is to build a broad digital trust, free flow of assets, common application of the block chain network ecology. MGP focus on the future value of circulation network, uphold the "to make the financial more simple and make the interaction more efficient" mission, to provide open, efficient and scalable strong underlying technology support, with finance, Internet of things, such as the social industry demand of digital assets and value circulation, eventually to build a "consensus" ecosystem block chain + era of digital assets.

The current block Chain the underlying infrastructure is not yet mature, the whole industry Chain is still subject to block stage, technical performance and scalable defects MGP after further argument, is committed to develop a represents the highest level of global industry public digital economy era Chain - MANGO Chain, to support the future digital in the underlying economic world. In the coming era of digital economy, MGP to "create new

financial ecology chain" as the goal, to redefine the infrastructure and chain of digital economy era, the pursuit of higher performance, higher stability and security, and for trade settlement, payment, asset management, securities and other complex scenarios provide computing and storage, etc. The underlying infrastructure, aims to become a public chain of digital economy era.

The future form of MGP is more likely to evolve into a new distributed system, so that the generation, circulation, notarization and confirmation of all assets and warrants will be carried out on the public chain, and make further attempts to open the business to the community for autonomous ecological goals.

2. MGP Technical solution

2.1 Infrastructure

In essence, block-chain is a distributed database with writing rules, which guarantees the spontaneity of the database under certain conditions. After browsing most block-chain projects on the market, the MGP team proposed the following layering:

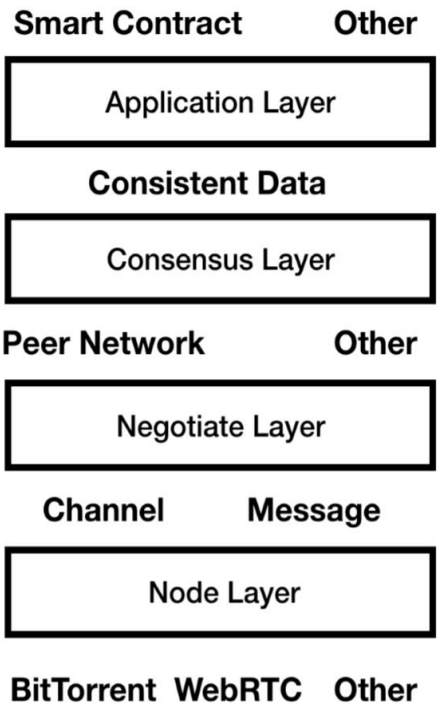

Figure 5 MGP Stratification

Node Layer :

Nodes are the basis of any distributed system, and the communication between nodes constitutes the node network.
The node layer needs to implement the following basic functions:

- Discovery node.
- Inter-node communication routing. In general, additional mechanisms are required to resolve "witch attacks," That is, in the peer-to-peer network, the single node has multiple identities, so it is necessary to control most of the nodes of the system to weaken the effect of redundant backup. In order to solve the problem of "witch attack", MGP proposed the concept of "cost function", That is, in the classic PoW consensus algorithm, since nodes do not have substantial voting effect, the molecule is 0, so the cost of witch attacks is infinite.

In other networks (such as BFT), witch attacks may also exist, so need to be increased

Cost Of Creating New Node : Increased attack costs, such as Dfinity and distributed systems with PoS mechanisms. However, the framework provided by MGP does not suggest that PoS does not consider witch attacks, but that PoS just solves the problem.

Negotiate Layer:

The negotiation layer is often a special layer lacking in other chains, which is the support of diversified consensus algorithms. Which means the node layer realizes different consensus algorithms through the abstraction of the negotiation layer, and the negotiation layer usually needs to complete:

- Random number negotiation: for example, Proof Of Luck or Dfinity will require a random number generation mechanism recognized by all nodes.
- Adaptation negotiation: used to exchange data with other running chains to perform special operations.
- Communication negotiation: negotiation on how to broadcast, announce, etc.
- Cryptographic negotiation: an algorithm for negotiating encryption.

Consensus Layer : the Consensus Layer is the core part of the block-chain protocol and defines the consensus algorithm and block data paradigm. MGP adopts an innovative M-dpos consensus mechanism.

Application Layer : usually includes a package limited state machine (interpreter for smart contract).

2.2 Design Goals

MGP is designed to be a globally oriented main chain, supporting m-dpos consensus mechanism, distributed storage, dynamic pricing, anti-quantum computing, cross-chain operation and other technologies, as detailed below:

2.2.1 M-DPOS Consensus mechanism

In addition to the hierarchical structure, MGP also created the m-dpos consensus mechanism, which was innovatively improved and perfected based on the DPOS consensus mechanism. Through some features and essence of the mechanism, participants could integrate multiple DAPP applications and services in multiple fields on the MGP.

The algorithm logic of m-dpos consensus mechanism is as follows:

1. Candidate mechanism: token holders vote to generate 21*N full nodes and 101 candidate authentication nodes.

1. light node:

- Has voting rights, can vote out the full node of 21*N
- Locking in a few tokens;

2. full node (21*N):

- More tokens are locked
- Package permission: randomly pack 1 node
- Validation permission: 21* n-3 as the validation node to verify whether the packaged data is consistent

2. Incentive mechanism: to obtain voting privileges, nodes need to lock certain tokens to obtain node privileges and rewards;

3. Certification method: the node shall pledge tokens, and the certification node committee shall conduct audit, and the certification shall pass and enter the candidate certification node;

4. Elimination rules: elimination at the end, double-dimension calculation of block speed and online time, and replacement of authentication accounting nodes with excellent candidate nodes;

5. Reward and punishment mechanism: in the system design, Bpay (block reward) and Vpay (vote reward) incentive pools are set in a specific proportion to motivate nodes and voters respectively. If a node is suspected of cheating, its assets will be removed and it will never have the right to participate.

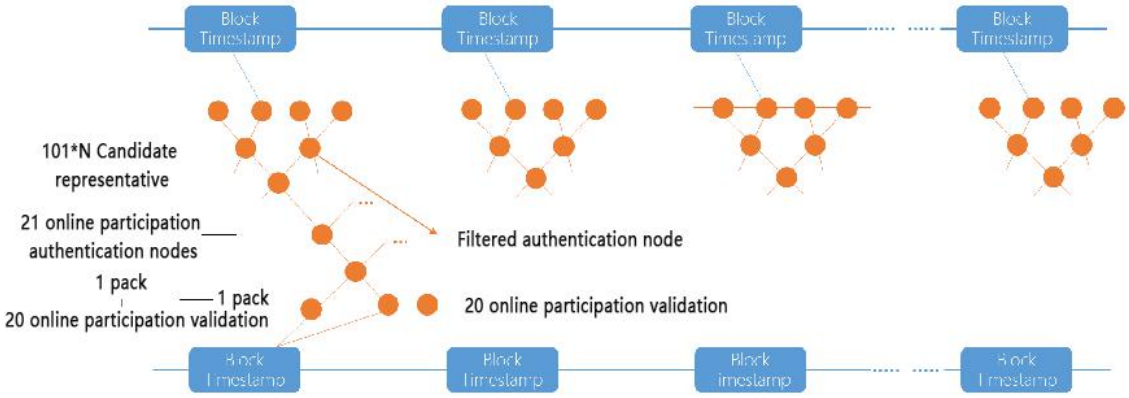

Figure 6 M-DPOS consensus mechanism model

The biggest advantage of this algorithm lies in the optimal combination of safety and efficiency. 1 record point +20 collaborative verification nodes are the data that we have determined after many experiments and studies. This quantity can not only ensure that it will not be bought at the same time (the cost is too high), but also ensure efficient authentication. Moreover, under the two-tier authentication system, these nodes will be users with good faith and ability to participate in the authentication, able to withstand the instantaneous transaction volume of

millions of levels.

Based on the authentication voting algorithm, M-DPOS also derived the equity reward algorithm and the two-layer authentication network algorithm. The two algorithms are introduced as follows:

1. Equity reward algorithm: for all dapps developed based on the MGP main chain, we make it mandatory to use smart contracts to ensure the openness and transparency of the financial and data of the whole DAPP, and the rewards are automatically distributed to miners (light nodes and full nodes) through smart contracts;

2. Two-layer authentication network algorithm: m-dpos adopts two-layer authentication network, that is, we will have two-layer authentication system of light node and full node. The candidates of each node are random, and the authentication will be re-elected each time, which greatly increases the attack cost of attackers. And even the 21 elected delegates have the same rights, unable to concentrate their power on a single delegate by getting more than 2.1% of the vote. Each representative is identified by its public key rather than its IP address, making it more difficult to identify the target of a DDoS (distributed denial of service) attack.

Other block-chain transfers generally require a service fee for two reasons:

1. Prevent malicious attacks (if there is no service charge, it is possible for someone to launch high-frequency and low-trading volume transactions, which will bring great burden to the network);

2. Improve the enthusiasm of miners (the fee will be used for community management, which is a benefit to miners);

However, the algorithm of m-dpos and two-layer authentication network perfectly solves this problem. The two-layer authentication network can effectively resist high frequency and low trading volume attacks.

To sum up, these three core algorithms determine the characteristics of the m-dpos consensus mechanism: instant arrival, zero fees and high security. It has solved many pain points of the current block chain consensus mechanism and laid a solid foundation for the combination of MGP and HFT industry.

2.2.2 resources

In MGP, the providers of various resources act as nodes to maintain the stable operation and value output of the whole ecology. In the architecture of distributed node network, the state change of each individual node will not affect the operation efficiency and resource acquisition of the whole network. Therefore, in terms of architecture, it not only maintains the stability of the network through technology, but also defines corresponding reward acquisition behavior and feedback mechanism for all kinds of resource contributions through GQEM's unique trading model. Therefore, from the perspective of resource providers, resources can be allocated spontaneously, automatically and autonomously through the model of market economy supply and demand. In this way, when the node state changes, the network can automatically respond and adjust intelligently, so that the efficiency of resource invocation and distribution remains stable and efficient.

First of all, the Resource Mining of the GQEM layer protocol, would be to DCC and RDSN behavior definition for the provider of resources required, and through the MAP (Mining Application Protocol) protocol to specification on the output of the currency.

The economic model framework of GQEM adopts the theory of supply and demand in economics and conducts spontaneous adjustment with the help of invisible hands. As the nodes of the network, the model of providing resources in exchange for benefits is not static and invariable. In the real world, due to the non-homogeneity of geographical space, computing power/access requirements, bandwidth requirements, etc., each individual request will result in a different specific demand for related resources. Only by dynamically responding to and allocating resources according to the actual demand of each request can resources be maximized and efficiency and value maximized. In a decentralized world, the best fit, and the most feasible, is a system of automatic adjustments triggered by supply and demand.

Both DCC and RDSN can be defined and adjusted dynamically through GQEM. In case of a request where demand exceeds supply, the node providing resources for the request will receive feedback higher than the MAP baseline, thus attracting more capable resource nodes to contribute. Similarly, in the event of a supply is greater than the demand of the request, provide resources for the request of the node will be below the MAP datum line feedback, thus guide the redundant resource node selection response to the demand, rather than the repetition and waste resources, and with the redundant nodes, for the demand of the resources, also is able to return to the MAP datum, makes the resources to provide node tends to be stable.

Like normal software, smart contracts require resources to execute and store their application data. The use of the processor and system memory is temporary and is only required for the execution of smart contract logic. Storage resources, on the other hand, are more permanent in nature. This distinction is the basis of the different types of intelligent contract resources in the system. The fuel quota (GQ) storage quota (SQ) is two important resources that need to be used in the MGP.

2.2.2.1 fuel quota (GQ)

The fuel quota is the instantaneous amount of system memory and processor speed required to perform the operation, depending on the smart contract logic being executed. The more complex the logic of the smart contract, the more memory and processing resources are consumed. A fuel quota is a reusable resource because memory and processor resources are freed once the contract logic execution ends, so there is no need for the user to permanently pay for the resource.

Users can get their share of the fuel quota by mortgaging the MGP, and the amount of fuel allocated will be proportional to the amount pledged. If the user decides to do anything with the smart contract, they must have sufficient fuel quotas to ensure that the operation is successful. In addition, a fixed amount of Gas quota will be allocated to users every day. MGP networks generally do not charge fees for most transactions, but due to system limitations and fairness, GQ usage and transactions are charged a fee.

Fees can be divided into the following categories:

1. Normal trade consumption fuel quota (GQ). Users can mortgage the MGP to get more quotas. When the fuel quota is insufficient, the MGP will be deducted directly from the sending account. The number of MGPS required is the number of bytes * 10.

2. Smart contracts cost storage quota (SQ), but also require fuel quota (GQ) to broadcast and confirm transactions. Bandwidth costs are the same as above.

3. MGP network has established a set of fixed charging standards for all chain operations.

2.2.2.2 storage quota (SQ)

Any reasonably complex smart contract application requires some user data to be stored in storage, and these resources in the software are called storage quotas. A storage quota is the amount of storage that the owner is allowed to use in various smart contracts. The software provides flexibility in determining resource payers for a given account, opening up the possibility for application developers to pay for storing their user data. Permanent storage quotas must be purchased in tokens.

Storage quotas are specified in memory units, such as bytes, kilobytes, or megabytes.
For quick access and performance reasons, the storage of account data has been separately categorized and maintained.

