



Open a new era of individual financial wealth, build a borderless digital economy platform!



TFT WHITE PAPER

Thunder Fire Token White Paper

Build a borderless digital economy platform and open
a new era of individual value civilization!



Abstract: Thunder Fire Token (TFT) aims to build a consensus-based individual financial wealth system to usher in the era of individual value civilization 3.0, use the blockchain technology and digital infrastructure, **with freedom, fairness, union, innovation, inclusiveness and sharing as the core concepts**, to build a vast scale digital economy industrial platform, and by the large-scale all-mankind collaboration consensus mechanism, realize the digital transformation and upgrading of industries and the true freedom of wealth for all mankind.

Wealth is like flowing water, as it has never ceased flowing! Just like the mystery of wealth, the eternal value flow trajectory began with bartering, whether it was shells, or gold and oil, or numbers in bank books, the evolution of civilization has changed the form of wealth greatly, but the nature of wealth has never changed, that is, the flow of value, and the driving force of the flow is the consensus of all mankind, and it is the true source of value. In today's centralized finance, the consensus on wealth is the product of collection of a small number of people. Therefore, it is destined that wealth is only in the hands of a few people. We have no right to interfere with its rules. We can only be squeezed and exploited ruthlessly. But in the present era when **the human technology change, Blockchain Technology**, has arrived, we have the opportunity to defend our wealth. When the fragile centralized finance experiences financial crises again and again, our wealth will gradually disappear in the disasters. This year, the stock market slumped several times, which ended the longest bull market in history and made it plunge into a bear market. Gold also plummeted accordingly. Treasury bond yields fell below 0.5% for the first time in history. The Federal Reserve Bank also cut interest rates urgently, which is rare in the recent ten years. Moreover, the rare novel corona virus epidemic in the century has caused the global real economy to continue to decline. In such a difficult time, we will present **an epic work to the world, the blockchain product, that is, TFT**. It was born for the financial freedom of all mankind. In the decentralizing manner, it will reshape the entire financial and business ecology. It will change the wealth creating way under the free will given to everyone by God, and the value will be redistributed in the consensus direction of all mankind. It will build up a wealth empire completely belonging to yourself. It will change the business landscape in the future. It is a key to unlock future wealth. It is a brand-new global business exploration. It will create a digital life community that will never end.



TFT not only provides a large-scale collaborative technology platform of **freedom, fairness, union, innovation, inclusiveness and sharing**, but also creates **five ecosystems** to jointly build a wealth-sharing ecology of digital economy that safeguards digital sovereignty, protects digital privacy and creates personal digital means of production. Through the wealth-sharing digital token, **TFT** begins **an era of individual value civilization (Thunder Fire 3.0)** based on the **origin of life (Thunder Fire 1.0)** and group civilization **(Thunder Fire 2.0)**.

Looking at the Future from the Perspective of Future —Thunder Fire Token (TFT)

is the ultimate force for world change! In the millions of years of human evolution, those shining great men will eventually turn into dust, and only common and ordinary people are the creators of history! When the consensus of the people becomes one direction, it will respond to a great era. People's wealth, privacy, and even thoughts should be used to create a better world! Our will should have a better sustenance. Our thoughts deserve a better destination! Under such a flood of consensus, we will present an epic great work of blockchain to the world. TFT was born for the wealth and freedom of all mankind. TFT allows every weak and humble individual to use the technological change of the blockchain to gather sand into towers, trickles into oceans, and become a force to promote the change and progress of this world! And everyone who participates in this change with a small force will become a witness and doer of history! This will be the largest group collaboration in human history! This will be a great victory of human consensus wisdom! TFT will eventually release the ultimate energy of this transformation maximization, and the day will definitely come when everyone is free, all the stars shine together, and everyone enjoys the ecological prosperity!

Reshape Data Ecology, Thunder Fire Wins the Future!

From the design and basic information perspectives, this paper will discuss how TFT can build a decentralized consensus-based individual financial wealth abundance system and a borderless digital economy platform and even the future monetary payment network for mankind. When this paper is being written, the development team of TFT is in the final stages of testing and validation, which take up all our time. Hence, after the project is officially launched, the related technology introduction and interpretation will appear in the **TFT White Paper 2.0**.



Figure 1 Past, Present and Future of TFT

PLEASE NOTE: CRYPTOGRAPHIC TOKENS REFERRED TO IN THIS WHITE PAPER REFER TO CRYPTOGRAPHIC TOKENS ON A LAUNCHED IPFS Mainnet THAT ADOPTS THE Thunder Fire Token (TFT) IPFS SOFTWARE.

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Figure 2: Build a New Era of Value Civilization!



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01

TFT WORLD DEVELOPMENT TREND

Thunder Fire Token



I. TFT (Thunder Fire) 1.0 TFT (Thunder Fire) Genesis

At the beginning of all things, the universe was an endless chaotic darkness, with neither time nor space. Matter existed in the form of elementary particles such as neutrons, protons, electrons, photons and neutrinos. A lightning caused the Big Bang, the entire world continued to expand in its red shift, and the temperature and density dropped rapidly in the energy transmission. As the temperature decreased and cooled down, atoms and molecules were gradually formed and recombined into gases. The gases gradually condensed into nebulae, and the nebulae further formed various stars and galaxies, and finally formed the vast universe we see today. Time and space are closely linked to our life. As a kind of apocalyptic power, Thunder Fire has nurtured all things! The lightning temperature after the thunderstorm was extremely high, above 30,000 degrees Celsius, five times the surface temperature of the sun. The lightning causes the air molecules to ionize. In addition to purifying the air to produce negative oxygen ions of a high concentration, the nitrogen and oxygen were combined into nitrite and nitrate molecules, which were dissolved in the rain water and fell on the ground to become a natural nitrogen fertilizer. There are 400 million tons of nitrogen fertilizer falling to the ground due to lightning alone in the world every year. When thunder and lightning occur, the electric field strength between heaven and earth is more than ten thousand volts per centimeter. The powerful potential difference stimulates the photosynthesis and growth of plants, advances the flowering period and multi-branch differentiation of plants, which accelerates the maturity of plants strongly and increases the yield greatly! Thunder and fire depend on each other forever ---- both at the moment when the sky was formed and at the moment when the earth took shape, thunder and fire served as the origins of human civilization! Whether in the ancient and mysterious East or in the romantic West, fire was the cornerstone of world civilization. The value and power of fire in human civilization are beyond doubt. From Prometheus' stealing sky fire for mankind, making mankind become the lord of creation, to Sui Ren's drilling of wood to make fire so that mankind said goodbye to the days of eating animals' flesh raw and drinking their blood, and started the Eastern Chinese civilization. The use of fire was an important sign of mankind's moving towards civilization. Human beings get light in the fire and get warmth to fight against the cold. They used fire to grill food, which made the human brain more mature and developed. Fire has always been the underlying driving force in the civilization process and technological change of mankind, from the steam engine that brought the industrial revolution to the rocket launch of modern aerospace. Fire is a way of releasing energy. Molecules gain energy, electrons transition to high energy levels, and electrons transition back to photons. That is just the light of fire we see. And another kind of light emitted by thunder and lightning from the beginning of the creation, depicts the entire universe through the cosmic microwave background radiation. It is just the oldest light we can see, because this light has spread for billions of years ----



Today, the thunder and fire from the beginning of the world has come to us! It has brought boundless blessings. Under the rotation of gravitation, it contains supreme energy and love. It is coming to us in the sound of whizzing. It comes in a new era, only for all dim individuals to have the chances to finally become bright and radiant and have the freedom to bloom and become prosperous and wonderful... **The thunder fire of creation, the thunderbolts and lightnings, the energy resonance, and the resplendent stars!**

II. TFT (Thunder Fire) 2.0 TFT (Thunder Fire) Consensus Is the Real Secret of Wealth!

Wealth is like flowing water, as it has never ceased flowing! Just like the mystery of wealth, the eternal value flow trajectory began with bartering, whether it was shells, or gold and oil, or numbers in bank books, the evolution of civilization has changed the form of wealth greatly, but the nature of wealth has never changed, that is, **the flow of value**, and the driving force of the flow is **the consensus of all mankind**, and it is the true source of value. In today's centralized finance, **the consensus on wealth** is the product of collection of a small number of people. Therefore, it is destined that wealth is only in the hands of a few people. We have no right to interfere with its rules. We can only be squeezed and exploited ruthlessly. But in the present era when the human technology change, Blockchain Technology, has arrived, we have the opportunity to defend our wealth. When the fragile centralized finance experiences financial crises again and again, our wealth will gradually disappear in the disasters. This year, the stock market slumped several times, which ended the longest bull market in history and made it plunge into a bear market. Gold also plummeted accordingly. Treasury bond yields fell below 0.5% for the first time in history. The Federal Reserve Bank also cut interest rates urgently, which is rare in the recent ten years. Moreover, the rare novel corona virus epidemic in the century has caused the global real economy to continue to decline. In such a difficult time, we will present **an epic work to the world, the blockchain product, that is, TFT. It was born for the financial freedom of all mankind. In the decentralizing** manner, it will reshape the entire financial and business ecology. It will change the wealth creating way under the free will given to everyone by God, and the value will be redistributed in the consensus direction of all mankind. It will build up a wealth empire completely belonging to yourself. It will change the business landscape in the future. It is a key to unlock future wealth. It is a brand new global business exploration. It will create a digital life community that will never end.



III. TFT (Thunder Fire) 3.0 TFT (Thunder Fire) Real Force for World Change!

Looking at the Future from the Perspective of Future ---- the Ultimate Force for World Change!

The sky, the earth, the sun, the moon, and the stars, are moving all the time! Every technological change in human history has promoted human progress. From the industrial revolution to the power revolution, to the Internet information revolution that has been running for 50 years, every wave was deeper and more thorough than the past. And with every technological change, oligopoly monopoly will inevitably appear in the traditional logic. When the unfair distribution caused by centralization triggers a crisis of trust, identity, wealth, and freedom, all mankind has fallen into the questioning of centralization and the desire for freedom. The birth of blockchain technology, has redefined trust, privacy, wealth and freedom, which has let everything return to the origin of the universe.

In the millions of years of human evolution, those shining great men will eventually turn into dust, and only common and ordinary people are the creators of history! When the consensus of the people becomes one direction, it will respond to a great era. People's wealth, privacy, and even thoughts should be used to create a better world! Our will should have a better sustenance. Our thoughts deserve a better destination! Under such a flood of consensus, we will present an epic great work of blockchain to the world. TFT was born for the wealth and freedom of all mankind. TFT allows every weak and humble individual to use the technological change of the blockchain to gather sand into towers, trickles into oceans, and become a force to promote the change and progress of this world! And everyone who participates in this change with a small force will become a witness and doer of history! This will be the largest group collaboration in human history! This will be a great victory of human consensus wisdom! TFT will eventually release the ultimate energy of this transformation maximization, and the day will definitely come when everyone is free, all the stars shine together, and everyone enjoys the ecological prosperity!

Thunder Fire Token (TFT) is a file storage and content distribution network protocol that combines the existing successful systems, such as Distributed Hash Tables (DHTs), BitTorrent, version control system Git and Self-Certified Filesystems (SFS) with the blockchain. The combined advantages of these systems give it the following distinguishing features:

(1): Persistent, decentralized saving and sharing of files (storage DHTs in blockchain mode)



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(2): Peer-to-peer hypermedia: P2P storage of various types of data (BitTorrent)

(3): Textualization: Traceable file revision history (Git - Merkle DAG)

(4): Content addressable: Files are identified by the file contents generating the independent hashes, rather than the file storage location. Only one file of the same content will exist in the system, for saving the storage space.

1: Coming of Digital Era (digital flow goldmine, mankind runs into the digital era)

◆ **1.1:** The direction of mankind consensus data flow is that of wealth. Since the printing was invented, all the printed materials in the last thousand year is equivalent to 200 million GB; but the last three years have produced as much data as the last 40,000 years of mankind.

Today, more than 50 billion GB data are generated globally every day, and the direction of the mankind consensus data flow is that of wealth! Mankind is moving from the IT era to the DT era.



TFT

Thunder Fire Token

Mankind has entered the digital economy era!



Today when the data is exploding, the Boston Consulting Group reports that the digital transformation of mankind will pull in an overall economic impact of **20 trillion US dollars**, equivalent to **20% of the world GDP**, and the human society will enter the digital era in full swing.



Agricultural era: The key elements are land, labor;



Industrial era: The key elements are capital, resources;



Digital era: The key element is the digital assets generated by human intelligence-driven behaviors. Mankind will build the society of the future with the sovereignty of digital assets at its core! Each individual will have the complete data sovereignty and data right, and an era of digital eco-economy will be formed according to time and space, and the integration of their focus and contribution with industries!

Figure 3: Mankind Has Entered the Digital Economy Era

◆ 1.2: Digital economy becomes the new development direction for the world

With the advent of the digital economy era, adapting to the development of the digital economy has become a global consensus. The USA established the NITRD (Networking and Information Technology Research and Development) as early as in 1999, with the



scientific research program on computer, network and software. The development of the world's digital economy has the following **3 features**:

First, platform support. Platform is a “new species” of the digital economy. “Cloud – network – terminal” replaces “railway – highway – airport” to become the brand-new infrastructure and create a brand-new business environment. The last wave of digitalization, driven by companies, achieved the digitalization of companies through the large-scale investment in information systems, thus greatly improved their operational efficiency and management radius. The emergence of platform is driving the digitization of the entire society, provides the affordable world-class digital infrastructure to individuals and micro and small businesses, and unlock their potential to the maximum extent. The cost of information across society has dropped dramatically, and the company credit is no longer directly linked to size, so it directly contributes to the formation of large-scale collaboration.

Second, data-driven. Data is the “new energy” of the digital economy, which is the most important feature of the digital economy. In the last wave of informationization, the business process is highly digitalized, and data is efficiently collected and stored within the company; data is used as a supporting tool to help the company achieve search, control and traceability of its global business. The emergence of platform makes the data flow and sharing possible; the application of new technologies such as artificial intelligence has significantly improved the breadth, depth and speed of data mining. Starting from data mining, it disrupts the original business model, builds a new business ecology and becomes the new development path.

Third, inclusiveness and sharing. Inclusiveness and sharing is the “new value” of the digital economy. The characteristics of “participation by all and sharing by all” have realized the inclusive technology, inclusive finance and inclusive trade. In the field of science and technology, the on-demand service business form, represented by cloud computing, enables individuals and enterprises of all kinds to easily obtain the computing, storage and network resources they need at a very low cost, without the need to purchase expensive hardware and software products and network devices. In the financial field, the new big data credit rating model based on Internet credit enables more individuals to enjoy the financial credit services suitable for their respective risk characteristics. In the field of trade, all kinds of trade entities can participate in and profit from the global trade, and the trade order will become more fair and just.



◆ 1.3: Development tend of the global digital economy

The platform and sharing characteristics of the digital economy are becoming increasingly obvious. Globalization has begun to weaken, and the focus of global competitions is gradually evolving from technologies, products and supply chain to the platform-based ecosystem competitions. Multinational companies continue to build a perfect ecological pattern of **resource pooling and win-win cooperation** by providing open source systems, creating an open environment, promoting the cross-border integration and sharing, reshaping business models, and incubating innovation teams. In the future, the global digital economy will continue to upgrade towards the development trend of **platform and sharing**.

The innovation system of the global digital economy develops towards the direction of **opening and collaboration**. From the past to the present, the innovation is always the driving force for the digital development of the economy. With the development of blockchain technology, artificial intelligence and other new generation information technology, the global innovation system began to develop towards the direction of opening and collaboration. The decentralization problem is solved through the technological means, so in the future, the cost of innovation and development will be significantly reduced, and the speed of creation and invention will continue to accelerate. In recent years, the global innovation entities, mechanisms, processes and models have undergone significant changes, the cross-regional, diversified and efficient crowdfunding, crowdsourcing, crowd maker and crowd smart platforms have sprung up like mushrooms, and the global digital economy highlights the development trend of open and collaboration.

The **digital development of infrastructure** has become a trend. The Internet of Everything and human-robot-thing coexisting are already the basic situations of the current global network architecture, and the planning and deployment of the information infrastructure in all countries are faced with the urgent needs for domain expansion and increment, sharing and collaboration, and intelligent upgrading. The digital economy era, driven by the decentralization of blockchain technology, will become a more inclusive economy.

◆ 1.4: How the blockchain technology drives transformation of the real economy

First, the technical characteristics of blockchain's distributed ledger, which is **open, transparent and non-tamperable**, can be applied to the real economy fields such as traceability, anti-counterfeiting, logistics and supply chain management, and achieve data sharing across organizations and regions in the upstream and downstream links of the industry.

Second, based on blockchain thoughts, it is possible to design new or change existing production relations. For example, the core problem for the difficulty in applying for loans by the real economy, particularly small and micro businesses, is the credit. The traditional risk



control model of financial institutions is mainly based on the assets and transaction records of a single enterprise, but the blockchain thoughts make it possible to design the new information and capital flows, so that the upstream and downstream of the industry can prove the enterprise credit with the fine-grained credible data, and allow the data to generate credit, rather than requiring assets to endorse the credit.

◆ **1.5: Blockchain enables a new ecology for the future digital economy**

Blockchain born with Bitcoin, with its own financial gene, is destined to be naturally suitable for transactions in the financial sector. It takes roots in the financial sector and brings great changes to this sector. Now blockchain also begins to expand from finance to applications in other areas, such as logistics, Internet, government and medicine. **TFT** (Thunder Fire Token, abbreviated as “TFT”), based on the secure and trusted data sharing technology of blockchain, brings new ideas for the digital economy:

1.5.1 About traceability verification

Traceability is an act of tracing the source, and collecting and retaining key data of objects or information in the process of production, circulation and transmission, such as start point, node, end point of circulation and transmission, data details, data collector, data collection time, and so on. That is to say, the stored relevant data can be queried by forward, reverse and directional methods, and then it is possible to trace the source of the object information.

1.5.2 About information synchronization

Blockchain technology can record and share the latest progress in all aspects of the digital economy in real time, keep track of the production, quality and transportation for orders, and transparently visualize the industry chain. It can reduce the difficulties and costs of implementation and management.

1.5.3 About asset digitalization

Asset digitization is the digital identification of various physical or non-physical assets that exist in reality, so that assets in cyberspace also have various offline attributes, such as ownership, circulation, etc.



1.5.4: About smart contracts

Smart contracts enable collaborating enterprises to digitally validate and enforce the content of a contract, as long as the parties have confirmed the content of the contract rules in advance. When the conditions are agreed upon, they can be automatically executed using algorithms without fear of falsification, and this can also effectively reduce the labor costs.

1.5.5: About trust cost reduction

Blockchain does not require intermediaries to be involved, i.e. “**decentralization**”. This may not only reduce costs, but also solve the most difficult trust issue today.



Figure 4: TFT Simulation Scenario



02 TFT Project introduction

Thunder Fire Token



2: TFT Project Description

Mankind will build the future society with digital asset sovereignty at its core

In the **1960s**, ARPAnet (the predecessor of Internet) appeared in the United States of America to solve the problem that IP addresses are difficult to memorize. TFT (full name in English: Thunder Fire Token) emerged from the cocoon and launched the version 1.0 at the world's top 20 communities simultaneously. **TFT file system** is the thoughts based on blockchain + industrial integration, and the full name of **TFT** is **Thunder fire token**.

A token that opens up a new world of digital economy ecology, has the mission to build a borderless digital economy platform, **a blockchain digital life community that never ends!**

TFT planning is the fusion of distributed ledger, distributed storage and distributed communication.

Any user can use a private key to control his own distributed cloud space, and build his own file system and file-based database system on it, thus providing that “missing hard drive” for the blockchain system and enabling the distributed system developers to build all sorts of useful **DApps** with it. This is also possibly a significant change to the infrastructure and thus having the far-reaching impact on the Internet.

Distributed communication is also a required function of the distributed system. The exchange of information, regardless of the dialogues of two or many people, either in text, voice or video forms, is particularly important for all types of transactions before, during and after the event. The traditional blockchain lacks the distributed storage space that can be read and written, and this makes it difficult to establish a distributed communication system, while this project has the distributed storage function and communication data can be transitioned through **distributed cloud**, thus realizing the true **peer-to-peer** distributed communication function.

Bitcoin, which achieves the peer-to-peer transfer function, is the first-generation blockchain that mainly establishes the distributed system through the **incentives**; **Ethereum**, which achieves the smart contract function, is the second-generation blockchain that mainly realizes the programmable transfer through Turing complete **virtual machine**; and the TFT-like public chain has the functions of **distributed storage, infinitely**



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scalable transaction and distributed communication, which is the **functionally complete** blockchain, can be used to build the functionally complete **DApp** and may be considered as the third generation blockchain.



Figure 5: A Digital Economy Sharing Platform That Never Ends



A poetry of Russell is shared here, which fits right with TFT's vision. Let's worship the power that **Pythagoras** admired – the **myriad things all count**.

