

Tachyon Field Chain

White Paper

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<https://www.tafchain.com>

Preface

The blockchain and cryptocurrency represented by Bitcoin and Ethereum are shaking the traditional monetary and financial system. Although blockchain technology is still in its early stages of development, its more transparent and open concepts and mechanisms have shown unparalleled viability. In recent years, the industry of blockchain and cryptocurrency has experienced different stages from the high flood to bubbling and from bubbling to the low ebb, through which the market has become more and more rational and mature.

After a series of storms and bubbles in the industry of blockchain and cryptocurrency, some investors now avoid them, and others embrace them firmly. Capital drive is the key factor in the development of blockchain at the initial stage, but it also brings the development of blockchain into the curve and bubbles. Only when we return to technology and rationality may an era that really belongs to blockchain eventually come.

According to the research report by International Data Corporation (IDC), the expenses of China's blockchain market in 2018 reached USD 160 million and are expected to continue this strong growth trend over the next three years to 2022. the market is expected to have a size of USD 1.67 billion, with compound growth rate over 80% in 2017- 2022. Thanks to blockchain, by 2021, distributed architecture will become the core foundation of data markets, and the core value of blockchain technology - shaping digital trust will also have a far-reaching impact on the existing business community. With the technology continuously developing, blockchain technology will flourish in manifold aspects and accelerate to achieve breakthroughs in various industries.

At present, most businesses hope to take advantage of blockchain to optimize their own industrial structure. However, the public chain systems already in the market cannot support commercializing of blockchain due to their low performance, for which the breakthrough in the public chain technology is increasingly imminent. TAF Chain solves the impossible triangle problem by innovating blockchain technology. It can integrate the blockchain technology into the existing business models, lower the threshold of using

blockchain technology and solve practical industrial problems to make the most of blockchain in various industries.

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Chapter 1 Overview of Blockchain

1.1 Blockchain Concept

When it comes to blockchain, we often think of Bitcoin. But Bitcoin is only an application based on blockchain. Blockchain is a combination of many existing mature technologies, including cryptography, consensus mechanism, distributed ledger, smart contract, P2P network, etc. Blockchain is a type of distributed ledger by means of cryptography that cannot be tampered or forged. Its characteristic is that the data in the ledger is overlaid in time sequence to form a chain storage structure. As a new distributed infrastructure and computing paradigm, blockchain uses chain data structure to verify and store data, uses distributed node consensus algorithm to generate and update data, uses cryptography technology to ensure safe transmission of data and control access, and uses smart contracts composed of automated script codes to program and operate data.

The core technologies of blockchain are as follows:

a. Consensus mechanism

Consensus can be simply understood as a type of agreement reached in a certain aspect by the common knowledge, values, ideas, etc. sought by different groups. Consensus mechanism is to determine the way to reach a consensus and maintain consensus. Consensus mechanism is a mathematical algorithm for building trust and acquiring rights and interests among different nodes in blockchain system. With consensus mechanism as the core module of blockchain network, decentralization can be realized. Owing to different scenarios, different consensus mechanisms are adopted. Common consensus mechanisms include PoW, PoS, DPoS, Raft, PBFT, etc. Consensus mechanism is not only a way to write data, but also a way to prevent tampering.

b. Distributed ledger

Distributed ledger is a database shared, copied and synchronized among network members, which records transactions between network participants. In the blockchain network, transactions are stored in multiple nodes, and each node records a complete transaction log, so they can participate in monitoring the legitimacy of transactions and verifying the effectiveness of transactions. In the blockchain system, no node has the right to record transactions independently, thus avoiding the possibility of data falsification caused by active or passive changes; on the other hand, because all the network nodes participate in recording, in theory, unless all nodes are destroyed, the transaction records will not be lost, thus ensuring the data security.

c. Security and privacy protection

Blockchain technology integrates many advantages of current symmetric encryption, asymmetric encryption and hash algorithm. Through the introduction of encryption and decryption technology it reduces the possibility of private key leakage and decryption; through asymmetric encryption and decryption algorithm it ensures the transaction security of the whole network; through a variety of signature strategies, such as group signature, ring signature, etc. it protects the privacy of user identity. Among them, the most representative is using elliptic curve encryption algorithm to generate pairs of users' public and private key and using elliptic curve digital signature algorithm to ensure transaction security. In addition, Chinese national encryption algorithms are also more and more used in blockchain networks.

d. Smart contract

Smart contract is a special protocol, which is a computer program code that can automatically execute predefined rules. It is itself a system participant, designed to provide, validate, and execute contracts. It can realize the storage, transfer, control and management of value, and implement the credible, traceable, irreversible and secure value transfer without the need of a third party. It provides an innovative solution for the application based on blockchain.

1.2 Blockchain Value

In recent years, with the vigorous development of blockchain technology, businesses and research institutions have made in-depth analysis and strongly promoted the blockchain system. People gradually come to realize the great value of blockchain technology itself.

