Haino

Metaverse + DEFI + NFTecosystem,
enabling chain tour for a new future

The Haino Foundation 2021

Preface

The advent of the blockchain era gives fintech an opportunity to transition.For example, Bitcoin is a cryptocurrency not issued by any central subject. It has a transparent issuance plan and circulation, and has been recognized by many people in the storage of value.This is the first distributed cryptocurrency in human history, bringing more options and possibilities to the future financial world.

Not only that, but with the launch of the Ethereum smart contract, the concept of D e F i(the concept of distributed finance)emerged in 2018.The significance of DeFi is that it has the ability to build financial scenarios through contracts, through which people can complete financial services without intermediaries, such as borrowing, stablecoins, token trading, derivatives trading, insurance, prediction, etc.It presents a different financial service characteristics than that completed before.For example, it has tamper-mutable and transparent ledger, contracts not controlled, even the developers of the contract, agreement developers, can not control the operation of the contract, which is a new financial ecology, a lot of possibilities.

With the rise and prosperity of DEFI, NFT, and the metaverse, the value Internet carried by blockchain is accelerating.According to the latest DappRadar data, the overall sales in the N F T Top 10 trading markets have reached $1.56 billion in the past 30 days, showing the NFT hot trend.Although sales in the NFT market is rising, N F T is still in an early stage compared with the current $109.26 billion lock volume in the current DeFi market, and there are considerable opportunities in the NFT market.

With the popularity of NFT, the concept of metaverse is also rising quietly emerging.

The word "metaverse" comes from the novel

The Avalanche, a cyberpunk classic.In novels and movies, the metaverse can have the sense of the real world or the unrestrained of the virtual world.Compared with the traditional Internet, metaverse has put higher requirements in immersion, participation, sustainability and other aspects, so many independent tools, platforms, infrastructure, protocols are needed to support its operation.

The game is considered the most likely entrance to connect the metaverse.At present, players can play a variety of roles in the game, can complete life, work and make friends in the virtual world.In March, Roblox, the parent company of overseas game Roblox, listed in the United States, rose 54% on its first day of release to a market value of $3 8.3 billion.Roblox claims that it connects the world together through games, allowing anyone to explore the tens of millions of immersive 3D

games built up by community developers around the world.In April, Epic Games, the parent company of Fortnite, secured a new $1 billion funding with the metaverse concept.Previously, "Fortnite" had hosted virtual "immersive" interactive concerts.Technology companies are also actively layout the metaverse.International giants such as Nvidia, Facebook, Tencent and ByteDance have increased their numbers to the metauniverse in order to dominate in the early market.

Based on this, the Haino project was born, a new blockchain protocol that integrates the concept of metaverse, NFT and DeFi concepts, and creates a multi-player metmetaverse game, aiming to enable a new future of chain travel through the integrated development of metaverse + DEFI + NFT.At the sametime , Haino will also use the metaverse + N F T based on the technology of ETH chain and TRX duplex simultaneous development + DeFi + game mode, it is committed to driving the implementation of blockchain technology in the financial field, physical business, entertainment and leisure, payment, mining, asset certification and other fields, and enabling the innovative business ecosystem in the value Internet era.

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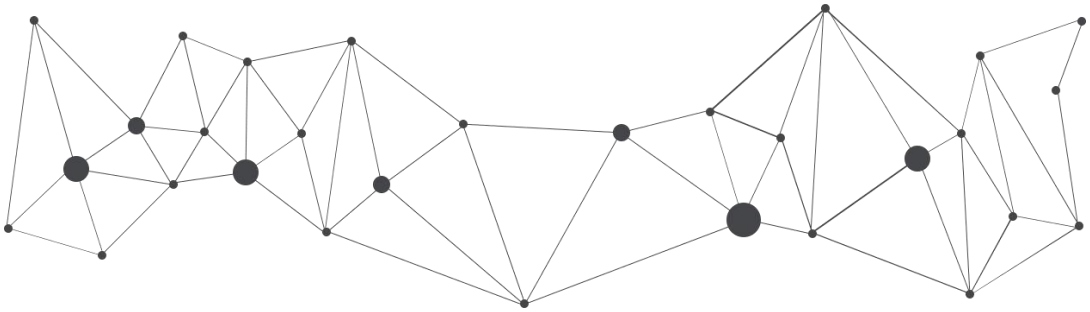
Chapter I Project Development Background

1.1 The development of blockchain technology

To explore the mechanism and development of blockchain, bitcoin is never an unavoidable topic.The emergence of blockchain as a stand-alone technology first dates back to Bitcoin systems.In 2008, a person (or team) nicknamed Satoshi Nakamoto published an article titled "A peer-to-peer e-cash system", and bitcoin published its early implementation code in 2009.

Throw away the ups and downs of Bitcoin prices, Explore only the design of the bitcoin system itself, It can be seen as a conceptual and technical experiment in electronic currency: in traditional electronic payment systems (such as bank transfer or third-party payment, etc.), The bank or the payment service provider is required to verify and record the transactions occurring in the system, The ledger is in the hands of the central organization; For the first time in human history, bitcoin has achieved decentralized electronic currency issuance and trading, That is, there is no need for a centralized third-party authentication agency or accounting management system to verify and record the transaction, The whole network will jointly maintain and update the same ledger.The emergence of Bitcoin makes it the possibility of the electronic currency system to change from the traditional "centralized ledger + intermediary" mode to the "public ledger + consensus" mode, which is realized by blockchain technology.

With the emergence and maturity of blockchain technology, smart contracts, as an important research direction of blockchain and future Internet contracts, have developed rapidly.Blockchain-based smart contracts consists of event processing and preservation mechanisms, as well as a complete state machine for accepting and processing various smart contracts, and state processing of data is completed in the contract.After the event information is introduced into the smart contract, the smart contract is triggered for the state machine judgment.If the trigger conditions for one or several actions in the automatic state machine meet, the state machine selects the automatic execution of the contract action according to the preset information.Therefore, smart contracts, as a computer technology, can not only effectively process the information, but also guarantee that both parties to the contract can forcibly perform the contract without having to introduce a third-party authority, and avoid the emergence of default behavior.



1.2 Fusion of the blockchain with the DeFi mode

With the support of blockchain technology, the financial industry form has more possibilities for innovation.DeFi is a more typical model.DeFi's full name is Decentralized Finance- -decentralized finance.DeFi is a financial behavior and services based on digital currency or Token.

For example, token-based lending services, exchanges, payment, insurance, investment and even financial management services.Among them, Ethereum-based DeFi services and products are the most prosperous at the current stage. DeFi in a broad sense refers to financial businesses and services based on decentralized technology.

Broad DeFi has two meanings: business and services are built entirely based on decentralized technology.For example, mortgage, transactions and loans based on blockchain decentralized technology and smart contracts.The service itself is not a decentralized technology, but the object of the service is the digital assets based on the decentralized technology.For example, digital currency exchanges, etc.

These financial businesses and services can be upgrades of existing traditional financial businesses, reconstructed using decentralized technology; or brand new financial services, such as digital currency-based transactions and other financial behaviors.

DeFi is a very important direction for the financial industry.Because the decentralized operation model can greatly reduce the cost of financial operation.And in the process of operation, it can eliminate the information asymmetry in the industry, and make the whole financial industry become open and transparent.

For example, the traditional field of lending has such defects, such as fraud in the mortgage phenomenon, or mortgage multiple mortgage phenomenon.Another example is urging loans, cut off loans.

In fact, there are many opaque links in the traditional lending sector.The significance of decentralized finance is in being transparent and irreversible.When a lender initiates a loan, as long as the value of the collateral meets the requirements, it will not suffer the pressure of loans from traditional institutions, nor will it be threatened by loan interruption, because decentralized finance is the

automatic execution of the contract, thus putting an end to the interference of human nature, which can well protect the rights and interests of lenders.

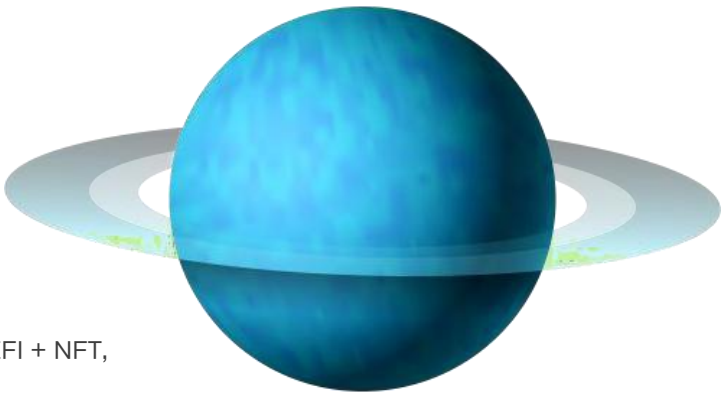
Although the initial target of the DeFi sector was just digital currency and stablecoin, as the technology develops, it is extending to more possible value space.