The storage quota (SQ) is used to store data in the blockchain. Users will need to sign up for a new MGP account with a storage quota (SQ), add information to their account (such as ownership of other MGP tokens), and DApp will use the storage quota (SQ) to store status information about their application for quick use when needed. In both cases, the storage quota (SQ) is used to store records on the MGP block chain.

The MGP is designed to handle millions of transactions per second, so it requires a superfast infrastructure that relies heavily on storage quotas (SQ). MGP SQ allocation algorithm is based on Bancor formula.

When you create a new account on the MGP, you should purchase some storage quota (SQ) to store the actual account details (such as account name and creation date). In the MGP, you need to pay to create a new account.

2.2.3 distributed storage

MGP-FS is a set of distributed storage protocols that take advantage of Distributed Hash Table technology. MGP-FS indexes data by file content (Hash) rather than file path (URI). Large files are divided into fixed-size chunks of data that are distributed across multiple nodes.

The main problem of this kind of system is to find a balance between redundancy and reliability. MGP-FS plans to solve this contradiction through token incentive mechanism and the establishment of backbone nodes. Users can select the reliability requirements of the files, the files with low reliability can be stored and accessed for free or almost free, and the files with high reliability will be provided with stable and reliable service by backbone nodes.

MGP-FS will be one of the Interop Service interoperability services under the Contract system, enabling smart contracts to store large files on the block chain and set access rights for those files.
In addition, MGP-FS can be combined with digital identities so that digital certificates recording digital identities can be issued, transmitted, and revoked point-to-point, without having to be managed by a centralized server.

In the future, old block data can be stored in the MGP-FS, so that most of the full nodes can release the old data, obtain higher scalability, and ensure the integrity of historical data.

2.2.4 Anti-quantum computing

In the current block-chain system represented by Bit-coin,SHA-256 hash calculation and ECDSA elliptic curve cipher constitute the most basic security guarantee of the Bit-coin system.But as quantum computer technology continues to make breakthroughs, especially the quantum algorithm typified by the Shaw algorithm,The related operation can theoretically achieve the transition from the exponential level to the polynomial level. These "difficult" problems for classical computers will surely be solved by practical quantum computers in the foreseeable future.

Encryption Algorithm	Type	effect	Impact of potential quantum computer capability threats
AES	Symmetric key	encryption	Increase the key length
SHA-2,SHA-3		Hash function	Need more output
RSA	Public key encryption	Digital signature key generation	Loss of security
ECDSA,ECDH (Elliptic Curve Password)	Public key encryption	Digital signature key generation	Loss of security
DSA (Finite Field Secret)	Public key encryption	Digital signature key generation	Loss of security

Figure 7Comparison of current encryption algorithms

Most of the existing block chain systems adopt ECDSA, However, SHOR attack algorithm, which is very efficient for ECDSA signature algorithm under quantum computer, SHOR algorithm is suitable for solving large integer decomposition, discrete logarithm inversion and other difficult mathematical problems, resulting in ECDSA signature algorithm is quite insecure

under quantum attack.

In consideration of the high security of digital currency transactions, MGP adopted the signature algorithm NTRUSign-251 based on lattice theory. The specific implementation process of the algorithm is as follows:

1. Key generation

Choose two polynomials f and g over ring R such that the number of 1's in the coefficients of f and g are df and dg, respectively. And calculate the public key based on f and g
h:h=Fq*(modq)
Solve the polynomial (F,G) to satisfy the equation f*G−F*g=q
And there are ||F||≈||f|| ,||G||≈||g||。

2. Signing process

The message M is HASH transformed into a polynomial (m1,m2), where the polynomials m1 and m2 are both a polynomial over ring Rq.

Calculate the polynomials A,B, A and B over the ring to satisfy:
G*m1−F*m2=A+q*B
−g*m1−f*m2=a+q*b

And we want the coefficients of A and A to be greater than - q/ 2 and - q / 2. Calculate the polynomial s:s=f*B+F*b(modq).
S is the signature calculated by using the public key h in plain text M.

3. Verification process
The message M is hash transformed into a polynomial (m1,m2), which is calculated by the signature s to be verified and the public key polynomial h:t=s*h(modq)
t=g*B+G*b(modq)

Calculate the distance between the polynomial (s,t) and the polynomial (m1,m2) ||m1−s||+||m2−t||. If the distance is greater than Norm Bound, the verification fails, otherwise the signature is validated.

Conclusion: the security of the signature algorithm finally known NTRUSign - 251 is equivalent to the shortest vector in a 502 - dimensional integer division problem, and the shortest vector of the problem is invalid under attack SHOR algorithm, also have no other solution under quantum computer fast algorithm, the best heuristic algorithm is exponentially, attack NTRUSign - 251 signature algorithm's time complexity is about 2168, so the NTRUSign - 251 algorithm MGP platform can resist quantum computing SHOR algorithm under attack.

2.2.5 Cross chain Operation

MGP proposed a block chain cross-chain transaction architecture -- interconnected chain, Including: interconnection chain architecture, interconnection chain consensus mechanism and transport protocol and interconnection chain privacy protection mechanism, to achieve

the interconnection between independent block chains, and to ensure the effectiveness of cross-chain transactions and the security of user privacy data.

The advantages of interconnected chains include:

1. It not only supports cross-chain operation between homogeneous block chains, but also supports cross-chain operation between heterogeneous block chains;

2. The cross-chain scenario is more abundant, which not only supports cross-chain transfer of a variety of digital assets, but also supports cross-chain operation between smart contracts and distributed applications in the future;

3. Provide a good privacy protection mechanism.

1. Interconnection chain architecture

In interconnected chain network, there are the following subjects:

(1) parallel chain nodes: block chains that communicate directly with interconnected chains are called parallel chains, and nodes running parallel chain programs are called parallel chain nodes.

(2) Interconnection chain nodes: nodes running interconnection chain program, including data receiving and receiving nodes and verification nodes.

(3) Data transmitter-receiver node: data transmitter-receiver node belongs to both parallel chain nodes and interconnected chain nodes. Its main function is to collect the transaction data within the parallel chain and transmit it to the verification node for verification.

(4) Verification node: the verification node is only in the interconnected chain. It is mainly responsible for obtaining the transaction data from the parallel chain, verifying the validity of the transaction, and synchronizing and consensus trading within the interconnected chain network.

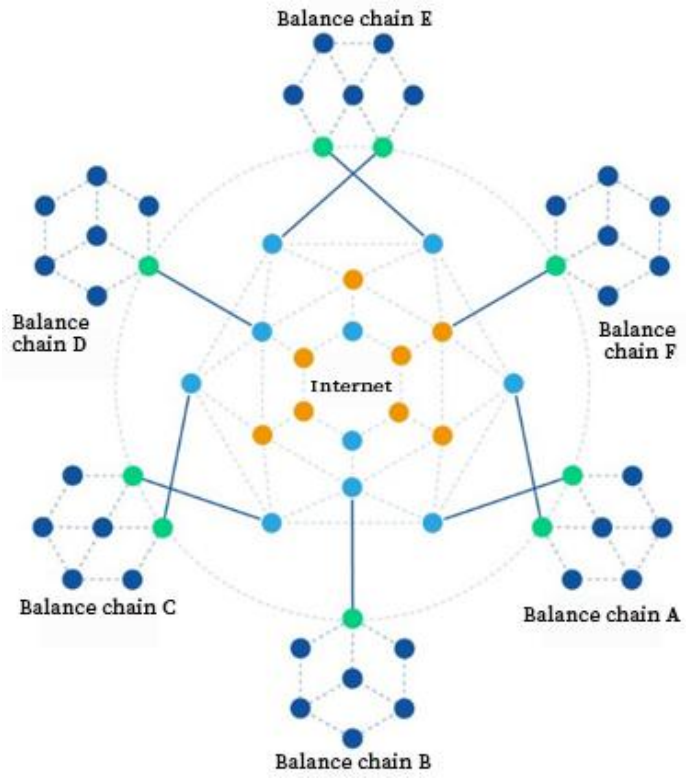

Figure 8 Architecture of the interconnected chain

Blockchains with the cross-chain feature can read each other's data records, Invoke the smart contract provided by the other party and complete the cross-chain transfer of digital assets, Cross-chain technology breaks down the barriers between different block chains, making cross-industry and cross-field value circulation a reality. It can be said that cross-chain technology "chain" woven into "network", is expected to create a global value network system.

2. Consensus and transmission of interconnected chains

The interconnection chain network will realize the interconnection between parallel chains. The interconnection chain, as an architecture that can access parallel chains, ensures a high transaction speed and matches the parallel chains with high transaction generation frequency, so as to timely forward the transactions from the parallel chains.
Interconnected chains maintain queue structures for data transfer between parallel block-chains.
Specifically, each parallel block chain contains an input/exit queue, and the interconnected chain places transactions on the output queue of a transaction initiator parallel block chain on the input queue of the destination address parallel block chain.

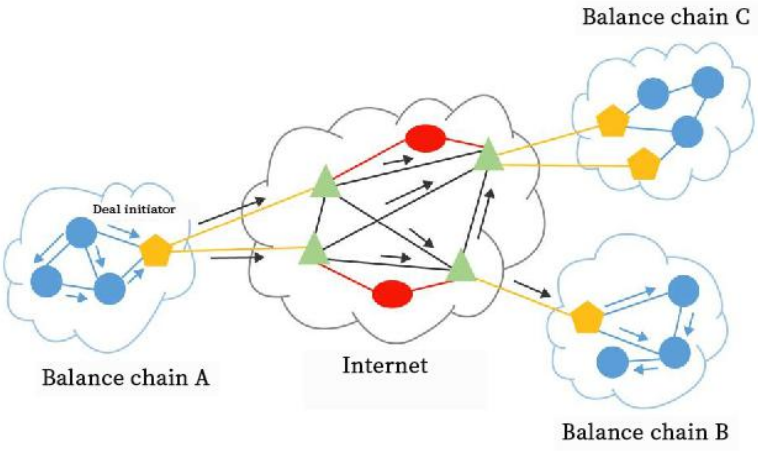

Figure 9Consensus and Transmission of Interlinked Chains

Any pair of parallel chains can be used as a bridge to complete cross-chain operation. Suppose parallel chain A initiates A cross-chain transaction with parallel chain B, the main steps are as follows:

(1) the initiator of A transaction with parallel chain A constructs A cross-chain transaction, in which the source chain, source account, destination chain, destination account and other information shall be declared. The initiator then broadcasts it to the network of parallel chain A, which agrees on the deal.

(2) because the cross-chain transaction is broadcast into the parallel chain network, the data transceiver node of parallel chain A can also receive the transaction. The data receiving and receiving nodes temporarily store the cross-chain transactions and their evidence in the outgoing queue, and then extract the cross-chain transactions and evidence from the outgoing queue in a specific order and frequency, and encapsulate them into a new transaction format supported by the interconnected chain.

(3) the data receiving and receiving nodes of parallel chain A broadcast the encapsulated cross-chain transaction to the interconnected chain network. Validate node validates cross-chain transaction validity. If it works, the transaction is written into the interconnected block-chain.

(4) since the data receiving and receiving nodes of parallel chain B are also in the interconnected chain network, it can also receive cross-chain transactions propagated in the interconnected chain network. Once the data transceiver node of parallel chain B recognizes the transaction of destination chain B, it constructs a new transaction conforming to the format of parallel chain B based on it, and stores it in its own queue temporarily. The transactions are then extracted from the incoming queue in a specific order and frequency and broadcast to the network of parallel chains B.

(5) the nodes of parallel chain B reach a consensus on the new transaction, and this consensus process belongs to the processing mode within parallel chain B.

The above steps illustrate how the two block-chains can conduct trans-chain transaction forwarding through interconnected chains. Based on this, the interconnected chain

architecture can complete trans-chain transfer, trans-chain smart contract invocation, trans-chain data sharing and other operations.

3. Privacy protection

MGP proposes a cross-chain transaction privacy protection method based on zkSNARK algorithm.
Zk-SNARK zero-knowledge proof algorithm is one of the relatively mature and feasible privacy protection technologies, with better anonymity. It does not need to trust the central node or the participation of other users in the network. Users can realize anonymous transactions by interacting with anonymous currencies, thus effectively protecting users' privacy.

As a carrier for forwarding and verifying cross-chain anonymous transactions, the interconnected chain needs to be able to verify the validity of cross-chain anonymous transactions.Cross-chain transactions are divided into two types: cross-chain transparent transactions and cross-chain anonymous transactions. The cross-chain transparent transaction provides the content of the transaction itself and related Merkle branch evidence. The verification nodes in the Internet chain network can verify the validity of the transaction according to the verification rules registered by the parallel block-chain.Anonymous cross-chain transactions will not reveal any information other than the validity of the transaction. Verification nodes in the Internet network need to know the public parameters generated during the start-up phase of each parallel block-chain network, and use these public parameters to verify the The effectiveness of cross-chain anonymous transactions in the block-chain, and the zero-knowledge proof algorithm ensures that the verification nodes in the interconnected network cannot know any information other than the validity of the cross-chain transaction.