It is mainly reflected in the following aspects:

a. Reliable storage

Based on decentralized P2P network technology and distributed consistency algorithm, blockchain network provides people with authentic and reliable data sources. Every piece of data has a strict signature and signature verification mechanism, and ensures that the data cannot be tampered once uploaded onto the chain. Even if some nodes in the network fail or are maliciously attacked, the authenticity of data cannot be changed.

b. Trustworthy network

Blockchain is a trustworthy network, which combines cryptography and digital signature to overlay the changes of data according to the time sequence in a chain structure, which cannot be tampered or forged. People can complete the trustworthy exchange of data without the need to establish any trust relationships.

c. Security and privacy protection

Blockchain adopts general international encryption algorithms, such as ECC, Chinese national encryption algorithm, etc., and various layered encryption technologies to avoid the possibility of data leakage and cracking. It uses a high degree of hash and digest algorithm to ensure the legitimacy of the user's address, and uses complex signature technology, such as ring signature, group signature and so on to protect the privacy of the user's identity.

d. Traceable history of changes

Blockchain technology solidifies history of changes of data and provides traceability. By means of encryption technology, the data information on the chain cannot be tampered and denied. Once the data is on the chain, it can determine the anchoring relationship with users through the blockchain network, and every subsequent data operation will be accurately recorded and cannot be tampered with.

e. Value sharing

Blockchain realizes the decentralized connection between nodes. Each participant has a copy of complete data, and data value is shared among participating nodes. Both sides of the transaction avoid the participation of intermediary, which greatly reduces the time cost in data circulation, enhances trust, and avoids the risk of data tampering and fraud.

1.3 Blockchain Technology

Blockchain technology is not a single technology. From the scientific and technical perspective, blockchain involves distributed data storage, encryption algorithms, P2P transmission and consensus mechanism and other new modes of computer technology application. Each single technology has a history of over one or even several decades and achieves a relatively high degree of maturity. Since these relatively mature technologies are integrated into a creative blockchain system, its characteristics as a new technology have begun to emerge, inspiring a new development path.

However, the maturity of the existing blockchain technology itself needs further improvement, and the mainstream public chains still face some technical challenges, such as system throughput, cross-chain systems, node size and fault tolerance, efficiency of consensus mechanisms, and security of smart contracts. Because the breakthroughs in every core technology require huge manpower and material resources, the high cost of innovation has become a critical obstacle to the development of blockchain technology.

1.4 Blockchain Environment

Why is there blockchain? Do we really need it? The founding team of TAF Chain, as participants and witnesses in the early days of blockchain, believe that this innovation is irreversible and not short-lived, for two reasons:

a. Reducing trust costs

People need genuine and valuable information that lowers the cost of trust. Computers and the Internet make information sharing cheaper and more convenient, and with the help of information transparency, optimize value chains and enhance collaboration efficiency. However, unstoppable false information and wrongdoing are very troublesome, and based on the Internet they spread and replicate extremely easily. The cost of people's trust has been increasing, which will hinder the further improvement of efficiency.

b. Objective and fair production relationship

People need a network of production relationships that connects consensus, behaviors, and value incentives. Compared with the great leap in productivity brought about by the Industrial Revolution, the change in production relationship is then not that big. The production activity of human being is carried out with the organization as the center, and still shows a top-down pyramid centralized structure. The more complex and hierarchical an organization's business is, the more difficult it is to achieve objective and fair distribution of benefits, and therefore, the more difficult it is to improve efficiency. Blockchain integrates distributed storage, encryption, P2P network and so on. It has the technical advantage of decentralization and de-trust, which is called the Internet of value.

Blockchain is the most likely to solve the problem of trust between people and create a new network of production relationships - peer-to-peer value exchange, thus reforming the inefficient production and distribution relationship.

Chapter 2 Status of Quo and Future Trends

2.1. Status of Quo of Blockchain

2.1.1. Blockchain Categories

Blockchain platform can be divided into three categories according to the degree of decentralization and different access mechanisms: Public Chain, Consortium Chain and Private Chain. Generally speaking, the Public Chain is suitable for scenarios where there is a high demand for credibility and security but no high demand for the transaction speed. The Private Chain or the Consortium Chain are better suited for applications with high requirements for privacy protection, transaction speed, and internal governance. In practice, the Private Chain is typically deployed inside the business, with smaller differences from traditional databases, while the Public Chain and the Consortium Chain have more extensive differences from traditional databases.

a. Public Chain

As the name implies, it is fully open, and everyone can be a node in the network, without anyone giving permission or authorization. Each node is free to join or exit the network, and anyone can read data, send transactions, and the transactions can get effectively confirmed consensus blocks. At present, the Public-Chain-based blockchain projects are mainly consumer-oriented applications (DApps). The ecosystem has just emerged, and the overall development is not mature. According to DAppRadar, as of April 3, 2020, there were just about 3,076 DApps on mainstream Public Chain platforms, concentrated in a handful of areas such as quizzing, gaming and crypto collectibles, with difference of orders of magnitude in the number of apps, categories, users and user activity compared to Internet applications.

b. Private Chain

The Private Chain is also a type of licensed chains, and the access for nodes to join and the right to read and write data on the whole blockchain network are controlled by an organization or institution only. One of its application scenarios is generally a single business or branch management. In some scenarios, the Private Chain is also called the exclusive chain. Its value lies in providing a reliable, traceable and tamper-proof platform, and it can prevent external and internal attacks.

c. Consortium Chain

The Consortium Chain is only for members of a specific group and a limited range of third parties. Multiple preselected nodes are internally designated as bookkeepers. Multiple bookkeepers work together to produce blocks and keep ledgers. The Consortium Chain is a type of licensed chains, which means that not all nodes can join freely. Joining the network as a new node requires specific permissions.