The differences between DeFi and traditional finance are shown in the following table:

	Traditional finance	DeFi
Public credibility	Official endorsement	Code is the law
Service charge	High middleman fees	Low contract enforcement costs
Access time	Business hours	7*24h
Flow of capital and information	The black box is opaque	The rules open and transparent / can be checked on the chain
Currency	Legal tender	Project release
Rate of interest	Influence of government	Market supply and demand
Credit and loan	Bank	Decentralized lending platform
Transaction in assets	Bourse	Dex

The year 2020 is a hot year for DeCentralized Finance (DeFi).At present, DeFi has many application directions, including decentralized exchanges, lending platform, stablecoin and so on. At present, there are hundreds of DeFi projects around these application directions in the market.Compound, the DeFi lending leader, is used to attract users to participate in deposits and loans with COMP tokens. The amount of capital precipitation increases 10 times within a month, and the COMP valuation is high, opening the carnival of DeFi.After this, the new concepts of DeFi have emerged in an endless stream. The lending platforms, decentralized exchanges, decentralized autonomous organizations, stablecoins and prediction machines have constantly emerged, and the excellent DeFi projects have used token liquidity mining to achieve the cold start of users.

That makes DeFi one of the fastest growing areas in the blockchain ecosystem, now with a total lock volume of more than $5 billion.Among the many DeFi businesses, the three most striking directions are stablecoins, decentralized exchanges, and lending businesses.Among them, DeFi lending business is developing particularly rapidly.



1.3 Overall overview of the D eFi Market

1）Overall market review: Market development and changes

The year 2018 is the first year of the development of DeFi industry, but until 19 years, the core index TAvenger (namely Total Value Locked, generally refers to the total value of digital assets mortgaged by users in an encryption certificate project) basically no big change trend, until 2020, the DeFi industry ushered in a huge outbreak, the rise of "liquidity mining" in this background environment.

The year 2020 is a year of the outbreak of DeFi in the market. Since the launch of "liquidity mining" triggered hot spots in June, major D e F i projects have launched similar liquidity mining modes. The total lock volume (excluding repeated pledge) has soared from $1.8 billion on June 20,2020 to $11.9 billion on October 22, achieving a 6.6-fold increase in four months.Among them, Uniswap contributed 23% to the TAvenger in the overall DeFi.

In terms of the number of market participants, the development of DeFi market is also obvious in the number of participating users. From January to June 2020, the number of participating users in D e F i market increased from 1 00,000 to 200,000; after the opening of liquidity mining in June, the market participants increased rapidly, and the number of users increased to 6 50,000 in 4 months.By the end of 2020, it had had more than one million participants worldwide.

In terms of market value performance, the market value of DeFi project began to calm down after a round of surge in 2020 July and 20. According to the D e F i price index DeFi Pulse Index established by DeFi Pulse, the index price has fallen 36.3% since its establishment on September 10; then DeFi will go through a round of development and regain its strength.

The reason behind the rise of this wave of DeFi lies in the innovation of automatic market maker AMM mechanism, which breeds the birth of liquidity mining, which binds the interests of early seed users through tokens through liquidity mining distribution projects.That triggers the entire DeFi industry.With the increasing development of DEFI ecology, more innovative cryptocurrency assets have emerged, which drives the development of DeFi2.0, and high-quality projects have also improved the pace of DeFi ecology from the perspective of improving the efficiency of capital utilization efficiency.

2）Leader project and market market, status quo

At present, DeFi project is mainly divided into four tracks: DEX, lending, prediction machine, derivatives, among which DEX and lending products account for the highest lock volume; In the top 10 DeFi projects, DEX accounts for 37% of TAvenger, while lending products account for 33%.

• DEX market house

The decentralized exchange (DEX) is a point-to-point free-trading market.Before 2020, DEX was basically an order-thin market, with poor liquidity and poor user experience, but the automatic market maker algorithm launched around 2020 injected a new soul into DEX and had to attract attention to the centralized exchange giants.

At present, the number of liquidity transaction pairs on Uniswap has exceeded 16,000 pairs, more than 50,000 liquidity providers, more than 2 3,000 daily active users, and an average daily transaction volume of $200 million.Objectively speaking, the rise of DEFI in June should have largely be attributed to the hot liquidity mining.It has brought a lot of capital precipitation and built a foundation of financial Lego. D E X has now solved some problems in the DEFI ecology and gained some positions, such as realizing independent currency registration, solving market-making problems with AMM, and simplifying the transaction process without KYC.But DEX still has a lot of problems, such as poor transaction depth and no review air currency.The trading depth and experience of traditional order books are not resolved by current DEX.

• loan market

From 2017 to 2019, the lending market took the Maker as the benchmark in principle, but since June 2020, the market rankings have been rapidly overturned, with both Comp and Aave threatening the top of the Maker.By the beginning of 2021, more high-quality projects will strive to go online, and the market competition is also relatively fierce.At present, the deposit assets are basically ETH, accounting for 45% of the deposit assets, followed by DAI, accounting for 32%.Loan assets are basically DAI, accounting for 82%.DAI and USDC became the most dominant borrowing stablecoins.

Defi's visible future development trend mainly lies in the introduction of privacy computing, breaking the current situation of only excess mortgages, and thus enhancing the growth space of the entire lenging field.Privacy computing is the underlying infrastructure for developing credit loans.Our current DEFI loan field is precisely the lack of personal identifiable information, account information related certification, a large part of the reason is due to the easy to disclose their identity privacy.After the exploration of the privacy computing field is gradually improved, it is believed that DEFI will have a further explosive growth.

In our view, the cryptocurrency market compared with the traditional financial

market, market value is still very small, capital never sleep, have capital gains will have flow, outside the big capital is still with a cautious attitude in the cryptocurrency and DEFI ecology, with the continuous improvement of infrastructure and cognition, outside the circle assets into the key of future development direction.

1.4 Prosperity in the N FT market

NFT, all known as Non-Fungible Token in English, is translated as a "non-homogenized token". It is a cryptocurrency using blockchain technology and can be understood as an advanced version of Bitcoin.Simply put, NFT is a virtual asset that puts specific information on the blockchain through encryption to prove the only copyright and is bought and sold through an online trading platform.Unlike Bitcoin, NFT has inseparable, irreplaceable and unique characteristics. Its records on the blockchain cannot be tampered with or copied, and the transaction records are publicly visible, so NFT cannot be imitated.

For example, when a painting transforms into an NFT form, then it cannot be changed and produces a certain number of tokens to prove its scarcity.The creator of the painting's painting, creation date, and other information will be forever engraved in its NFT, even if someone copied or copied after it, others can use its NFT to determine true or false.To sum up, NFT is using blockchain technology to transform the abstract fact of "holding ownership of a certain commodity" into "tokens" that can be priced and change hands, and is recognized by the world and cannot be changed.

The history of NFT, dating back to 2017.In that year, Ethereum launched 1 0,000 CryptoPunks pixel heads, each with different heads. People holding Ethereum cryptocurrency could receive them for free and get the second-hand market transaction.Half a year later, Ethereum again launched the blockchain mini-game "Cryptokitties" (crypto cat).Each cat has its own number and cannot be copied or stolen. The gameplay is similar to QQ Penguin, and the cat you spend time and money "captive" always belongs to you and will not disappear because of the end of the game.

In 2018, the NFT ecosystem gradually developed.OpenSea, AvengerrRare, Rarible, Nifty Gateway and other trading platforms rise accordingly. With the rise of NFT, there are also various NFT trading platforms, among which Ethereum operates the largest AvengerrRare and OpenSea scale, attracting more customers.

In 2019, Nike, F1 and other brands smelling business opportunities began to intervene in the NFT market.In 2020, NFT began to apply in other areas, including identity authentication, fixed asset backup, and even use as a crypto collection for increased collection value.

In 2021, the NFT market finally saw explosive growth.According to the CryptoArt.According to the io platform, the NFT was the most competitive at the beginning of the year, with more than $2 million in March; as of August 1,8.21 million art works were sold as N F T, with a total value of about $683 million, or 26 0,000 Ethercoin ETH.Not only Musk, Jack Dorsey and other technology giants are seizing the market, but some well-known artists have also entered the NFT, with many reports of many art works sold at high prices.