*I have wished to understand the hearts of men. I have wished to know why the stars shine.
And I have tried to comprehend the Pythagorean power by which number hold sway above
the flux.*

*Love and knowledge, so far as they were possible, led upward toward the heavens.
But always pity brought me back to earth. Echoes of cries of pain reverberate in my heart.
Children in famine, victims tortured by oppressors, helpless old people a burden to their
sons, and the whole world of loneliness, poverty, and pain make a mockery of what human
life should be. I long to alleviate this evil, but I cannot, and I too suffer.*

–Bertrand Russell

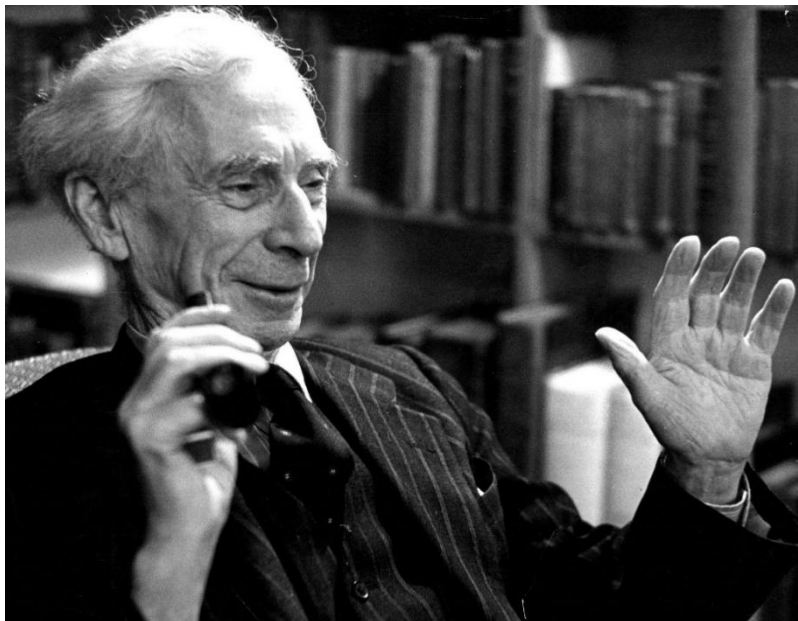


Figure 6: TFT Bertrand Russell



Tenets of Thunder Fire TFT: Freedom, Fairness, Union, Innovation, Inclusiveness, Sharing.

◆ 2.1: TFT——A vast scale industrial ecology of digital economy

Based on the mature blockchain technology, it is supported by RTXP algorithm, distributed data storage, artificial intelligence and other technologies, and uses the unique blockchain incentive mechanism to quickly gather individuals, communities, enterprises and financial services institutions on the same platform, so it becomes the world's first industrial ecology of digital economy with the **individual digital asset management and collaborative innovation of data and industry** at the core, as well as the **wide application values**, to boost the incubation of **high quality blockchain projects**. This is the **first large-scale group collaboration** in the history of mankind **with the blockchain technology at its core**.

Jointly developed by 20 allied communities around the world, it is highly open and autonomous. It aims to build a **free, fair, united, innovative, inclusive and sharing ten-million-flow open transaction platform** on the chain. It is accessible to the real-time transaction data from all major global mainstream exchanges to achieve the barrier-free circulation and exchange of various types of digital currencies and fiat money.

Simultaneous launch in 20 countries and regions. It is simultaneously launched in 20 countries and regions around the world, including USA, Canada, Australia, North Africa and Asia Pacific, to create a digital economy ecology covering the whole world.

◆ 2.2: TFT “one center, two cornerstones, three dimensions”

2.2.1: “One center”——building a digital parallel world

The ultimate goal of the digital economy is to build a digital parallel world, eventually realize the full integration of the physical and digital worlds, and merge the world of atom bits into one.

TFT takes the data chain of 20 communities in the world as the starting point to comprehensively construct the key infrastructure for the **digital transformation of economy and society**. By virtue of the advantages of opening and sharing, it attracts more institutions and individuals to join the ecosystem, creates the core component of the next-generation Internet of Value architecture and becomes an important portal connecting the virtual and real worlds.

2.2.2: “Two cornerstones” — blockchain + AI

Blockchain technology can construct an efficient and reliable value transmission system, drive the Internet to become a network infrastructure for building social trust, and achieve the effective transmission of value, which we call the **Internet of Value**. We note that



blockchain provides a new type of social trust mechanism and lays a new foundation for the development of the digital economy, and that the “**blockchain+**” application reflects a new direction of industrial innovation and public services. Many solutions based on the blockchain can improve the existing business rules, build a new model of industrial collaboration, and enhance the efficiency of the collaborative circulation rate. Either central banks or large commercial banks, either United Nations, International Monetary Fund or government research institutions of many countries, have paid great attention to “**blockchain+**”.

And **artificial intelligence** (AI) is also extremely important in the realization of the digital economy, in the **field of data collaboration**. Data in the digital economy are represented by **cloud computing on the platform side** and **edge computing on the terminal side**, and the prerequisite is to have massive data for model training. Any single organization can only master a portion of the data set, and only an open and collaborative alliance can more fully and accurately outline the total characteristics of the target object.

2.2.3: “Three dimensions”— technology consensus, finance consensus, ecology consensus

TFT establishes three levels from technology, application to ecology:

- **Technology consensus** lays the basis, because it provides a good technological foundation for the open on-chain system, and for the industrial ecology of digital economy through blockchain.
- **Finance consensus:** It defends our wealth with decentralized technology, naturally converges the attention flow and consensus direction of payment tools, and can quickly drive business change and profit redistribution. The time, attention and behavior data can generate big value and greatly improve the business environment and social environment! In the future, we plan to complete the construction of digital identities for **nearly a billion** people, and create an **over-trillion** application ecology of attention flow and digital flow! This will be the world’s largest digital eco-economy dynasty covering the fields of game, e-commerce, social media, entertainment, health tourism and intellectual property rights ... **it will open up a digital life community that never ends!** Its application value will be worth **trillion**.
- **Ecology consensus:** It is an open interface that allows various entities to join the ecological business application scenario of digital economy; and unites government regulation, community organizations and other institutions to build a borderless digital economy ecosystem.



TFT uses the blockchain distributed ledger to build an identity authentication management hierarchy system from the underlying layer, sign the multiple signature registration and binding management with **double private keys**, and satisfy the requirements of decentralized regulation and government access to commercial-level regulation of decentralized network. To meet commercial needs, **TFT uses the credit consensus mechanism** to allow more merchants and users to participate, and issues **a common digital currency, TFT**, to realize data transactions and circulation within the system.

2.2.4: Application layer and smart contract create the digital management layer. TFT smart contract uses blockchain technology to upgrade the supply chain at the application level, and achieves the **unimpeded flow of commerce, logistics, information, capital and users** in the digital era. With **user demand as the core**, it can realize the **flattening, community and sharing** of data, shorten transaction links from upstream brands, downstream terminals to consumers and reduce the duplicate construction. Over 3,000 **ODPS** data system can achieve the integration and linkage of various links - helping brands cover terminals, help terminates to purchase from the upstream directly through the platform and realize the **connectivity** of individuals in the alliance.

2.2.5: The ecological layer builds an intelligent decision-making solution. TFT is an open on-chain system that supports the development of commercial applications by governments, third-party organizations and all third parties on the upstream, midstream and downstream of the supply chain, makes the intelligent analysis of data through AI, big data, cloud computing, 5G and IoT, and provides intelligent decision-making to boost the long-term growth of the real economy, promote the integration of finance and real economy, reduce financial risks and construct the ecology of digital economy that is multi-center, controlling distribution according to work, value-sharing, and equitably distributing of benefits.

◆ 2.3: Rise of Blockchain and Hope It Brings

On November 1, 2008, Satoshi Nakamoto's Bitcoin white paper made it possible for mankind to issue private money over the Internet. The blockchain technology behind it has the potential to solve the problem of trust between cooperative entities, and this is why blockchain was called a **"trust machine"** in the cover article of *The Economist*. Although most of the existing technologies primarily contribute to the advancement of **"productivity"**, the blockchain is an innovation in the **"way people cooperate"**, a technological revolution in the relations of production. Before the blockchain emerged, human cooperation could only be achieved through centralized solutions, which were reflected in the use of



centralized servers in the Internet, C/S or B/S architectures based on the TCP protocol. Blockchain allows us to see the possibility of transforming centralized transaction matchmaking platforms into distributed matchmaking platforms, which can maximize the efficiency of the distributed market economy while avoiding the problems associated with centralized organizations, thereby greatly reducing the cost of trust in distributed markets. In fact, blockchain can give reasonably distributed solutions to major obstacles such as opaque human cooperation, irrationality, conflicting ideas, and lack of program interfaces, mainly because blockchain has features such as **distributed bookkeeping, consensus mechanisms and token incentives, assets based on address and private key control, smart contracts, trusted data, and distributed communication.**

The industry to which blockchain brings the biggest change is **first of all the finance**. Bitcoin pioneered non-government issuance of currency and unmediated electronic transfers, while the ICO boom of 2017 offered broad prospects for the digitization, distributed bookkeeping and programmability of various assets through tokenization. It can be imagined that in the future, assets of all kinds, including securities, land, real estate, cars, oil, etc., will be mapped to the blockchain in large quantities, thus enabling **digitization, distributed bookkeeping and programmability** of assets.

But in the future, if the blockchain can realize the **distributed storage** and **distributed communication**, it has the potential to establish the infrastructure for a distributed Internet, and thus providing the unlimited possibilities for the transition of human cooperation from centralized organizations to distributed organizations. The first-generation Internet is the centralized information Internet, which has already brought great changes to society, while the emerging **distributed information Internet** and the **Internet of value** are the deepening and inevitable trend for the development of the Internet.

More importantly, for the first time in the history of mankind, blockchain gives a distributed solution to the core problem, the problem of trust, by **delivering trust to code**. The blockchain-based smart contracts replace paper contracts, enabling not only the automated execution of contracts, but also transactions between strangers based on trust in code. Distributed bookkeeping and smart contracts allow mankind to automate the distributed market transactions without relying on centralized institutions, so that mankind can make a qualitative leap in cooperation technology for the first time since out of Africa. Since then, human cooperation gradually enters the 2.0 era, that is, mankind's organizations and cooperation built on the distributed Internet. It can be predicted that the distributed technology based on blockchain will gradually solve the drawbacks of centralized organizations, remove the spell of centralized organizations on the throat of mankind, and open a new journey of human civilization to a more advanced stage.



2.3.1: Blockchain's current shortcomings and problems to be solved: From Turing Completeness to Functional Completeness

The application of blockchain in the field of payments began with Bitcoin in 2009, and the proposal of Ethereum as a Turing-complete blockchain started since 2014, but so far, in addition to Bitcoin and Ethereum with more than **2 million** users, other blockchain applications have basically not reached this order of magnitude, and the number of daily active users are even less, only a few hundred thousand. However, too many centralized applications have tens of millions of users, and hundreds of millions of users are not uncommon. Blockchain projects not only lack killer applications, but also are rarely implemented in various industries.

Centralized platforms generally have functions such as registration and identity authentication, data storage, communication, and order placing for transactions, and the platform is also better at scalability and user experience. Blockchain, on the other hand, is almost either vacant or inadequate in these functions. Here list several imperfections in the functionality of blockchain.

2.3.1.1: Scalability. Scaling refers to the confirmation efficiency of blockchain transactions. Currently, Bitcoin averages less than 20 TPS, Ethereum averages less than 20 TPS, and even EOS single-chain speed with super-node capabilities can only reach thousands. At present, blockchain scaling is being worked in several aspects by slicing, layering and consensus mechanism, but all of them are still immature.

2.3.1.2: Storage. The development of the Internet is accompanied by data storage technology, but the current blockchain basically uses data blocks to broadcast to the whole network, which is not only inefficient, but also difficult to generate a variety of data-based applications.

2.3.1.3: Communication. At present, important applications, regardless of Airbnb, Uber or Taobao, have built-in communication functions, not to mention social applications. This is because most transactions have communication requirements before, during and after the transaction. The current blockchain is building an Internet of value but fails to integrate the functionality of the Internet of information, while future blockchain projects need the systematic solutions that can efficiently integrate the **exchange and transactions** of mankind.



2.3.1.4: Cross-chain. We expect blockchains to represent large amounts of value on chain and form an Internet of value through blockchains, but now it seems that individual blockchains form their own value interactions, and it is difficult for blockchains to have value interactions with each other. This actually shapes an archipelago of blockchains, but without island-to-island connections. Hence, tens of thousands of exchanges have already been created, but exchanges are centralized institutions that can only exchange values, making it even more difficult to achieve programmable multi-currency interactions, that is, multi-currency smart contracts.

2.3.1.5: Identity management. A person's identity is tied to his or her activities, including social and transactional, but it also includes the self-identity revealing and identity authentication from third parties. Moreover, identity is relevant to the use scenario, and people have different identities in different situations. The existing blockchain lacks totality and depth in the identity management, and also lacks integration with business scenarios.

2.3.1.6: User experience. Existing blockchain projects often have a poor user experience when they are made into products. For example, the management and use of private keys and addresses are not user-friendly and lack integration with artificial intelligence.

It can be found that currently the blockchain has not yet been used on a large scale, mainly due to the above imperfections in functionality. Melanie Swan in "Blockchain: Blueprint for a New Economy" (Swan, 2015) **divides blockchain applications into three stages:** blockchain 1.0 is blockchain for payments, technically characterized by the realization of distributed bookkeeping; blockchain 2.0 is blockchain for finance, technically characterized by the realization of Turing-complete smart contracts; blockchain 3.0 is blockchain applications in all aspects of society, in fact, to achieve various functions the current centralized platform has. Currently, the blockchain has not been able to develop applications with tens of millions of users, mainly because the existing public chain does not have all the above-mentioned functions, on which it is impossible to develop distributed applications that are commonly used by the public. In order to realize Blockchain 3.0, it is necessary for the public chain system to evolve from Turing completeness to functional completeness.

The term "**functional completeness**" refers to the specific key functions that blockchain-based applications need in order to achieve an experience equivalent to that of existing centralized apps. The public chain 3.0 is similar to the distributed version of current centralized platforms. To enable it to develop functionally complex distributed applications,



it needs to have sufficient functionals itself, which require the emerging blockchain to achieve above-mentioned specific functions. However, we look at almost all public chain projects that have emerged, which are difficult to meet the requirement of “functional completeness”. They either lack communication, storage, or lack identity management function. Therefore, there is no real blockchain 3.0 public chain on the market yet. The real execution and large-scale application of blockchain require the public chain platform to **evolve from “Turing completeness” to “functional completeness”**, that is, with various functions that can realize heavy distributed applications, not just Turing-complete payments.



Figure 7: TFT Simulation Scenario

◆ 2.4: Features mankind need to have for the blockchain-based automated cooperative system

Distributed market is the most natural way for the cooperation of mankind, but due to the limitations of communication technology and automated trading techniques, mankind have made extensive use of centralized organizations to mitigate market failures. Centralized solutions can solve a large number of problems, but they also have inherent flaws. Centralized Internet platforms have opened our eyes to the possibility of automated human cooperation, and blockchain has opened our eyes to the **prospects of distributed automated human cooperation**. The Internet-based distributed automated human cooperation system will be the main future direction of human cooperation technology. And the blockchain-based automated human cooperation system has the features that are not identical to centralized platforms.



To sum up, the blockchain-based human cooperation system needs to have the following characteristics:

2.4.1: The public chain is sufficiently distributed. Distributed systems break up the cooperative entities into smaller granularities that allow for smaller granular cooperation, have the potential to avoid the various negative problems associated with centralization, and increase the number of entities that can participate in cooperation. This requires that the blockchain be a very distributed public chain.

2.4.2: Automated systems for code-based cooperation. Automation is not only the automation of machine systems, but also the future of cooperation in human society. Cooperation based on programs enables future cooperative systems to function efficiently. This cooperative mode also has the benefit of reducing the problems caused by mistrust by increasing code transparency and automatic execution. This mechanism of code-based cooperation is the most critical solution to the barriers that exist in human cooperation. This requires that the public chain and the smart contracts on it be open source systems.

2.4.3: Ability to integrate exchange and transactions. Exchange is the most critical means of reducing information asymmetries, and the distributed automated system can integrate exchange and transactions because it is able to always connect the transaction counterparties before, during and after the transaction. In the Internet era, this requires the integration of the Internet of Information and the Internet of Value on a distributed network.

2.4.4: Data is controlled by the producer, in other words, there needs to be distributed cloud storage. A major problem of the centralized solutions is that the data is owned by centralized organizations, which is not only unreasonable but also prone to leaking privacy. The reasonable approach should be that the data is controlled by the producer. This requires a distributed system that solves the problem of distributed storage of data so that the data exists in private space and can confirm rights as soon as it is generated.

2.4.5: It has the identity authentication and proof-of-reputation mechanisms. The identity authentication and proof-of-reputation mechanisms are the most important mechanisms to solve the information asymmetry and distrust of transaction entities. A distributed system must integrate the two mechanisms.

2.4.6: It enables various participants to access services or make money. The system allows individuals, organizations and intelligent programs to participate equally in



transactions. At the same time, it requires the public chain to empower participants, including code developers, product providers and users, who can benefit more than a centralized platform.

2.4.7: It can empower developers. The most important creativity of mankind derives from entrepreneurs, and a system can only be activated if it attracts the strong support from various entrepreneurs.

As stated above, the existing human cooperation is mainly built on **semi-automated systems of centralized organizations** and called the first-generation cooperation system. The second-generation human cooperation systems should be mainly based on **distributed automated systems**. Such a system should have the capacity to allow various transaction entities to trade more equally and efficiently.

◆ **2.5: Project objectives**

The blockchain technology offers us the prospect of an automated society for all mankind on an automated transaction matchmaking system, with the possibility of a blockchain-based global village. To upgrade human civilization as soon as possible, we must establish a functionally complete and infinitely scalable public chain system that enables exchange and transactions between individuals, organizations, and between individuals and organizations to promote human cooperation on a global scale across geographic, institutional, organizational, faith and racial boundaries, and to promote efficient human cooperation by integrating the Internet of Information and the Internet of Value via blockchain and facilitating human exchange and transaction.

As we can see, currently some apps can have **2 billion** users, but the total population of mankind is less than **10 billion**. For an infinitely scalable public chain, it is entirely possible that all mankind establish cooperation on it and facilitate the realization of a blockchain-based global village. Although it won't be easy to achieve this goal, we can already see a glimpse of such a prospect.

With such a **mission and vision** in mind, the project has a direction to persevere with efforts. But direction alone is not enough; the project needs a concrete goal. Based on the above analysis of centralized human cooperation and the current deficiencies of the blockchain, what mankind currently needs the most is a distributed automated cooperation system, which should be based on the public chain. Our goal should be to develop a public chain that can overcome the shortcomings of current blockchain, and build various **DApps** on it to facilitate human cooperation. Such a **public chain should have the following characteristics: infinitely scalable, functionally complete, address-centric data right**



confirmation. Therefore, **the goal of TFT is to develop a functionally complete and infinitely scalable public chain with address-centric data right confirmation** and to promote the continuous improvement of the **DApp** ecosystem on it.



Figure 8: TFT Simulation Scenario

So the TFT project has the following objectives:

2.5.1: To establish an Internet of information based on peer-to-peer networks, where data is stored in the private space of the producer and rights are confirmed as soon as the data is generated. Professor Zhang Shoucheng, a famous scientist, made the following points when discussing the development of artificial intelligence and big data: “the majority of big data are related to personal information, but personal data and information often go to central platforms, where individuals do not get privacy protection, and people do not get rewarded for providing personal data. These two problems are concurrently solved by the blockchain, so it has a complementary relationship with artificial intelligence.” This project will confirm rights of personal data based on the distributed space of personal data.



Open a new era of individual financial wealth, build a borderless digital economy platform!

2.5.2: To create a peer-to-peer network-based Internet of Value with transaction scalability capable of supporting one billion users.

2.5.3: To build a multi-dimensional identity and reputation system that enables a human cooperative ecosystem to create the mechanism for good money to drive out bad money.

2.5.4: To serve developers so that they can focus on data services rather than data possession.



Blockchain platform based on high intelligence and high transparency characteristics will bring a new round of change to the global financial system, and may even dominate the future “code world” of the new financial world. The distributed financial system made up of consensus can gather a large number of people’s consensus, which will be linked to more digitally enabled real industrial economies on an open main chain structure and form a new ecology of digital economy!

Figure 9: Three-in-One Ecology of Digital Economy



03 TFTP Project Structure

Thunder Fire Token



3. Project Structure

◆ 3.1. Design thinking of project

3.1.1. Peer-to-peer communication, distributed internet of information and space-based storage

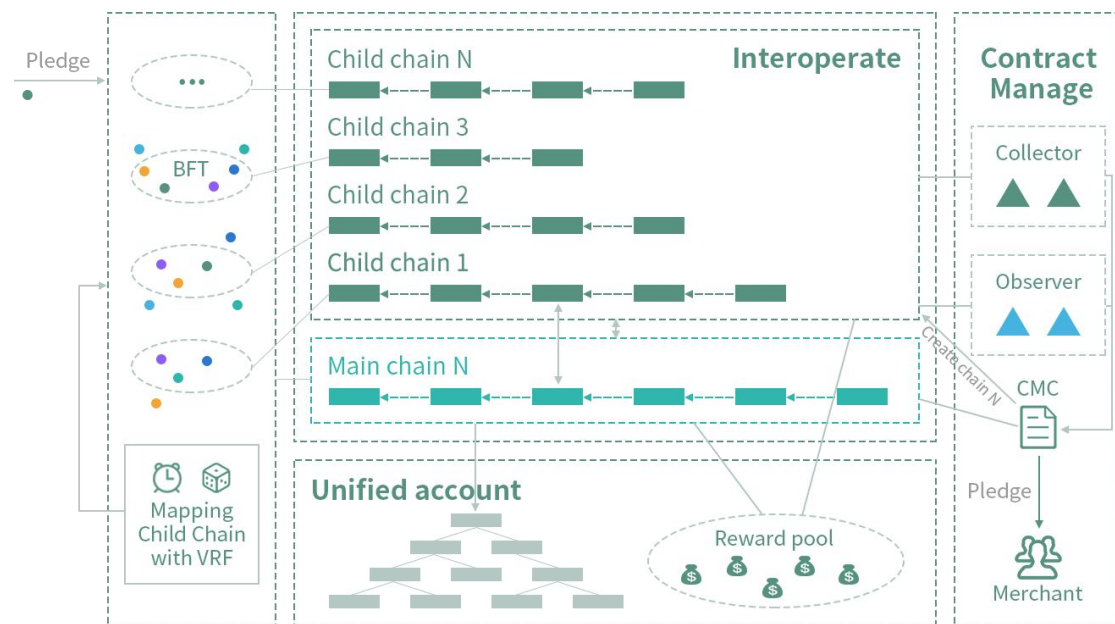
The **space-based storage** is the most critical condition for project design that must be satisfied. On this basis, the peer-to-peer communication and distributed information Internet can be realized. The current **IPFS** technology requires transactions for every upload and download of files, which will make the file system itself take up a lot of transaction resources, and make it difficult to be used in data storage that requires dynamic updating, but the dynamically updated data is the most timely and valuable. **IPFS** is actually the “**file-based**” storage, but our traditional internet storage is space-based. Almost all cloud services are charged for the amount and time the space is used, but the space in the blockchain world is not charged for the time and space used for storage. This is the most important thing that blockchain storage needs to change.