Unlike the Public Chain, the Consortium Chain is more business-oriented. Business users often face some industrial challenges, trying to combine blockchain technology features with business scenarios and take advantage of blockchain for trust, efficiency, and cost. At present, the common business blockchain applications in the Chinese market have categories such as finance, traceability, certificate depository, etc., and are generally at the stage of active exploration.

2.1.2. Blockchain Evolution

Since the birth of blockchain, it has experienced three major technological changes. Their typical representative projects are Bitcoin released by Nakamoto in 2009, Ethereum in 2015 and Hyperledger Fabric launched by Linux Foundation in 2016. Its organization form has been transformed from Public Chain with heavy resource consumption, low transaction performance and lack of flexible control mechanism to Consortium Chain with highly efficient consensus, smart programming and privacy protection.

Technological innovation promotes continuous improvement of performance and security. At present, blockchain technology is still in its early stage of development.

Technological innovations are emerging in the areas of blockchain performance, privacy protection, scalability and security issues. In regard to the blockchain performance problems, there are several innovative solutions as follows:

The first is paralleling: for example, Ethereum's fragmentation technology, MOAC's sub-chain technology, and Hyperledger Fabric's multi-channel technology.

The second is the DAG (directed acyclic graph) mode: for example, IOTA, the innovation project of blockchain and Internet of things, adopts DAG technology to make the scalability of blockchain system no longer limited by block size, but only limited by network bandwidth, CPU processing speed and storage capacity.

The third is to optimize the consensus algorithm: for example, PoS consensus algorithm can achieve performance improvement by reducing the nodes participating in consensus while maintaining multi-center mode.

The fourth is the capacity dilatancy under the chain: for example, innovative technologies such as lightning network that improve the transaction capacity of blockchain, and realize the payment with instant confirmation, low cost and high throughput.

In regard to the privacy protection in blockchain technology, the industry has proposed innovative technical solutions such as mixed currency, ring signature, homomorphic encryption, Zero-Knowledge Proof, multi-party secure computing, etc. To solve the problem of blockchain scalability and interconnection, the industry proposes a cross-chain solution. The mainstream cross-chain technologies include side / relay chain, notary mechanism and hash locking. The representative projects are COSMOS, Ripple and Lightning network.

In regard to the security problems of blockchain, especially the security problems of smart contracts, public and private key storage, and the underlying platform attack, the industry has put forward solutions such as code audit, formal verification, smart hardware wallet, hybrid consensus mechanism, etc.

With the deepening of research on blockchain in academia and industry, the achievements of blockchain technology innovation will continue to be

implemented. With the continuous development of blockchain technology, the continuous improvement of industrial chain and the gradual improvement of social cognition, the scenarios have been enriched increasingly, and blockchain application effect gradually appears.

2.2. Future Trends

2.2.1. High Throughput, High Concurrency

For large-scale application projects, such as Facebook, Alibaba etc., it needs to be able to handle hundreds of millions of daily transactions. For such demand, the performance and throughput of blockchain system is very important. But the transaction processing of the mainstream blockchain open source projects is serial execution. It cannot make full use of multi-core processor resources, and it is also not possible to scale performance in the same way that traditional Internet high concurrency servers do with simply heaping machines. In order to effectively realize the high concurrency and high throughput of blockchain system. The future research should be directed towards that every single node runs fast and that capacity dilatancy can be scaled smoothly by the way of heaping machines.

2.2.2. Low Latency

The confirmation time of Bitcoin transaction is about 1 hour, and EOS can complete the confirmation of transaction only after the confirmation of most production nodes. Millisecond-level confirmation time is an important research direction of blockchain projects in the future. Timely feedback is the foundation of pleasant user experience. If the delay in time exceeds seconds, the user experience will be greatly affected. If it only reaches the minute-level, it will not even be able to meet the business needs, greatly reducing the competitiveness of the application.

2.2.3. Distributed and Efficient Storage

At present, the physical storage of blockchain is usually single disk, or even serial

storage, with poor I/O performance. In addition, due to the chain structure of blockchain, the increasing amount of data leads to the linear growth of storage space demand. Efficient distributed parallel storage model will become an important development direction.

2.2.4. Privacy Protection

As IoT devices become more connected, more data will be shared among people, companies, governments, and ecosystems. In the digital world, most of the users' data is placed in the giant servers, and there are risks of hacker attack, loss, illegal transactions etc. Although the development and utilization of data assets are the general trends of development, the confirmation of data rights and interests and the protection of information privacy are particularly important.

Chapter 3 Overall Structure of Blockchain

3.1. What is TAF Chain?

TAF Chain, a public chain for global businesses, aims to create an efficient underlying system.

TAF Chain is a distributed system with self-developed innovative underlying architecture based on DPoS consensus mechanism. It has supporting functions on the chain which facilitates the development of various applications.