At present, it is now clear that NFT's main application areas include games, art, domain names, collectibles, virtual assets, reality assets certification (STO), especially art and games pay high attention in the market.Some game props and artworks are naturally unique and not separable, just coupled to the NFT, so the NFT can effectively prevent the forgery and fraud of such items.In the context of the global digital transformation, NFT will play an irreplaceable role in the future blockchain ecosystem, and may even become the key driving force and cornerstone for many industries to realize the transformation of the digital economy.For exchanges, how to seize the opportunity under the new wind mouth to promote the development of the digital economy is worth deep thinking.

The prosperity of NFT has a similar relationship with DeFi. NFT belongs to the category of DeFi as a field with great growth potential in the DeFi field.DeFi (Decentralized Finance), or decentralized finance, refers to financial behavior operating on the underlying blockchain systems such as ETH Ethereum, Binan Intelligent Chain (BSC).DeFi uses smart contracts to enable digital assets to rebuild traditional financial order in blockchain networks and synergize with each other.Typical applications include quantitative, market-making, lending, insurance, bonds, funds, audit, derivatives, ETF, exchange, clearing and settlement, etc., by using digital assets.Corresponding to CeFi (Centralized Finance) centralized finance, DeFi decentralized finance has the characteristics of code-neutral open source, decentralized operation, no decentralized regulation, decentralized autonomy and other characteristics:

- Code neutral open source: refers to the DeFi projects running on the blockchain, open running in the blockchain network, and open code source.Each smart contract interaction and open source code can be viewed at any time.

- Public access on the device: the mainstream project code on the chain has been audited by the code audit companies to avoid the backdoor, bug and other malignant events that affect the healthy operation of the system.Most of the code for traditional Internet applications is not fully open-source.

- Decentralized operation: DeFi projects can run in the global mining nodes, unlike traditional Internet applications, which need to run in company-owned centralized servers.The alized blockchain nodes are more risk resistant. As long as there are global mining machines mining for this public chain, the block network can operate normally.

- Uncentralized supervision: blockchain network applications run on countless

blockchain nodes, and the main network of the project need not go through centralized institutional review, making innovation more free and developing faster.Unregulation makes the DeFi network complete the chain restructuring of the traditional financial system in just half a year, and try all kinds of innovations on the original basis.On the other hand, undecentralized regulation also makes investors less protected, with the DeFi network gradually growing in a decentralized organization in hackers, vulnerabilities and other incidents.

- Decentralized autonomy (DAO, Decentralized Autonomous Organization): Most head blockchain network applications use decentralized autonomy to manage the major matters and development path of projects.Any community member can initiate a proposal where all users holding digital assets can vote on the project based on their holdings.The DAO is similar to 24 hours and 365 days.

The D e F i concept began to rise in 2014-2017. In 2018-2019, various D e F i projects such as decentralized lending were gradually launched, and became widely popular in January 2021 after the Bitcoin bull market attracted market attention.D eF i lock warehouse capacity in 2021
Above $80 billion in April.The stock of digital assets in the DeFi network also exceeded $101 billion in early April, accounting for about 5% of the overall digital currency volume, and has a trend to further accelerate.

1.5 The beginning of the metmetaological concept

The concept of the metamoeverse first originated from the 1992 science fiction novel "The Avalanche", in which the author constructed a virtual world parallel to the real world.Later, the famous films "Matrix", "Top Player", "popular animation ip" Sword God domain " and other film and television works have been continued and improved in this concept.

Literally, the metauniverse (Metaverse) consists of Meta (beyond) + Universe (universe) two parts, namely through the virtual world on the basis of the virtual world, make the real world through digital form can live in the virtual world, the virtual world at the same time the virtual world also exists social, economy and a series of relatively perfect system.

The metacaverse industry is still in its initial stage, and there is no unified and complete definition of the core elements of the metaverse in the market.But one of the earliest authoritative metaverse concept of the Roblox CEO of the eight necessary elements, and tencent institute of the ideal state, namely a extremely immersive experience, super space-time social system, rich and colorful content ecology, the combination of economic system and can map the real human social civilization of super large digital community.

In terms of technology, on the basis of the traditional Internet, the metaverse has put forward higher requirements in immersion, participation, sustainability and other aspects, so it will be many independent tools, platforms, infrastructure, protocols to support its operation.With the increasing maturity of technologies such as AR, VR, 5G, cloud computing and so on, the metacoverse is expected to gradually move from concept to reality.

With the deepening of the market's understanding of the metaverse, it is certain that from the consumer Internet to the industrial Internet will welcome the metaverse era of online and offline integration in the future.The mainstream view of the market believes that the metacverse model will be a new pan-entertainment model. The unique immersion, real-time and multi-dimensional characteristic model will be more welcomed and affirmed by the market.

In general, the metacoverse is highly virtual and reality, with closed-loop economies attached to the open source platform.Although there is no detailed description of the final form of the metacta-Universe in the industry, we can still determine the four core properties of the metacta-Universe by refining its characteristics:

- Synchronization and distortion.Virtual space is highly synchronized and interconnected with the real society, and the interaction effect is close to reality.Synchronization and quasi-real virtual world are the basic conditions for the composition of the original universe, which means that all events in real society will be synchronized in the virtual world, while users can get close to real feedback when they interact in the virtual metacta Universe.

- Open source and creation.Open source also means that open source technology and platform open source. Metamoverse formulates "standards" and modules the code through "protocol" and modules to different degrees. All users with different needs can create in the metamoverse, forming a native virtual world and constantly expanding the metaverse margin.

- sustainability.Instead of "pausing" or "ending", metaverse platforms operate open source and persist indefinitely.

- Closed-loop economic system.Users' production and work activities will be recognized in a unified currency of the platform, and players can use the money to consume the content within the platform, or replace the real currency through a certain proportion.Economic systems are the engine driving the continuous progress and development of the human universe.

1.6 Fusion of D EFI, NFT with the metaverse

The metaverse is not a castle in the air, but a virtual space based on the real Internet world mapping in the future, which will also be extended from pan-entertainment to every corner of the Internet.However, the current development stage of the metaverse is still in the super early stage, and it still takes a long time to develop and improve.

DEFI and NFT will become an important infrastructure of the metamoverse. Its uniqueness and irreplaceable will provide a reliable basis for people to map real world things to the metamoverse, and have initially shown its value at this stage, but there is still a very imagination space for the core and extension of DEFI and NFT in the future.According to our vision above, DEFI and NFT will become the important infrastructure of the metacaverse, and the metaverse will become the most bright application result of DEFI and NFT. From this perspective, the two are interdependent and co-honor each other.

At the end of June 2021, Zuckerberg announced that Facebook would work to build the future, and the product group would be led by Instagram vice president Vishal Shah.At the end of 2020, Ma Huateng put forward the so-called "full true Internet" concept of Tencent's annual special issue: " Now, an exciting opportunity is coming, the development of mobile Internet is about to usher in the next wave of upgrades, which we call the full real Internet."Judging from its interpretation of the true Internet, it is the same as the metaUniverse we discuss today.

This is a process from quantitative to qualitative change, it means the integration of online and offline, the integration of physical and electronic ways.The door to the virtual and real world, whether from virtual to real, are committed to helping users achieve a more real experience.From the consumer Internet to the industrial Internet, application scenarios have also been opened.Communication and social networking are video, video conferencing and live streaming rise, and games are also cloud.

As is known to all, the development of the Internet from Web1.0 to Web3.0 indicates that the NFT and the metacaverse will also experience such a process, that is, for the individual value of each individual and all the value created in the Internet, on the whole, Web3.0 will be an important part of the metaverse, so the discovery of individual value will also be an important core of the metaverse.Based on the above analysis and the unique advantages of DEFI and NFT, it is not difficult to find that with the development of human society, especially the

continuous exploration of the development of human society development, the value of each individual "unique" and the "unique" of DEFI and NFT recording function will be more deeply integrated, which will undoubtedly continue to strengthen the interdependent relationship between DEFI, NFT and the metaverse.

Although the development of the metamoverse is still in a very early stage, but through the DEFI, NFT this window, have given us a glimpse of the virtual world open interconnection, value sharing, and with the help of DEFI, NFT, in the future metamoverse, any valuable individuals and things will be found, recorded and get due respect.

For the above reasons, the Haino project was born.