2.2.6 Ring Signature

MGP realizes the anonymity of digital assets through ring signature technology. The ring signature technology is described as follows:

A common signature is shown below, with only one participant, allowing one-to-one mapping.

Figure 10 Normal Signature

The ring signature blurs the identity because it's just someone who belongs to a group but doesn't know who is in the group.

Figure 11 Ring Signature

This allows for a high degree of anonymity in virtual currency transactions, which can be thought of as a combination of decentralization and non-trust.

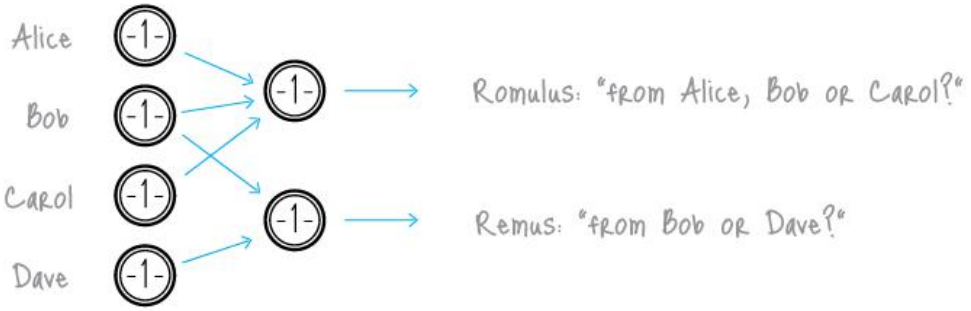

Figure 12 High Anonymity

In order to maintain anonymity, the MGP USES a disposable ring signature technique. Ring signatures allocate privacy by allowing the initiator of the transaction to join the group and then the transaction as a unit, rather than from a single private key signature.

This technique allows the originator to blend in. The validator can prove that the output exists and that one of the members of the group is the true signer. However, because each member has an equal probability weight, they cannot determine which group member the signer is. As the group size increases, the probability of each member becoming a true signer decreases.

Ring signatures, which involve merging the user's real hidden address P, and a large number of "dummy" P's scattered across the block chain. The signature is verified by all P's, and mathematically any corresponding private key can sign the transaction, confusing the identity of the real sender.

In order to prevent double spending (double spending means that the same money appears in two or more transactions at the same time), each MGP transaction has a unique key image. The key mirror is created by taking the hash of the hidden address P and multiplying it by the private key, which is different for each transaction. This mechanism ensures that each P can

only be used once. The MGP network maintains a database of all incomplete key images, so if the user tries to reuse the key, the network rejects the transaction.

2.2.7 Virtual Machine and Smart Contract

1. MGP virtual machine

MVM is a lightweight Turing complete virtual machine developed for the MGP ecosystem. It is a high-performance block-chain network dispenser, designed to provide efficient, convenient, stable, secure and scalable custom block-chain systems. .The concept of virtual machines explained in this white paper is narrow. It is not a simulation of physical machines through the operating system. In addition, MVM also supports DPoS consensus and uses the concept of SQ.But unlike the Gas mechanism on EVM, transaction operations and smart contracts on MVM are free and do not consume any MGP.Technically speaking, the executable computing power on MVM is not limited by the total number of tokens. The complete operation process is as follows:

1) compile the smart contract source code into bytecode.

2) push the byte-code and related parameters into the execution heap as the run context.

3) whenever the execution engine retrieves an instruction from the current context, it executes the instruction and stores the data in the computation stack and the temporary stack of the current context.

4) if external data needs to be accessed, it will use interoperable services.

5) after all scripts are executed, the results are saved on the results stack.

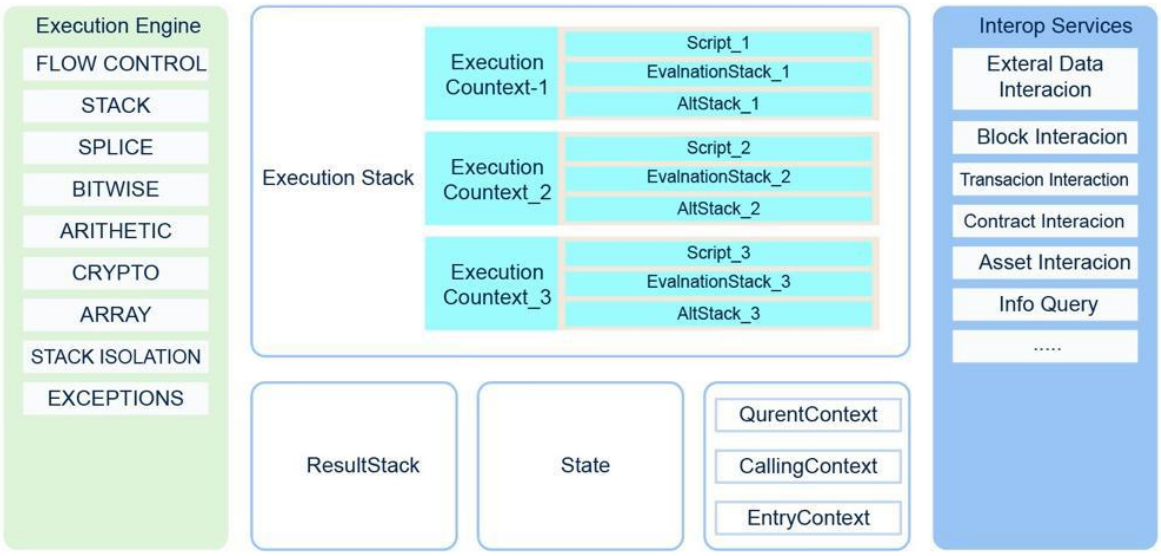

Figure 13 MVM Architecture diagram

2. MGP smart contract

The software supports the placement of executable scripts that can be associated with the user address.

The logic defined in the script can be executed on the Turing complete virtual machine, and the results can be stored on the blockchain as transactions. These scripts are defined as smart contracts, which can consist of business logic defined as licensed or open with different operations that can be invoked from other addresses.

The smart contracts are executed on a deterministic state machine that converts these scripts into WebAssembly byte-code. The software USES smart contracts in the form of WebAssembly byte-code, an emerging standard that has been adopted by industry leaders and the Internet community.

The software will execute the action byte-code and store the transaction results on the block-chain. Many programming languages can be compiled into WebAssembly, which will allow a larger development community to participate. Software development is an error-prone, bug-fixing process that requires attention to extreme situations and frequent debugging.

Smart contract writers may encounter inspection and validation issues. The software's execution engine has basic data types, including built-in protections that trigger and automatically terminate smart contract execution in many extreme cases. Effective resource management is the key to building high-performance block-chain applications. Parties to a block-chain network have a limited set of resources that are Shared among users, making it all the more important that block-chain applications operate effectively within their assigned specifications.

The execution tool for this software allows developers to better manage resource allocation by tracking the running execution of WebAssembly. This can be done by detecting the number of WebAssembly instructions that have been executed by built-in checking and stopping at a preset threshold. It is also possible to check the process that started but didn't finish within the set time-frame.

In addition, there is an external "monitor" that stops execution after a preset time, stopping some processes that have been delayed and cannot exit properly.

By partitioning the virtual machine and creating separate components, you can make the system highly adaptable to custom back-end tools, allowing newly defined logic to coexist with previously defined components. In addition, by following a simple coding process, it is relatively easy to build new extensions, and a set of powerful tools for profiling, debugging, and so on are available when needed.
Built-in protection paging mechanism for sandbox memory operations using CPU and core operating system security for memory protection. This mechanism allows for a wider deployment of native code functionality without the risk of a computer crash due to memory overload.

3. Business Value and Application

3.1 Community Ecology

Historical experience shows that every major change in economic form will inevitably lead to and depend on new factors of production. Just as the agricultural economic era takes labor and land as new production factors and the industrial economic era takes capital and technology as new production factors, in the digital economic era, data will become new key production factors and valuable data will become a scarce resource. However, due to the lack of cooperative mechanism of data sharing and exchange, it is easy to form an "island". To achieve a certain scale effect, digital economy must break through its own individual boundaries and get through internal and external data information. The connection of internal and external data information needs two conditions: first, the authenticity of data, effective performance is widely recognized; Second, the connotation of the data can be agreed to understand. Block chain technology can just solve these two problems. With the help of block chain to reshape the credit system, a high degree of information symmetry and true and effective consensus can be achieved.

MGP to "realize digital assets time value and use value" is the core idea, under the guidance of the core idea, the intrinsic value of the digital assets will become a reality, has the dual attributes of new financial products - both monetary payment functions, and asset value and function of trading, and, more importantly, digital assets can freely flow in the ecosystem. In this way, digital assets really come into reality and become a necessity in our lives.

In the traditional model, the flow range of digital assets can only be limited to the users of the asset side system (including through the agency channel system), because the whole flow process must rely on the asset ownership accounting function in the asset side system. In MGP mode, digital assets once registered on the block chain network, the corresponding private key user is assets "master", can move freely on the whole block chain network digital assets, because assets belongs to an account in the process of flow is implemented by the block chain network, asset ownership in the process of flow, neither more nor less, can not forge cannot be tampered with. This cross-domain mobility will bring new commercial and application value to digital assets.

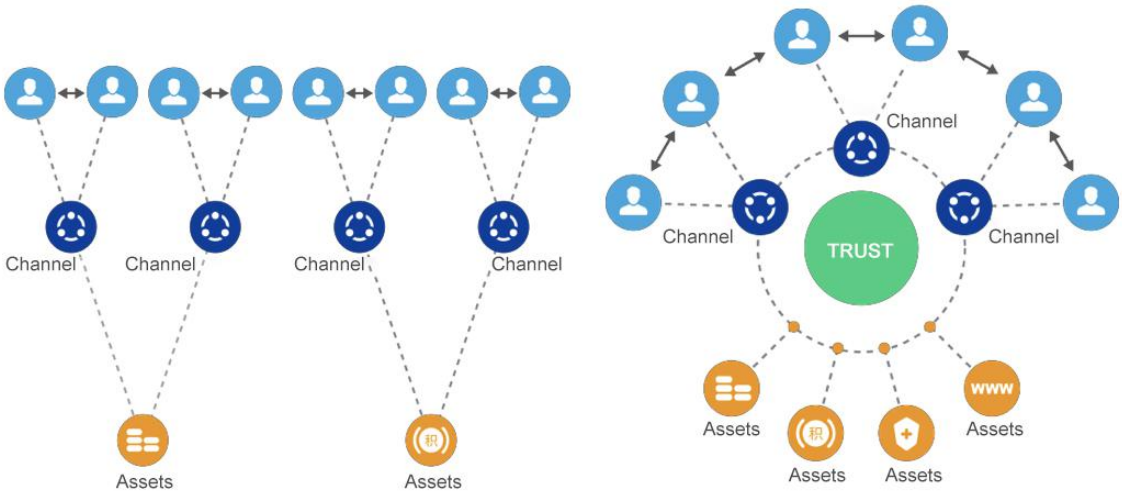

Figure 14Comparison of asset circulation models (left: traditional model; right: MGP model)

3.1.1 ecological functions and characteristics

MANGO Chain will create a digital economy ecological community. Range in the digital economy era, the user's economic activity is based on information and data, users of its own data and the degree of master of information advantages, but the rest of the world of information and data to master in a blank state, main body lack of trust and understanding between the user and the outside world, can't agreed to the authenticity and validity of data and information, so ecological digital economy requires to form a social credit system for all users.

MANGO Chain will take advantage of the non-tamper and open and transparent blockchain technology to reshape the credit system and improve the efficiency of digital economic activities. Specifically, MANGO Chain, as the infrastructure platform for the future digital economy, will provide the following three functions in the community ecology:

1. connect all service objects through the platform, collect and process data of all business transactions and scene activities, and provide payment and settlement functions;

2. provide service matching according to the needs of service objects, including matching of funds and assets and matching of value-added services;

3. connect with external service agencies to provide legal, accounting, consulting, credit enhancement and other services for users' economic activities.

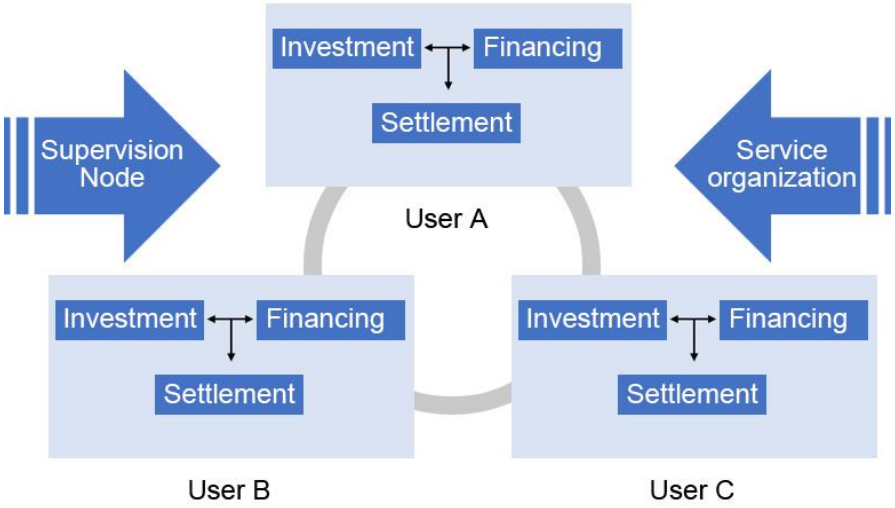

Figure 15Ecological Digital Economy Community

Therefore, the community ecology of MANGO Chain will present the following three characteristics:

(1) with a large number of participants, each user can independently complete the investment, financing, payment and settlement of digital assets and upchain assets and other economic activities within the community, so as to realize the scale effect;

(2) the transaction chain achieves a certain degree of information symmetry, enabling all community users to maximize their functions and values in the ecosystem on the premise of privacy and regulation;

(3) the reduction of service cost, based on the scale effect and information symmetry, can greatly reduce the cost of users to obtain services through the block chain technology.