TAF Chain has a global technical team. The whole public chain is fully self-developed. The team members have unique insights and extensive experience in the areas of the blockchain, information management and big data. Based on years of development and engineering experience, the team have implemented technological innovation, have produced many patented technologies, such as the self-designed cluster solutions and the self-developed efficient storage technology, and have achieved the breakthroughs in the industry's throughput capacity – the fully optimized theoretical maximum reaching 1,000,000 TPS – which enables TAF Chain to effectively support all kinds of commercial applications for the whole society.

3.2. The Core Technologies

3.2.1. Consensus Mechanism

Currently, TAF Chain uses the DPoS consensus mechanism to realize bookkeeping and data exchanging in the blockchain.

The DPoS (Delegated Proof of Stake), a mechanism derived from Graphene, is based on the principle that users holding tokens on the entire network can select block

producers through a chain-wide voting system, and that once elected, any individual or organization can participate in block production. Block producers, of course, also get a systematic incentive of tokens.

In the network of TAF Chain, all token holders can vote to elect 21 representatives as block producers of the system. These 21 supernodes have exactly the same rights as each other. In each production cycle, 21 supernodes take turns to produce blocks until the next election of new supernodes.

The TAF Chain supernodes are elected by the votes of all the token holders every other hour. The top 21 in the voting rate automatically become supernodes. If a supernode is found to misbehavior during a production cycle, it will be voted out and the network will elect a new node (among those from the 22nd onwards) to replace it.

Voting users need to pledge the corresponding tokens to vote – one token for one vote. Pledged tokens will be automatically unlocked after a month. During the pledge period, voting users can set to vote for fixed node candidates.

The main consensus mechanisms for the existing blockchain projects are the PoW (Proof of Work) and PoS (Proof of Stake), and a small part of the projects adopt the revised Consensus Mechanism of BFT (Byzantine Error Tolerance). Bitcoin is the most successful cryptocurrency of the PoW system. Although the PoW mechanism has proved successful for its long-term stability and relative fairness, it is relatively inefficient. Bitcoin, for example, can only handle about six transactions per second and consumes a lot of energy, and cannot meet the high-performance requirements of the base chain. Peercoin is a more mature cryptocurrency under the PoS mechanism, which, in contrast to PoW, introduces the concept of a “coin day” for random computing, which is likely to become more centralized over time because of the possibility that a small number of large token holders will own most of the tokens in the entire network. The PoS mechanism, while saving energy, does not improve performance or security very much.

In order to ensure security and decentralization based on the implementation of the performance improvement, the DPoS mechanism came out. These trustworthy

nodes exercise power in place of the network-wide token holders, and block producing nodes require long-term online access, thereby solving many issues, for example, the delay in block production resulting from the fact that the PoS block signers are not often online.

The DPoS mechanism typically achieves transaction speed of up to 10,000 TPS, and up to 100,000 TPS given low network latency. With the DPoS consensus mechanism, TAF Chain is expected to reach 100,000 TPS by innovating underlying technology, which will fully support all kinds of applications as well as business applications in the modern society.

3.2.2. Smart Contracts and Virtual Machines

As an important module of blockchain, smart contracts play an important role in the ecosystem. Users can offer a variety of digital assets through smart contracts, as well as implement complex business logics.

TAF Chain 1.0 version anticipates that the protocol layer and hundreds of more versatile contracts will be written as built-in contracts. If these contracts are all HardCode on the chain, the developer may invoke according to the interface parameters of the contract.

The main chain will use the self-developed efficient contract machine, TFVM, which is compatible with WASM. In order to reduce the threshold for developers to write smart contracts, with the help of built-in compiler tools, the TAF Chain currently supports C++, JAVA, Python, GO, JS and other mainstream programming languages. Developers can use their own familiar programming language to write smart contracts.

In the special scenario of pursuing the efficiency of smart contracts, TFVM's unique kernel parsing mechanism can support asynchronous smart contract coding. That is supporting both synchronous and asynchronous smart contract encoding. The eco-developers are provided with the maximum possible choice of components in order to make the most reasonable choices for different business scenarios.

3.2.3. Efficient Storage Technology

TAF Chain storage system supports micro-service by default, and can be expanded by adding machines after simple configuration, as shown in Figure 1 Distributed Storage System.