Chapter II Haino Project Overview

2.1 The birth of the Hain o

NFT games are the primary form of the metaverse.In terms of product form, the game is the prototype of the metaverse.As a virtual world built by people based on reality simulation, extension and unrestrained imagination, its product form is similar to the metaverse.

Based on the integration of Web3.0, holographic Internet technology, blockchain and NFT, the values shown by the metacverse concept fit with the core value of the Internet.The Haino team believes that the metaverse may be the ultimate form of the Internet.Therefore, we take games as the entry point, and supported by the bottom of ETH chain and TRX double chain public chain technology, to create Haino —— multi-player game based on NFT + metacverse, making the connection between reality and virtual more efficient, and making the circulation of value richer.

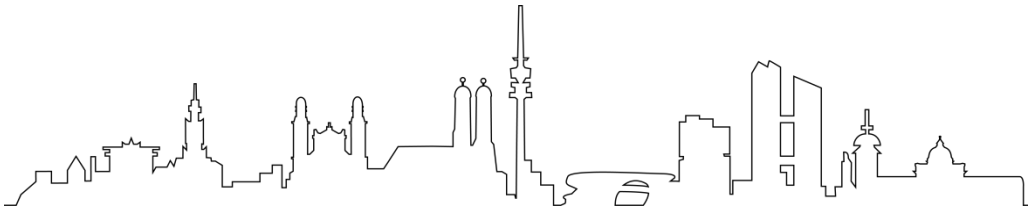
Haino (ruler) is jointly built by chain travel giant aixe infinity, (Singapore Fund), Goldman Sachs Group, 10 gamefi developers and the top 100 communities around the world. The project will be completed and set defi.NFT.gamefi is a large blockchain ecosystem in one, and with the support of the foundation's global technology, resources and game network, Haino can be supported by DEFI and NFT concepts, and the metacUniverse system as the standard to achieve innovation in the following aspects:

- In terms of synchronization and authenticity, Haino games give each player a virtual identity, such as username and game image, and social relationships to meet new partners in the game community, the game creates a cognitive demanding environment through rich storylines, frequent interaction, graphics, coordinated sound effects, allowing the player to use a lot of mental resources to focus on what happens in the game

  It is called "immersion sense."

- In terms of open source and creation, players have full freedom in the framework and rules of Haino games, which can not only simply enjoy the game screen and sound effects, but also pursue the ultimate equipment and operation.

- In terms of economic systems, each Haino game has its own game currency, in which players can shop, sell, transfer money, or even withdraw cash.To sum up, Haino integrates several basic needs of the Metacta-Universe and NFT into the game, making the game the most likely track to build the prototype of the Metacta-Universe.



2.2 Hain o chain tour system

With the support of DEFI, NFT, meta-Universe theory, and concepts, we have created a multi-player collaborative metaverse game ——Haino chain game based on BSC technology.Players build their own virtual land in the game, interact with their neighbors, perform stimulating daily activities, and receive rewards.Anyone can join the world by purchasing a piece of land and participate in various activities such as growing fields, developing mines, insect hunting, and beekeeping.Activities, shared missions, and competitions bring valuable rewards that enhance player status in the game.Let the game provide interesting plots for the average player who wants to enjoy the game experience, and also an ecosystem for players who want to collect and trade nonhomogenized tokens (NFT).

Haino chain game fusion strategy, collection and other gameplay, with strong play.It is also the main embodiment of the N F T and metamoverse in the Haino blockchain ecosystem. The Haino chain tour gives the real circulation value of the tokens in the ecology, and opens up the transaction channel between users and the platform.

In BSC Under the support, Haino Chain tour system has the characteristics of decentralization, transparency and certification incentive.And, the Haino A large number of international top blockchain talents have been quickly gathered, aiming to take the online game industry as an opportunity to drive the industry change and build the world's top blockchain game infrastructure, NFT and metaverse ecological application system.Haino integrates third-party resources through the blockchain network and token mechanisms, combining the online virtual environment and the physical environment, creating a borderless entertainment world, and creating an unprecedented entertainment experience for global users.

In addition, we will also issue Haino digital assets based on the value of Haino.In the Haino chain game ecology, Haino allows players to participate in the games and get rewards, and distribute the game assets through the blockchain.

- Decentralized ownership based on NFT assets: decentralized ownership of the assets in the game (e. g., islands, houses, pets, etc.).
- Social features: A built-in chat module that allows players to communicate with players on the same island, and to transfer tokens and assets to friends

during the chat.Players can visit each other's islands and complete group missions together.

- Market: an in-game market that allows users to buy and sell assets.It creates a basic ecological environment for gamers to purchase and use NFT assets, and also provides strong liquidity support for the trading and circulation of various types of digital assets.

In the future, Haino chain swim system will be on the basis of the universe game, expand including storage cloud platform, game distribution platform, game props trading platform, NFT props asset exchange, advertising platform, universe mining and incubator ecosystem, for players, miners, research and development, channels to provide complete game solutions.Developers can also create blockchain applications through the Haino toolset, as well as get comprehensive NFT service support through other platforms.

2.3 Hain o's core competitiveness

Adhering to the concept of applying the concept of NFT + metacverse + DeFi, Haino will open the new value Internet era with the support of ecology.Thanks to the advantages of sustainable development and innovative technology, extensive commercial application, and fine governance, Haino is competitive in the following aspects:

- Technology: With the support of T a k e-Two Interactive and Rockstar Games, Haino has very mature and strong technical support. Haino has accumulated rich industry and technology experience in blockchain, games, artificial intelligence, NFT, metaverse, VR / AR and other fields, and has made industry-leading breakthroughs in the development and application of the underlying technology of blockchain.

- Industry Resources: The Haino team perfectly brings together veterans with many industries, many years of practical operation experience and deep insights into the development of the industry.In addition, with the support of T a k e-Two Interactive and Rockstar Games, Haino will sign strategic cooperation agreements with the top leaders in the target industry, which will provide strong support for Haino to enter the target industry, so as to truly promote the actual implementation of NFT + metamoverse + DeFi polymerization mining application.

- Business governance: Unlike general projects, Haino has a clear and clear strategic plan for the target industries, and continues to empower free, fair and high-value ecological prosperity through a self-governance community model.Haino focuses more and professionally on the distributed decentralized, tamper-free and encrypted security and the value of point-to-point transmission value of blockchain technology, to penetrate the target industries and quickly gain market share.

- Capital management: The capital management of Haino will, under the leadership of the Haino Ecological Development Foundation, strictly abide by the principles of fairness, justice and openness, and take the development of Haino as the main purpose.The Haino Ecological Development Foundation specially maintains and ensures the security and sustainability of the funds.All Haino use of funds will be regularly disclosed to all investors to ensure their openness.

- Development space: Haino targets a trillion-level market.The development team ensures sustainability by developing effective management of general discussion, code management, financial management, compensation management and scope of privilege operations.

2.4 Floor logic of Hain o chain tour

With the support of the core competitiveness, the commercialization logic of Haino chain tour is clear, each technical link and organization has a strong targeted and logical genes, and on this basis, many modular and modified technical solutions or mechanisms are put forward.

1）User ecology

- Haino will create a unique pass —— HE for digital encryption for all users.
- Provide users with low threshold, high security wallet, and become a safe payment platform for players to participate in the ecology.
- Create digital tokens circulating in global multiple scenarios: Haino supports the whole ecology of the transaction and settlement.
- Build a benign, sustainable ecosystem around users, including DeFi mining, NFT casting, collection and trading, and Play-to-earn.

2）Technical level

- Blockchain function is modular, integrated into the blockchain engine and its front-end development tools, directly covering third-party DAPP developers, and infiltrating Haino tokens into hundreds of thousands of applications, covering more than one billion users around the world.
- Integrate blockchain technology into back-end service logic, using node servers around the world, to provide developers with fast communication solutions on DAPP and reliable smart contract service-side logic.
- Around developers, we will build a complete set of development tools, documentation, and development community to provide the most perfect and convenient developer ecosystem.

3）Operating level

- Haino will work with professional community and application global distribution teams to integrate the content of the Haino payment system

for global operations to ensure the global circulation of Haino.

- Continue to improve the construction of DAPP platform, and reach strategic cooperation with the world's top media giants in the future to promote based on Haino, the products of Technology.