Meanwhile, space-based storage allows each person to have their own “**distributed personal cloud**”, which enables the data communication, right confirmation and transactions built on personal cloud and allows various applications to return the data generated in the applications to users. In other words, data are not stored in the platform, but stored in the **personal cloud**.

3.1.2. Transaction scalability solution

If the project needs to be used by a large number of people, it is necessary to scale the existing blockchain trading capability. How to scale the transaction capability is one of the important issues in the development of blockchain.

The essence of blockchain is **distributed ledger**, which requires state synchronization before the next-step operation and then a new state synchronization, otherwise it is difficult to avoid the double spending problem. And to achieve state synchronization of the peer-to-peer network, a trusted bookkeeping node needs to be selected at each state synchronization cycle, and then the record is broadcast to all nodes, and so on and so forth.



■ Figure 10: Parallel Fast Multichain Sharding

Accordingly, the bottleneck of trading capability lies in two points: efficiency of electing bookkeeper; efficiency of data synchronization.

- **Efficiency of electing bookkeeper:** The election of bookkeeper is mainly realized through consensus mechanisms, which mainly include POW, PBFT and POS.

POW (proof-of-work) is the most concise and secure mechanism, but it is also criticized for slow block generation rate, adversity for environmental protection, monopoly of mining pool computing power and other issues, so it is a consensus mechanism that should be avoided as much as possible.

PBFT (Practical Byzantine Fault Tolerance) needs to collect signatures of more than two-thirds of the nodes, and as the number of nodes increases, this is almost impossible, but only through super nodes. However, this will seriously damage the decentralization.

POS (proof of stake) can generate blocks quickly, but it is considered to widen the gap between rich and poor and be easily monopolized by the rich, and the issue of finality is mathematically difficult to prove. In reality, however, the POW also widens the rich-poor gap and is easily monopolized by the rich, because the purchase of computing power also requires financial resources. At the same time, it is not impossible for the POS to curb the gap between rich and poor by a new design.



Therefore, this project should design the consensus mechanism in such a way that the strengths of various consensus mechanisms can be absorbed and their weaknesses can be avoided, and a hybrid consensus mechanism is a reasonable choice.

● **Data synchronization efficiency: sharding**

The synchronization efficiency is primarily **related to hardware performance, size of each block, block generation cycle, and size of nodes that need to be synchronized**. Hardware performance, including bandwidth, awaits the development of the entire Internet hardware infrastructure. The size of each block and block generation cycle are directly related to TPS and cannot be optimized. The size of nodes that need to be synchronized is related to security and decentralization, and it is in this respect that most current blockchains are unreasonable. The current number of blockchain nodes can be increased infinitely, but all need to synchronize a piece of data, thus leading to worsening system performance with increase in the number of hardware, but its marginal utility is decreasing when the distribution reaches a certain level. Although the distributed level increases security, but the security and distribution also need a certain limitation, it is not necessary to expand infinitely.

Therefore, the best way to increase the synchronization efficiency is **sharding**, that is to say, nodes are divided into **multiple groups**. With the increase of nodes, the number of shards also gradually increase, and each shard have enough nodes to maintain the “**sufficient distribution**”. This approach can control the size of each shard to a certain degree and increase the synchronization efficiency, and on the other hand, multiple shards generate blocks at the same time, so that the infinite scaling of the blockchain trading capability has a realistic approach. So, although it is difficult, the sharding design, including inter-shard trading and split mechanism, will be the inevitable choice for this project.

3.1.3. Multidimensional identity authentication and proof-of-reputation mechanisms

Although blockchain provides means for anonymous transactions, more transactions require an increasing understanding between transaction counterparties in order to reduce information asymmetry and transaction costs, and effect more transactions. Therefore, the **identity authentication** and **proof-of-reputation mechanisms** are an essential design.

It is difficult to achieve mandatory disclosure in the blockchain world, and even in the distributed world, it is difficult to verify the data authenticity after disclosure. But the



blockchain has the characteristic of **untamperable data**, so if information disclosures are provided to individuals, plus timestamp and proof that the data cannot be tempered, then voluntary disclosure or self-proof of reputation will become an autonomous choice for many people.

Because a person has multiple identities in family, school, company, country and part-time occupation, etc., with different characteristics on different occasions, the multi-dimensional identity authentication is required. Also, the proof-of-reputation mechanism needs to be supported by multidimensional data. Only when a person keeps storing his various data in an untamperable network, can he leave more and more traces in time, thus presenting an increasingly credible self and making **identity and reputation an asset to himself**.

Therefore, many people have the need to utilize **personal cloud** on the blockchain for **identity authentication and proof of reputation**.

3.1.4. Serving developers

This project aims to promote entrepreneurial productivity and further the efficiency of human communication and transactions. This is the fastest way to facilitate human communication and transactions. Accordingly, the project design bears developers in mind. Platform entrepreneurs don't necessarily want to occupy user data and give rise to misunderstanding. Platform entrepreneurs actually have no choice, and the current data cannot be stored by everyone on their own. If the blockchain could provide the cheap personal cloud space for everyone, then entrepreneurs can have a functionally complete blockchain and build various **DApps** to start their business. This is because a distributed network built on a functionally complete blockchain has a number of irreplaceable advantages and can provide better startup services in the shadow of today's Internet giants.

- **A functionally complete blockchain allows for better data right confirmation, rule-making power and self-proof of innocence**

Most startups today need to use the Internet to develop mobile applications or websites, but new entrepreneurs often face the challenges of big costs of customer acquisition and their business models being copied by large Internet platforms. Large Internet platforms have advantages in development strength and traffic import, and it is easier for Internet platforms with big data to optimize customer experience, but small entrepreneurs have higher



development and customer acquisition costs, so entrepreneurs nowadays easily encounter bottlenecks in their business, and the best choice for them may be to develop and sell to large Internet platforms, thus further enhancing the Internet platforms' monopoly power.

How can empower entrepreneurs to challenge large platforms? Large platforms are currently criticized most for their monopoly on user data and rule-making power for transactions, and their lack of transparency. They claim to be innocent, but it is difficult for them to prove their innocence.

If starting a business on blockchain enables the user-generated data to be confirmed to the producer, trading rules to be controlled by the user, and developers to prove their innocence, then developers are able to challenge large Internet platforms.

- **A functionally complete blockchain allows for better use of development tools and development ecology**

The blockchain based internet is quite different from the traditional one in terms of architecture, because blockchain has a thick protocol layer and a thin application layer, but the traditional internet has a thin protocol layer and a thick application layer. This makes it more difficult to develop the traditional Internet, but in the blockchain world, business can be started only by using the smart contract package, even without renting a server, so that developers can better help each other, development tools can be better shared, and development difficulty is reduced accordingly.

- **A functionally complete blockchain allows for better traffic sharing and reducing customer acquisition costs**

Traditional internet platforms are becoming more and more powerful due to the large amount of data they occupy, and it is becoming increasingly difficult for entrepreneurs to import traffic or acquire customers. However, users on the blockchain platform can use addresses as usage IDs for any application, making it possible to share traffic between DApps on blockchain and greatly reducing customer acquisition costs.

- **A functionally complete blockchain allows for better data sharing and customer profiling**

The most important feature of a functionally complete blockchain is that data are stored in personal space, and these data can be selectively open. Therefore, most people have open data available to new entrepreneurs on blockchain, thus enabling data sharing and facilitating customer profiling and targeted recommendations for platforms using a particular application for the first time.



◆ 3.2. Project characteristics

3.2.1: Serving developers: Empowering entrepreneurs as the main entry point for the ecology construction

TFT strives to be an automated blockchain-based cooperation system for mankind, which has a pyramid structure made up of basic public chain, DApp, merchant, and customer, as shown in the figure below:

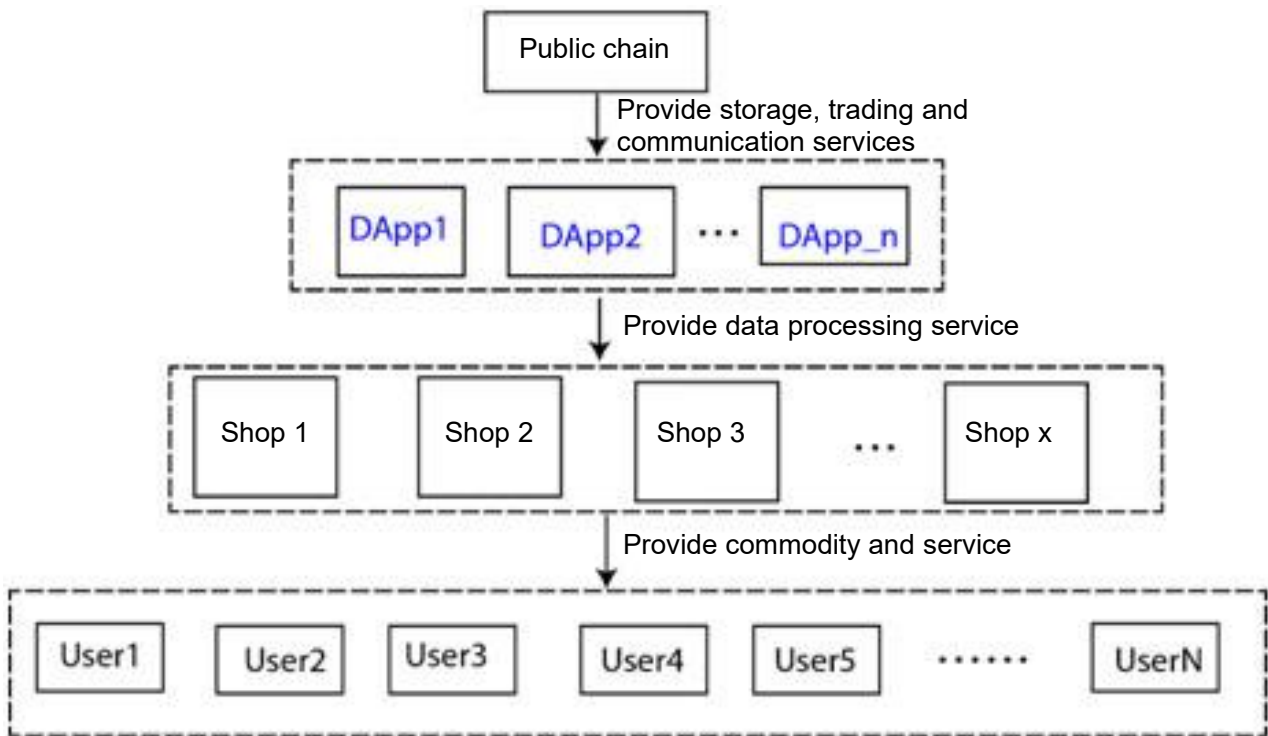


Figure 11: Ecological Pyramid of Blockchain

According to the figure above, TFT directly serves **DApps**. If **DApps** are primarily considered as developers (D-terminal), the **D-terminal** will be the entrepreneurs in the automated human cooperation system, so **TFT mainly serves the entrepreneurs**. For this purpose, TFT must achieve **the following points**:

3.2.1.1: To provide the necessary functionality for developers: To achieve this, the blockchain needs to be functionally complete and infinitely scalable.

3.2.1.2: To reduce the costs of developers: This requires good supports, including multi-language support, good documentation, testing network, and a large amount of open source code, etc.

3.2.1.3: To import traffic for developers: This requires the users to share information on the public chain.



3.2.1.4: Object management is required for the storage space: Database functionality is fundamental to any application, and read-write, space-based storage is essential for developers.

3.2.1.5: To avoid unfair competition of developers: This requires that data are not be attributed to developers, and that developers provide algorithmic services, for this purpose, data need to be put on the public chain.

3.2.1.6: To increase the number of trading objects that can enter into smart contracts: This requires the blockchain to have the cross-chain function.

3.2.1.7: To make smart contracts smart enough: This requires smart contracts to have the prophet function.

3.2.2. Space-based data storage: read-write storage space

The traditional Internet is built on TCP protocol and C/S or B/S based architecture with a variety of vertical applications. However, with servers at the core and lack of communication mechanisms for servers of different organizations, it is impossible to establish intelligent, automated cooperation across organizations. Blockchain is built on P2P network, which makes intelligent and automated cooperation across entities (both individuals and organizations) possible due to the equal status of nodes. The traditional Internet has the well-developed database system where large applications can be built, but the blockchain system lacks the database system that can support large-scale applications, thus making it difficult to establish large-scale cooperation across entities even on blockchain. Therefore, **TFT** must achieve the **on-chain storage function**. Moreover, to make the data producer the controller of data, data must be stored in the storage space owned by the address. Therefore, the address needs to have the ability to **apply for the data storage space**.

In terms of the data storage needs of **developers**, these spaces need to be managed **based on object** rather than **based on files**, so that data can be defined in categories as they are generated, and designed with the management method. A large number of applications need to update data at all times, such as communication, social, self-media and online shops, which require to establish the read-write storage spaces in the backend. Therefore, the read-write, space-based, object-managed storage child chain will be the first technical problem that TFT will need to overcome.



At present, a large number of blockchain projects for storage are based on **IPFS**, and managed based on files. They upload encrypted texts, and the public chain manages them in pieces, with the main purpose of **certificate storage** instead of facing developers. Such a file-based management system makes it difficult to implement the highly available, read-write and object-based storage space management, and to realize the database system on it. Of course, the space-based management needs to involve space contribution management, space application management, as well as space read and write management. It is very complex to build such a cloud service on the distributed system, but this space-based distributed storage system is the problem that blockchain must overcome.

The basic function of the future blockchain should be to establish personal file systems on the distributed cloud service, not only allowing the data rights to belong to the producer, but also making it possible for individuals to suggest identity authentication and data transactions based on this space, and reducing the granularity of social communication and transactions. It is easier for entrepreneurs to build large **DApps** on it, thereby causing a big change to the organization of human society. **TFT** needs to develop its own storage subnet, where space is the object of management and files are the object management, so that each user can easily build own data system, identity reputation system, communication system and transaction system on it.

3.2.3. Address-based data right confirmation: Addresses are central

The blockchain system makes it possible for one address to have various functions. In the traditional world, when people want information interaction, they have to apply for accounts on different Internet platforms, and when they want value interaction, they must apply for bank accounts. On the blockchain, people with an address can interact not only with information, but also with value. Not only that, but they can also conveniently issue various smart contracts for programmable value interactions. In addition, people can bind their identities to addresses to assist in biometrics and build their own identity system. However, in various centralized systems, people need to register multiple accounts, data are also divided and possessed by various centralized service organizations, and interactions between organizations are difficult to achieve. Such a cooperation system is neither efficient nor reasonable, and has a single point of risk.



Address-based **data storage and control** also makes it extremely convenient to **confirm data rights and share traffic**. Since the addresses of different DApps and address-related data are stored according to addresses, the data can be stored in the user's own space. This allows for right confirmation of data upon being generated by users during their use of DApps. In this way, not only the value of addresses is increased, but also different DApps can read data of each other's users, thus making it possible to share traffic. DApps are also able to challenge centralized platforms. Originally centralized platforms keep occupying data through "imparity clauses" so that they can earn revenue mainly from the data instead of the service. However, when the new DApp is developed on TFT, the existing DApps can provide traffic for it, and the new DApp can also bring traffic to the existing DApps.

The data sharing of DApp is shown in the following figure:

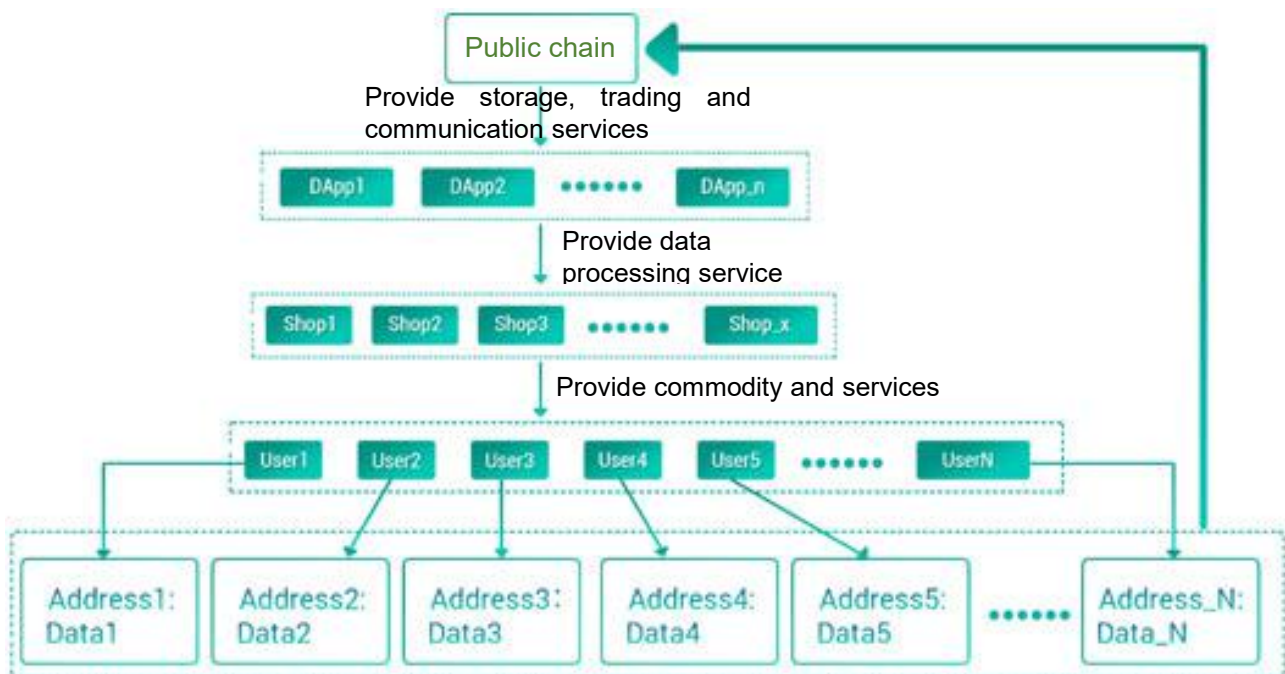


Figure 12: Customer and Data Sharing Among DApps

After realization of distributed data storage, TFT allows any DApp to have the abilities of address data storage, information exchange, value interaction and identity proof, etc., so that any individual, organization or even intelligent program can conveniently establish exchange and transaction relationship with any other entities as long as they have an address. Moreover, with the accumulation of address- centered data, it is possible to establish a proof-of-reputation system where "**good money drives out bad money**", so human cooperation can move towards a virtuous circle.



From the perspective of entities of exchange and transaction, only if they are able to operate the address, any entities can participate in the **TFT system** for exchange and transaction, they may be individuals, organizations or intelligent programs. The world today is dominated by various centralized organizations, but the blockchain leads to the rise of individuals. In the future, intelligent programs will become more and more important entities. As a matter of fact, there is no need to distinguish whether it is people or intelligent programs behind the address, either individuals or organizations may achieve equal exchange and transactions if they apply and own an address.

According to the Metcalfe's law, the more entities participate in a system, the more progress will be made. Participants, either individuals, enterprises or intelligent programs, through the underlying blockchain code, are not subject to geographic, institutional and organizational constraints. They can freely express their views, sell and buy products, and make transactions more automated and intelligent through smart contracts, thus enabling mankind to gradually build large-scale, automated and deep cooperation relationship.

3.2.4: Data sharing based on data routing: the information exchange is fully supported by protocols

TFT's storage function allows for the on-chain storage of data, while data retrieval requires **data routing**. TFT designs the specialized data routing function to make data accessible at any time, and establish the exchange of information between any addresses. For smooth chatting experience, the existing solutions need centralized storage or routing. TFT's distributed storage is specifically optimized for chatting, and the **information exchange** can be completed through chatting without centralized servers if the specially designed read and write storage space and file database are used. Either a dialogue between two people or among multiple people, either text, voice or video, are particularly important for human transaction before, during and after it. The Internet of Information is characterized by information interactions and the Internet of Value is characterized by value interactions, but TFT, the next generation public chains, will break this boundary and integrate information and value interactions.

TFT provides the protocol-level communication support for DApps, so everyone can freely have the **encrypted, decentralized** communication with the whole world. The exchange data will be owned only by the producer. Any person can establish the peer-to-peer rich media chats and peer-to-peer rich media chats, and transfer money and interact with smart contracts during the exchange. **It is important to integrate the communication function to the blockchain**: before transaction, the counterparty may be contacted for transaction negotiating, and the smart contract for transaction can be conveniently established in the dialogue; during transaction, both parties can have chat at any time about the transaction-related situation, communicate the delivery situation or



modify the smart contract; after transaction, all objects that have ever transacted can be divided into separate groups for the convenience of customer relationship management.

TFT will support the live chat at the protocol layer, while DApp, based on Email and the distributed storage function, can establish peer-to-peer or one peer to multiple peers relationships, and have the peer-to-peer or group chats.

3.2.5: System is fully distributed and infinitely scalable

TFT V2.0 is fully distributed. TFT V2.0 is similar to Bitcoin and Ethereum in that anyone can participate in mining and have the opportunity to be rewarded for mining. Participants can choose to obtain resources for each shard by participating in the consensus main chain or applying for participating in the various child chains.