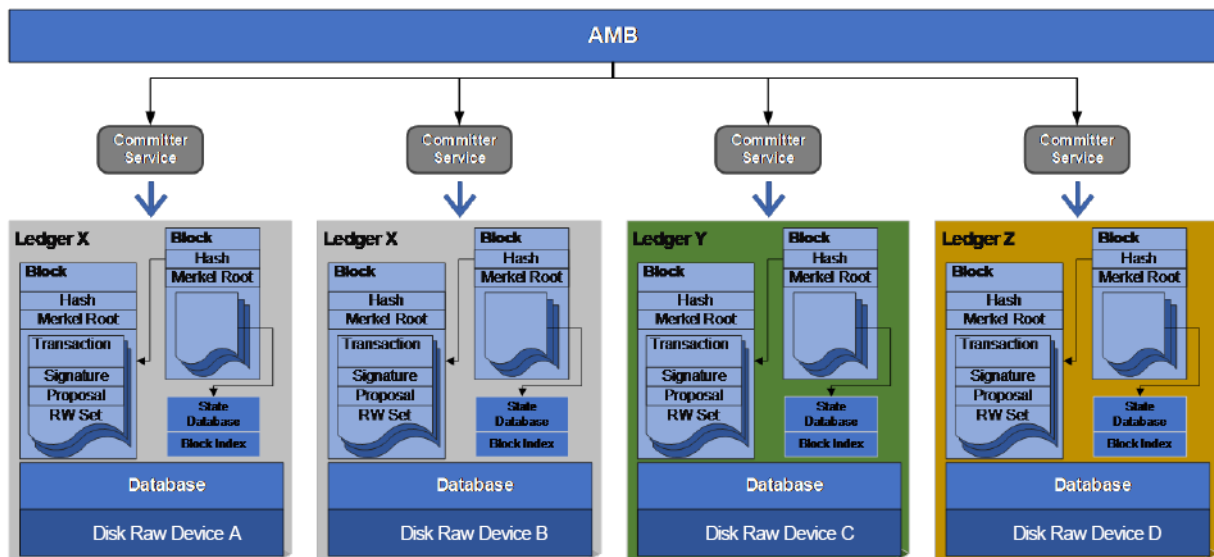


Figure 1 Distributed Storage System

The advantage of distributed storage architecture is its ability to share the storage load through multiple servers and use location server to locate the stored information.

It not only improves the reliability, availability and storage efficiency of the system, but also is easy to expand, minimizing the instabilities caused by general hardware. It has the following advantages:

a. High performance

TAF Chain distributed storage system has high-performance read-write cache, and supports automatic hierarchical storage. It improves the response speed of the system by mapping the data in the hot area to the high-speed storage. Once these areas are no longer hot, the storage system would move them out of high-speed storage. In addition, writing cache technology can cooperate with high-speed storage to significantly change the overall storage performance. According to the

agreed policy, first write the data to the high-speed storage, and then synchronously save the data to the disk at the appropriate time.

b. Supporting hierarchical storage

Due to the adoption of micro-service and loose coupling mode, TAF Chain's distributed storage system allows high-speed storage and low-speed storage to be deployed separately or in a mixed mode. In the unpredictable business environment or agile application, the great advantages of tiered storage can play to the best. It effectively solves the problem that the granularity of the data extracting from the cold pool is too large, resulting in high latency when the performance pool fails to read. It solves the problem of low performance of blockchain storage.

c. Consistency of multiple replicas

Different from the traditional storage architecture which uses RAID mode to ensure the reliability of data, TAF Chain's distributed storage system adopts multi-replica backup mechanism. Before storing the data, the system first fragments the data, and then stores the fragmented data on the nodes of the cluster according to certain rules. In order to ensure the consistency between multiple replicas of data, the strong consistency technology of "single-replica writing + multiple-replica reading" is adopted here. The methods of mirroring, striping and distributed verification are used to meet the different requirements of tenants for reliability. The cross protection between multiple replicas is particularly important. When one replica fails, the system can recover by reading data from other replicas and writing the replica again. This can effectively protect the reliability of business system data.

3.3. Blockchain Browser

TAF Chain will build blockchain browsers that work with the main chain to provide access to and use of blockchain information of all types. The main functions include:

(1) provide total transaction volume, total transaction amount and total transaction charges and other information;

- (2) display block information, including the summary and details of block and transaction;
- (3) provide queries based on block height, block hash, transaction hash, and addresses; and
- (4) support a fast access to new currencies.

3.4. Wallet

TAF Chain will incorporate wallet software that works with the main chain for accounts and asset management on the chain, and open APIs and documentation to third parties. Features of the functions include:

- (1) provides multi-system computer versions, the web version, and the mobile layout version of the wallet program.;
- (2) support multiple accounts.;
- (3) support all independent application assets on the TAF Chain, and support multiple types of assets on the chain;
- (4) have basic functions such as transfer, collection, import and export etc.;
- (5) easy to use API and documentation to facilitate application development;
- (6) provide a password to protect the private key of the wallet;
- (7) have transaction history query and account management functions;
- (8) provide text addresses and QR code addresses for quick copy and paste.

In the future, TAF Chain plans to introduce the functions of market display, real-time query of global crypto market and other related information, as well as supporting cryptocurrency exchange as a decentralized exchange.

3.5. API & SDK

The system will provide a complete set of APIs and SDKs for identity creation, token creation, smart contracts, cross-chain interaction, trusted data, trusted storage and other scenarios to invoke for use.

The SDK supports mainstream programming languages, such as Golang, C++, JS, Python, and so on.

3.6. Characteristics

3.6.1. High-performance, high concurrency, low latency

Based on the DPoS consensus algorithm, the deep optimization is carried out to ensure that the transaction is confirmed as soon as the consensus is completed. The other links in the process of transaction confirmation, such as signature algorithm, book storage mode, etc., are optimized to realize the millisecond confirmation of the transaction with the fully optimized theoretical maximum reaching 1,000,000 TPS.