4）Incentive level

At Haino, users can order related services and products through a special interface.For example, in more diverse game scenarios in the future: brand business can choose some settings for games and slots.The interface then calculates the cost of the game.If you want to play when the event is ready, a smart contract.Any participant who wants to play games must pay a certain fee.There are several ways to get Haino tokens and be able to join the game.When registering, the user uses a social network to confirm its identity.To join, they will receive the tokens.First, these tokens can only be used to check the game.Only after receiving a reward can users exchange their tokens for prizes or cash them.Exchange the tokens into prizes or cash them in.Existing users receive token rewards when they invite friends to join Haino.Once invited users join at least one game, tokens become available.Another way to get tokens is to buy them from an external exchange.Each user account is connected to the wallet address.Users can add tokens they purchased outside of the system to the wallet.

Chapter III: The Haino Architecture System

The Haino, based on the principle of simple, easy to use and convenient, tries to achieve the best in the architecture design. Therefore, the Haino architecture, supported by BSC, includes: blockchain bottom layer, user service layer, and blockchain API layer.

3.1 Block chain bottom

1) distributed system

Distributed computing is a computer science that studies how to divide a problem that requires very huge computational power to solve into many small parts, then assign them to many computers for processing, and finally put these computing results together to get the final results.Distributed system is a system with components distributed on a network computer and communicating and coordinating actions through messages.Simply understanding, distributed systems are connecting some computers through the network and then working together.Working together needs to solve two problems:

- Task decomposition: dismantling a problem into several separate tasks, each task running on a node, to achieve the concurrent execution of multiple tasks.

- Node communication: When the nodes communicate with each other, you need to design a specific communication protocol to achieve it.Protocols can be done by RPC or Message Queue, etc.

One engineering problem for Haino in payment scenarios: high concurrent transactions, massive data running, which can be solved using distributed systems.According to the hierarchical division and organizational structure in the application system, the structure of the distributed system can be divided into two layers of C / S structure and multi-layer structure (three layers of C / S structure).The former is a traditional and mature application technology, and the

latter is becoming increasingly popular and evolving.

The Haino employs distributed systems with a multilayer structure as needed.Multi-layer application architecture is to add a middle layer between the traditional two-layer structure client and the database server, each layer to achieve a clear division of labor.

Multi-layer structure has many technical advantages over the traditional two-layer application mode, which is easy to maintain in the following aspects.Distributed application adopts a multi-layer architecture, and the application logical structure is reasonably distributed. The business logic is in the middle server. When the user needs to change the business logic rules of the application software, they only need to change the program of the application server.The client program basically needs no change.

- Fast execution: The thin client reduces the workload at the client end.High performance improves the execution speed of the application through load balancing and the data caching ability of the middle layer.

- High security: The middle layer separates direct customer access to the database server and protects the database security.

- Strong stability: the actual connection between the middle layer buffer client and the database makes the number of connections to the database far less than the number of clients, and the database server more stable.quack mechanism can transparently transfer client work to other servers in case of a server failure.Scaling scalability is based on a multi-layer distribution system, and when business increases, more application servers can be deployed at the middle layer to improve the response to clients, while all changes are transparent to clients.

2）Distributed database system (Hbase)

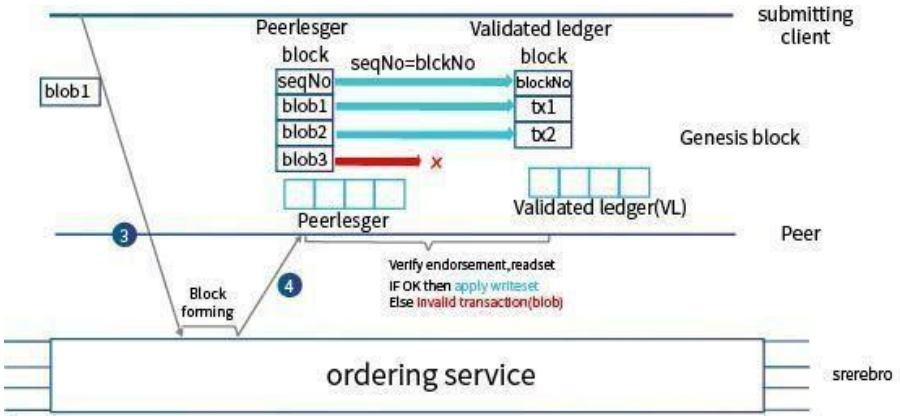
HBase is a highly reliable, high-performance, column-oriented, scalable distributed database designed to address the limitations of Haino relational databases in processing large amounts of data.The HBase distributed database system divides a table into Region s by rows and columns and is stored on different machines.The HBase cluster consists mainly of 2 to 3 HMaster and a large number of HRegionServer.HMaster avoids the single-point problem through multiple instances. It is mainly responsible for the management of Table and Region, such as the addition, deletion, modification, and checking of Table metadata; managing the load balance of HRegionServer, and adjusting the distribution of Region.

The Region is responsible for the new Region; automatic migration of Regions on a HRegionServer failure, etc.HRegionServer is mainly responsible for responding to user I / O requests.

3）Account structure

The ledger structure of Haino is a distributed ledger, and is a database that is shared, replicated, and synchronized among members of the network.Distributed ledger records transactions between network participants, such as consumer payment transactions for hotels and tourism.Each record in a distributed ledger has a timestamp and a unique password signature, which makes the ledger an Auditable history of all transactions in the network.One implementation of the distributed ledger technology is the open-source Hyperledger Fabric blockchain.To keep the ledger abstracted, only valid and promised transactions are included, and equivalence can be maintained beyond status and ledger.This is done by filtering out the invalid transactions derived from the hash chain of the ledger.

The ledger structure of the Haino was constructed as follows.Since PeerLedger blocks may contain invalid transactions (i. e., invalid approved transactions or have invalid version correlation), such transactions are filtered out by peer before transactions from blocks are added to vBlock.Each peer itself (e. g., by using a bit mask associated with the PeerLedger) performs this operation.vBlock is defined as no invalid transaction plot, filtered out.Such vBlock are dynamic in nature and possibly empty.The description of the vBlock construction is shown below:



Each peer connects the vBlock to a hash chain.More specifically, each block of a validated ledger contains a previous vBlock hash + vBlock number.Calculates the sequence table (list of valid transactions in the corresponding block for all valid transactions submitted by the other party since the previous vBlock) and derive the hashes of the corresponding block (in the PeerLedger) of the current vBlock.All this information is connected and hashed peer to peer, yielding the hash value of vBlock in the validation ledger.

4）Cross-chain communication protocol

Communication protocols between the blockchain are similar to communication protocols such as TCP / IP in traditional networks, passing messages by establishing reliable connections.The message is divided into message header (Header), and communication information (Data).The message header records the message source, destination, length, category, etc.During delivery, the message header is stripped layer by layer, modified, and the message is transmitted to the destination of the message.Moreover, the transmission of the message is of a state, and the sender can understand the state of the current communication according to the feedback of the receiver and make the correct response.

The Haino cross-chain communication protocol mainly consists of two parts, communication address, and communication package.The communication address includes the chain identity of the source chain (from Chain ID) and the current strand height (Height).Communication package is composed of part, communication Baotou (Header) and communication information (Data) composition.The communication state corresponds to the communication state mechanism in the network communication protocol.

When a communication packet is sent, the communication state is "receive to be set".When the receiver receives a message, it will return to a communication packet, where the communication status is "Send Success". If the sender receives a communication packet containing the "Send Success" logo, the sender will reply to a communication package containing the "Receiving Success" logo.

That's a successful communication.If a communication packet reception fails during the process, for example, the receiver does not reply to "send success", the sender will issue the transaction after a certain time of time to try to establish the communication again.

3.2 User service layer

1) privacy protection

In order to solve the problems of unequal information and fake evaluation technology, Haino will encrypt and save the identity information into the system through the asymmetric encryption technology.To ensure that the information on the chain is effective, true, and secure.The specific application principle is as follows: the users in every link on the Haino need to register on the system, and the registered users have a unique private spoon to prove the true identity information.Every user with a private key can record information on the blockchain or view it within permissions.

The mechanism of Haino privacy protection is as follows:

- Public key and public key generation: the user should first generate the ciphertext of 256 b i t private key (yellow key) through the SHA256 (Security Hash) algorithm.When the HASH function is used, the Data length changes and the hash value length is unchanged; each Data character corresponds to a unique hash value, which can be used as a data fingerprint.Use this private key with an elliptical encryption algorithm to generate the public key (light purple key), which can let everyone know.Everyone can use this public key and get the user's address through the HASH function.Due to the unidirectionality of the HASH function, namely: Hash (x) =y, it is difficult to find x through y.It is almost impossible to crack the public key through an address, or to crack the user's private key through the public key.