TFT is infinitely scalable. The so-called “infinitely scalable” means that the blockchain system can enhance its capacity with the increase of miners and support more users. TFT will adopt the sharding mechanism, so the functions will be expanded continuously as the number of participating miners increases.

◆ 3.3: Address-based data systems

3.3.1: Personal cloud-based identity authentication, proof of reputation of friend circles and transaction history

The reputation mechanism is essential for communication and transactions of people because people often need to know who they are communicating and transacting with, so as to make the information more symmetrical and efficiently complete the transaction. For a well-functioning market, **the reputation is the most important mechanism by which “good money drives out bad money”**. The blockchain should provide an interface for the reputation mechanism, so that people's reputation can change dynamically over time and address owners maintain their own reputation.



Reputation is actually an evaluation of information (including identity information) about the owner of that address, and for this reason as much information as possible should be integrated into the address. TFT stores data with the address at the core, so it can easily achieve the proof of reputation (PoR) through multiple pieces of information. People can document the relationship with the world through voluntary disclosure of information, or establish their reputation through the third-party identity authentication. Different methods have different effects of proof. **TFT puts forward the three methods of proof, weak form proof, semi-strong form proof and strong form proof:**

3.3.1.1: Weak form proof: The virtual world is constantly connected to the real world by posting information on its own and proves itself through dynamic information about own life that is continuously deposited on the timeline. This is mainly realized through social functions.

3.3.1.2: Semi-strong form proof: It proves itself by transacting with other address and providing information about the transaction (including comments of the transaction counterparty).

3.3.1.3: Strong form proof: It proves itself by establishing a credible association between own address information and the real world. This method is primarily achieved by publishing its relationship to an address through a trusted source or through third-party verification. For example, an institution publishes its blockchain address on official website, or a person verifies at a specialized verification authority, which publishes the identity of the real person to whom the address corresponds on its own information distribution channel. At the same time, the address owner can publish the relevant verification information on its own address for the purpose of seeking verification from other trusted entities.

To complete the proof of reputation, individuals can choose to store their personal information, life dynamics database and transaction data in their own space and grant authorization to different persons for use. In the future, there may be more and more people depositing data in private data identified by address, such as:

3.3.2.1: Address book data: The address is empowered to have the permission management of address book. One permission is to authorize the relevant person to help transfer data from the address to a new address, so it can be used in case of emergencies such as loss of private key;



3.3.2.2: Life dynamics data: The address is empowered to have the ability to publish life dynamics that cannot be tampered with;

3.3.2.3: Multimedia data: The address is empowered to have the ability to publish media such as text, pictures, voice, video, etc., and to customize labels and customize tamperable attributes;

3.3.2.4: Product data: The address is empowered to launch products, including resources that can be shared, and store these data in the product database;

3.3.2.5: File storage space: The address is empowered to request space and store various data, and because files exist as objects, the address can customize its own database, which paves the way for the establishment of different kinds of DApp databases;

3.3.2.6: Multi-currency wallet data: The address is empowered to map various tokens to the chain through cross-chain transactions and form its own multi-currency wallet database;

3.3.2.7: On-chain coin offering data: The address is empowered to offer coins by one click, and the relevant data are stored in the coin offering database;

3.3.2.8: Smart contract data: The address is empowered to generate smart contracts, and the relevant information is stored in the smart contract database.

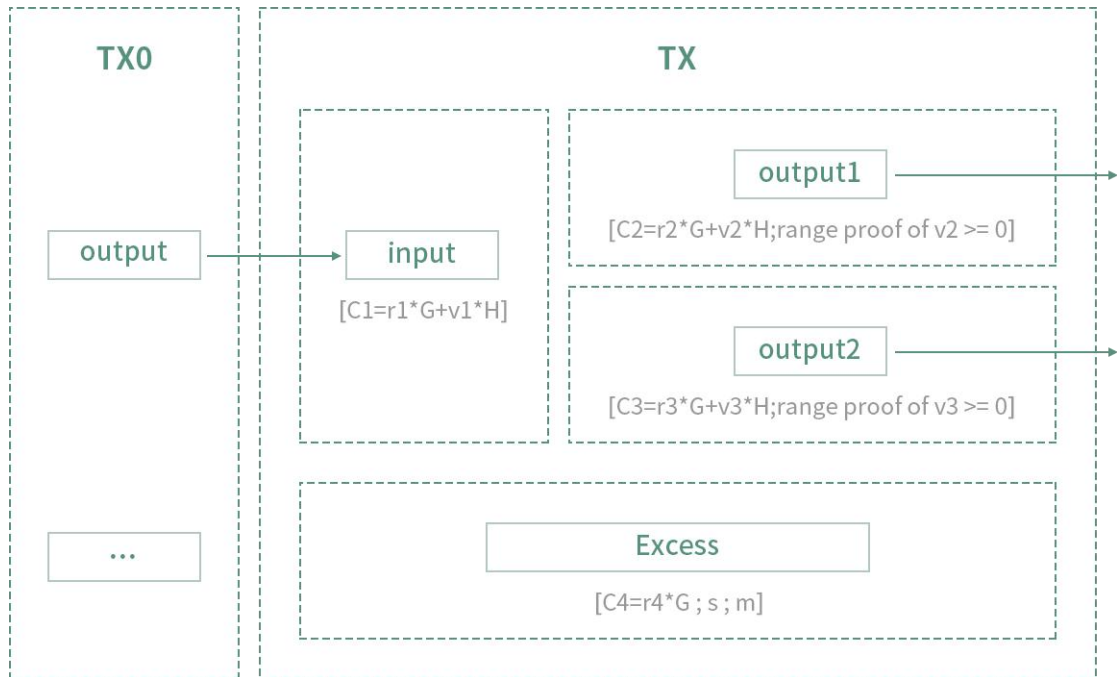


Figure 13: Reliable Privacy Protection and Permission Control

Because data are stored in private datasets upon being generated, this solves the problem of data privacy and right confirmation, and paves the way for data transactions. Only data that the address is willing to disclose will be made public, and the address can also selectively open data to specified addresses and form its own data sharing circles, such as life dynamics data that can only be seen by specified friends. These shares can also set time limits on access or be viewed for a fee, resulting in various types of data exchanges and transactions.

In the future, there may be specialized data mongers who continuously acquire all kinds of desensitized data from individuals, thus making data truly a service industry.

3.3.2.9: Address alias, communication account and recovery help functions

TFT primarily provides the function for user communication and exchange, which need to bind the user with a memory friendly ID, instead of a boring binary address string. Therefore, TFT provides the address alias as a more user-friendly interface.



Because communication requires **public key encryption** of the other party, the address will also be able to apply for a special communication account and keep the communication account in the world state, so that it can be used for encrypted communication of data.

Owning a private key means owning everything, but losing private key means losing everything. To avoid this tragedy, TFT is designed with the address that can specify other addresses to add **multiple signatures**, so when the private key is lost, after a certain period of time, the private key in other addresses can help authorize the transfer of data or account balances to other addresses.

◆ 3.4: Design goals

Although in recent years blockchain is considered to have the potential to disrupt existing business models, the underlying technology of the public chain still cannot support large-scale commercial applications, and the most prominent technical problem of blockchain is the low performance of the system. Take Ethereum as an example, all its applications running on the whole network can use about 10 processing power per second, but for an application with tens of millions of active users, its peak **TPS** requirement is generally around 2000-3000, so the existing Blockchain 1.0 and Blockchain 2.0 systems, represented by Bitcoin and Ethereum, are completely unable to support large-scale commercial applications.

Why is this TPS limit difficult to overcome? Just as all distributed systems are designed to face the problem of “impossible trinity”, the blockchain system also faces its own **impossible trinity: decentralization, security and high performance**.

3.4.1: The design challenge of decentralization is how to guarantee the decentralization of the network. It requires that the network be a peer-to-peer network in which all machines are equal in status and there are no special central nodes. In order to ensure the decentralization of this network, it must be an open network without access limit, so that everyone can join the network and it will not be controlled by one or more centers;

3.4.2: The design challenge of security is to ensure that the network is secure enough to be compromised. In an open network linking openness with economic interests, not only will there be nice persons buying machines to join the network, but there will also be evil persons trying to profit by destroying the network. Then, how to ensure the network security when there are evil persons inside the network? This already breaks the security architecture in a traditional sense and becomes the challenge of secure design;



3.4.3: The design challenge of high performance is to ensure the best performance and the lowest energy consumption, while maintaining a sufficiently decentralized and secure network

In the impossible trinity of blockchain, Bitcoin and Ethereum have chosen to be sufficiently decentralized and secure, while EOS favors efficiency at the expense of some decentralization and security.

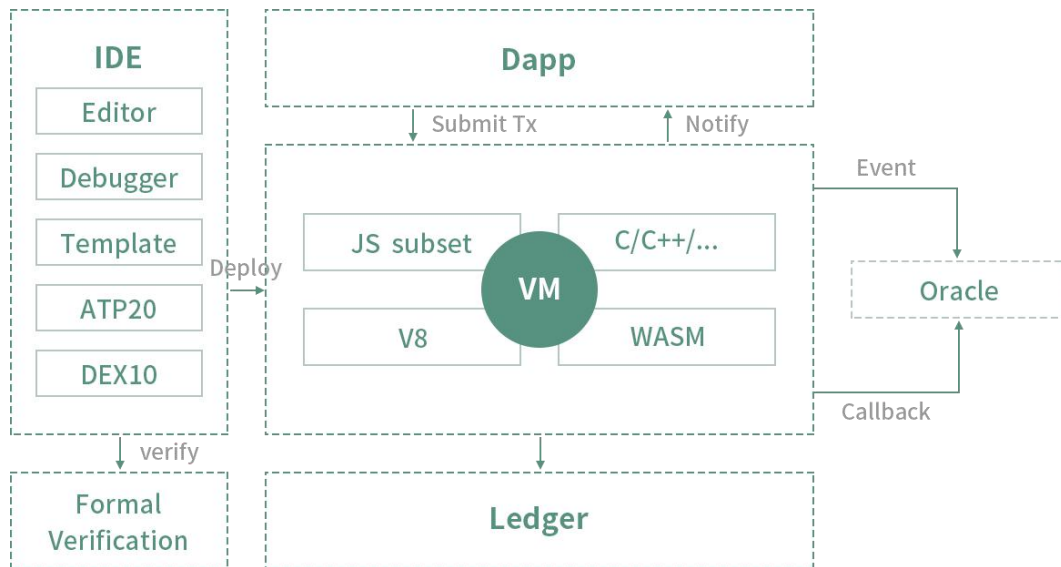


Figure 14: Application Development-Friendly Smart Contracts

The goal of TFT is to build a platform for exchange and transaction with blockchain technology, on which data assets, various tokens, goods and services can freely interact through smart contracts, so as to achieve interoperability of value under a good balance of the three corners of the impossible trinity. Specifically, it includes the following technical requirements:

System functions

Infinitely scalable transaction and Turing complete smart contract function.

Convenient data saving function.

Convenient asynchronous communication function.



System features

System stability and high concurrency.

Distributed applications are easy to develop and deploy.

Ability to be modularized to facilitate system upgrades and maintenance.

Scalability

Ability to meet the needs of large-scale communication and transaction applications.

Ability to maintain a reasonable energy efficiency ratio when the system reaches a large scale.

Ability to maintain good block generation efficiency, storage efficiency and communication effects as the system itself and the application scale expand.

With the addition of more resources, the system can be infinitely scalable.

Security

Ability to prevent against double spending attacks.

Ability to prevent against sybil attacks.

Ability to prevent against other attacks that reduce efficiency or break down system.

◆ 3.5: System architecture

Based on the analysis above, the system should have at least a storage subnet, a shard transaction child chain, a main chain that coordinates shards, smart contracts running on each shard and an address-centric user support system. The primary architecture of this functionally complete blockchain is summarized in the figure below.

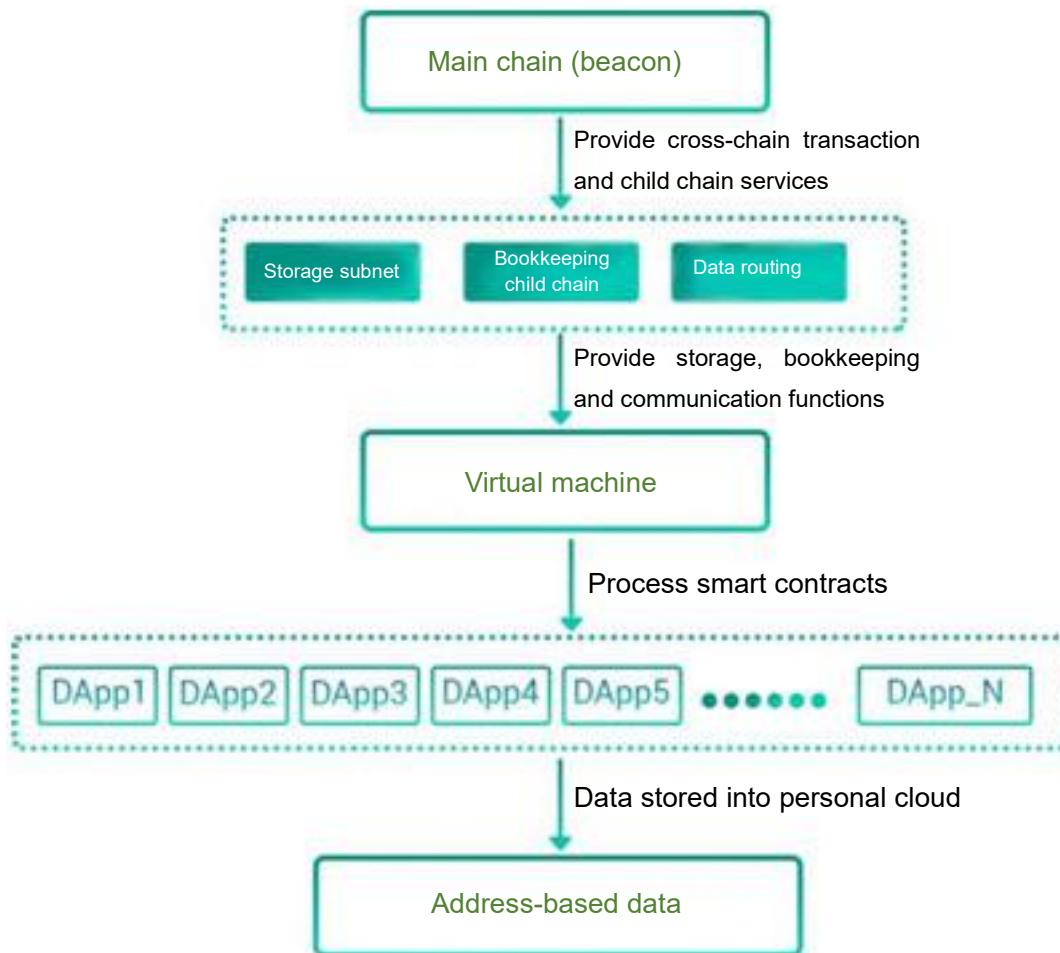


Figure 15: System Architecture

The following chapters, from the perspective of technology, will discuss the three problems: how to achieve the **space-based storage**, how to **realize sharding**, and how to **actualize personal cloud-based communication**. The economic models will explore the **token economic model** and the **project's future plans**.



04 TFT Ecology and Application

Thunder Fire Token



4: Ecology and Application

◆ 4.1: Five-Ecology of TFT Application

In order to build a trustworthy and sharing digital economy ecosystem, TFT specially constructs a “**five-ecology**” application system, which deploys applications in five ecological scenarios, “**water, fire, earth, wind and spirit**”.

★**Water Ecology:** TFT is developed based on the underlying technology of RTXP protocol. For the InDeFi decentralized on-chain platform of financial ecology, TFT utilizes blockchain technology to achieve complete decentralization, decentralized control, coinage, transactions and decentralized guard of asset access, all transactions are recorded in the blockchain, and the data are open, transparent, traceable and unalterable, and converge energy to the on-chain financial ecology. Through the latest cross-chain and side chain fusion, the underlying layer of the platform seamlessly accesses to digital assets for transactions, the **POS+DPBFT combinatorial consensus algorithm** is used to complete the general ledger records of general ledger within one second, and **TPS** can reach the million level.

Based on the characteristics of **high intelligence** and **high transparency** of the blockchain platform, the new financial world that dominates the future “**code world**” is constructed, and the distributed financial system constituted by consensus can gather a large number of people to build a digital financial flow consensus layer. In the future, we plan to complete the construction of digital identities for nearly **700 million people**, and create an application ecology of attention flow and digital traffic distribution **on a trillion scale**! **DeFi** is the new smart business, and as a new model of digital finance, **DeFi** will become the “base” of open finance that promotes the construction of personal digital financial system and empower the real economy. It will build up our distributed DEFI financial ecology worldwide.

★**Fire Ecology: A global digital ecology focusing on cultural tourism, game and entertainment**

Touring the world’s cultural tourism industry

At present, the high-quality tourism real estate resources of many countries are digitally available. In the future, investment institutions, travel agencies, consumers and individuals related to tourism real estate can quickly find information on tourist resorts, hotels, villas and manor on the chain, vertically expand the tourism real estate upstream, midstream and downstream, lengthen the industry chain and find the value of tourism real estate on the chain.



It connects to the global business entertainment scenarios and put data of hotels, entertainment cities, casinos duty-free shops, stores and car rental companies on the chain. Users can use TFT to pay quickly in all major places in different countries. The consumption information data is not only a process of enriching personal credit data, but also a process of establishing identity files. In the constructed credit society, users can be rewarded for their consumption data contribution in the future.

★Earth Ecology: A global digital ecology that focuses on gene technology, stem cell therapy and big health

TFT can solve the problems in big health data, revolutionize the way patient data are stored and transmitted, and provide a fast information channel for medical service providers through data on-chain. It can also protect the privacy of patients without disclosing their medical records. Blockchain achieves the complete record in the entire life cycle of assets. When assets flow through the whole supply chain, either the patient's health records or the records of a bottle of pills are clearly visible.

★Wind Ecology: Ecology of digital education, art collection and patent copyright worldwide

TFT is a non-educational training institution with strong endorsement, authoritative interpretation and complete project incubation system. It provides the education and training of blockchain knowledge, blockchain programming and blockchain project investment, cultivate blockchain talents, and solve the application problems of enterprises, so that the global digital education evolves towards full opening and form an integrated education system with universal participation and collaborative construction. TFT builds a decentralized education ecological alliance, which helps to break the monopoly of education rights by schools or government agencies.

TFT can record the art collection to be identified, confirm the authenticity, provide the blockchain "certificate of identity" for each piece of art collection, and record the authenticity data in the TFT blockchain system, which are clearly visible and cannot be tampered with. Moreover, TFT can clarify the first beneficiary of art collection and provide the most favorable guarantee for the subsequent appreciation and circulation of the art collection.

Every patented copyright work can obtain a unique and permanent TFT code. The registration certificate (electronic version) adopts the encryption technology and electronic signature technology to encapsulate the owner, artwork name, copyright information and TFT code into the copyright certificate, so as to satisfy the subsequent need for copyright verification. Furthermore, TFT provides services such as copyright fee settlement and authentication, testing for proof and rapid rights protection, etc. to meet the more usage needs of copyright owners.



★Spirit Ecology: Digital life community with global blockchain charity and e-commerce

The most important feature for the application of blockchain technology in the field of philanthropy is to reconstruct the trust mechanism. Philanthropic organizations can store information about the entire process from fundraising and project progress to the use of donations and feedback from recipients, on a public blockchain for easy viewing by donors and the public. TFT uses the distributed ledgers to track donations, cryptocurrency to transfer funds, and smart contracts to ensure that every donation is spent reasonably.

The applications of blockchain technology, such as traceability, distributed computing, anonymity, global value delivery and connectivity, and encryption, can be used to build a decentralized BAAS (Blockchain as a Service) application ecosystem through the hybrid consensus mechanism of DPoC proof of credit and PoL cross-chain proof. This system integrates global decentralized e-commerce ecology, global node connection, aggregated supply chain cloud warehouse and value data services, effectively solves various bottlenecks and pain points faced by e-commerce, and realizes the co-governance and sharing of user data and resources and the expansion of the precision market. Meanwhile, it can build a trusted ecological entry of the underlying layer for the whole industry based on the blockchain e-commerce, and promote the entire e-commerce to develop in a sharing and connected harmonious ecology.

Based on the significant characteristics of the retail industry, such as fragmentation of transaction data, diversification of transaction nodes and complex transaction network, **TFT** can collect, store and integrate information on production, circulation and delivery of goods, achieve the intelligent matchmaking, and shorten the retail industry chain. Massive credible data can become the cornerstone for analyzing user spending habits in the new retail industry. With the expanding dimension of personal data, corporate merchants can make better marketing campaigns and tap the value of industrial data based on consumer analysis.

TFT allows producers and distributors to monitor the flow of goods effectively and fully mobilize resources on the chain. Consumers can have an intuitive and reliable understanding of the origin of goods. The logistics platform based on blockchain technology can effectively solve the problems of scattered order data and opaque information in the logistics and transportation scene. On the blockchain, you can not only view the static



Open a new era of individual financial wealth, build a borderless digital economy platform!

attribute information of the product, but also monitor the transit and transportation process from producer to distributor and finally to end consumer, track the entire product life cycle and improve the overall efficiency of the industry.





05 TFT Technical Logic

Thunder Fire Token



5: Space-Based Storage

◆ 5.1: Storage based on peer-to-peer network

5.1.1: Technical logic

Traditional blockchains, mostly Status BlockChain, range from the single status of bitcoin number to the world status of smart contracts of Ethereum. All of them follow the logic of state storage.

Starting from **IPFS**, Data BlockChain appears with the data attributes as the status for transactions and storage. From the perspective of storage, IPFS achieves the object storage, and its object is files. Two types of miners are proposed. One is the **storage miner**, which takes the responsibility of saving file data; and another is the **index miner**, which is mainly used to save file description information (file owner, number of shards, shard hash and other attributes).