3.6.2. Safety Protection Mechanism

TAF Chain supports multiple mainstream privacy and security mechanisms, and builds a multi-dimensional and multi-channel security system, so that business and individual users in practical application can ensure both security and privacy, including but not limited to the following:

- (1) supporting ECC (Elliptic Curve Cryptography) public-private key pair and Chinese national algorithm;
- (2) introducing layered encryption and decryption technology to reduce the possibility of leakage and decoding of the private keys;
- (3) high hash and summary algorithms used to ensure the legality of user addresses;
- (4) ensuring the confidentiality of data by using safe multi-party calculation and Zero Knowledge;
- (5) identity privacy guaranteed by loop signature and group signature mechanisms.

3.6.3. Support for dynamic parameters

TAF Chain can dynamically adjust the overall parameters of the system without forks, and the Governing Committee can initiate a proposal to vote to upgrade the

consensus algorithm and related parameters. Through the proposal and voting mechanism, users can also upgrade or modify the running parameters of the blockchain, such as block size, transaction size, block productions time and other parameters.

3.6.4. Developer-friendly

TAF Chain will build a whole set of support tools for users, communities and teams to ensure the healthy and sustainable development of the whole ecosystem.

At the same time, there are rich APIs, built-in development operating environment and sophisticated multi-language development documents, to create a fully resourced developer platform and realize A-to-Z support for developers from entry to release and commercialization of applications.

3.6.5. Free of transaction charges

Transactions on TAF Chain alone are completely free of charge. All charges are paid by additional Tokens issued on an annual basis. Tokens need freezing only when developers are invoking contracts and thus occupying resources of the system.

3.6.6. Convenient Digital Asset Offering

There are minimal digital asset distribution processes and standards on TAF Chain, which allows developers to freely offer and circulate digital assets based on TAF Chain.

Chapter 4 Business Scenarios

4.1. Inclusive Finance

The finance sector is the first sector in which blockchain technology realized commercialization, and the initial appearance of Bitcoin was expected to solve some problems of the traditional monetary system.

In the sector of traditional finance, the exploration and application of blockchain in asset securitization, industrial chain finance, letters of credit, forfeiting, etc. has come to the crucial stage. According to the 2019 annual reports of many banks, the "blockchain" technology, the new financial technology which many banks and other financial institutions competed in laying out a few years ago, is gradually moving from the stage of POC verification test to the stage of application. Blockchain technology also serves a wider range of financial sectors, such as Internet lending, stablecoins, decentralization transaction agreements, derivatives/prediction markets, portfolio agreements, KYC/AML/identity agreements, etc.

TAF Chain's technological breakthroughs in distributed data storage, transaction throughput capacity and other fields solve the basic problems in the finance nowadays. Data is the core of financial applications. Most of the financial products are data-centric. Data on the chain cannot be tampered with, being open and transparent. Its efficient transmission better guarantees the input data of financial models. The sophistication of smart contracts and the security of data transmission guarantee the open application in financial scenarios and provide the foundation of trust.

4.2. Game Markets

The game market is huge and has a natural combination of blockchain and the token economy.

The game industry has grown rapidly over the past 20 years. According to the 2019 China Game Industry Report, in 2019, the actual sales revenue of China's game

market was CNY 230.88 billion, increased by 7.7% YoY, and the number of Chinese gamers reached 640 million, increased by 2.5% YoY. In 2019, the Chinese mobile game market's actual sales revenue reached CNY 151.37 billion, increased by 13.0% YoY. But the game industry practitioners are also faced with many predicaments at present, such as fading of game user bonuses, the short life of most games (except for a few top games), little room for enhancements of premium rates and ARPU. In addition, oligarchic concentration rises continuously, which makes medium and small game manufacturers hard to survive.

The development of blockchain provides the game industry practitioners with an opportunity to break out of their predicaments. For example, the blockchain game Cryptokitties that came out at the end of November 2017, attracted global attention in just a few weeks. On one hand, blockchain has formed a global distribution of high net worth user groups, providing more exploitable space for game ARPU; on the other hand, the blockchain industry is still in its infancy, and it is a fairer market for new entrants. At the same time, the token economy can give players a stronger sense of motivation and project participation. Blockchain games will be a new global market, with a quality user base, offering new entrants a fair starting point.

It is shown on DappRadar that there have been 628 blockchain DApps so far, but most of them have monotonous gameplays and simple scenes. It is believed that TAF Chain's extremely convenient token system, sophisticated smart contracts, industry-level transaction throughput capacity, and integrated capabilities make the best catalyst for blockchain gaming and entertainment, enabling current blockchain gaming to create more possibilities.

4.3. Social Networking Platform

We live in an information-centric and data-centric age, with a growing reliance on social media and a growing threat to the security of social information. Social networking has become one of the most fundamental and critical applications of the Internet age, strongly appealing to and heavily needed by the vast majority of users.

What are the drawbacks in the traditional sphere of the Internet social networking? To sum up, there are three main aspects:

a. Unguaranteed intellectual property rights

The articles, pictures and other original content users published on social platforms are reproduced free of charge. The users cannot get the corresponding benefits for their contributions. Thus, in the long run, the quality of content on the social platforms will gradually decline.

b. Oppressed freedom of expression

What users post on the social networking platform is actually subject to the supervision of the platform. When the information released damages the interests or affects the image of someone, even if such information is authentic and credible, such information will immediately be restricted due to "public relations".

c. Information falsification

On the Internet, because of the asymmetry of information, the cost of forgery is so low that fraud cases emerge one after another such as those on social networking platforms and dating websites. There is also a vicious cycle that most users stop where they need to upload authentic data for fear that privacy is not protected.