3.1.2 Ecological Participants and Services

On MANGO Chain, digital assets and on-chain assets will be transferred in the ecological network system formed by all users, and any financing demand will be automatically matched with funds with the same risk and return preference in the ecological network. The same is true of capital, where an investment need can always be matched by an asset in an ecological network. When the network is large enough, the participants are large enough and the demands are diversified enough, capital and assets will be connected between users, the clearing and settlement of transactions will be popularized in the ecology, and the digital economy ecology of MANGO Chain will also form a good cycle.

In the MANGO Chain digital economy ecological community, there are three types of participants: users, infrastructure service providers and external service providers. Different types of participants have different roles, functions, rights and responsibilities and values in the digital economy ecosystem.

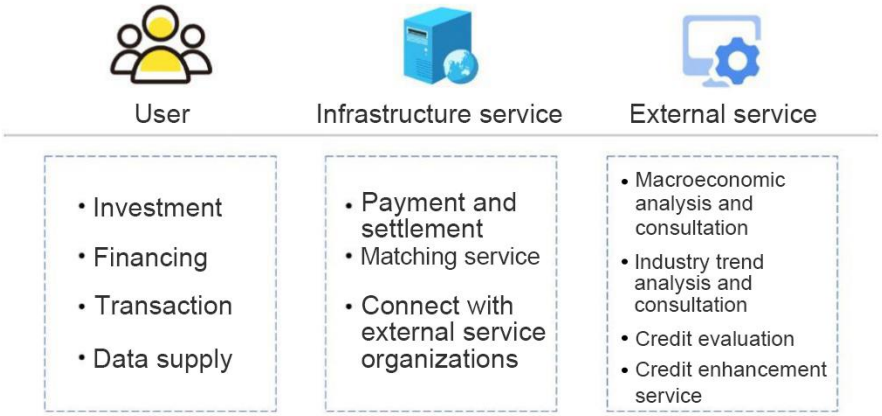

Figure 16 MGP Ecological participants of the MGP digital economy community

1. The User

Users are important participants in the ecosystem of the digital economy. On the one hand, users generate financing or investment needs in the ecosystem, use public chain infrastructure for matching transactions, and use value-added service tools to obtain greater value. On the other hand, users are the providers of data output. As the core production factors of digital economy, their data is crucial to the development of a higher level of digital economy ecology. To this end, MANGO Chain users generate demand, receive services, at the same time output data, improve the ecology. They are both participants and architects of the digital economy ecosystem.

2. Infrastructure Services

Infrastructure services play a central role in the digital economy ecosystem, and their main functions include: First, Connect all users through the public chain platform, provide payment and settlement functions, collect and process data of all business transactions and scene activities; The second is to provide matching services according to the needs of service objects, including the matching of funds and assets, the provision of value-added services, etc. The third is to connect with external service agencies to provide legal, accounting, credit investigation, consulting and other activities. On MANGO Chain, MANGO is responsible for providing payment clearing and settlement service (bottom Chain); Developers mainly develop related service products on the smart contract (contract platform) to meet the requirements of various complex application scenarios.

3. External Service
In the future, MANGO Chain will connect with external service providers to provide professional and personalized services for users in the community.

The contents of Ecological Services mainly include the following Three Categories:

Value-added services
In the era of digital economy, value-added services are mainly represented by consulting services and information services, including macroeconomic analysis consulting services, industry trend analysis consulting services, credit rating information services, etc. The application scenarios of the above value-added services are extensive and far-reaching.
In the future, when stocks, bonds, bulk commodities, real estate and other assets are traded

up the Chain, MANGO Chain will be connected to macro analysis consulting institutions to provide users with asset allocation consulting services and financing program guidance services. At the same time, we provide industry trend analysis and consulting services for this emerging industry, accurately analyze the upstream and downstream situation of the industry, and timely grasp consumer information. In addition, with the expansion of the scale of digital assets, the risk and return of different digital assets are quite different, so MANGO Chain will also introduce corresponding digital asset rating agencies to improve the digital asset rating system.

Credit service
No matter in the business environment with incomplete or highly symmetric information, risk always exists, but the degree of risk and the probability of default are different. For this reason, MANGO Chain will introduce credit adding agencies such as insurance companies to provide credit adding services, and provide guarantees for users' trading activities, investment and financing activities, so as to promote the development of community ecology.

Compliance services
Digital assets compliance is the inevitable trend of future development. Relying on the network, digital assets are inherently globally liquid, but regulatory requirements vary greatly between countries and regions. Therefore, MANGO Chain will also access professional law firms and accounting firms to provide legal compliance and audit compliance services for users in need.

3.1.3 Application Scenario Conception

With the development of social economy, more enterprises or individuals will participate in digital economy activities in the future. MANGO Chain will provide a standardized and large-scale platform to help users obtain all kinds of digital economy information services at a low cost under the condition of disinter-mediation.
We will open the community construction ecology: include a chain of the sustainable development to provide technical support for chain team community, an ecological development fund management oriented community, an infinite creativity and product, and a geek technology application of the open source community, a provide service for users and members of the community, we will continue to open when there is a need to set up and the introduction of a new community ecology; We will support the public chain team community based on the ecological fund community, incubate the application community and manage the service community, so that more teams can develop more practical applications based on the MANGO Chain. Meanwhile, we will guide the direction based on the future community development, and actively incubate some projects to support the ecological prosperity.

Including but not limited to supporting the following application scenarios and ecological development:

- On-chain asset transaction liquidation (payment transaction and investment integration on-chain)
- On-chain games and entertainment (providing Internet-level services)
- MBTC and reserve requirements (let BTC flow)
- Wancheng membership card and MGP member community (sharing benefits with the community)
- MGP credit card (lock-up -- credit limit; Super-node - issue credit card)

- MGP mobile phone (5G block chain mobile phone)
- MGP miner (super-node; Force sharing)
- MGP bank (credit/card issuing/financial management/lock-up (savings) and other functions)
- MGP insurance (We-chat Alipay insurance, such as micro insurance, and MGPC insurance, digital insurance) and trust (for high net worth customers; Quantitative resource support)
- MANGO Credit is a two-way Credit
- MANGO promotion planet

3.2. New Compliance Token

3.2.1. New Compliance Token Technical Scheme

Based on the ecology, MANGO Chain will focus on creating a new compliance token MGP:

- MGP as the basic Token of ecology;
- MGP can be divided into two forms: TOKEN and real COIN. The TOKEN issued before the main network goes online is TOKEN, while the COIN issued after the main network goes online is COIN. The rights of token currency are the same;
- Establish an issuance model of MGP and MBTC. MBTC 1: 1 benchmarks BTC real-time prices. MBTC will set up a 1: 1 BTC reserve system and provide related guarantees through MGP.
- MBTC can realize instantaneous transfer of 0 fees and provide real-time price calculation for MGP.

3.2.1 New Token Contract Standard

On the market at present there are mainly represented by ERC - 20 standard homogeneous access token (Fungible Token) and represented by ERC - 721 standard of Non homogeneous access token (Non - Fungible Token).
The general token produced by the former are all the same, can be exchanged at will, split and integrated; The general token produced by the latter is unique and irreplaceable. However, neither of the above two contract standards can be applied to the needs of various types of asset chain business in the digital economy era. The reason is that although the pass-through represents the same underlying asset, it requires differentiated data related to it, which implicitly requires that the pass-through cannot be replaced among different subsets, so it requires that the pass-through has characteristics between homogeneity and non-homogeneity.

3.2.1.1 Stage 1: mgc-10

In the first stage, MANGO Chain will refer to ERC1404 Standard to develop a less difficult

pass-through Standard -- Simple Restricted Token Standard. The pass-through Standard can be Restricted according to address, allowing issuers to implement supervision and restrictions on transfer, and initially meeting the basic requirements of the pass-through issuance of compliance assets.

From a technical point of view, the new general standard is consistent with ERC20 standard in basic function interface, but two new functions will be added:

- Detect Transfer Transfer: this function is the Restriction logic that the issuer enforces for the Transfer of the pass, such as the ability to verify that the pass recipient is on the white list, that the pass of the sender is frozen during the lockup period, or that it is subject to sale restrictions by relevant laws, etc. The function implementation is for the publisher only, and a third party can call the function publicly to check the expected results of the transition.
- Message For Transfer Transfer: this function is a "Message" accessor that explains why a transaction is restricted in a human-readable way. Through canonical message look-up, the developer authorizes the user interface builder to report errors to the user.

Each account in the MGP network can issue MGC-10 tokens, but it will cost 1024 MGP coins. In order to issue a token, the issuer needs to determine the token name, total capital, exchange rate with MGP, circulation time, description, official website, maximum bandwidth consumption per account, total bandwidth consumption, and the number of tokens locked.

Each token issue can be configured with a maximum daily token transfer Gas quota for each account, the maximum daily token transfer Gas quota for the entire network, the total token supply, as well as the lock duration on a daily basis and the total token amount for the lock.

3.2.1.2 Phase Two: MGC-20In the second stage

MANGO Chain will develop a COIN suitable for public chain operation according to the rules of the public chain.MGC-20 is a technical standard for smart contracts that execute tokens supported by the MGP virtual machine.From a developer's perspective, there are some differences between MGC-10 and MGC-20.

The key difference is that API and smart contracts can access MGC-10 tokens, while MGC-20 tokens allow interface customization, but can only be accessed within smart contracts.

From a cost perspective, the transaction cost of the MGC-10 token is 1,000 times that of the MGC-20, but it includes the bandwidth cost of API transmission and storage. The transfer and deposit of MGC-10 tokens in smart contracts will cost GQ and SQ at the same time.

3.2.2. Token Economy Design

The number of initial releases cannot be fixed, as it depends on the various tasks to be completed and the ownership / locking period of the various tasks / holders. But we can get the maximum initial release number.
For us, nearly 32% of the total supply (160 million, a total of 500 million) can be the best upper limit for the initial release.

The initial version will depend on how many tokens are to be retained and for what purpose, depending on the purpose of the reserve, these tokens may need to be locked (for example, we can reserve tokens for development funds, airdrops, etc).Then lock development to retain

tokens and release them regularly when needed, it all depends on the goal and direction of this project. In addition, for the control of the token management decision, it must be implemented as the muti-signature authority of the producer node.

Therefore, we make the following plans to meet the needs of phased development of the project:

- Strategic financing of currency shares with the same rights (8%) :

We do not raise funds from the public, and this part of Token is sold to angel investors. This part of subscription funds will be used for the fund before the main chain of the project is launched.

- Ecological fund pool (10%) :

Due to abundant funds and strong team capabilities, the public chain will be put online quickly, and 10% Token will be used to support the construction of public chain ecology. The use of this part of funds will be separated from the traditional public chain foundation mode, managed and invested by community committees composed of super nodes and so on, so as to truly realize the autonomy of the public chain.

- Operating expenses pool (2%) :

This is the premise for the use of corporate chain funds. Faced with the complex market and the community and various institutional media that support us, including the fees and deposits to be paid by listing to a better exchange, we plan to use 2% Token for this.

- Team reward pool (10%) :

We plan to team rewards can be divided into two parts, one part is curing the reward of about 10%, this section will lock up two years (from July 30, 2019, due to July 29, 2021), 2% of them as a chain of online rewards, the remaining 8% unlocked once every six months, January 29, 2020 2%, respectively, on July 29, 2020 2%, 2% on January 29, 2021, 2021 on July 29, 2%; The second part of the reward will be put into the continuous promotion of the development of the chain to reward;

- Chain reward and pool (70%) :

This Token will be used to reward voters and miners and will be distributed to community contributors through DPOS algorithm and MGP mining algorithm. For each reward block generated or distributed, 7% goes to the team and 7% to the eco-fund.