TFT proposes a pure space storage, instead of object storage, and it does not target specific storage objects, but provides available storage space. Users can use this storage space like a local hard disk to store various data objects, and this space is provided by the distributed miner nodes.

The following figure shows the architecture of a TFT storage subnet:

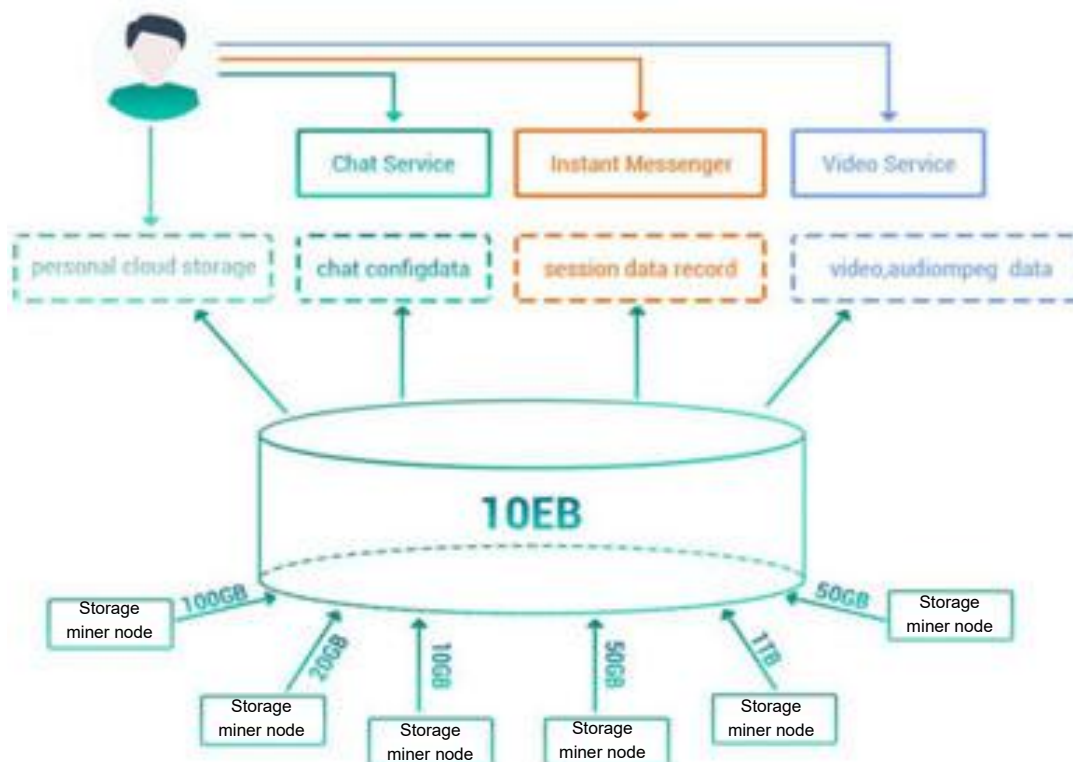


Figure 16: TFT Storage Function



As shown in the figure above, the storage contributors (storage miners) provide free storage resources from their own hosts or nodes, and TFT aggregates the miners' resources to form a large-scale storage cloud.

With a mega **storage cloud**, the wallet (terminal) user is able to extract a part of virtual storage space (e.g. 1GB) from the cloud to form their own cloud disk, and the user can plan their own space to store files, either large files, such as audio and video data, or a large number of small files. The uploading, downloading, addressing, use, management and maintenance of these files or data are all planned by the user in the virtual cloud disk, without the need to perform complex market transactions like IPFS for the storage of a small number of files.

Moreover, with the **distributed storage cloud**, we can construct functionally complex distributed services on it, such as chat rooms, instant messaging, audio and video services, and so on. These traditional centralized services have the opportunity to be decentralized after solving the storage pain points.

The primary task of storage miners is to keep and maintain the physical space they provide and the virtual space they map and manage, so that they can keep getting mining revenue if they continuously provide services online.

The roles of the storage child chain is shown in the figure below:

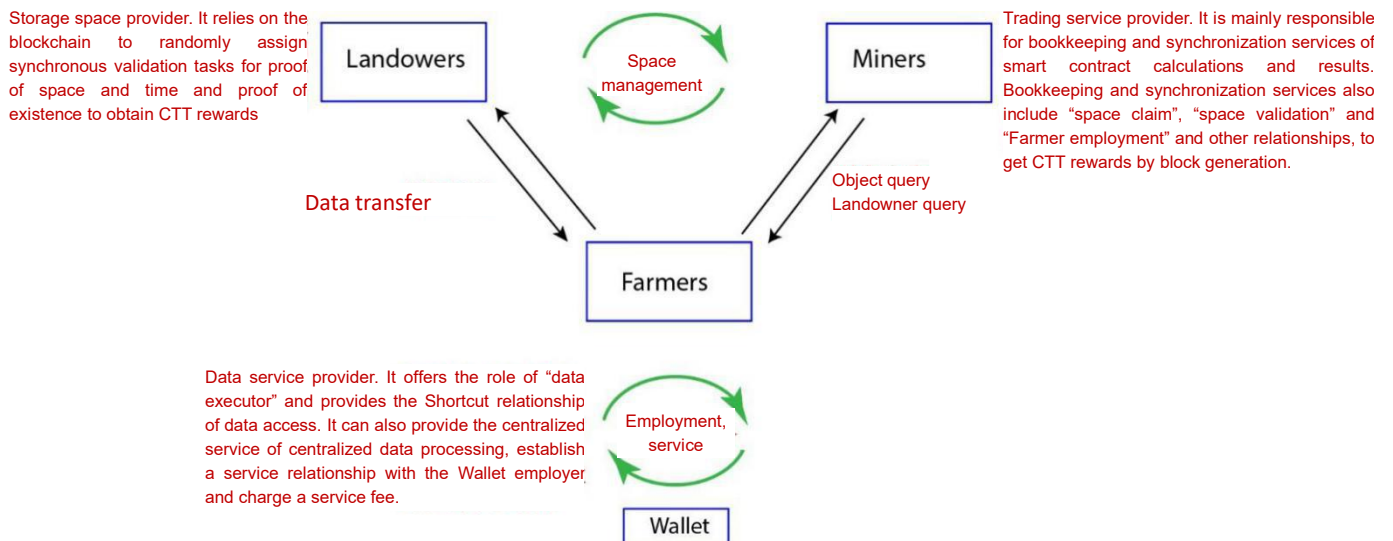


Figure 17: Roles of Storage Child Chain



From the figure above we can see **four roles**. **Wallet** represent the front end, **Farmers** denote the storage service providers (also known as landowner), **Miners** are the blockchain service providers, and another important role is the “**Data Gateway**”, also known as the Data agent, which provides the data routing function.

5.1.2: Data agent

Without data agent, when a user wants to write data, he must go through a complex network path to create an information query before the transfer begins. This undoubtedly poses a serious challenge to the user experience. To provide a Shortcut for the user, the agent is required to complete beforehand, so that every future visit becomes easy. The agent will prepare all kinds of information queries and paths for the data objects that the user often visits. When the user raises a request, the waiting time will be greatly shortened and the experience will be largely enhanced. Taking Email service as an example, the agent can provide read and write of the mailing list space belonging to the user, thus greatly accelerating the speed of mail delivery.

Therefore, the user and the agent constitute a “**centralized**” private employment service, which is equivalent to the situation that the user can find a data service provider on the network through transaction (spending **TFT** coins) to provide him with exclusive data services. The service provider is mainly responsible for the routing construction, transmission and simple list management of the employer’s data access.

5.1.3: Mining by miners

TFT divides all virtual storage spaces into **Chunks**. Miners can claim the **Chunks** they provide space for when they are sure to provide a certain amount of storage. For example, Miner A is sure to provide 1GB, it is allocated to **Chunk N** by the algorithm.

As shown in the figure below:

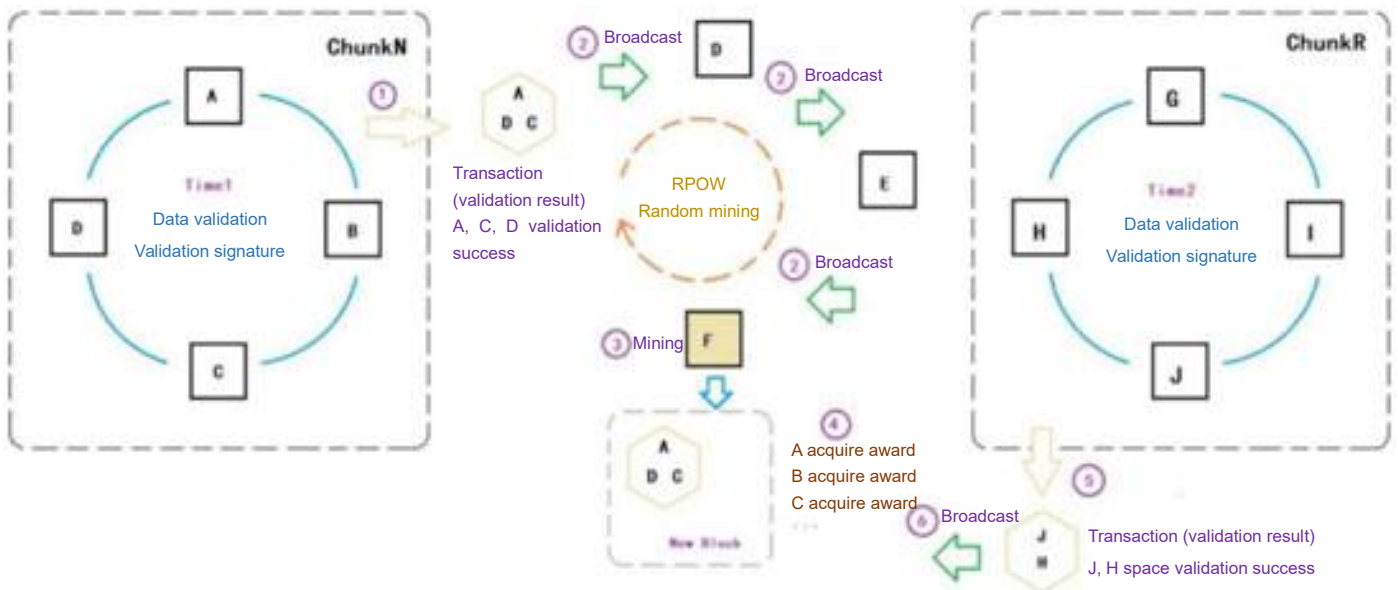


Figure 18: Miner Mining Diagram

(For example, **Chunk N** is the range of 3GB-4GB of virtual space). Miners claiming the same **Chunk** form data copies, which we call a **Chunk Copy Group**. As shown in the figure above, storage nodes **A,B,C,D** and **G,H,I,J** claiming different virtual spaces form two copy groups, **ChunkN** and **ChunkR**.

At **Time1**, the four nodes of the **ChunkN** copy group, **ABCD**, validate each other's data. They provide each other with data drift and data size calculation hash in the **Chunk** associated with their **Id** and the current block **hash**. The hash is passed to the other nodes for validation, and it is signed and passed on if validated, and discarded if not validated. The authentication is considered to be passed when the number of signatures reaches **2/3** of the nodes. In the figure, there are three nodes **A,C,D** in **ChunkN** that have passed each other's data validation and signed successfully. This signature is then packaged as a "**space validation transaction**". This transaction is broadcast among all the miner nodes.

The final "**space validation transaction**" is packaged in a new block by the miners identified by **RPOW**, and the new block packages this validation transaction into block and then broadcasts it across the network. The node receiving the new block will be rewarded with **token** based on the accounts associated with the three storage nodes, **A,C,D**, contained in the space validation transaction in the block. Then, it can generate revenue by keeping the storage space online.

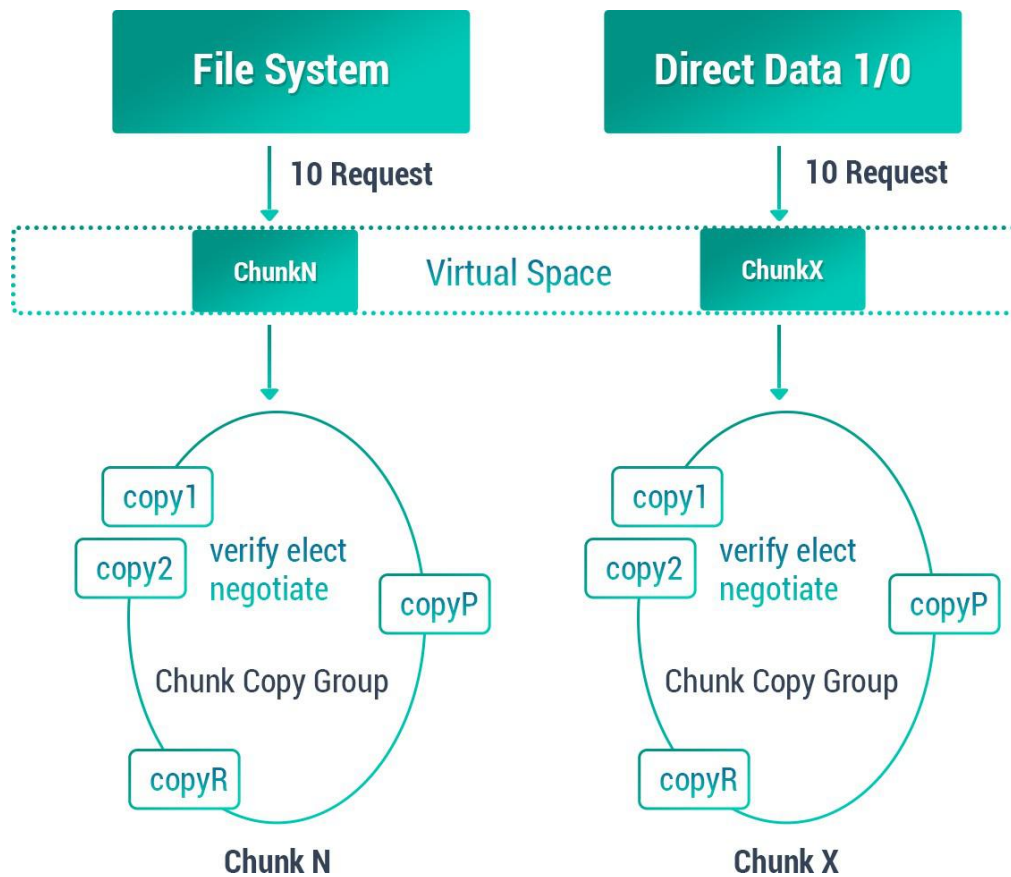


Figure 19: Miner Verification Diagram

5.1.4: Sharding and encryption

Data sharding adopts the mode of **space sharding**, which is different from the file sharding of most public chains nowadays. Traditionally, a file is split into several equal-length fragments and distributed for storage on the network, and they can be downloaded and read in parallel by local splicing. The advantage of this method is being simple and direct. It conducts the **Merkle** integration of the **hash** of file fragment content to guarantee the simultaneous downloading of multiple fragments for the consistent download of file data, and increase the read speed. However, its disadvantages are relatively obvious. Because of a large number of fragments of large files, it is relatively difficult to realize the maintenance; and the file size is fixed, so its storage mode is limited to read only, and it generally does not support the file modification, but is only suitable for archiving scenarios. From the functional point of view, it is equivalent to network file storage, which is consistent with the traditional **P2P** file mode, and similar to **FTP** if benchmarked to the centralized service.

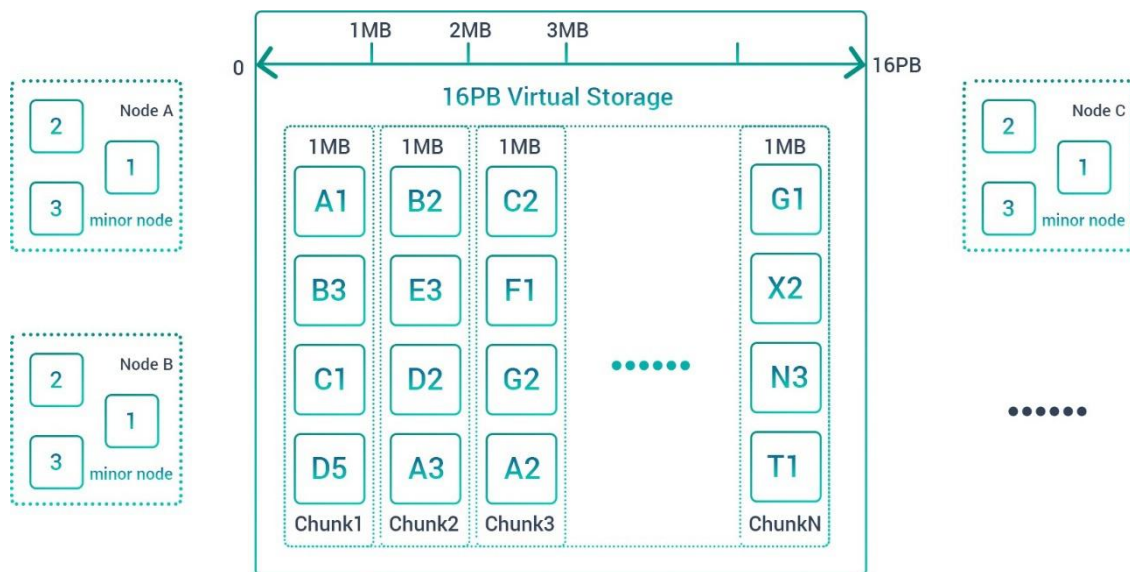


Figure 20: Sharding and Encryption

As shown in the figure above, the 16PB virtual space contains many Chunks, each of which has a fixed size (e.g. 1MB). For miner nodes, the way they contribute space is contributing block copies. In the figure, each Chunk is made up of block copies contributed by multiple miners, so Chunk is a logic concept that represents a part of the virtual space. For example, Chunk1 represents 0-1MB in the virtual space, while Chunk2 represents 1MB-2MB in the virtual space ...; each Chunk can be constructed from 1MB blocks provided by multiple miners, and the number of copies is scalable, with different claiming strategies based on different thresholds.

5.1.5: Miner grouping

The miner grouping involves two dimensions:

- (1). Management by the Chunk approach, where all nodes involved in maintenance of the same data are grouped together into a Chunk maintenance group



(2). To ensure high data availability, there are many copies of Chunk space, which means that the Chunk management information also takes up a large amount of management space (memory and storage).

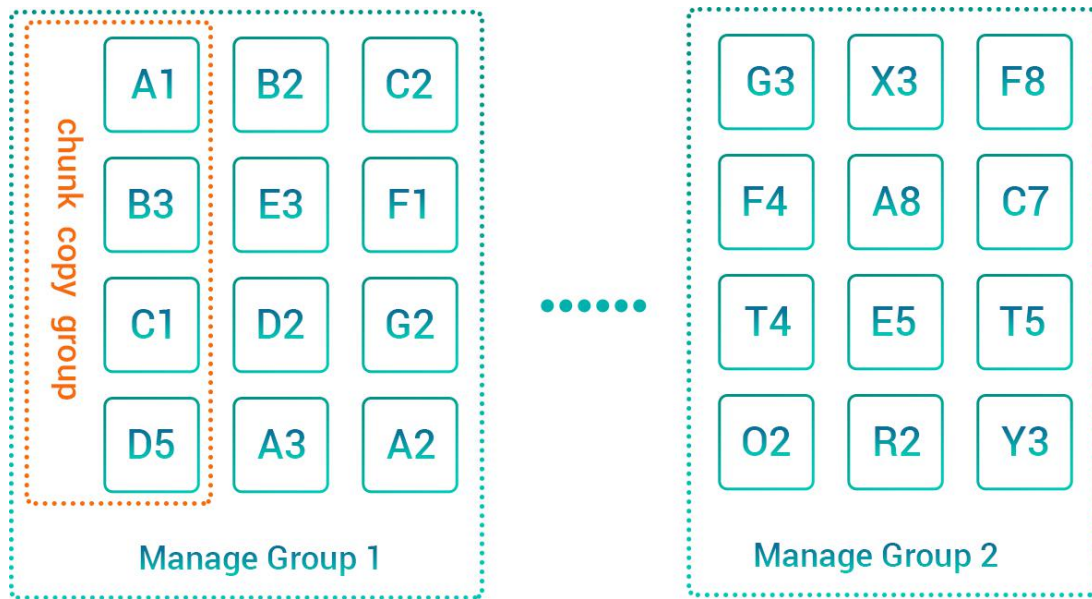


Figure 21: Sharding and Encryption

For the same miner node, it is the space carrier provider of each chunk. It participates in the Chunk copy Group it claims (and provides space). In this Group, it synchronizes data with other nodes participating the same chunk and jointly maintains the high availability of the same Chunk.

For each Chunk, their copy participating nodes need to be recorded. According to the correspondence between ChunkId and the NodeId of miner node, TFT divides all the Chunks into several Manage Groups, and assigns them to a group of miner nodes for information recording and management. This allows miners to form management sharding of Chunks, and construct a sharding mechanism of the storage blockchain.

The sharding mechanism of blockchain aims to improve the overall operational efficiency of blockchain and enable more information and transactions to be processed in parallel.

5.1.6: Data downloading

For data downloading, the user node requests data from a group of **Chunks** according to the data request (from the File System, or direct data access from upper layer).



For all the nodes in the same **Chunk Copy Group**, the requesting node sends a command to request the Id and current status of everyone's current update block. After successful request, several nodes with the maximum and equal ID and the status of **"status online"** are categorized as the data providing nodes. According to the size of data requested from this Chunk, the download request is split into different fragment requests. Meanwhile, the data transfer connections are initiated to them.