TAF Chain can better solve some of the pain points of existing Internet-based social networks. TAF Chain has amended the issue that social platforms exploit the benefits of content-creators by providing Token incentives for users who create content and contribute computing power. Users can also create their own channels to gain the benefits for content creation; and they can speak freely, free of the platform's influence

In fact, on social networking platforms, users' comments are monitored by the platform, while anonymity of the network boosts violence and fake stuff on the Internet. When users lose trust, there is little need for social networking. On TAF Chain, peer-to-peer communication is based on decentralized network structure, which cannot be tampered with. At the same time, decentralized encryption protects users' privacy data, which ensures the maintenance of such trust. When applied to social networking platforms, it can re-establish a credit system among people.

4.4. Data Interests

In the current Internet world, personal data is not well protected and there frequently arise concerns about personal data security, such as data theft, the proliferation of black markets, and the mistaken attribution of data ownership. More than 50% of the world's top 500 companies have suffered data leaks, hacker attacks and other data security issues. Internet giants and black-market data traders appropriate the value generated by data processing and trading, and our information on all types of platforms is often sold to other companies. Facebook, for example, has lost more than 20% of its market value since it leaked information of tens of millions of users. This is a painful lesson for both users and businesses alike.

In the future, businesses of all kinds will be able to use TAF Chain to replace centralized data server clusters with distributed networks where users' key privacy data are encrypted and protected in a public form on the blockchain, and hackers are unable get access to the data through the back door. This will undoubtedly revolutionize the existing data entitlement mechanism.

4.5. More Scenarios

Features based on TAF Chain can support many other business areas, such as healthcare, electronic contracts, advertising and so on. We look forward to witnessing that day.

Chapter 5 Economy Model

TAF Token (TAFT) is the core asset of TAF Chain and the fundamental virtual crypto-tokenised certificate of rights and interests created and circulated inside the ecosystem. The specific Token economy model is as follows:

Token Economy	Token Value	Ecosystem Value
<ul style="list-style-type: none">• Initial Offering• Producer Reward• Community Contribution• Activity Incentive• Development Support Plan	<ul style="list-style-type: none">• Governance Committee• Node Election• Modification of Important Parameters	<ul style="list-style-type: none">• Invocation of Development Resources• Intra-Application Settlement• Circulation Value

5.1. Token Economy

5.1.1. Initial Offering

As per the actual needs of the public chain projects in different aspects, including the development of products, the introduction of technical personnel and the construction of communities, the total number of TAFTs to be offered is [TBC] for the purpose of better building the foundation of the community ecosystem. The distribution plan is subject to the provisions specified in the final White Paper for global distribution.

5.1.2. Producer Reward

In TAF Chain, for each block produced, the system rewards the block producer with a certain amount of TATFs, which are added annually by the system.

5.1.3. Community Contribution

TAF Chain will launch its own official community, and will open a variety of social channels, such as Facebook, Tweet, Wechat, Telegram, Weibo and so on.

Users who are active and contributing to the community, such as those who actively communicate within the community, find bugs and submit them to administrators, and actively participate in official events, will receive high rewards of TAFTs.

5.1.4. Activity Incentive

In order to maintain the activity in the early ecosystem and improve the active participation of various groups, TAF Chain holds various online and offline activities from time to time, through which users can obtain generous rewards of TAFTs.

5.1.5. Development Support Plan

All the developers in TAF Chain that construct the ecosystem, build applications, and/or enrich the application ecosystem within the public chain, will get a certain amount of development support fund in TAFTs. The amount of support fund is not fixed, which shall be jointly decided by the members of the Governance Committee.

Among those excellent applications, the community each year will vote for the top three which will receive a special award from TAF Chain.

5.2. Token Value

5.2.1. Governance Committee

The Governance Committee is the decision-making body of TAF Chain and is responsible for the healthy functioning of the entire ecosystem.

The name list of the members of the Governance Committee shall not be fixed, but shall be elected once a year.

The key responsibilities of the Governance Committee include:

- (1) voting for all kinds of major events and interim events;
- (2) review and approval of the annual operation and construction budget plan;
- (3) review and approval of the annual project research budget plan;
- (4) proposal, review and approval of changes to the Development Support Plan.

5.2.2. Node Election

The ultimate role of TAFTs in the ecosystem is being the votes cast in election of the supernodes, one TAFT for one vote. All the TAFT holders can be voters. When voting, voters need to pledge their TAFTs. If the TAFTs are transferred out, it is considered the withdrawal of votes.

5.2.3. Modification of Important Parameters

In the public chain system, there are some important parameters that affect the operation of the ecosystem. The right to modify these parameters is determined upon voting by all the TAFT holders and automatically executed by smart contracts.

5.3. Ecosystem Value

5.3.1. Invocation of Development Resources

The invocation of development resources in TAF Chain relies on TAF Chain, where the resource invocation includes the following aspects:

- (1) creation of developer accounts and creation of DApps;
- (2) upgrading of accounts;
- (3) deployment and invocation of smart contracts;
- (4) invocation of the underlying services;
- (5) issuance of one's own digital assets;
- (6) initiation of fund transfer transactions;
- (7) use of various types of infrastructure in the ecosystem.