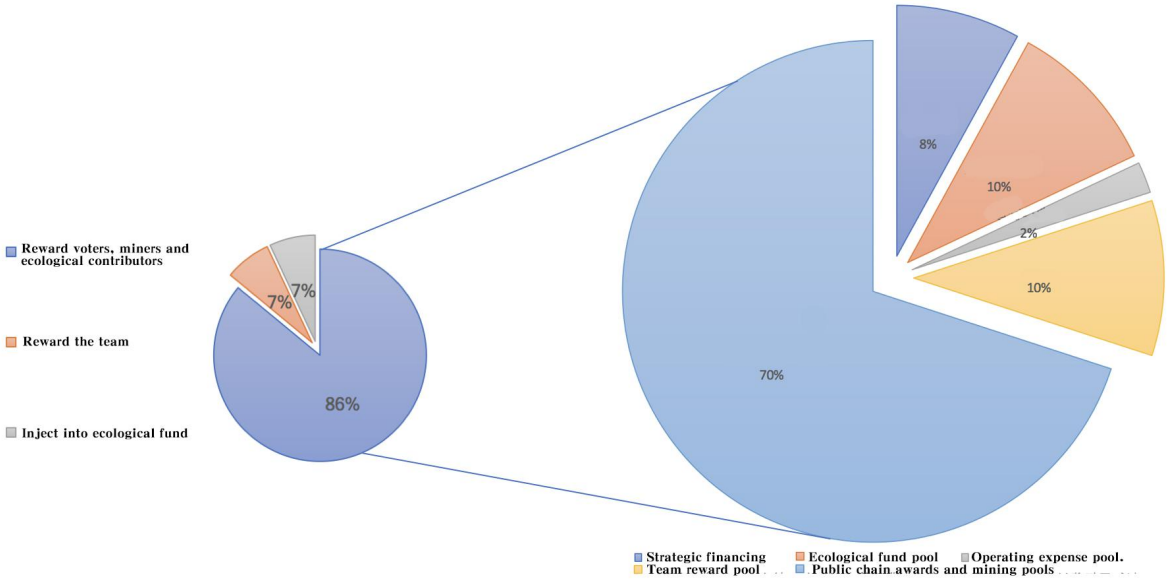

Figure 17 Token Economy Design

3.2.3 Attribution Mechanism -- COINS will be controlled by the muti-signature permission of the block producer node

Since our pass-through production process will be implemented using the system pass-through contract, the contract will be controlled by the muti-signature authority of the producer node (over 2/3 of the producers). In the origin phase of the block-chain, the first transaction can be the issuance of the initial token, followed by subsequent transactions to retain/lock them on the main system token contract for different purposes. The reward system can also be easily woven into the contract itself, checking the number of squares produced and halving the reward.

Therefore, when a transfer operation is invoked on this system pass contract, any pass transfer will actually occur. This architecture implements the core functionality as a system contract controlled by the block-generated nodes, which allows for unlimited scalability and changes that can be made to the protocol itself without the need for substantial allocations by simply modifying the contract.
As a result, the agreement has become more universal, more tolerant, more democratic, and supports periodic revisions out of the box.

3.3. Basic Application Scenario

3.3.1. Liquidation of On-chain Asset Transactions

The most important function of MANGO Chain is transaction settlement. At the same time, the cross-chain settlement we have implemented will bring about a new type of public chain innovation. For this reason, MANGO Chain technically increases the

transparency of transactions and reduces the cost of users' trust through the way of transactions on the chain; the introduction of supervisory nodes to conduct transaction tracking and asset tracing to prevent illegal transactions; meanwhile, in order to ensure transaction speed, MANGO Chain also designs a unique new DAG structure to truly improve TPS performance to process transactions.

- Offer MGP payments: MGP payments is the latest way to accept payments in crypt-currencies from around the world. Merchants can use MGP Pay to accept bit-coin and other crypt-currencies, gaining new customers and avoiding high fees and refunds. From installation to settlement, MGP payments make it easy to accept these payments.

- Support for multiple devices: MGP Pay can be used by users using iOS and Android apps, and merchants can accept block chain payments on multiple devices through the MGP Pay Checkout app.

- No price volatility: MGP Pay insulates you from price fluctuations in bit-coin and bit-coin cash, minus a fixed fee of 1%.

- Fast bank settlement: MGP Pay allows you to transfer funds to your bank account through its trading partners, enabling encryption to build legal Bridges in more than 50 countries.

- MGP investment: the MGP investment platform allows you to invest in crypt-currencies by automatically investing and saving spare change from your daily credit or debit card purchases into MGP Pay. Save money while you spend it.

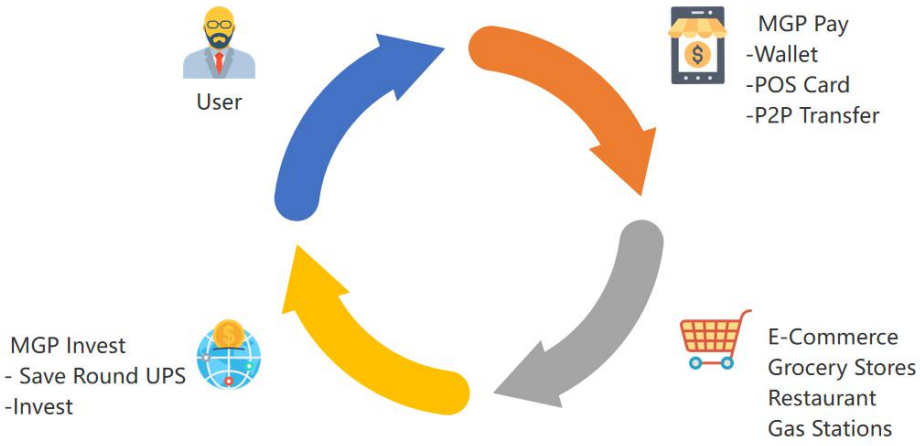

Figure 18 MGP Schematic diagram of transaction settlement on the MGP chain

3.3.2. MBTC and Reserve Requirements

Bit-coin is an innovative payment network and new currency that is faster and cheaper than any other traditional method of sending money internationally, but it still has its limitations. For example, bit-coin charges a fixed fee per transaction, so when the amount transferred is small, the rate is high and the time to complete the transaction is measured in minutes. Many projects have tried to build a faster payment mechanism than bit-coin, but have so far failed, because even though bit-coin is not the fastest and cheapest crypt-currency transfer method, it is the most trusted and stable, and they cannot compete with the credibility of bit-coin. MBTC is a token based on MGP chain, which has the reliability and stability of bit-coin, and can solve the problem of speed and cost. We are going to have really fast transfers across borders and chains.

1. MBTC is a stable currency and the price is anchored to BTC. For every mBTC in the market, we have 1:1 bit-coin reserves stored in the corporate bank as collateral.

2. The transaction cost of mBTC will be a small part of that of BTC (transfer fee can be deducted by MGP), and the transaction speed will be 50 times faster than BTC, enabling faster transfer and larger transfer.

3. MBTC will realize the global exchange of stable COINS. Even in the face of active issuance of stable COINS by various countries, MGP will provide exchange business for global stable COINS of enterprises and individuals.

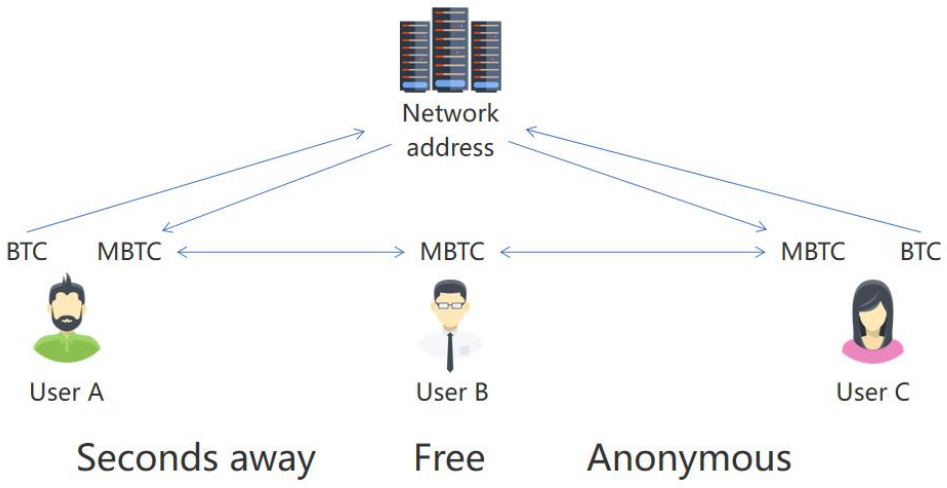

Figure 19 mBTC Transfer diagram

3.3.3. MGP Super-node Application

MANGO Chain adopts DPoS mechanism, and the super-node provides network, storage and computing infrastructure, and is responsible for transaction verification, transaction accounting, block packaging and confirmation of MANGO Chain network. Super-nodes will receive rewards for successfully packaging blocks and will also be subject to oversight by the MANGO Chain community.

3.3.4. Wancheng Membership card and MGP Member Community

MBTC is an encrypted digital currency circulating around the world, and MGP will work with supermarkets, hotels and other institutions in a number of countries to issue physical membership CARDS to holders.

- The MGP membership card can be used to collect and pay at partner merchants online and offline. It can realize direct credit card shopping at signing units, rebates and discounts through consumption, and direct MGP and fiat currency exchange and credit card functions.
- MGP membership card is a status symbol (you can apply for free MGP membership card to the community if you have 1000 mBTC), and you will enjoy different rights and treatment according to the total number of positions, the level of membership card conversion.
- MGP membership card can also be understood as a debit card, the user can through the client MGP financial and credit services.

3.3.5. MGP Game Entertainment

As the most successful application of the block chain, MANGO will continue to introduce and cooperate with games, and will also launch global video and audio entertainment based on copyright.

- FORM3D games.
- Boutique mini games.
- MMORPG games.
- MGP chain library video.
- M small video platform

3.3.6. AI Smart Contract Platform

MANGO innovatively released an AI smart contract platform, which introduced AI smart technology in terms of contract security detection, automatic correction, security alarms, parameter settings, compliance supervision, etc., to truly make smart contracts intelligent and achieve the following functions:

• One-click winding
• One-click financing
• One-click trading
• One-click promotion
• One-click participation

3.4. Advanced Application Scenarios

3.4.1. MGP Bank

On the basis of MGP investment community, MGP membership card and credit card, the community management committee will choose the opportunity to set up MGP ecological bank and invite the whole community to participate by means of reserve fund, which will truly realize virtual digital bank on the chain. No community members will provide paid inclusive financial services, but no legal currency financial services.

The ecological fund will take the initiative to invest and hold the shares of some Banks. Meanwhile, as a part of the ecological application, the bank will have about 5% of the profits by default belonging to the ecological fund, which only has the right to share profits without voting rights.

3.4.2. MGP Credit Card and POS payment

Unlike membership cards, MGP credit cards are issued by Super Nodes. Super Nodes can issue different types of credit cards based on the number of MGPs they have locked up. The applicant's MGP locks the credit guarantee.

- The maximum overdraft is 80% of the total value of the MGP lock warehouse. If the overdraft exceeds 80% or the total value of the MGP is less than 80%, the cardholder will be required to make up the difference within three working days (MBTC overdraft and legal currency overdraft can be realized); The amount of lock-up is equal to the credit limit.

- Return monthly, and pay late fee for delay. Over 15 days in arrears or less than 80% of the total value, the lock-up MAP will be auctioned to repay the super-node.

- Merchants pay credit card handling fees, handling fees and late fees to repurchase MGP, in which the ecological fund enjoys 20% revenue, and the super-node enjoys 80% revenue.

We will issue POS machines based on the MGP system and sign up with global merchants for

offline POS networking to achieve the lowest handling fees and the widest use, and support multiple digital currency transactions:

- Cooperative payment is parallel to POS payment, supports the construction of individual POS nodes, supports the construction of community POS nodes, and supports the construction of self-operated POS of super nodes;
-
- Support POS member payment discounts, support members' code payment and face payment;
- Part of the POS fee will be credited to the ecological fund to support ecological development;
- POS will support multiple authentication of digital currency payments based on public chains and cooperative cross-chains.

3.4.3. MANGO Promotion of the Planet

The Internet giants have made a lot of money by buying and selling unfair access to data, while publishers and copyright holders have not benefited as much as they should have, and the system is rife with AD fraud. We should have a fair Internet, and as users, our access to network activities and data should be sold to the highest bidder, because information on any chain is valuable. So we've redefined the browser to give power back to the average user, with unmatched speed, security, and privacy by blocking trackers. Get paid for choosing to enter our privacy-respecting ads and help publishers return their fair share of Internet revenue.

We provide a fully decentralized MGP browser for users worldwide who use MGP Coin, allowing most users to control 100% of the Data's private and anonymous. Users can choose to turn on MGP rewards and receive MGP tokens to share data with content creators and to view ads that respect privacy. The MGP downloads the entire AD catalog and selects the ads that fit the user locally on the device. When users see MGP selected ads, they will receive 80 percent of the advertiser's guaranteed payment. MGP ads look like system notifications. They don't distract or distract others, and they don't get mixed up with the pages you're reading online.And while these ads are completely private, your personal information, browsing history, or anything else won't leave your device, the MGP browser will block other intrusive ads by default.Users can also set the number of ads they see per hour, or they can use the MGP ecosystem to save, consume, or trade.