- Encryption and decryption: Encryption —— If someone (such as a user) wants to encrypt the data, encrypt it with a public key.—— decryption,

which only the user knows.

3.3 Blockchain API layer

1）API

For blockchain technology, API is crucial.Powerful API infrastructure can enable users to win first and profit from the blockchain faster.Haino will officially open the blockchain technology through the API (Application Programming Interface, application programming interface) released on the developer platform, providing a new application scene access mode for participants in all forms of business.

Haino's API allows applied registered users, query the blockchain, and issue signals about the transactions, allowing developers to quickly test the chain code or query the transaction status.Therefore, Haino will build a game pan-commercial vertical application platform, which is committed to gathering game enterprises and game service organizations in all forms of the world to provide high-quality multi-field services.

2）Coordinated open interface

Haino's pan-game commercial platform is a cross-format service platform, which is integrated and developed based on the actual situation, with open support and high selectivity.Therefore, in order to facilitate the business system docking with the participating institutions, Haino's blockchain system provides an independent API gateway, which provides the business functions provided by BSC in the form of REST API to realize the interface of collaborative operation.On the one hand, cooperative third parties can quickly have access to the BSC and integrate with other systems within them, and obtain real-time user data through the platform.On the other hand, when the cooperative third party owns these game data models, these unique user information is more difficult to be stolen or accessed by other operators, making better anonymous, secure, reliable and unique.

Chapter IV Haino Key Technology Innovation

4.1 Anonymous communication technology based on P2P

The Haino underlying communication network adopts a P2P architecture, and then adds an inter-node anonymous access mechanism to it to ensure the privacy protection of information services.Haino's P2P network anonymous communication is mainly achieved in the following ways:

- Run a proxy server that periodically communicates with other Haino s, maintaining a TLS link to constitute a virtual link in the Haino network.Specifically, each user runs its own agent: get catalogues, build paths, and process connections.These agents receive TCP data streams and reuse them on the same line.

- There are hierarchical structures.The nodes package the client in it so that communication security between relay nodes.Specifically, each Haino relay node maintains a phase 长 verification key and a short-term session key, the verification key to sign the TLS certificate, the descriptor of the relay node, and is also used by the directory server to sign the directory.The session key is used to decode requests from the user to establish a pathway while negotiating a temporary key.The TLS protocol also uses short-term connection keys between the relay nodes of the communication, varying periodically and independently, to reduce the impact of the key leakage.

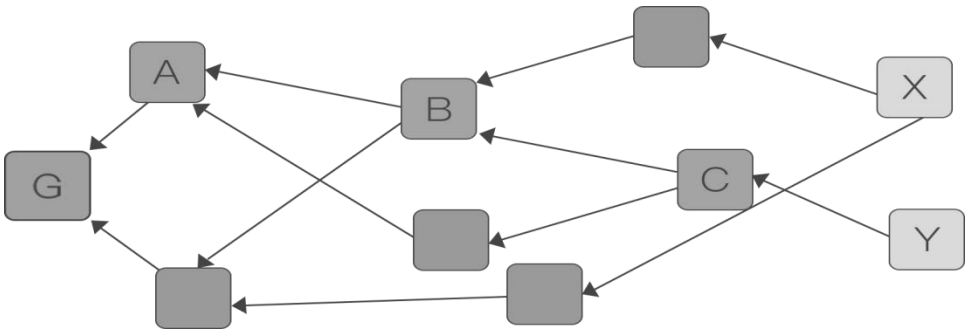
- The packets in the Haino network use random paths to mask the footprint so that observers at some point do not know where the data really comes from and where the real destination is.The client incrementally establishes an encrypted line in the Haino network.The line only extends by one jump at a time, and each extended relay node will only know which relay node the data comes from and which the data will be sent to.No one of the relay nodes knows the entire line.The client negotiated a separate set of keys with each hop to ensure that each jump cannot track past relay points.Once a line is established, it can be used for data interaction.

The basic principle of Haino anonymous communication network is that the directory server is the core of its network, collects relay node information in Haino network and publishes to Haino agent in node snapshot and node description; relay node is the basis of the Haino network through anonymous communication link composed of multiple relay nodes; the agent runs on the Haino user, responsible for establishing the anonymous link and transferring network traffic between the user's network application and Haino anonymous link.In the figure, an Haino anonymous communication link is formed by three relay nodes that are successively entrance, middle, and exit positions according to their positions.

4.2 Hybrid data structure

1）Basic DAG data structure

The Haino uses the underlying DAG structure to store the transaction data in Phase I.At present, several projects such as IOTA and Byteball have successfully built public chains with stable 长 operation using DAG, proving the technical advancement and performance of DAG chain.In Haino, the transaction information is encapsulated into cells (Unit) connected to each other into a DAG graph.Because the unit can be linked to any one or more previous units, do not need to pay more computing cost and time cost for consensus problem, also do not have to wait for data synchronization between nodes, there is no concept of multiple data unit assembly block, so can greatly improve the currency of the transaction, and reduce the confirmation time to a minimum.



The D A G data structure of Haino is shown in Fig, with directed edges between cells indicating a reference correlation between two cells

Line, there is a directed edge from B to A, indicating that B reference A, A is the parent unit of B, B is a subunit of A, meanwhile, we refer to unit C indirectly reference A, A is the ancestral unit of C; unit G does not have any parent unit, called the creation unit is unique; units X, Y do not have any subunit, such units are called the apical unit.

The unit consists of the unit head and the unit message.The unit head mainly contains the following fields:

- Unit version;
- A token of token;

• Unit Creator signature: single signature or multiple creators;

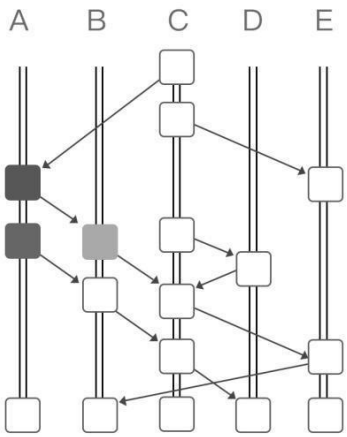
• Parent unit hash: the hash of a single or more parent units referred to;

• List of 见 witnesses: a hash with other units (usually the parent or ancestral unit of the same 见 witness).The unit message section is used to store information about the transaction, and the Haino has multiple types of transactions, including payment, and data storage

Storage, voting, etc.Similar to each new block in the blockchain that needs to confirm all the previous blocks, each new subunit in the DAG needs to confirm its parent unit, all the parent units of the parent unit.If trying to modify past records in Haino requires coordination with a large and increasing number of other users, most of whom are anonymous strangers.Thus, irrevariability is based on the complexity of coordination with such a large number of strangers that are difficult to agree, have no interest in cooperation, and everyone can veto the revision.Immediately after the release of the unit, confirmation and confirmation can come from a new unit published by anyone at any time. Users help each other: by adding a new unit, the publisher also confirmed all the previous units.

2）The HashNet data structure based on the enhanced DAG

HashNet is a directed acyclic graph (DAG) that is composed of numerous vertices and connected vertices.as shown in the figure.



The graph records what kind of data is sent in what order by all nodes across the network, and each node has a copy 贝 of such a HashNet in memory.

The figure above has five computer nodes A, B, C, D, E, and each node has a column placing the vertex v e r te x (also called e v e n t).The latest events, will be placed at the top of the figure, HashNet is up the 长 over time.

4.3 Trade anonymous protection

Haino ensures anonymous protection of transaction information from two aspects of unrelevance and untraceable transactions, and constantly iteratively improves anonymous protection capabilities.Haino has normalized the definition of transaction unaffiliated unlinkability and untraceable untraceablility, which means that for any two external transactions, it cannot be proved to be sent to the same person, and untractability means that all possible senders are equal probabilistically for each internal transaction.

Uncorrelation and untracker are properties that a blockchain with strong privacy protection must satisfy, and Haino supports unrelevance and untracker by adopting the one-time key o n e-time secret key and ring signature ring signature technology.At the same time, Haino designs and implements strict zero-knowledge proof of the z e r o-knowledge proof model as a selectable function to further enhance transaction anonymity.