5.3.2. Intra-Application Settlement

All DApps based on TAF Chain accept TAFTs for the underlying payment and settlement.

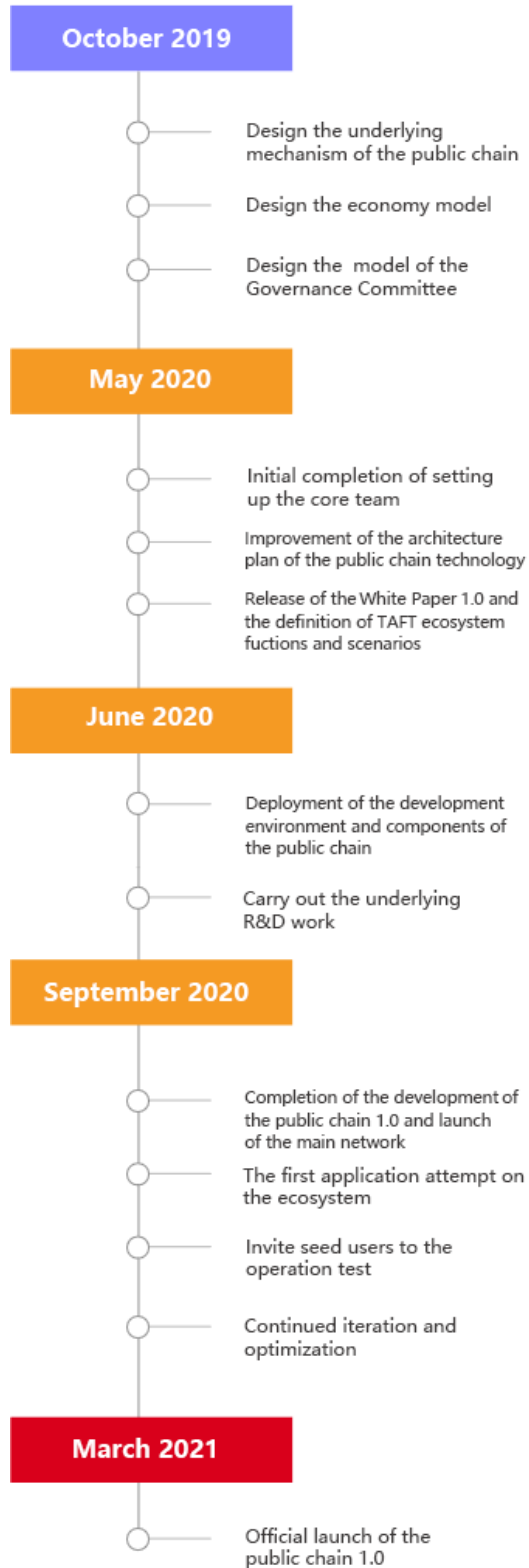
5.3.3. Circulation Value

The scarcity of TAFTs and the strong demand for application support the huge intra-ecosystem circulation value, which will release huge energy in the future and bring great return to the long-term TAFT holders that believe in the prosperous future of TAF Chain.

Chapter 6 R&D Roadmap

Up to now, there have been a number of core R&D forces (including the founding team) that continue to expand. Considering that the initial strength of research and development is still weak and the number of businesses and users in the ecosystem also requires a process of gradual enlargement, the R&D team will adopt a step-by-step R&D approach in order to build the Minimum Viable Product as soon as possible, optimize the TAF Chain infrastructure and application ecosystem in a rapid and iterative manner, and continue to grow and strengthen the community.

In the initial stage, the main R&D efforts of the team will focus on the development of the underlying public chain facilities of TAF Chain. The initial stage of the upper application ecosystem will be constructed and operated in a semi-decentralized manner based on the core technologies of blockchain. With the ecosystem's influence in the community developing and enhancing, it will gradually self-iteratively evolve into a fully decentralized form. In order to keep the R&D process open and transparent, the R&D team will continuously update the R&D progress on a weekly basis at GitHub, the project code custodian, to enable community members to access information in a timely manner.



Postscript and Declaration

This White Paper builds a complete and efficient trust ecosystem based on technology, rights and interests, and incentives.

But the establishment of trust ecosystem, especially in the existing public chain market, is still a huge and arduous task. Therefore, we hope that various partners join us, and we welcome developers, community volunteers, business partners to contribute to this great cause.

At the same time, TAF Chain hopes that through the joint efforts of eco-partners, trust can be brought to everyone, so that trust can enable new blockchain reform for the benefit of mankind.

TAFT is an important digital value in the platform ecosystem, not an investment. Owning TATFs does not grant its owners ownership, control, or decision-making power over the public chain platform.

TAFT, as a cryptocurrency, does not fall into the following categories:

- (1) any kind of currency;
- (2) securities;
- (3) equity in legal entities;
- (4) stocks, bonds, notes, warrants, certificates or other financial instruments granting any rights.

Whether the value of TAFTs increases depends on the market and the needs post-launch of applications. TAFTs may not have any value. The team is not committed to the increase in the value of TAFTs and is not responsible for the consequences of any increase or decrease in the value of TAFTs.