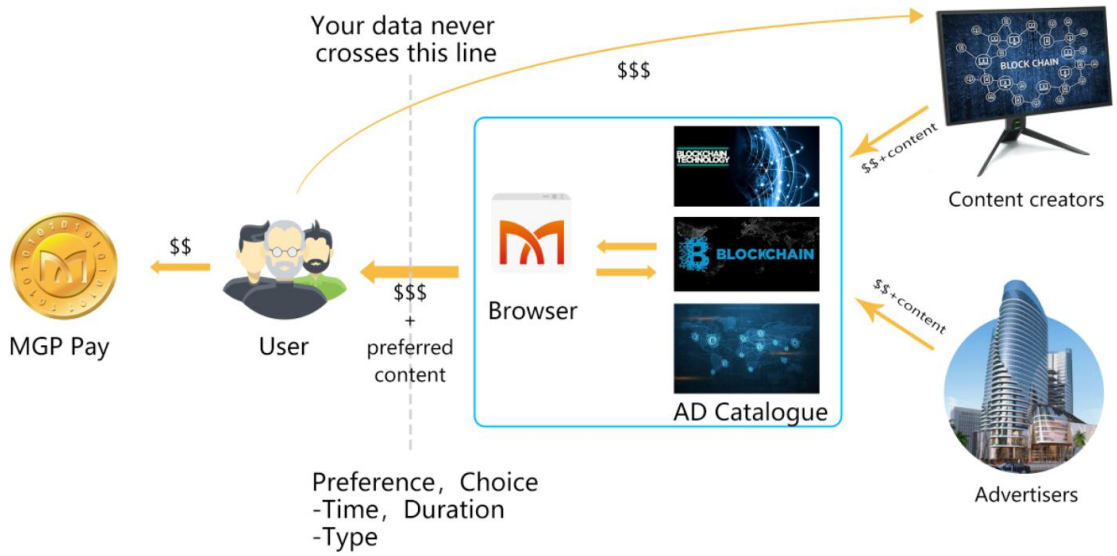

Figure 20 Schematic diagram of the Mango promotion planet

3.4.4. MANGO Credit Two-way Loans

MANGO Chain will provide legal assets and digital assets two-way mortgage lending business. We will combine the strengths of DEFI and MANGGO CHAIN to develop a new two-way lending business -- MANGO Credit:

- Provide fiat currency loans to digital currency borrowers;
- Provide digital currency loans to fiat currency borrowers;
- Provide fiat currency loans to fiat currency borrowers;
- Provide digital currency loans to digital currency debit loans.

Withdrawal rules:

- All loan guarantees and deposit and withdrawal borrowers can choose legal currency (equivalent legal currency of other countries) or MGP / MBTC as the return unit;
- All loan guarantees and deposit and withdrawal lenders can choose legal currency (equivalent legal currency of other countries) or MGP / MBTC as the unit of use;
- As an ecological application, MANGO Credit only charges accumulated debits and accumulated lenders based on membership card levels, which is far lower than P2P fees;
- At the same time, based on the identity verification and trust system of MANGO CHAIN, we will give members a certain amount of unsecured credit for free.

Take digital currency lending as an example:

In other words, the borrower USES the digital currency in hand as collateral to borrow money from the lender. After the two parties determine the loan amount, pledge rate, interest rate and other contract details, the borrower can pledge digital assets in the smart contract and obtain the loan. When the loan ends, the smart contract triggers the completion of the contract according to different conditions.

- Determination of pledge rate

The pledge rate is simply understood as “discount”. The mortgage of digital assets will be lent according to the current digital asset price multiplied by a certain ratio. This ratio is called the "pledge rate". According to the liquidity and market value of digital assets,
When MANGO Chain provides digital asset pledge loan services, it refers to the following benchmark pledge rates:
A. The pledge rate of stable-coins (such as USDT, GUSD) is 80%;
B. The pledge rate of mainstream currencies (including only two digital currencies including BTC and ETH, including MBTC) is 70%;
C. The pledge rate of the top 10 digital currencies (excluding BTC, ETH, and stable-coins) is 60%;
D. The pledge rate of the top 10 to the top 15 digital currency is 50%;
E. MGP's pledge rate is 80%;
F. The pledge rate is directly proportional to the lock MGP.
The digital currency ranking is updated once a week, and the pledge rate is determined according to the ranking of Monday.

- Collateral management

MANGO Chain will develop relevant smart contract management digital assets that are mortgaged. In the management, the two most important indicators are the warning line and hiragata line. The smart contract will recalculate the value of the collateral according to the market price. When the value of the collateral falls to the warning line agreed by both parties, the smart contract will automatically issue a margin call for the borrower to provide additional collateral so that the value of the collateral is higher than the warning line.When the value of the collateral falls to the agreed margin, the smart contract terminates the contract early and clears the collateral.

- Digital asset financing cost pricing

MANGO Chain's digital asset mortgage business, upholding the principle of fairness and openness, will give certain reference standard pricing to the digital asset financing rate. Generally, the financing cost of a digital asset mortgage consists of three parts: repurchase price margin (interest), transaction fee, and pledge registration fee. The latter two will be charged by MANGO Chain, while the repurchase price margin will be determined by the risk premium of similar products and the transaction term, including the active willingness of the lender, which will be completely attributed to the lender. While MBTC/MGP guarantee or MGP loan is not charged transaction fee; The pledge registration fee is a fixed fee charged by the public chain ecology according to the ecological form, and only MGP is charged. The specific pricing method is shown in the following figure. The benchmark interest rate will refer to the benchmark interest rate of the bank loan in the same month of the loan. The risk premium is determined according to the risk of digital assets in different periods and the lender's intention.

Time limit	Bank rate	Risk premium	Interest	Service Charge	Financing interest rate
Within 6 months	A1	B	A1+B	C	A1+B+C
Within 6~12 months	A2	B	A2+B	C	A2+B+C
1~3 years	A3	B	A3+B	C	A3+B+C
3~5 years	A4	B	A4+B	C	A4+B+C
More than 5 years	A5	B	A5+B	C	A5+B+C

Figure 21Financing cost pricing reference

3.4.5.MGP Miner

In order to reward ecological development, MGP has three incentive means to continuously stimulate community development:

- Rewards for super-nodes that provide force support;
- Rewards for Eco-builders, including technical teams and community managers;
- Reward for expanding the scale of calculation force, support the issue and incentive of MGP miner.

MGP miners are divided into mobile hardware mining and virtual computing power mining:

- Mobile phone hardware mining: there are two parts of the computing power subsidy, the first part of the mobile computing power increase subsidies, and the second part of the super node voting subsidies;
- Virtual computing power mining: It can provide a model of computing power per unit of investment. Mining is free and flexible, but it can only join super nodes to get voting subsidies.

3.4.6.MGP 5G Block-chain Phone

The encryption and financial attributes of the block chain will be perfectly combined with the future of 5G mobile phones. We will jointly launch 5G "MANGO" mobile phones with well-known mobile phone manufacturers in China and Japan to open the MANGO mobile phone, the MGP global communication service.

- Price range: 100-300USDT, can be purchased with MGP and MBTC;
- Hardware indicators: safety, speed, and portability;
- Software indicators: encrypted calls, 5G networks, digital banking, secure wallets, unique identification, support for MGP mining, and support for MGP computing mall;
- Package choices: lock mobile phone, deposit phone calls, enjoy global traffic, and high-end customized mobile phones.

3.4.7. MGP Insurance and Trust

Insurance is a stable financial product. We accept MGP and MTBC insurance. We will learn the model of mutual treasure and Weibao and cooperate with world-renowned insurance companies to provide localized insurance and claim services to all community members based on country and region, and provide basic insurance services, including accident insurance and auto insurance, to members all over the world.

Trust is the guarantee of family and business, we mainly focus on digital currency and traditional asset management field for high yield trust management, providing community super-nodes and high net worth customers with one-to-one VIP family trust and enterprise trust services.In addition to the standard trust product service of 5/10/20/50 years, we will also customize the exclusive digital asset quantified trust product of less than 5 years based on user needs.

3.5. Ecological intelligent risk control system

In the era of digital economy, data is the core of financial application, and most financial products are carried out around data. Risk is the core element of finance, and risk control depends on the amount of data. Risk management refers to the process of minimizing potential risks in a project. With the increase in the volume and complexity of financial products, the requirements for risk control are also gradually increased, and the scope of management also covers the issuance and circulation of financial products. The Basel agreement classifies risks into three categories: market risk, credit risk and operational risk.

As an innovative product of modern finance, block chain finance is characterized by high risk and high return, which also means more rigorous requirements for risk management. MANGO Chain will also introduce AI and big data technology to provide the final risk control support and post-investment supervision service for the whole community ecology. The data on the chain can not be tampered with and open and transparent better ensure the authenticity and consistency of the input data in the financial risk control model.

Specifically, MANGO Chain will develop an intelligent rating system for project risk control to evaluate the risk of the project. The product design will also be adjusted based on the data of intelligent evaluation. The design of digital asset derivatives will also take full account of the risk factors to maximize the protection of investors' rights and interests; The architecture design of MANGO Chain will also use the risk control system to evaluate the security and operational risk of the system.

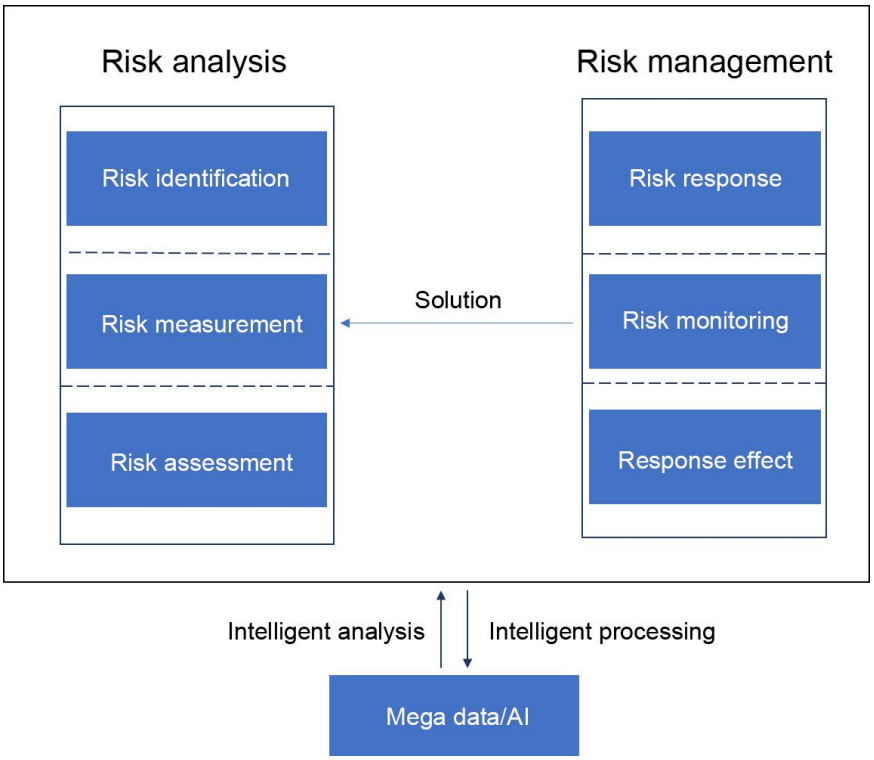

Figure 22 MANGO Chain risk control model

4. Autonomous Consensus Community Governance

4.1. Community Autonomy Builds Consensus

4.1.1 Community consensus

High-quality community governance mechanisms can gather internal forces, promote their own development and attract external support. A comprehensive study of the global block chain community, a successful block chain community governance model needs to do the following:

First, to establish and improve the incentive mechanism of the community. Only when enough incentives are given to community members can positive feedback be formed to attract more community members to join. In the block-chain community, the common incentive mechanism is "mining" activities.Therefore, in order to improve the enthusiasm of community members, the benefits of super nodes must be fully guaranteed in the design of community governance.

The Second is full "community autonomy". The concept of "community autonomy" has become the "consensus" of the block Chain community. However, in the practice process, many block Chain communities are to a large extent led by the project side. In order to fully implement block Chain community autonomy, MANGO Chain will adopt the model of distributed community and be independently established by community members through voting.

The Third is to practice "code as law". MANGO Chain will write the basic rules of community governance into smart contracts, which will be executed automatically by the system, and ensure the consistency and stability of community rules through reasonable allocation of governance rights.
Major events and strategic decisions in the Chain ecology are decided by all the holders of the MANGO Chain through consultation and voting. MANGO Chain's governance plan will also be gradually improved according to the requirements of different stages of community development.

4.1.2 Community Committees Maintain Consensus

MANGO Chain will form a community committee consisting of a public chain team community, an ecological fund community, an application technology community (technology + open source), and an MGP member community. The community committee is responsible for manual management functions, responsible for on-chain maintenance and off-chain governance. Jointly manage the community, manage the public chain ecology, and guide the development of the entire community.

Rules for the election of executive members of community committees:

- The super-node represents 21% and has 21 votes, one commissioner or vote per node

- The technical side of the chain represents 30%, with 30 committee members or votes;
- The ecological representatives of each chain are 20%, and there are 20 committee members or votes, which are equally distributed according to all ecological compliance
- Representing 20% of early investors with 20 committee members or votes;
- Community certification of large v9%; There are 9 committee members or votes.

(Note: More than half of MGP token holders can change the election rules, and more than 5% of MGP holders can propose to launch a community-wide referendum at the cost of the sponsor.)