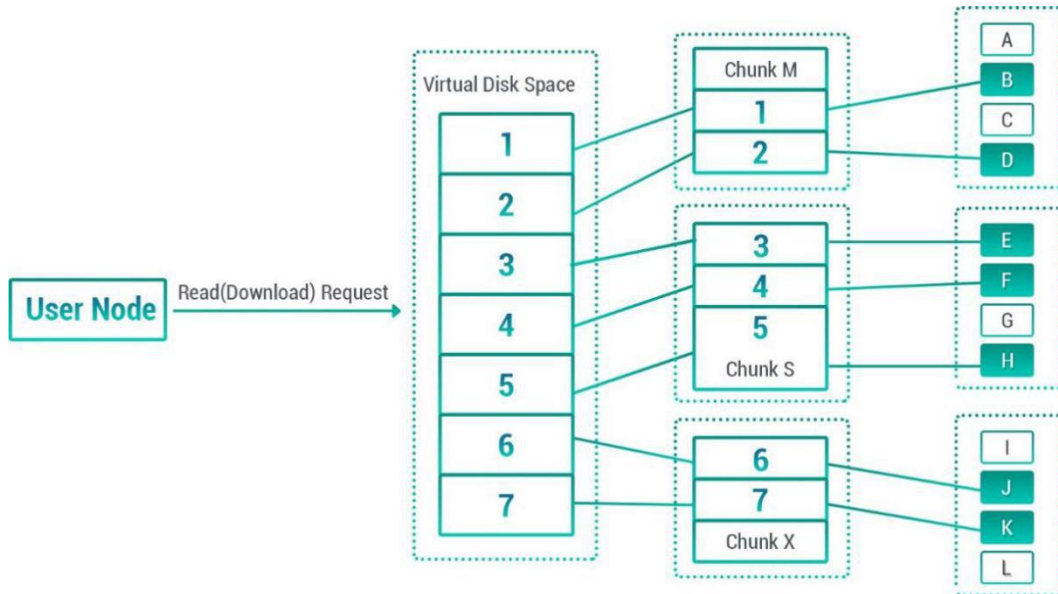


Figure 22: Data Downloading

5.1.7: Data uploading

As shown in the figure above, the 16PB virtual space contains many Chunks, each of which has a fixed size (e.g. 1MB). For storage miner nodes, the way they contribute space is contributing block copies. In the figure, each Chunk is made up of block copies contributed by multiple miners, so Chunk is a logic concept that represents a part of the virtual space. For example, Chunk1 represents 0-1MB in the virtual space, while Chunk2 represents 1MB-2MB in the virtual space ...; each Chunk can be constructed from 1MB blocks provided by multiple miners, and the number of copies is scalable, with different claiming strategies based on different thresholds.

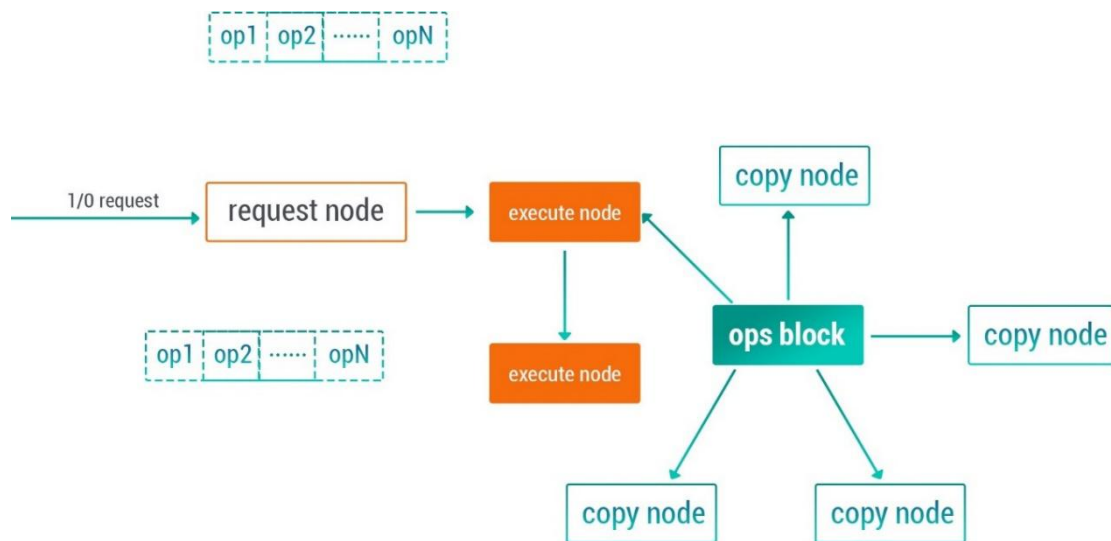


Figure 23: Data Uploading (Continued)

Data write flow description:

We divide a **Chunk** into several **Slices**, and a Slice is the basic unit of operation on the user side. The OwnerId of a Slice is the tenant and user of this Slice, and only he has the permission to update and write to this Slice. **The service model is:**

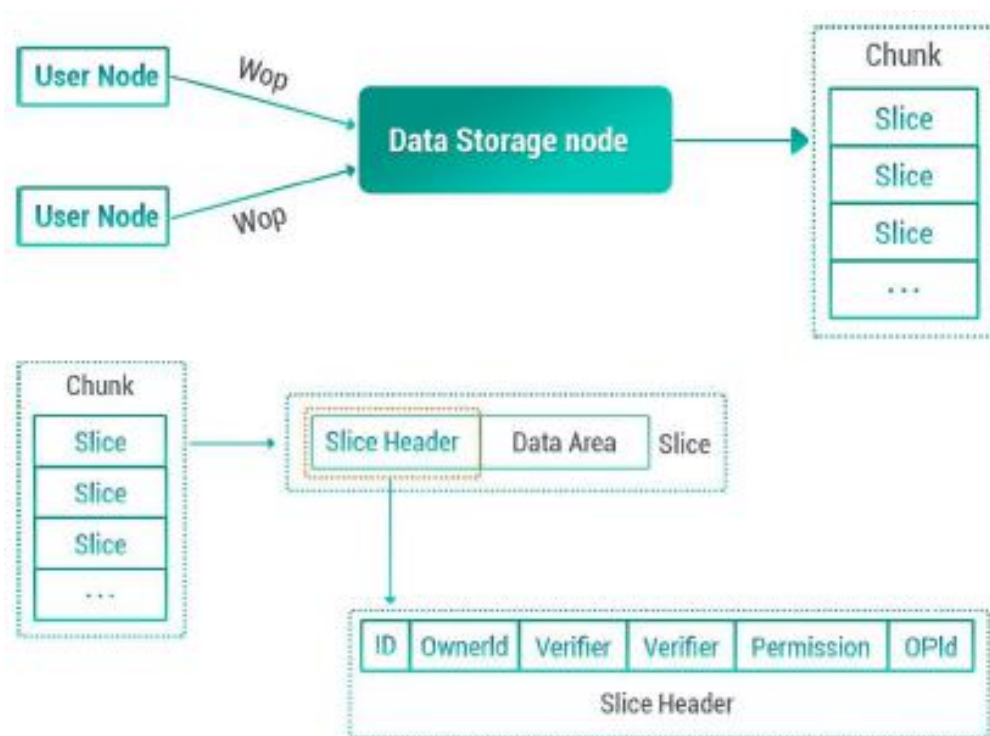


Figure 24: Data Write



For Chunk, the user can directly access Slice on the storage node so that there are no barriers or spoofing. For the session service, the service model is changed to be:

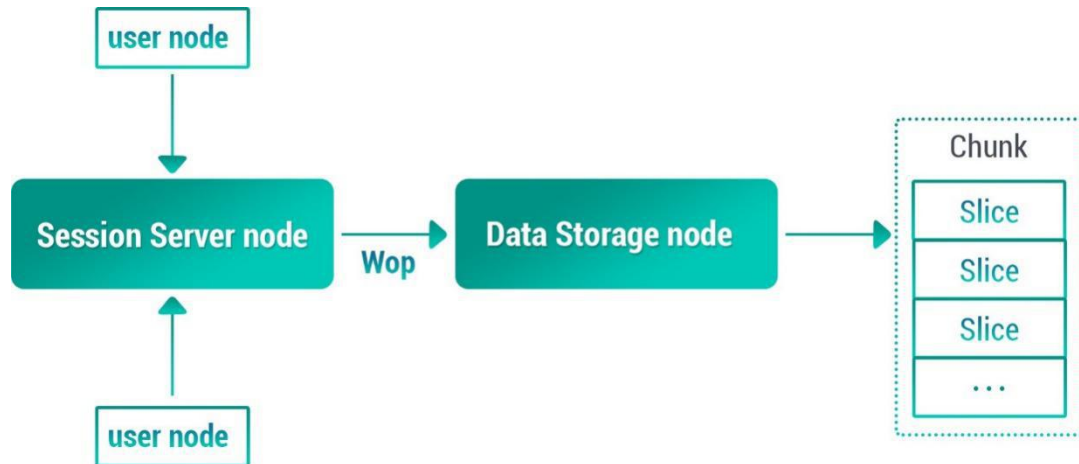


Figure 25: Data Node Access

As shown in the figure, all the users have to exchange and communicate with each other on the session service node channel server, and the session file data are dependent on the session service node to submit to the storage node.

The session service node is a randomly selected node from the channel blockchain according to the dynamic routing, and its behavior is unpredictable, so we can't fully trust that it won't do evil. Although the session content is delivered in an encrypted manner and it cannot snoop into the session content, it can maliciously corrupt the session data on the storage node during writing.

The requesting end informs the member nodes of the same block copy group of the operator Id by constructing an initiating query command broadcast to them. Each node receives the command and signs for acceptance if no one is currently using it or if the nearest operation has timed out from the current time. The signed response messages are transferred to the requesting end through the active path finding or returned to the requesting end through the broadcast path. After receiving enough signatures, the requesting end packages all signatures into an Open command and broadcasts it again. Each node inspects and verifies the signatures and confirm the quantity. If there is 2/3 of consent, the operator Id is set to memory.

Design of block copy synchronization: All participating nodes of the same block data group are treated as a mini blockchain for the data block. The blockchain adopts a semi-cache synchronization strategy, and each group node can collect Wop requests from each requesting end. After collection, these Wop requests are broadcasted to the execution



node of the current block; upon collecting requests, the execution node packages them into operation blocks by the receiving sequence (and by sequencing, eliminates the conflict of multiple nodes to write in the same virtual space), and filters out operations that do not conform to the sharding permissions settings.

Each **group node** can be called as a **copy miner**, which collects **Wop** requests from other group nodes. When the number of Wop requests meets a certain requirement ($N > 0$) and the collection time also meets a certain requirement, it will package the Id of the Wop it sends to or receives from other nodes into a block and broadcast it to other nodes. Meanwhile, according to the Wop sequence in the block, each Wop is executed locally.

If a **group node** receives a broadcasted block from its group node after creating and executing its own generated block, it needs to determine its priority first. If a node crashes, then no blocks can be generated within the time window in which it is an execution node, and all operations will have some delay for this high latency.



Figure 26: Sequential Execution

The upper layer application should buffer before loading data, try to minimize the number of loads, and combine most of the operations together.

For a newly added group node, there must be a data downloading process. It selects one of the group nodes that can communicate smoothly as the data service node and starts downloading the complete data of the Chunk from the beginning; and it also needs to join the cluster to become a quasi-cluster member node (semi-group node). It needs to save all the blocks during the download process while the data are being downloaded, and then execute all the blocks locally after the download is finished, so that it can complete the overall synchronization and keep up with the pace of the other copy nodes.



The election rule for the **execution node** is elaborate, and there may a large number of group nodes, such as 32. If the simple rotation strategy is adopted, in most cases, the node that receives the IO request is one of the few nodes tied to the app node (a Chunk may be used by multiple tenants at the same time, and the operator is not unique); so we need to elect a leader as the execution node for this copy synchronization group. Election process: When a tenant writes data to a virtual disk, it first calls an Open method, which queries the nodeId of all copy nodes where the information of all participating Chunks is located, and sends an Open message (with chunk, slice) to these storage nodes. Upon receiving, the storage nodes will find the corresponding local storage records from the local disk according to the (Chunk, slice) information carried in the message, compare their owner and attributes (read/write permission attributes, etc.) and take different actions according to the comparison results; if it is acceptable in the validation, the node is added to the execution node group of the (Chunk-Slice) and the message is communicated to all the nodes it knows. In a **Slice**, the members of the execution node group take turns to generate blocks, and **the successful block generation means the divided broadcast**: the broadcast mechanism can be set as the query delivery mode, because it involves bandwidth and traffic. It must communicate and query before transfer, instead of directly throwing data. For the group nodes, only 1-2 sub-nodes are selected for data transfer, and then the sub-nodes can achieve the further transfer.

As described above, the write operation process is complex. If the application layer adopts synchronous waiting, the efficiency will be low. The application layer should adopt the cache operation method. After submitting all the cache operations at a time, on the one hand, it continues to wait and add new operation instructions into the cache, and on the other hand, it waits for the operation submitted before the lock sends confirmation to be executed and cleared from the cache.

◆ 5.2: Technical architecture

TFT technology panorama includes basic network layer, intermediate protocol layer and application service layer to achieve the end-to-end data transparency, reduce cost and risk, effectively solve the phenomenon of information silo and achieve the global circulation of data value.

TFT's basic network layer comprises data layer and network layer. The data layer includes the underlying data block and the related data encryption and timestamp technologies; and the network layer includes the distributed networking mechanism, data propagation mechanism and data validation mechanism, etc.



The intermediate protocol layer is composed of consensus layer, incentive layer and contract layer. The consensus layer mainly includes various consensus algorithms of network nodes; the incentive layer integrates economic factors into the blockchain technology system, mainly including the issuance mechanism and distribution mechanism of economic incentives; and the contract layer mainly includes various scripts, algorithms and smart contracts, which constitute the basis of the blockchain programmable characteristics.

TFT's application service layer is the most important application link in the digital economy. It includes various application scenarios and cases of blockchain, such as programmable currency, programmable finance and programmable society. The application layer is the underlying technical architecture of the TFT application ecology, and the open-source programmable application layer provides the technical guarantee for the establishment of the global digital economy application ecology.



06

TFT Issuance Plan

Thunder Fire Token



6: Issuance Plan

◆ 6.1: Issuance rule

The total number of TFTs is fixed at **770 million coins**. It is the proof of stake on the main chain platform built according to the **RADAR** standard, with the double functions of payment within system and identity marking.

Token name: TFT

Full name: Thunder Fire Token

Total number: 770 million coins

Issuance price: \$0.2/coin

Distribution rule: coin-holding mining and promotion mining

Computing mode: The trading platform portion can be transferred to the mining pool for dividends, with neither portions being locked,

Transfer and trading at any time

◆ 6.2: Revenue mode

6.2.1: Coin holding revenue

Holding of a certain number of TFTs can participate in the coin holding dividend. The minimum holding quantity can be dynamically adjusted; the dividend will be paid pro rata according to the ranking of coin holding; The total number of coins is 770 million. In the first phase, 7.7 million will be issued, and the remaining 762.3 million coins (will be mined within 10 years)

Phases	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8	Phase 9	Phase 10
Period	6 months	6 months	6 months	6 months	6 months	12 months	12 months	18 months	24 months	24 months
Monthly Mining	10%	9%	8%	7%	6%	5%	4%	3%	2%	1%

50% of the total daily yield will be used as the coin holding mining reward of users, and another mining will be used as the promotion mining reward.



$$A_i = \frac{M_i}{M_1 + M_2 + M_3 + \dots + M_n} \times \frac{W}{2}$$

Figure 27: TFT Calculation Method

M is the ranking of TFT holding, and those who hold the same number of TFTs have the same ranking. W is the total number of TFTs issued this time over network. A is the coin holding revenue of the user in current day.

6.2.2: Promotion revenue

The promotional link relationship is created by means of invitation code. TFTs are purchased in the USDT trading area of TFT wallet, and then transferred to the **TFT** wallet. An invitation code is requested from the referrer to register and activate the mining pool, and in this way, a promotional link relationship is formed.

$$B_i = \frac{X_i}{X_1 + X_2 + X_3 + \dots + X_n} \times \frac{W}{2}$$

Figure 28: TFT promotion revenue

TFTs are newly issued every day, and 50% is automatically allocated according to the proportion of the linked user group to the total computing power.

$$A_i = \sqrt[3]{P_{max}} + P_1 + P_2 + P_3 + \dots + P_n$$

Figure 29: TFT promotion revenue

X is the propagation force of this user point, W is the total number of TFT coins issued this time on the whole network, Pmax is the number of TFT coins of the largest access point, and P is the ordinary access (the team performance of ordinary access, if less than 10000, multiplies by 10 to calculate the promotion computing power, and the excess portion is calculated according to the actual coin holding).



6.2.3: Issuance phases

TFT is generated by an open-source algorithm based on “RTXP” protocol, with a total of **770 million** coins. TFT has **10** issuance phases: **7.7 million** coins in phase 1, and the remaining coins: **762.3 million** (to be mined within 10 years)

Phases	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8	Phase 9	Phase 10
Period	6 months	6 months	6 months	6 months	6 months	12 months	12 months	18 months	24 months	24 months
Monthly Mining	10%	9%	8%	7%	6%	5%	4%	3%	2%	1%

Figure 30: TFT issuance description

◆ 6.3: Incentive mechanism and payment mechanism

6.3.1: Space use mechanism

The space use mechanism is:

6.3.1.1: First time of space use: The user pays for storage object by time and space size with TFT according to the built-in pricing formula, the payment is deposited into the pool, and the storage object expiration timestamp is confirmed when the block is packed.

6.3.1.2: Space adjustment: When an object is expanded or reduced, considering object change and additional TFT, the timestamp is changed according to the pricing formula.

6.3.1.3: Space locking: The space access rights are automatically locked after the timestamp expires, and the space is marked as space that can be applied.

6.3.1.4: Space reclaim: The claim of new space will use the free space first, then the space that expires earlier.



6.3.1.5: Space unlocking: When a user applies for fee renewal, if the original space is not reclaimed, it can be retrieved again, but you need to pay for the space from the expiration date to the current time.

6.3.1.6: Landowner rewards: The total amount of rewards is calculated by multiplying the cancelled amount by the price for each block of purchased usage rights, and confirmed to the validated landowner through the random validation mechanism.

6.3.2: Conventions on relevant variables

All paid transactions for space purchase will be done by special algorithms and recorded on the main chain. Payments will be made into a special account called a “**capital pool**”. This capital pool records the space purchase behavior. Here, the mega-day (MD) is used as the unit for space usage. A mega-day means one day’s usage of a megabyte of space.

The variables are assumed as:

6.3.2.1: W: Assume that the total space of the Worlddisk available to the user is WD, in unit of MB. The data is corrected once per block and recorded by the block header. It is the initial letter of Worlddisk.

6.3.2.2: t and T-1: represent the timestamps for this block and the previous block, respectively.

6.3.2.3: T: It is the total number of mega-days in a year for the current block. Here it is stipulated that a space object can apply for a maximum retention period within 365 days since the transaction, so each block period can provide a maximum of $365W$ mega-days. We use T to represent the space usage, and this data is corrected once per block. $T = T-1 + (W - W-1) * (t - t-1)/(24 * 60 * 60)$. $T-1$ is the total number of mega-days for the previous block. $W-1$ is the total space on the Worlddisk for the previous block. $(W - W-1) * (t - t-1)/(24 * 60 * 60)$ is the number of mega-days added or subtracted for the current block. T is the initial letter of Total.

6.3.2.4: B: It is the number of mega-days that have been purchased and are still available for the current block, and this data is corrected once per block and recorded by the block header. $B = B-1 - B-1 * (t - t-1)/(24 * 60 * 60) + \Delta B$. Here B_0 is the number of mega-days purchased and still available for the current block, $B-1$ is the number of mega-days purchased and still available for the previous block, and $B-1 * (t - t-1)/(24 * 60 * 60)$ is the number of used mega-days that need to be written off for the current block. ΔB is the number of new mega-days purchased for the current block. B is the initial letter of Bought.



6.3.2.5: R: It represents the residual unpurchased mega-days of the current block, including free space and expired space. R is the initial letter of Residual. $R = T - B$

6.3.2.6: M: It represents the number of TFT tokens in the capital pool of the current block.

6.3.2.7: p: It represents the storage unit price of the current block, the usage price per mega-day, in unit of TFT. Here it means the hard disk user, that is, the “rental” cost of “citizen” per mega-day.

6.3.2.8: r: It represents the unit rental of the current block, the lease revenue per mega-day, in unit of TFT. Here it means the hard disk provider, that is, the “rental” revenue of “landowner” per mega-day.

6.3.3. Requirements for the space usage price function

Mega-day price is the key to regulating the storage space usage, and the price adjustment should satisfy the following conditions:

6.3.3.1: With the increase of use demand, the price is raised in a non-linear manner so that the space is always in a state of abundance.

6.3.3.2: With the increase of use demand, the incentive for time space verification increases to encourage more landowners to move in.

6.3.3.3: The space lease price is within a reasonable range.

6.3.3.4: The space lease price is at a relatively stable state.

6.3.4. Bancor Payment Mechanism

If there is no limit to time each storage object can store, it is difficult to manage the inflow. If a maximum of 365 days is specified for all storage per object, the excessive portion must be paid, so the total number of mega-days that can be purchased is $T=365W$. Since there is a fixed total number of mega-days in each block generation cycle, a mechanism similar to Bancor can be used to price the mega-days in each block generation cycle.



Bancor is a project of Ethereum, a currency system that provides continuous liquidity to digital currencies through smart contracts. Bancor addresses the liquidity of digital currencies with small trading volumes. It does not require a third-party organization or a second party to buy and sell Tokens through smart contracts. Bancor's automatic adjustment mechanism makes automatic price discovery and autonomous liquidity mechanisms possible, and it never sells out.

Bancor mechanism is used here for price mega-days at a block generation cycle.