1）A key

Haino uses one-key technology to achieve unrelevance of transactions.A primary key is when the sender signs each transaction with a separate key.Unlike the usual block chain transaction, the receiver can only use a public-private key, in a single key scheme, the receiver needs to use two pairs of public-private keys. When each transaction starts, the transaction sender uses the two public key and random number of the transaction recipient to generate the temporary public key, the temporary key as the address, the receiver performs the Diue-Hellman exchange and combines one of his private key information.Since the single key can only be verified by the recipient, the correctness of the transaction is guaranteed.At the same time, each transaction uses a different random number, even if multiple transactions with the same receiver, it cannot be associated because of its different primary key, ensuring the unrelevance of the transaction.

2）Ring signature

The primary key mainly guarantees the privacy of the transaction receiver. In order to simultaneously ensure the privacy of the transaction sender, InterValue adopts the ring signature technology.Ring signature is a multi-user signature technology derived from group signature (Group Signature) technology, which gets rid of many drawbacks of group signature, such as no longer the need for group administrator, untraceable, etc.

In the ring signature technology, the message is signed by a set of signers, and the verifier cannot know who the specific signer is.Therefore, ring signatures can well solve the problem of signature identity privacy protection and realize the untraceability of transactions.On the other hand, because the general ring signature technology hides the signer in a set of users, it brings about the problem of double payment (double spending), which can be solved with the linkable ring signature technology linkable ring signature.

3）zero-knowledge proof

Zero knowledge proof technology was produced in 1985 by S.Goldwasser 、S.Micali and C.What proposed by Rackou was originally designed to achieve the purpose that the verifier was able to correctly authenticate the verifier without providing any useful information to the verifier.Zero-knowledge proof is essentially introducing elements of stochastic and interaction in the traditional mathematical proof, an interactive proof system in a question-and-answer way, and later developed non-interactive ways with profound implications in the fields of computer science and cryptography.In practice, zero knowledge proof requires the verifier not to acquire new knowledge in the validation process, namely the malicious verifier, making the validation error while preventing technical validation errors.

For the first time, the cryptocurrency Zcash used to use zero knowledge to prove the privacy of its transaction. Different from the way of deleting the sender's transaction block, Zcash uses the invalid list to identify the block sent by the trader. The miner only verifies the hash value of the transaction block, realizing the complete anonymity of the transaction.

4）Anonymous transactions and privacy protection

As an innovative technology of blockchain, Haino realizes anonymous transactions and privacy protection through confidential transactions (contdential transaction). Version Haino 1.0 to version 3.0 learn from the privacy protection methods of multiple cryptocurrencies, and adopts primary key and ring signature technology to achieve confidential transactions.The latest version of Haino draws on the current Zcash anonymous protection method, adds strictly designed non-interactive zero knowledge proof based on the previous version, takes non-interactive zero knowledge proof as an optional function, supports the realization of complete anonymity of transactions, effectively resist malicious verifiers, and meets the privacy protection needs of different application scenarios.

6.4 Smart contracts

Blockchain technology provides a safe and trusted execution environment for smart contracts, and contributes to the realization of the smart contract concept.Smart contracts are event-driven, state and run on a replicable, shareable ledger and capable of keeping assets on the ledger designed to allow a complex set of digital commitments with trigger conditions to be properly executed at the will of the participants.

Smart contracts can not only receive and store value, but also send information and value to the outside. The whole process can be automated and intelligent under the premise of no center and distrust.

Smart contracts are designed to strike a balance between security and functionality.The existing blockchain projects mainly focus on the design of a single type of smart contracts, and seek a balance between security and functionality under the conditions of limited types of smart contracts, which often cannot meet the ideal effect of meeting the use experience of diversified user groups and the diversified trading needs of users.

Bitcoin blockchain transaction script is the prototype of the smart contract, belongs to the non-Turing complete smart contract, has low complexity and lightweight advantages, and in the Bitcoin blockchain network running for nearly a decade, no security problems, but the Bitcoin transaction verification script support function is very limited, only used for payment verification.

Ethereum blockchain support using Solidity advanced language of Turing complete intelligent contract, greatly enrich the function of intelligent contract, expand the application of blockchain technology, but write Ethereum intelligent contract prone to security vulnerabilities, The DAO event is because of writing Ethereum intelligent contract security vulnerabilities lead to Ethereum community split.

Haino adopts the hierarchical idea of similar computer storage architecture in the implementation of smart contract functions. With Moses Virtual Machine (MVM), it supports declarative non-Turing complete smart contracts and advanced Turing complete smart contracts.

Users choose to use these two types of contracts based on the use experience

and transaction needs, balancing computing security and computing functions with computing costs and computing complexity to meet the diversified transaction needs.Declarative smart contract deployment is simple, high security and closer to legal contract language; advanced Turing complete smart contract deployment is relatively difficult, mainly used to develop DApp with more complex program logic.

The fee mechanism of the two types of smart contracts is different. The fee of the declarative smart contract is calculated according to the bytes occupied by the contract, while the advanced Turing complete smart contract takes the Haino Token consumed when the program runs as the fee.

4.5 N FT Digital assets data structure

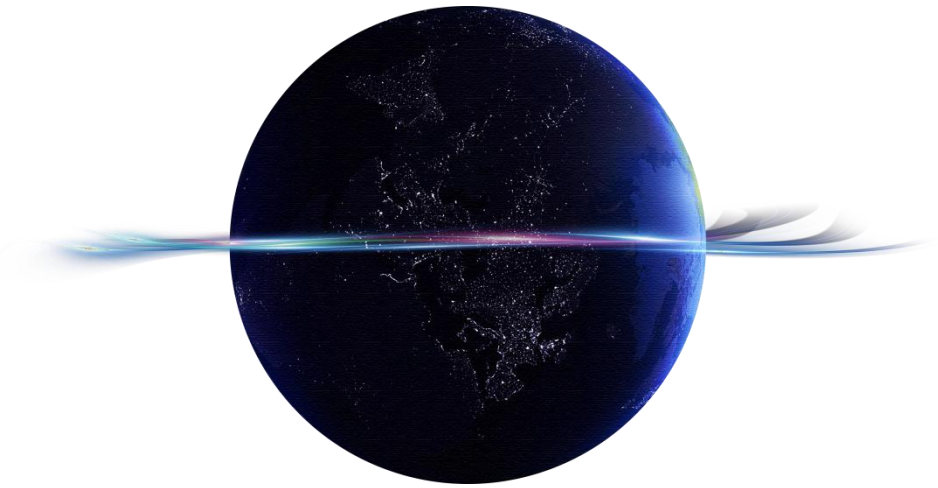
Non-homogeneous digital assets (NFT) is a type of digital assets applied in distributed bookkeeping networks, and asset instances are unique, and the optimization of the digital assets (NFT) structure of non-homogeneous digital assets can make it more flexible to serve blockchain network games.

Haino redesigned the data structure, added custom data storage to accommodate possible game data and extended content.At the same time, the key processes such as consensus, witness and block out are also adjusted accordingly to match the new data structure.Prop data in Haino is only fully recorded in block data when generation and attribute changes, and in ordinary transactions and flows, only hash pointers are recorded to ensure that the volume of block data does not grow too fast by long-term transactions.

Data separation of assets from contracts: the storage of homogeneous, non-homogeneous assets (NFT) and smart contract data on the chain is separated.There will be a large number of continuous transactions in Haino's network, which needs to reduce the operational cost of asset analysis and circulation as much as possible. The separation of assets and contract can realize the separate analysis and execution of the contract and the operation of the necessary results.

Under the design of separating the asset from the contract data store, the asset owner has all the permissions of the asset, and the operation of the asset can only be completed by the authorization of the owner.It can avoid the destruction of the assets or calling the assets of others by modifying the content of the contract, and it is easier to realize non-homogeneous assets without considering the constraints of the contract factors

(NFT) for cross-chain acceptance, so asset and contract separation is a safer design.



4.6 Ultra-scale game virtual machine support

Haino has sufficient high concurrent processing capacity.The vast majority of current connected games, whose servers require a short amount of data processing, is not available in existing Ethereum networks.

Haino adopts innovative consensus mechanism, theoretical throughput of about one million TPS, its high concurrent processing performance in reasonable data management mode design to support the development and normal operation of existing games, basically meet the operation needs of large network games in the platform, to ensure that the user's game experience is almost no different from the existing centralized games.