The chief executive of the executive committee is responsible for the overall management. Meanwhile, the chief executive of the eco-fund community, the chief executive of the applied technology community and the chief executive of the MGP member community are elected as the leaders of the three communities. The chief executive officer shall be responsible for convening meetings or initiating votes in case of problems requiring decision making. Daily meetings can be held online and annual offline meetings can be held regularly every year.

Community committee organizations and members have fixed office expenses and incentive rules. The fee and incentive forms are as follows:

Community Committee Organization Fee and Incentive Form (subject to community vote)			
Community roles	Fee MGP/Per month	Incentive Reward MGP/Per month	allocation
Community committee	20000		fixed
Public chain team community	5000	2%*Community monthly profit	CEO in charge
Eco-fund community	2000	2%*Community monthly profit	CEO in charge
Applied technology community	2000	2%*Community monthly profit	CEO in charge
MGP member community	2000	2%*Community monthly profit	CEO in charge
Chief executive	2000	1%* Total profit	Monthly distribution
executive	2000	0.5%*Total profit	Monthly distribution
The executive committee of	5000	1%*Total profit	Divide equally by number of people

Figure 23Community Committee Institutional Fees and Incentives Form

4.2. On-chain Governance

4.2.1. Node Autonomy

MANGO Chain adopts DPoS mechanism, and the super-node provides network, storage and computing infrastructure, and is responsible for transaction verification, transaction accounting, block packaging and confirmation of MANGO Chain network. Super-nodes will receive rewards for successfully packaging blocks and will also be subject to oversight by the MANGO Chain community.

Super nodes are elected by all members of the community by voting with coins. Each token is considered as one vote, all token holders can participate in voting, and can vote for multiple candidate nodes at the same time. Token holders will need to pledge the token in their wallet when participating in the voting. If the token is transferred out during the period, it will be considered a withdrawal.
In order to ensure the efficient execution of node elections, MANGO Chain will develop a series of standards and rules for candidates.

Basic requirements for participating in the super-node race:

A. Seed node initiator with A minimum of 10,000 HST to activate super-node campaign;
B. Only the activated super-node will be open for registration and can accept other people's votes;
C. Hold a certain number of MANGO Chain pass certificates, and transfer the specified number of pass certificates to the smart contract for election for mortgage during the campaign;
D. Having nodes for testing by community members;
E. Having servers that meet the standards and technologies that are sufficient to maintain the normal operation of the nodes;
F. Budget support, technical solutions, hardware expansion plans and community support plans have been prepared for the coming year;
E. Having a degree of community influence.

Collateral and its disposal:

A. The super-node participating in the election shall pledge A certain amount of pass certificates, the specific amount of which shall be decided by the community committee. The super node participating in the election shall come into effect after proposed by MANGO Chain in the first election and approved by the community vote;

B. The campaign node can retrieve the mortgage pass within 30 days after withdrawing from the campaign (system dynamic parameters can be adjusted by the vote of the community committee);

C. If the candidate node does something wrong during the campaign, the collateral can be handled by the community committee by organizing a community vote.

D. MANGO Chain adopts the model of distributed community, which is self-organized and self-governed by community members, and each community can run for super node.

4.2.2 "Community Charter"

Although the concept of "code is law" is promoted in the block-chain world, community governance is a process in which community members reach consensus on subjective issues, and many issues cannot be achieved through code algorithms. In order to achieve community governance under certain rules, MANGO Chain will bind a special protocol on the block-chain, that is, the "community charter" of the MANGO Chain community. The "Community Charter" sets out the rights and obligations of users, as well as other important rules, and any user must comply with the "Community Charter".

When the "Community Charter" was first formulated, it was drafted by the community committee and the public chain team. When revising the "Community Constitution", the following process is required:

A. The executive member proposes to modify the "Community Constitution" and submits it to the community committee to vote. The executive member has one vote per person, and the votes in favor of more than two-thirds of the total votes are deemed to be passed, then the community voting link is entered;

B. Users holding more than 5% of the currency can directly initiate community voting at the expense of the sponsor; each time a voting is initiated, a certain amount of MGP must be paid as a fee collateral;

C. In the community voting session, all members of the community vote. The vote does not consume the token. The number of votes is distributed according to the number of tokens held before voting begins.

D. The node modifies the source code to reflect changes in the community charter, and publishes the hash value of the new charter to the block chain network;
E. All ordinary nodes complete the upgrade within a week, and the nodes that have not been upgraded to the new code will automatically shut down.

F.The details of community governance rules, node elections and voting, and the operation process are subject to the latest information published on the chain.

4.4. Off-chain Governance

The off-chain governance of MANGO Chain is led by the community committee and is responsible for the decision-making of major issues. The decision-making committee composed of the chief executive officer and the executive officer is responsible for daily work. Each CEO can build and manage his own community team and is responsible for the rights of responsibility; The decision-making committee is responsible for the daily operation of MANGO Chain as an executive team, including but not limited to technology development, product design, community operation, marketing and other content, and accepts the professional guidance and supervision of an expert advisory group.

According to the "Community Draft for Mango Chain Executive Committee Election Rules", the following governance system is formulated, and it will be revised in the future based on the project development and community voting opinions.

4.3.1. Community Committee Composition

4.3.1.1 Composition of members

MANGO Chain community committee shall be composed of several executive members, including 5 members of the decision-making committee, 1 CEO and 4 CEO. The remaining executive members are elected by vote.
After the white paper is completed, the community will vote for the executive members on a quarterly basis. At the end of each quarter, the members shall be replaced according to the voting conditions. The term of the decision-making committee shall be two quarters, and the remaining executive members shall be elected by qualification or high votes. The MANGO Chain community's official announcement shall prevail.

- **The powers and responsibilities of the community committee**

Community committees shall have the following powers and responsibilities:

- Hearing and deliberating policy-making committee report and ecological head, expert advice and community;
- Views of the community, and vote on chain development direction and other general issues;
- Vote on important matters.

4.3.1.2 Scope of major events

The major issues stated by the community committee shall include the following:

- Major changes in public chain development;
- The establishment of public chain related management institutions;
- The establishment of the basic system of public chain related management institutions;
- chief executive and executive impeachment and the election;
- community committee more than two-thirds of all the committee members to by other matters as the major matters of the.

4.3.1.3Procedural specification

Community committees should follow the following procedural norms:

- The community committee should hold online meetings at least once a week;
- Only 50% of the members of the community committee can vote or make decisions;
- The decision-making committee is in charge of the chief executive officer, responsible for the daily operation and management of the public chain and the community, involving large amounts of finance and community decisions that require voting;
- The four major community operations are independently responsible for the CEO, and large amounts of finance and community decisions need to be voted on
- Five or more executive members can initiate a vote of no confidence in the CEO and CEO, which is passed by the community committee at least 3/4; if the vote is not passed, the sponsor's executive member is disqualified, and other community members will continue to vote To replenish and freeze the eligibility of the executive election source for one quarter;
- Executive members have immunity and are not subject to impeachment by any person or institution;
- Community committee resolutions implement a one-person-one-vote system, allowing for, against, and abstaining;
- General matters must be approved by more than half of all members, and major matters must be approved by more than two-thirds of all members;
- Community groups representing more than one-tenth of the voting power, more than one-third of members or expert advisers can propose to convene temporary social committee meetings;
- Records of online or offline resolutions formed by the community committee, members present should sign or sign on the record and upload it on the chain;
- After the Chief Executive Officer or the CEO has successfully stepped down or been impeached, the community committee will vote for succession among the existing executive members, and get more than half of the votes to become the successor.

4.3.1.4 Rights and obligations of executive members

Executive members shall perform the following obligations and enjoy corresponding rights:

- Members should attend the meeting if they are inconvenient to attend offline, but can participate online. After the online meeting is not changed, they should sign in and confirm the records, and diligently perform the duties assigned by the social committee;
- Members can propose to lead the development of modules in the public chain and propose corresponding incentive schemes to the community committee for consideration and voting, and the development task should not change due to the removal of members.

4.3.2. Expert Advisory Team

The MANGO Chain expert advisory team is composed of well-known domestic and foreign technical elites, community educators, industry leaders and well-known investors.

Expert Advisory Responsibilities:

- Promote the healthy development of the public chain cause;
- Externally supervise the construction of MANGO Chain in accordance with these rules;
- Provide consultants for the construction of MANGO Chain according to this rule;

- Propose a motion on important issues related to MANGO Chain, and for a proposal formed by one third of the members of the consultant, the social committee must review and make a resolution.

The initial number of expert advisory panels is determined by the community committee. Every year after the first natural year after the determination, the community of MANGO Chain organizes a vote to decide whether to increase the number of expert consultants. For the avoidance of doubt, if the vote decides to increase the number of expert consultants, the increase in that year shall not exceed 50% of the original number of consultants.

After the identity of the expert consultant is confirmed, sign a contract with the main body designated by the community committee to determine the rights and obligations.When the expert consultant appears incompetent or violates contractual obligations, the main body designated by the community committee will be dismissed.

4.3.3. Composition of Decision Committee

The decision-making committee is the permanent body of the community committee, which is responsible for the development and construction of MANGO Chain and the daily operation of the community on behalf of the community committee. It is composed of four large communities, which are respectively responsible for the development of different communities.

4.3.3.1 The composition of the policy-making committee

- MANGO CHAIN appoint one person to join the policy-making committee, not the chief executive or chief executive;
- Chief executive elected by the community committee vote, the term 2 quarters;
- Executive produced by the community committee vote, the term 2 quarters;
- Executive director and chief executive shall not concurrently hold;

The decision-making committee consists of four community sub-teams:

1. Public Chain Team: responsible for MANGO Chain's technical architecture construction, technical upgrade, code audit, etc., and actively explore technical solutions to improve corporate Chain performance according to business needs, so as to ensure the stable operation and sustainable development of MANGO Chain; Responsible for MANGO Chain product layer design and related function realization, and carry out product iteration according to business development. The main vesting right is the basic service charge of the chain, including handling charge, transaction fee and other agreed vesting rights and interests.

2. Eco-fund community: responsible for tracking regulatory policies, researching and judging the development of the industry, and researching the economic model of the token;Responsible for investing in on-chain ecology and maintaining and increasing value of investment assets, and no off-chain asset investment is allowed; The main vesting interests are the dividends or other agreed vesting interests arising from the projects in which the fund participates in the investment or the projects on the ground; The income

generated by other business segments belongs to the ecological fund and is not part of the ecological fund community income, and does not participate in the distribution of dividends at the end of the month;

3. Application community: Responsible for activating ecological creativity, applying for funding to support landing applications, encouraging and guiding public chain ecological technology development and cooperation; providing project libraries to the ecological fund; responsible for external business cooperation and public image establishment and maintenance of MANGO Chain, and promoting MANGO Chain cross-chain cooperation, gaining market recognition and more external resource support. The main vesting interest is the management fee income related to the crowd-funding part, the dividend income generated by the application of community recommended projects, the income generated by community rewards and activities, and other agreed benefits;

4. Member community: The comprehensive functional team is responsible for the foundation's legal compliance, financial budget, internal personnel management, and administrative affairs management; responsible for community construction and operation, communicating with community members on the development of MANGO Chain in a timely manner, and understanding the opinions and opinions of community members It is recommended to organize community activities such as MANGO Chain super node election. The main attributable income is the dividend income due to member services and member consumption, the dividend income due to the promotion of products, the income due to organizational activities, and other agreed income; the dividends are calculated after deductions in advance for management-related expenses.

4.3.3.2Responsibilities of the chief executive

- Report regularly to the social committee;
- Manage the strategic work of the CEO and the four communities
- Organize the development and maintenance of the public chain and conduct daily management of the public chain and the community;
- Design and / or lead the design of public chain technology routes;
- Formulate the basic management system of the decision-making committee and submit the plan to the social committee for approval;
- Participate in meetings of the Social Committee;
- Perform other functions assigned by the social committee.

4.3.3.3 Responsibilities of team members

The team members signed a contract with the main body designated by MANGO CHAIN to confirm the team members' rights and obligations in the development and construction of the public chain.

- System development according to the requirements of the CEO;
- Perform system maintenance under the guidance of the CEO;
- Fulfill other obligations stipulated in the contract.

4.3.3.4 other

- Team members must apply to the CEO, with the consent of the Chief Executive Officer, and withdraw from the contract signed when joining the team.

- The change of CEO and CEO shall not affect the rights and obligations of team members under the contract.

5Ecological Road-map

5.1. Chain propulsion program

Q3 2019 - ERC20 token launch, Financing for Institutions

Q4 2019 - MGP Protocol testing and technology team building. Launching the project to the world

Q1 2020 - MGP Protocol launch. Work on MGP Phase 1 starts.

Q2 2020 - MGP Phase 1 launch. Launch of open source mBTC smart contract. mBTC token pegged 1:1 to Bit-coin. Expanding technology team and work on Phase 2 starts.

Q3 2020 - Building open source community and spread awareness around mBTC. Remittance Revolutionized.

Q4 2020 - Launch of MGP Phase 2. Launch og MGP Pay for users in over 50 countries to spend using Crypt-currency.

Q1 2021 - Expanding MGP ground marketing and technology team in 10 countries for awareness of MGP pay and solve user queries.

Q2 2021 - Launch of MGP Invest for users to earn. Work on MGP Phase 3 begins. MGP ecosystem covers half of the world allowing users to earn, save and spend using Crypt-currency.