Bancor needs one constant term: $c = M / (p * T)$

The price formula can be deduced from the above two formulas: $p = M / cR$

When the parameter c has different values, the price curve changes are:

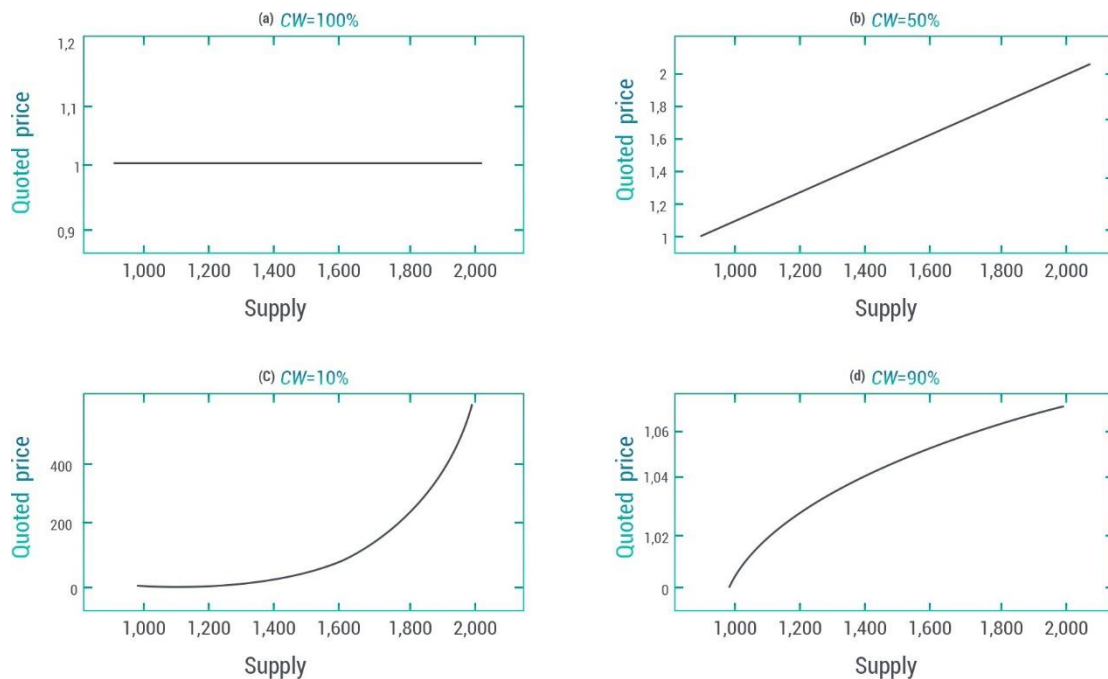


Figure 31: Price Charts of Different Constants

Here CW represents a constant:

- When $CW = 100\%$, it can be considered that the issue token is an alias for the connector token and that the price of the issue token is always equal to the price of the connector token, regardless of any changes in demand.
- When $CW = 50\%$: There is a linear relationship between the issue token and their supply.



- When $CW < 50\%$, $CW = 10\%$ in the figure, and the price increases rapidly with the increase of supply.
- When $CW > 50\%$, $CW = 90\%$ in the figure, and the price changes become small with the increase of supply.

We set the constant c in the reference Bancor around 20%, so the storage is cheap when only a few people use the storage, and expensive when more people use it. It non-linearly increases.

Because every mega-day purchased in Bancor protocol will lead to the price change, we use a simplified algorithm, that is to say, the price is the same for each block generation time.

6.3.5: Landowner rental, landowner subsidy, donation channel

Landowner rental

Because the Worlddisk usage is B/T , but the cost of the whole disk is paid by the real user, it should be paid from the capital pool.

Since each block is free to destroy expired usage rights by timestamp, the cost of these destroyed portions should be paid to the hard disk provider. The number of mega-days to be paid is:

$$r = (t - t-1)/(24 * 60 * 60)$$

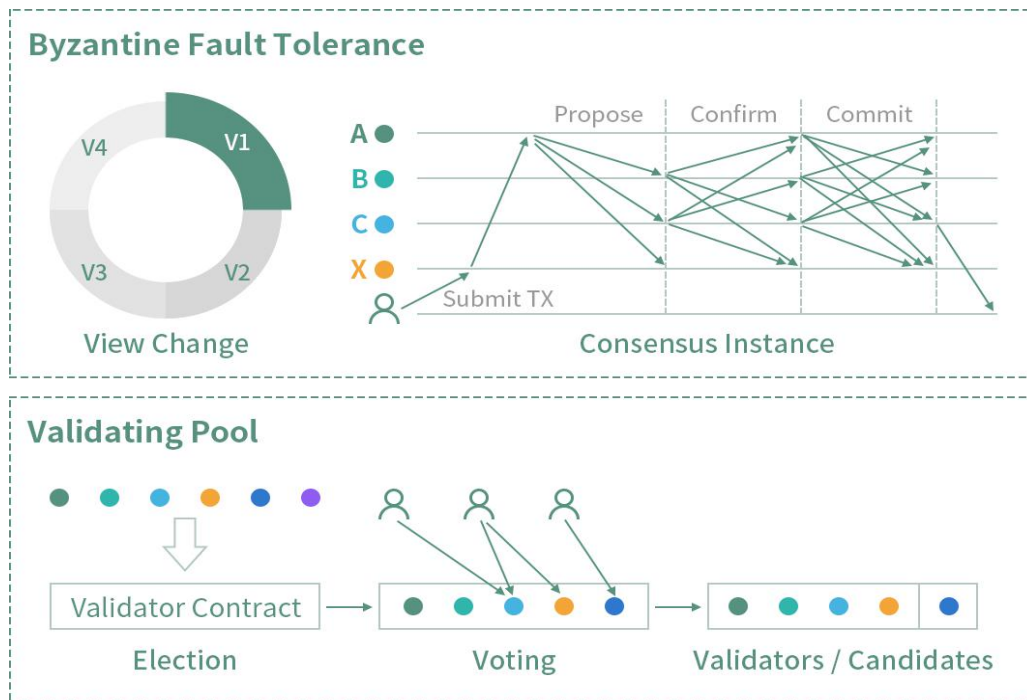
To settle the previous block, the mega-days sold in the previous block is $B-1$, and the tokens earned are $M-1$, so this part of mega-days should be paid out of the capital pool pro rata. In other words, the rental fee that should be incurred is:

$$r = M-1 * ((t - t-1)/(24 * 60 * 60))/B-1$$

These fees will be rewarded dispersedly to the landowner wallets passing the verification at each block generation time.



Landowner subsidy

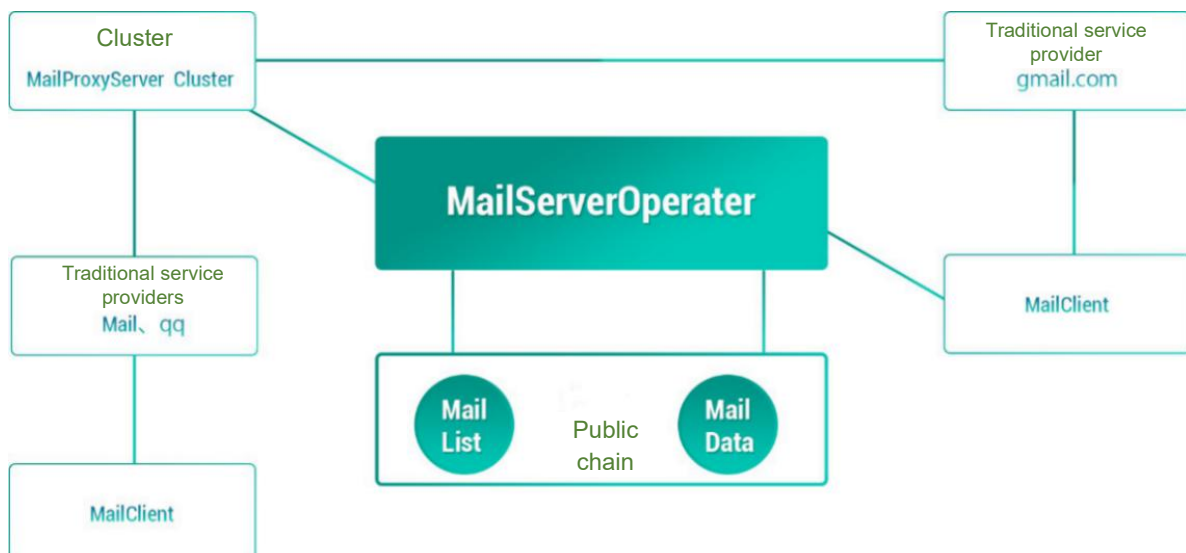


■ **Figure 32: Secure and Efficient Consensus Algorithm**

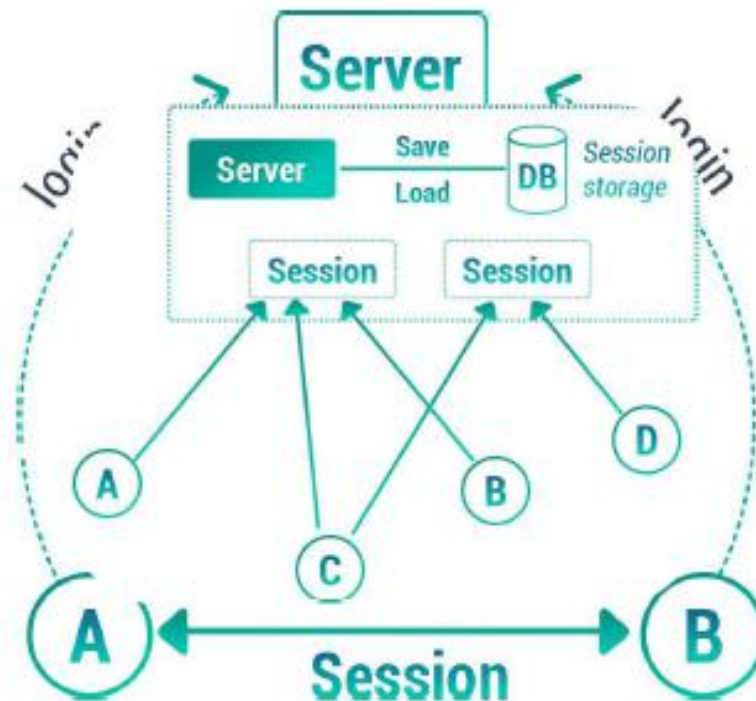
In order to maintain a surplus space and make the initial storage space of the project cheap, within a certain period, a number of funds are added to the capital tool, so that the entire ecology can subsidize the landowner.

Donation channel

The distributed storage is the foundation of the project and the dream of many people. We can add a donation channel to enable coin holders to donate funds to the capital pool.



■ **Figure 33: TFT Distributed Data Routing Framework**



■ Figure 34: Peer-to-Peer Session

TFT believes that: communication is a means of exchange in the human world, and it should be a free and self-controlled tool. TFT constructs a completely distributed session venue, which is decentralized, so that any one or several service nodes on the network has the opportunity to become a bridge (communication routing) between user terminals. The group-key encryption of the communication content makes it invisible to the service nodes that provide the routing channel service.

With the advantages of centralized services, TFT conceptually separates storage and channel.

A cooperative architecture of storage and channel blockchains is formed:

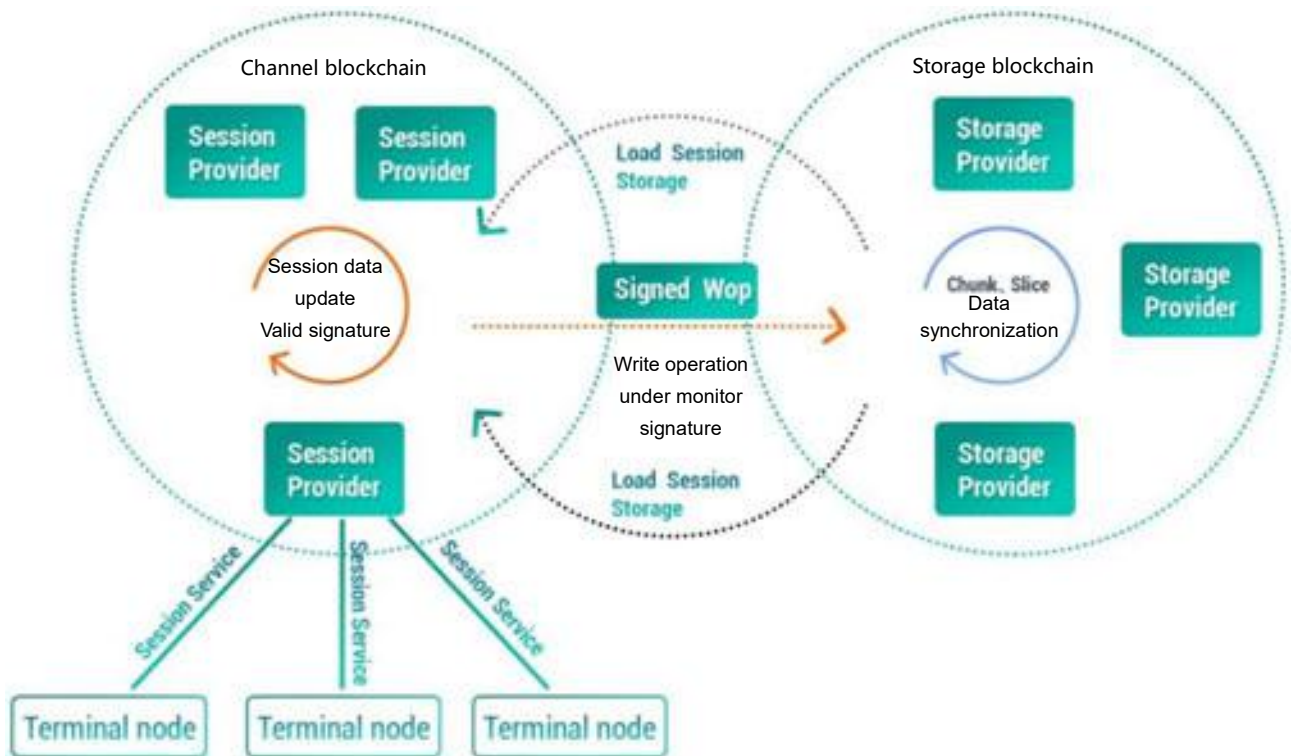


Figure 35: TFT Distributed Data Routing Framework

By comparing the above figure and centralized session service diagram, it can be found that TFT replace **Server** and **Storage** in the centralized session service diagram with two blockchains, respectively:

(1): The storage blockchain consists of highly available distributed storage miner nodes and constructs a highly available storage network by the enormous storage space provided by the participating miners;

(2): The channel blockchain consists of highly available distributed Relay miner nodes, which mainly provide a dynamic data routing and according to the Session participating members, help users construct a service node connection topology that all members can connect to, so as to provide data Relay services. In the meantime, the service nodes participating in the data Relay can access the Session Storage of the storage blockchain, and continuously store the session content, for the convenience of future online and load of the nodes.

For the user Terminal node (wallet terminal), it obtains the functional interface and experience that are not different from the centralized session service, but the server end completely evolves into a decentralized distributed system by utilizing the distributed blockchain technology.



The service topology after successful session establishment is:

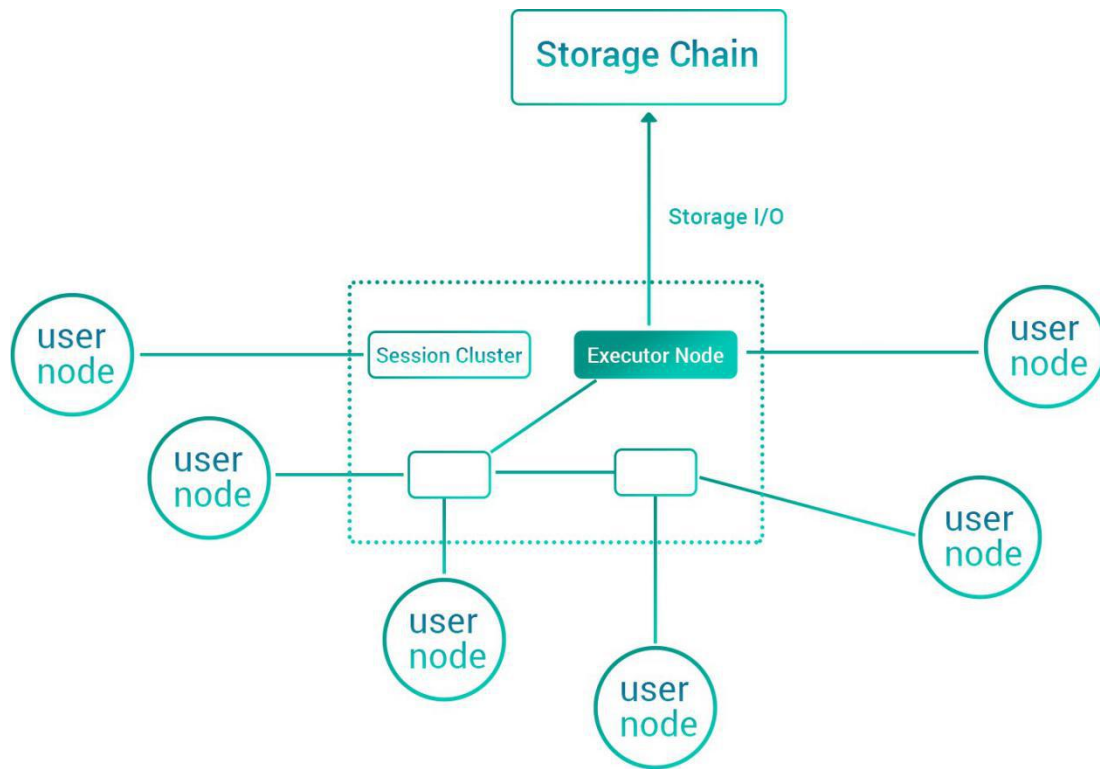


Figure 36: Session Service Topology



07 TFT Application Scenarios

Thunder Fire Token



7: Blockchain Society, Data Service Providers and Application Scenarios

◆ 7.1: From Turing Completeness to Functional Completeness: Applying blockchain to all aspects of the society

According to **Melanie Swan**, the founder of the Institute for Blockchain Studies, the development of blockchain technology is divided into **three eras: Blockchain 1.0 (Programmable Currency), Blockchain 2.0 (Programmable Finance) and Blockchain 3.0 (Programmable Society)**. Bitcoin and other competing coins belong to Blockchain 1.0. Ethereum is Turing-complete and realizes Blockchain 2.0. However, due to the lack of storage, cross-chain, communication and other functions, Ethereum is not functionally complete and difficult to be applied in many areas. It is also difficult to apply other existing blockchains in all aspects of the society because they don't have the fully distributed, infinitely scalable, communication, storage and cross-chain functions at the same time. This is why we haven't seen important Apps replaced by DApps yet.

TFT is fully distributed and infinitely scalable, and has the communication, storage and cross-chain functions. This is why TFT can be applied in all aspects of the society and it is a true Blockchain 3.0 project. TFT can be applied in almost any scenario, and only a few of them are listed below to illustrate.

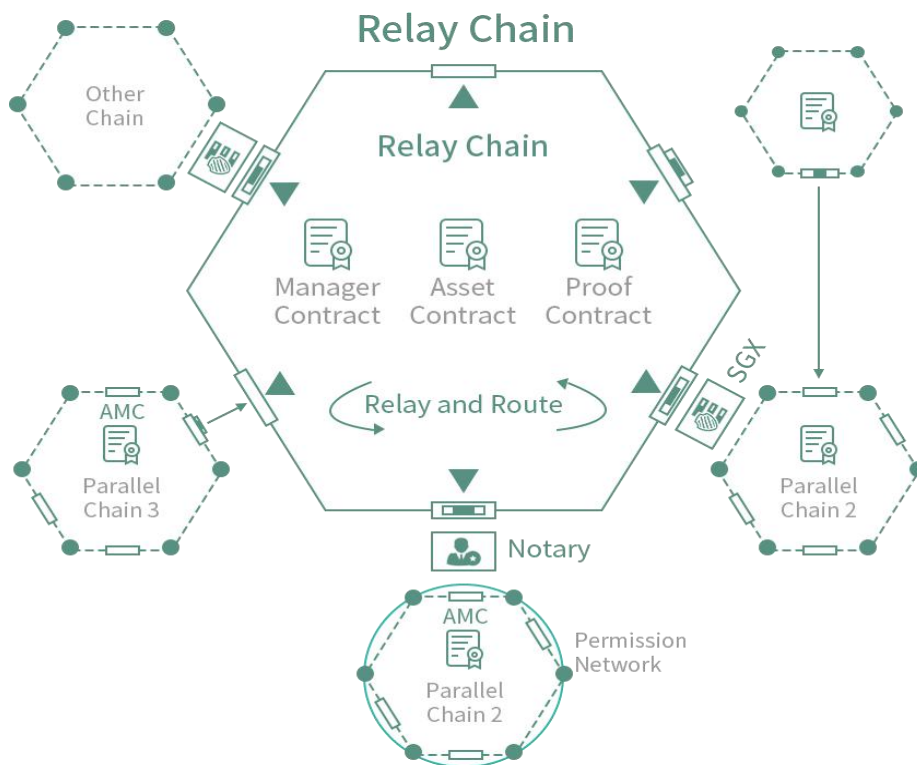


Figure 37: Scalable Homogeneous/Heterogeneous Cross-chain Interoperability



◆ 7.2: Data service providers

Data service providers are actually **DApp** entrepreneurs who don't own most of the user data, but collect data labels and descriptions, analyze them, and provide data mining and data pushing services.

◆ 7.3: Blockchain search

Master's data will accumulate in the distributed storage system, and the exploration of these data becomes an important task. A blockchain search is a search of all data on distributed storage that is open to the public.

◆ 7.4: Distributed cloud storage services

TFT's storage child chain constitutes a large "Worlddisk", which is infinitely scalable and provides the distributed cloud storage services for individuals and enterprises. The users can generate hashes for uploading at any time to prove that it cannot be tampered with, and can become the distributed Dropbox. In particular, enterprises have a greater need for data security and privacy protection. TFT's object storage is very attractive for them.