Q3 2021 - MGP Ecosystem build a parallel economy allowing cheap and fast remittance, empowering businesses to trade worldwide and users to buy, sell, save, spend and earn using Crypt-currency. MGP browser testing begins with few set of users.

Q4 2021 - Launch of MGP Phase 3. Fully decentralized MGP Browser beta live for users powered by MGP coin. Most private and anonymous browser with users controlling 100% data.

（*Quarter）

5.2 Ecological Road map

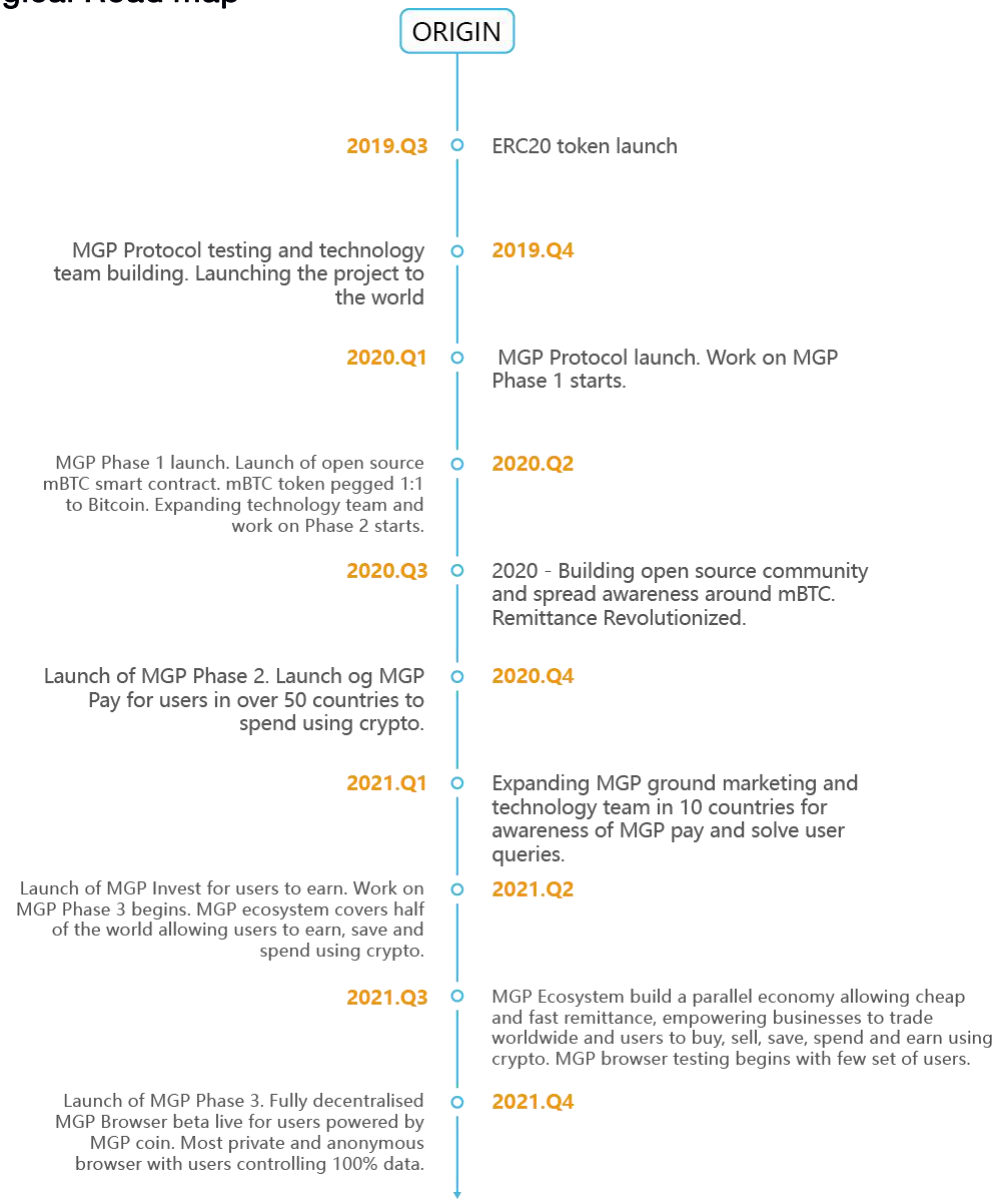

Figure 24 MGP Ecological Road map

5.3. Stage of Ecological Development

- **Preparation period**

From October 2018 to March 2019, a team was formed to clarify business development needs, determine public chain design ideas, formulate initial development and operation plans, and complete white papers, yellow book, and demos.

- **Test period**

From March 2019 to December 2019, the team advanced the project according to the plan, including the development of basic components, application modules, and smart contract standards, and gradually improved the relevant systems of community governance. Issuing ERC20 tokens supports the online test chain to complete testing and upgrading. Launching the main net to start the MGP real currency journey and build a new ecology.

- **Development period**

From December 2019 to June 2020, the team promoted the project according to the plan, including the development of basic components, application modules and smart contract standards, and gradually improved the relevant systems of community governance. Issuing ERC20 tokens supports the online test chain to complete testing and upgrading. Launching the main net to start the MGP real currency journey and build a new ecology.
Node construction: including purchasing free node servers and expanding community nodes.
Developer community construction: launch publicity activities, set up bounty programs, and attract global technology development talents.
Financial business expansion: complete the development of new compliance token functions and digital asset mortgage functions, and enrich various functions such as new token issuance and additional issuance according to the regulatory situation, expand digital asset derivative trading functions, and explore more financial derivatives The feasibility of product on-chain is based on the development of intelligent risk control functions based on previous data.

- **Development period**

From June 2020 to December 2020, improve the community, improve the ecology, promote the expansion of cross-chain and multinational business, vigorously develop the ecological community, and actively promote the globalization of MGP.

Application construction: When the public chain starts, the ideal state is to support no less than 10 killer applications and hundreds of DApps, and attract more smart contracts to be deployed on the chain through hackathons and other large-scale competitions.

Construction of ecological tools: In order to improve the ease of use of the public chain, developers are provided with a variety of application projects such as wallets, browsers, and development environment one-click deployment solutions, user-friendly mobile links such as mobile phone development, and professional financial contracts Templates etc.

- **Mature period**

December 2020 – December 2021, continue to iteratively upgrade public chain functions, further deepen node construction, developer community construction, application construction, etc., and integrate MANGO financial ecological business as a whole, and various types of partner assets .

6 Team Introduction

6.1. Founding Testimonials

On October 12, 2018, MANGO CHAIN was proposed by several blockchain geeks and technicians in new Delhi, India. After three months of preparation and contact, it attracted a group of consensus participants from Russia, Germany, China and other countries to join in, and was officially launched in March 2019.

During this period, nearly 100 people from more than 20 countries including China, the United States, Japan, South Korea, the Netherlands and Singapore have signed up. We hereby express our special thanks to all those who have participated in, proposed, rejected and opposed. Consensus is consensus, but also a collision.

6.2. Technology Advisory Team

MITHIL J. THAKORE

- Co-Founder of QuillHash
  - QuillHash builds products in Blockchain, Machine Learning, AI and IOT.
  - QuillHash focuses on the research, training and development of blockchain technology.
- Quillhash LABS is the training arm of Quillhash technologies, providing specialized training for the skills needed for the scattered future.
- Tokenic is a smart contract development platform that allows anyone to create and deploy smart contracts on Ethereum, Neo, Stellar, EOS, and Corda blockchains without programming
- Strategic consultant of Orion Stride (Marketin Consultancy for Crypto and blockchain Projects)
- Independent investor and Investmemnt Advisor for several financial institutions particularly for focusing on cryptocurrency investments.
  - As a Financial Advisor, Mithil Identifies and invested in several ICO projects with high potential and have managed fund with more than 30 blockchain quality projects
- The list includes EOS, Binance Coin, Zilliqa, PundiX and being an early investor in Power Ledger

Dr. B. SINGH AJATSHATRU

- Director / The BRICS Institute, New Delhi
- PhD, International Political Economy, Peking University
- Assistant Professor/ Peking University
- Research Assistant / Institute of Politics, Chinese Academy of Social Sciences
- Chief Representative/GIIC India
- Popular in International Media as Eloquent Public Speaker with a demonstrated skill of working for public cause and promoting peace and brotherhood among nations. Skilled in International Relations, Political Science, Inter-religious Dialogue & International Investment Relations.

Ms. Nisha Singh

- Financial Analyst and Marketing Advisor, Research Analyst at BRICS Institute, Crypto Market Researcher and young female entrepreneur;
- M.A. in Econmics, Patna University, Department of Economics.M.A. in Development Studies, Peking University, National School of Development,

Himanshu Chandra

- Delhi university
- Blockchain Application Developer
- Software engineer
- Data storage project manager

7. Risk Warning

Beyond what is stated in this white paper, the MANGO team makes no representations or warranties (especially regarding its merchant-ability and specific features) regarding the MANGO Chain or project license. The project shall follow the principles of voluntary participation, risk assumption, responsibility assumption and self-charge.
There are risks in the development, maintenance and operation of MANGO Chain, which may be beyond MANGO's control. In addition to the content of this white paper, the user is required to be aware of the risks described below and to assess the ability of the party to undertake the risks described below. The following risks may exist in the development of MANGO Chain project:

1. Insufficient information

As of the publication of this white paper, MANGO Chain is still under development. Its philosophical philosophy, consensus mechanism, algorithms, code and other technical details and parameters may be frequently and frequently updated and changed. Although this white paper contains the latest key information of MANGO Chain, it is not absolutely complete and will still be adjusted and updated by MANGO from time to time for specific purposes. MANGO will provide community members with various information on public chain development as much as possible, but it cannot ensure that all information is transmitted to each token holder in real time.

2. Risks related to judicial supervision

Encrypted digital assets are being or may be regulated by authorities in different countries. MANGO may from time to time receive inquiries, notices, warnings, orders or rulings from one or more competent authorities, and may even be ordered to suspend or terminate any

development or action related to MANGO Chain. The development, marketing, promotion or other aspects of MANGO Chain may be severely affected, hindered or terminated. As the regulatory policy may change at any time, the existing regulatory license for MANGO Chain in any country may only be temporary.

3. Cryptography

Advances in cryptography (such as password cracking) or technological advances (such as the invention of quantum computers) may pose dangers to cryptographic-based systems (including MANGO Chain). MANGO cannot guarantee the absolute security of MANGO Chain at all times. Within reasonable limits, MANGO will take preventive or remedial measures, upgrade the underlying protocol of MANGO Chain to cope with any advances in cryptography, and incorporate new reasonable security measures where appropriate.

4. Development failed or abandoned

MANGO Chain is still under development, not a finished product that is ready to be released at any time. Due to the technical complexity of the MANGO Chain system, MANGO may from time to time face unpredictable and / or insurmountable difficulties. Therefore, the development of MANGO Chain may fail or be abandoned at any time for any reason (for example due to force majeure).

5. Source Code Defect

No one can guarantee that the MANGO Chain's source code is completely flawless. The code may have certain flaws, errors, flaws, and vulnerabilities that may prevent the user from using certain features, expose the user's information, or cause other problems. If there are such defects, it will damage the availability, stability and security of MANGO Chain, and thus cause a negative impact on the value of the certificate. Open source code is based on transparency to facilitate community identification and problem solving. MANGO will work closely with the MANGO community to continuously improve, optimize and improve the MANGO Chain source code in the future.

6. Source code upgrade

The MANGO Chain source code is open source and may be updated, modified, modified or changed from time to time by any member of the MANGO community. No one can predict or guarantee the exact results of an upgrade, correction, modification or change. Therefore, any upgrade, correction, modification or change may result in unexpected or unexpected results that may have a significant adverse impact on the operation of the MANGO Chain or the value of the pass.

7. Competition

The underlying MANGO Chain protocol is based on open-source computer software. There is no claim to copyright or other intellectual property rights in the source code. Therefore, any person can legally copy, copy, remakes, design, modification, upgrade and improve, re-coding, reprogramming or otherwise use MANGO Chain source code and/or the underlying protocol, to try to develop competitive protocol, software, system or virtual machine, virtual platform to compete with the MANGO Chain, or even surpass or replace the MANGO Chain, MANGO can't control. In addition, there are and will be many competing block-chain-based platforms competing with MANGO Chain. Under no circumstances can MANGO eliminate, prevent, limit or reduce such competitive efforts aimed at competing with or replacing the MANGO Chain.

8. Token Liquidity and Price Fluctuations

The trading of tokens is based only on the consensus reached by the relevant market participants on their value. No one can guarantee the liquidity or market price of the token at

any time to any extent. If the token is traded on the open market, its price may fluctuate sharply. Such price fluctuations may be caused by market forces (including speculative trading), regulatory policy changes, technological innovations, the availability of exchanges, and other objective factors. Such fluctuations also reflect changes in the balance of supply and demand. The risk involved in the transaction price of the token shall be borne by the trader.

9. Unexpected Risk

Block chain technology is a rapidly developing technology. In addition to the risks mentioned in this white paper, there may be some risks not mentioned or not anticipated by the MANGO Chain team, or multiple mentioned risks may appear in the form of combinations.