◆ 7.5: Distributed communication and online broadcast

TFT enables communication between addresses. It is actually a tool for distributed communication. The communication data will not be reviewed or held by anyone other than those in the session, and it can become a distributed WeChat and provide various online broadcast services. Due to the convenience of blockchain payments, it is easy to give rewards during a session.

◆ 7.6: Blockchain identity services

Addresses can upload their own identity information, including resumes, in their own space, which can become the distributed LinkedIn service and be used in a variety of scenarios where identity services are required. Identity can be combined with any other application and may be required to provide data for evaluating eligibility and payment when participating in other services, such as typically lending application where lenders need to open up their identity information and private data for credit evaluation.

◆ 7.7: Blockchain self-media, blockchain pan-entertainment and blockchain advertising markets

Addresses can upload various materials such as articles, voice and video in their own



space, become distributed Facebook, Instagram, Ximalaya, Youtube, Tik Tok, etc., and form a service similar to Toutiao through a recommendation system. On TFT, all kinds of programs can be paid for by users without intermediaries. Moreover, each address can publish its own advertising smart contract, or be embedded with the advertising smart contracts from other addresses. In this way, they can promote themselves or for them.

◆ 7.8: Blockchain sharing economy, blockchain mall and blockchain logistics

Since everyone has their own private space and can define their own labels and descriptions, it is possible to post products for sale in their own space. It is an Airbnb if there is a vacant house for rent, and a car drive by updating the GPS if there is a vacant car seat. With proof of identity and reputation and transaction comments, it can form a virtuous circle. The communication module allows transaction counterparties to contact with each other by text, voice or video.

Because any merchant can publish and update product information in their own data space, merchants can settle in TFT and sign the tripartite smart contract with logistics enterprises for automatic completion of transaction. TFT's communication module makes it very convenient to bargain and provide after-sales service. The digital field of transaction contract enables both parties to evaluate the transaction afterwards.

◆ 7.9: Blockchain IoT and supply chain management

Since each company or even each smart object in the supply chain system can choose to upload its own data to its own address, these vendors or smart objects can use these data to build smart contract systems, and create complex inter-triggered supply chain management systems.

With the enterprise distributed cloud space, it is much easier to maintain the supply chain dynamically and upload, transact supply chain and conduct B2B transaction. The data reading function of smart contract enables the management AI and the order-driven automated society.



◆ 7.10: Blockchain big data transactions, data services and AI training

Because each participant with an address has its own dataset that can be easily transacted through smart contracts, and all purchased and open data can be collected and provided by data service providers, these data can be more useful if they are trained by artificial intelligence.

◆ 7.11: Blockchain game

In the future, people will live in a variety of game scenarios made up of big data, but blockchain games can only have very simple applications due to the difficulty of saving the data on the chain. The development problem of heavy game scenarios can be solved on TFT by storing the data of game developers on the chain, saving the data of game players on the players' private space, using the heavy computing for running the dedicated servers and conducting transactions on the main chain.



Figure 38: Visualized Operation and Maintenance

Provide a comprehensive visual monitoring platform for blockchain

Provide a blockchain browser for multi-dimensional statistical analysis

Nodes support local and cloud deployment

Multi-platform support: Linux/Windows/MacOS/Android

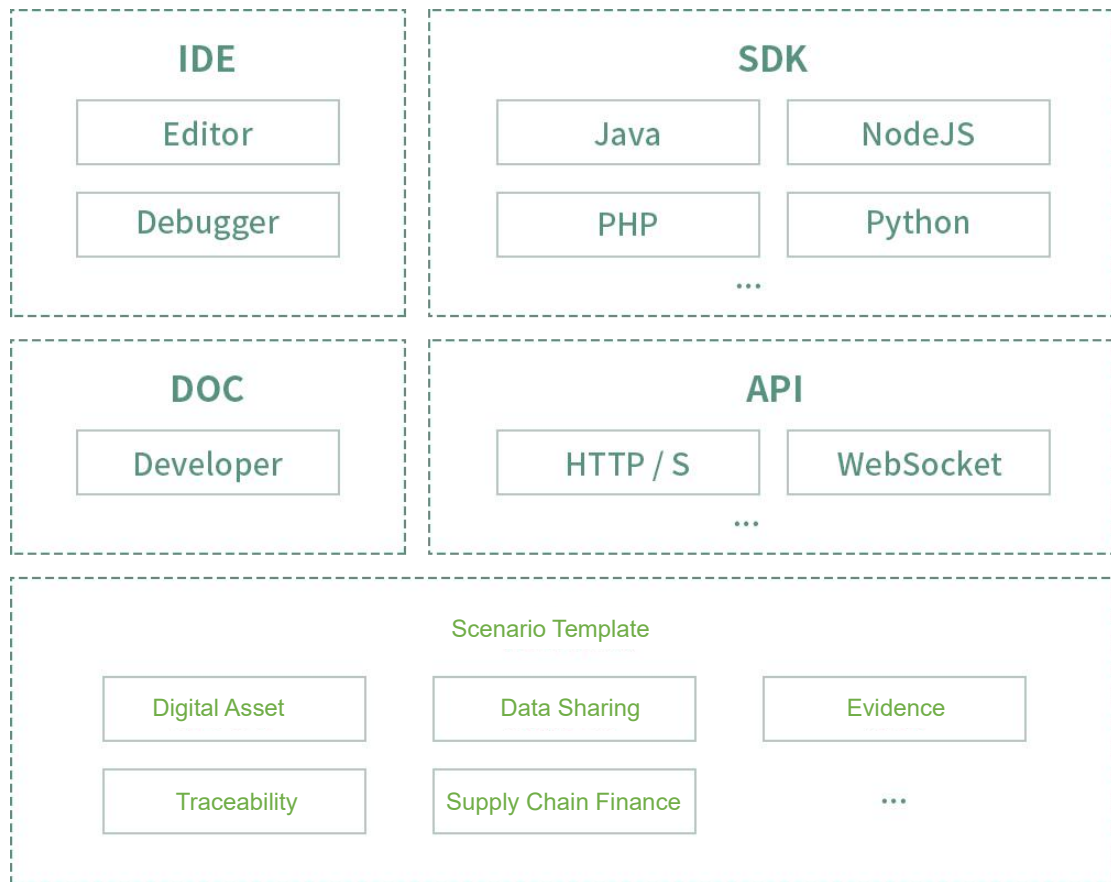


Figure 39: Usability

API supports short connection HTTP and long connection WebSocket protocols

SDK supports Java/NodeJs/Python/PHP and other development languages

Smart contracts support JS/C/C++ mainstream development languages

Smart contract IDE integrated with development and testing deployment

Complete and detailed development documentation

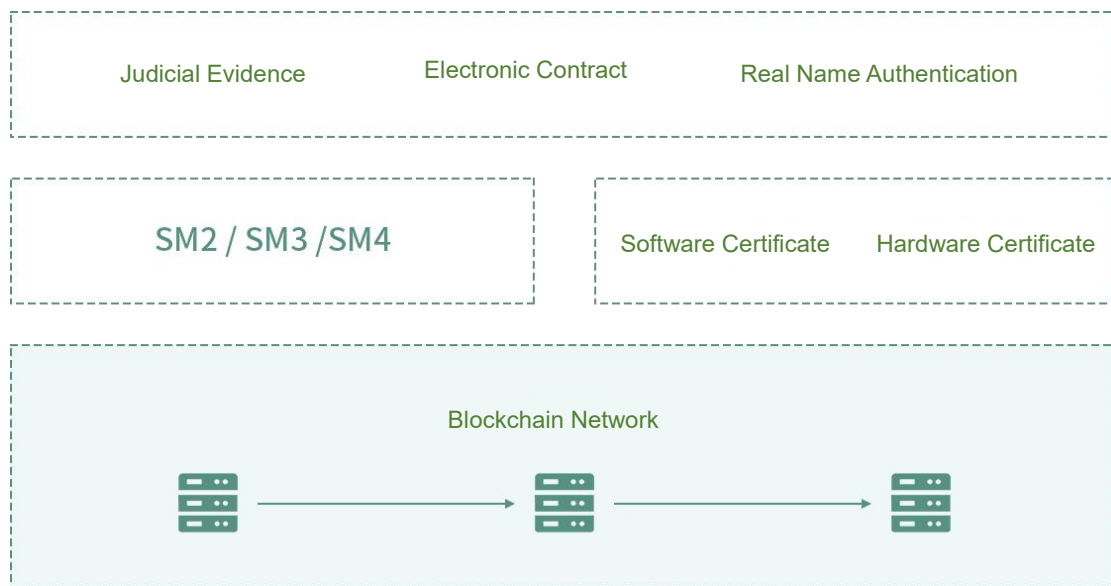


Figure 40: Legal Validity, Compliance

- Support electronic contracts and judicial evidence
- Support SM2/SM3/SM4 cryptographic algorithms
- Blockchain users use CA for real name authentication
- Blockchain nodes use CA to access the network

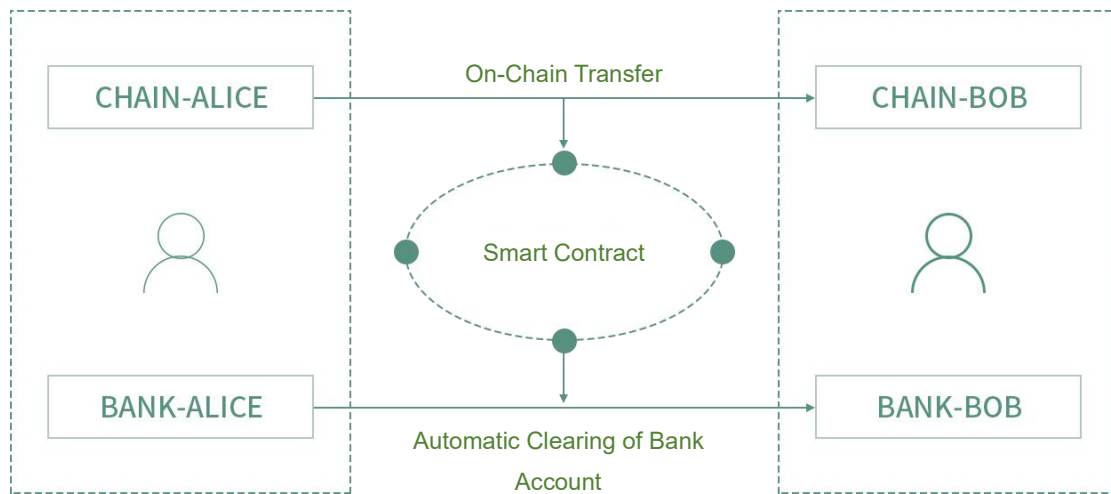


Figure 41: On-Chain Account Linking to Bank Account

The problem of no “money” on chain in business application

Integration of on-chain account and bank account

Smart contracts achieve automatic fund clearing

Clearing process relies on on-chain signature, but not administrator

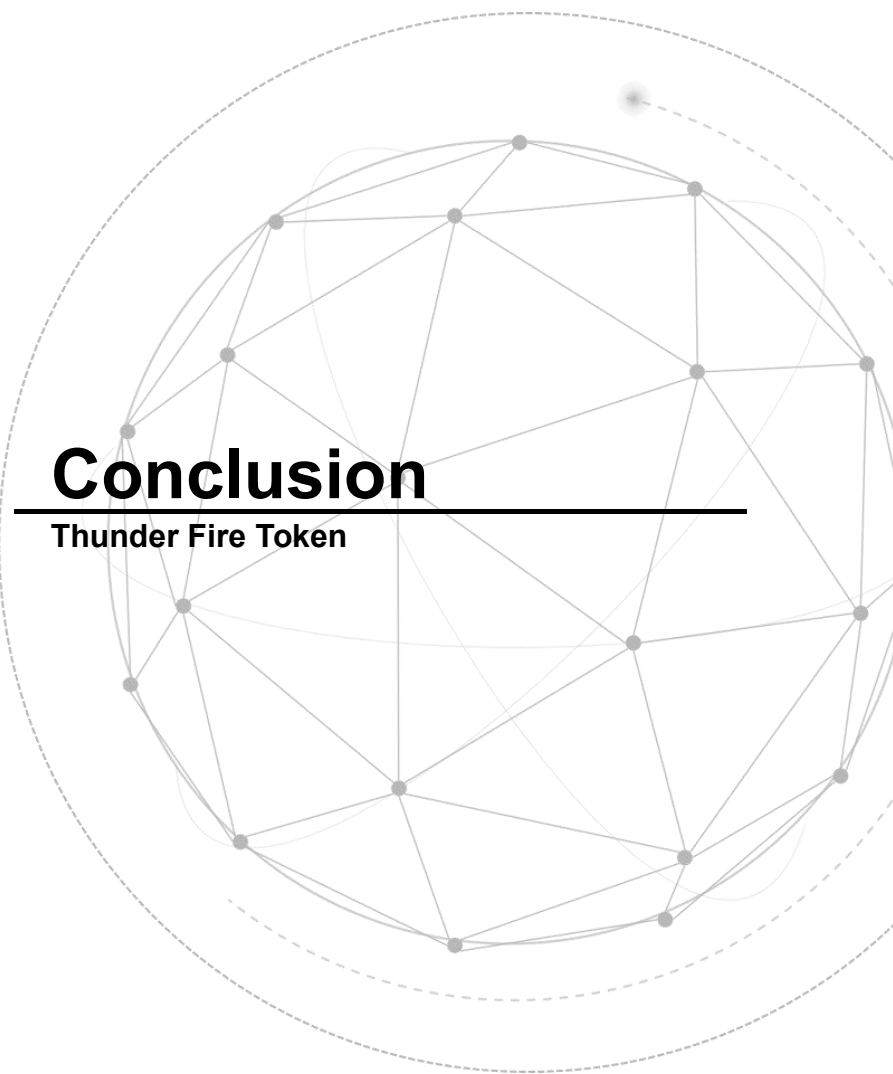
Global settlement through VISA debit card



08

Conclusion

Thunder Fire Token





8: Conclusion

Human civilization is still at a very primary stage, and its rapid progress is inseparable from the deep cooperation among the various trading entities that breaks through the limitations of geography, system, country, organization, etc. The development of Internet gives people the hope of breaking through these limitations. The Internet of Information has enabled people to break all kinds of restrictions for information communication, but the increasingly centralized Internet of Information needs to be transformed into the distributed Internet of Information. The Internet of Value gives people the hope of breaking all kinds of restrictions for value interaction, but the blockchain's data storage, cross-chain interface and scalability are not enough to support heavy applications, and the blockchain needs to evolve from Turing completeness to functional completeness.

TFT is committed to becoming an address-centered, functionally complete, fully distributed and infinitely scalable public chain system that can integrate the Internet of Information and the Internet of Value. It makes the transaction infinitely scalable through hierarchical sharding of main chain and becomes functionally complete and infinitely scalable through multiple functional child chains and their shards. It is based on the read-write storage functional child chains, enables any subject to publish its own identity, social information, rich media, products and smart contracts by building its own private dataset, and in this way, builds a variety of distributed applications on it.

TFT is the third-generation functionally complete blockchain capable of applying blockchain to all aspects of the society. The Foundation, community-based with the distributed governance mechanism, will certainly drive TFT closer to its mission of facilitating efficient human cooperation through the creation of an address-centered, functionally complete, fully distributed and infinitely scalable blockchain.

TFT is an open payment network that is built for financial payments, just like an email for delivering messages.

This protocol can be used to transfer money to any corner of the world, in any currency, quickly and free of charge.

TFT protocol is **compatible** with all **fiat and virtual currencies**, and can achieve the free flow of value around the world.

It allows independent systems to be interconnected like a mail system. Just as SMTP creates a shared standard environment for email, TFT creates a shared standard environment for payments.



TFT network has the functions much better than Bitcoin, **including:** the two-way flow of real and virtual currencies, multi-currency P2P exchange and payment, and personal network clearing of P2P online credit. These four functions are combined to form a basic and complete decentralized all-currency financial entity.

▲ **TFT is a secure payment network.**

This security is not just the security of funds, but also the security that keeps payments safe from power.

TFT is built on the **P2P** network that differs from the traditional centralized financial network. The TFT payment system is distributed over various **nodes** around the world. These nodes, which are connected through the P2P network, make up the entire TFT financial database. Therefore, it only takes several seconds to complete the financial transfer and payment. Another embodiment of TFT's decentralization is that although **SWIFT** is nominally an inter-bank organization, TFT is able to minimize the impact of power on payments.

TFT optimizes the payment system and distributes the settlement function to complete the instantaneous, peer-to-peer payments and transfers. For the user, TFT's instantaneous payments can enhance the payment experience.

▲ **TFT makes paying as easy as breathing**

TFT builds an inclusive and sharing system of personal financial abundance, with a convenient and accessible payment network that can be used at anytime, anywhere in the world. This makes TFT approachable and convenient. You can easily find the TFT transaction portal online, but with the development of TFT you can find the portals in stores, hotels, gas stations, and anywhere else, so people can make financial payments as free as breathing. You can easily transfer your banknotes to any corner of the world within seconds. You can get local currency anywhere through the TFT portal system.



Open a new era of individual financial wealth, build a borderless digital economy platform!

▲ TFT makes it easy to exchange currencies

Due to the existence of TFT, there is no need to go to the foreign exchange market when trading globally, because the built-in mechanism of TFT supports the foreign exchange. Likewise, the multinational financial institutions are no longer needed to complete the financial payments, you just need a simple payment portal to do everything.

For financial institutions, it reduces the settlement risk. This is the significance for the innovation of TFT.



Figure 42: The Ultimate Force for World Change

Every technological change in the history of mankind leads to a redistribution of wealth.

The nature of wealth is the flow of value, and the driving force of the flow is the consensus of all mankind. When the unfair distribution caused by traditional centralization triggers a crisis of trust, identity, wealth, and freedom, we have the opportunity to defend our wealth by the decentralized technology. Only common and ordinary people are the creators of history! When the consensus of the people becomes one direction, it will respond to a great era. People's wealth, privacy, and even thoughts should be used to create a more abundant and better future!

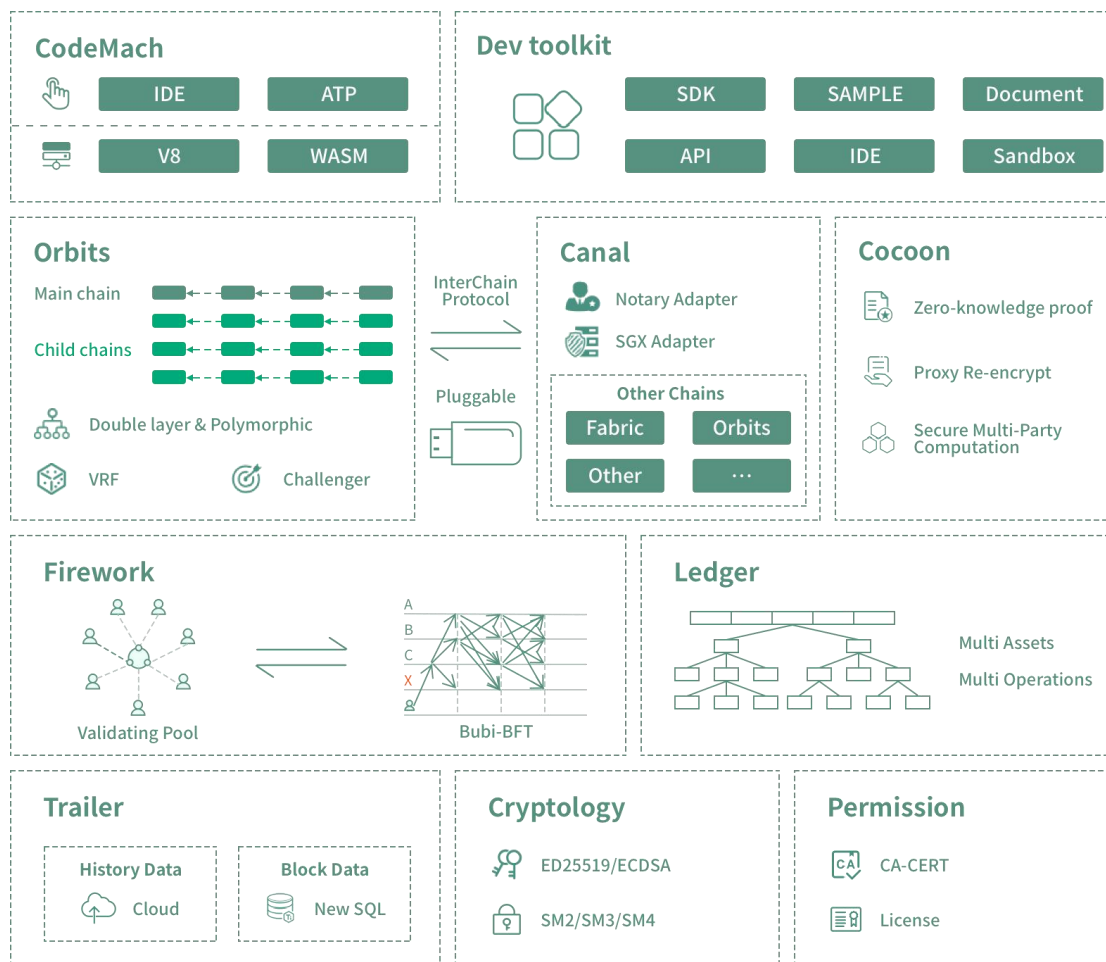


Open a new era of individual financial wealth, build a borderless digital economy platform!

The thunder fire of creation, the thunderbolts and lightnings, the galloping horses, and the resplendent stars!

A new era of independent, free and affluent digital economy is coming, and the human society will evolve into a new world;

TFT blooms with glory and opens a new era!



Thunder Fire Token 1.0