Due to the very high frequency of data interaction in large-scale online games, the DNF has set a record of 60 0,000 simultaneous people online, and the Steam game platform has an amazing 14.2 million people online at the same time.If each online user submits data is regarded as initiating a consensus application, Haino's extreme throughput capacity is not enough to support this level of processing requests. The development team has designed different witness entrustment modes (Delegation Templates) according to the needs of the witness speed, so that a single witness client does not simultaneously witness and process all running games, but focuses on witnessing and counting blocks of multiple types of games of the same type.And, in this mode, the data submission / witness for different games is relatively asynchronous
Cheng, each game will choose the appropriate commission mode, while the data verification in the asynchronous mode can be completed through the on-chain database service, that is, the user authenticates on the chain and completes the data access.This process is very efficient and efficient enough to support player data operations in large-scale game scenarios.

A contract is a program that can be automatically executed, while acting as a system participant, following the basic environmental rules (compiler rules). It can define input and output and can receive and store value, while sending information and value outward.Smart contracts are designed on the premise of "mistrust principles," and each node considers them untrustworthy.Due to the distributed preservation characteristics of the blockchain, each node on the chain has the same contract execution code. The operation results of the contract are witnessed by the computing power of the whole network, and whether the computing results are determined is approved through the form of all voting.Haino's contract supports

the definition of witness entrustment.



Chapter V General Certificate of Haino Economic Model Design

5.1 Distribution and distribution of H E

HE is the value token circulating in Haino ecology, and its value attributes integrate DeFi and NFT And the meta-universe.The total issuance of 1 trillion, HE (ruler) tokens are allocated as follows:

Issue of
1 trillion
50%
destroye
d

2% technological development

4% Private placement (8 million)
4% Public offering (12 million)
10% Pre ale NFT cards
30% Liquidity capital pool
Tokens mechanism:
extreme
combustion, burning 10% of each
transaction

5% Liquidity pool

5% share out bonus

5.2 D EFI pledge mining model

Liquidity mining in the field of DeFi refers to the process of obtaining income through DeFi products with a mining mechanism, and depositing or borrowing the specified token assets as required to provide liquidity for the capital pool of the product.On the Haino liquidity mining agreement, the gain is the token HE, which represents the governance rights of the future DAO community.

Currently, the cryptocurrency and blockchain markets attract many investors, speculators, and traders, and transactions generate thousands of blockchain assets.Unfortunately, the complexity of financial markets does not follow, and it is difficult for ordinary users to make valuable transactions, and the value trading of assets benefits both sides.For blockchain assets, there are currently two main defects.One is the limited intervention mechanism, which leads to an asset pricing error; second, the negative returns of blockchain assets are due to huge storage costs and risks, without natural interest rates to offset these costs.This leads to currency price fluctuations and suppresses the holding of a digital currency.

A centralized exchange allows customers to use the built-in "lending" market to trade.These are trust-based systems, limited to a few of the most mainstream assets, but unable to move positions on the chain.Peer-to-peer agreements directly facilitate market participation, between mortgages and unsecured loans.At each agreement we evaluate, the lender must issue, manage and (in the case of a mortgage) supervise loan quotes and loan activation, and loan performance is usually slow and asynchronous (loan capital flow takes time).Therefore, we developed the Haino liquidity mining protocol.The agreement is based on an agreement on Ethereum to build asset-based supply and demand changes to generate algorithmically calculated pools of interest rates.The supplier and borrower of the asset interact directly with the agreement to earn or pay the floating rate.

Our important step in designing the liquid mining scheme is to determine the exact objectives of the scheme.The following are our general objectives:

- Encourage long-term, sticky liquidity;
- Attract a large amount of hot money to create kinetic energy, improve product awareness;

• Distribution tokens without ICO to decentralized the governance of the protocol.

To achieve the goal of protocol decentralized governance, many protocols inject governance into their tokens.However, if the ownership of governance tokens is highly centralized, it is difficult to ensure the decentralized nature of agreement governance.One of the major challenges facing protocol teams is how to distribute their governance tokens to users.In addressing this problem, the Haino liquidity mining we designed can serve as a powerful tool (relative to other ways, such as directional airdrop).

5.3 Hain o destruction mechanism and development planning

1）Destruction mechanism

Extreme burning, 10% per transaction burned 10%, of which 5% Liquidity pool , 5%dividends.

2）development planning

The ecological landing processes of D e F i, metacaverse, and N F T mining based on Haino are as follows:

- Building trust: Establish a completely decentralized trust foundation based on the blockchain digital encryption algorithm;
- Design ecology: establish consensus mechanism and design ecological mode based on distributed computer nodes;
- Make rules: Make rules and rewards and punishment measures based on smart contracts, and the system automatically implements the rules;
- Issuing tokens: issuing the ecological circulation currency —— Haino through the application value from the main public chain protocol;
- Start ecology: Hain o circulation, start DeFi, and deconnect the excavated Hain o pairs to NF T and Play-to-earn.

Haino will take DeFi, NFT and metacverse games as the breakthrough, and constantly expand the application boundary of blockchain technology, so that ordinary Internet users can feel the value of blockchain technology.In the system, the point-to-point value transfer can be realized through the value transmission protocol, and according to this protocol, a decentralized industrial circulation platform supporting multiple industries can be built.

Haino's roadmap is as follows:

The project will be conducted in phase 1 in 3 phases 1

1 . 11.15 -11.24 rulers online to open the global private equity 2 . 11.25-12.1opened the global public offering
3 . 12.1 Haino(Ruler) will be officially launched at 9： 30 pm at Bi an Pancake Swap.
Phase 2
opens the pre-sale of N f
t cards in 3 .2 . 2022!

phase 3

Open 2022 (Haino estate) (Ruler Manor) 3.17 built-in test (BIT)
Open 2022 (Haino estate) (Ruer Manor) 4 . 2 officially launched

Chapter 6 The Global Team and the Haino DAO

6.1 Global team

Most of Haino's core technology R & D team members come from the top international blockchain projects and well-known Internet companies.Gather together the best technical experts in various fields of computer, information security, communication, mathematics, finance, web development and high frequency algorithm trading.At the same time, the team members have market and practical experience in DAPP development, DeFi, NFT, metaverse, chain travel, bidding and other aspects. They not only have strong technical capabilities, but also have excellent scientific research ability, and have achieved outstanding achievements in many fields.

Joyce ——, an internationally renowned data engineer, has held key positions in a number of world-famous Internet big data research centers, is responsible for the application research and development of Internet basic technology, and participates in many international renowned projects. He is a pioneer in the field of blockchain technology.

Dr. Algernon —— Computer and Big Data, architect, database expert, exchange construction technical expert, he has long been engaged in database application, data warehouse, big data and blockchain development in the trading industry, and has rich experience in blockchain project development.

Michell—— is a world-renowned blockchain game application expert, and a global blockchain technology business application leader.He served as a director of the European Business Council, a PhD in sociology at Columbia University and a researcher at the Center for Financial Research. He is an authority in the application of intelligent games and entertainment technology.

Paddy —— has an authoritative influence in the development of the underlying blockchain technology, covering his career in two academic and corporate fields, and is a research academic, engineer and leader.He has served in multiple engineering management positions at Google and Amazon.

Bradley——Bradley's research focuses on big data parallel computing and

distributed algorithm optimization, and has rich research experience in blockchain, cryptography, and data mining.Bradley will provide deep algorithm support for projects in the blockchain core mathematical model, artificial intelligence core algorithm, and the parallel computing level of big data.

Wesley —— is proficient in the principles and realization of mainstream blockchain technologies such as bitcoin, Ethereum and HyperLedger, and has a deep understanding and rich practice of blockchain consensus mechanism, smart contract, cross-chain technology, side chain technology, and privacy protection.

Minkevich—— technology consultant, a world-renowned computer technology application development expert, has worked for many companies, including Apple, SGI, Microsoft and Google, and has more than 15 years of experience in global IT development and operation.

Colbert —— legal director, graduated from harvard university law department, has more than ten years of experience in legal research, good at business structure, convenient financial regulations, for block chain alliance financial control has basic legal direction control, can good project development and promotion, and friendly organize and control financial and legal ideas.

Donovan Mitchell—— Global Market Consultant.With decades of experience, continue to provide guidance about the game market.

6.2 Hain o DAO construction

From the development of DeFi, the rise of DeFi has given more support to the industry.In addition, the popularity of NFT also makes DAO, which has been quietly contributing the core value to the industry, be supported by users.

With the development of information technology and the increasing complexity of the organization itself, it has been difficult for the employment relationship and management mode of traditional organizations to adapt to the complex and changeable environment and the requirements of a new generation of individuals.Decalized autonomous organizations
(decentralized autonomous organization, DAO) decentralization, autonomy, autonomy and certification economic incentives, the elements of the system as assets, make monetary capital, human capital and other elements of capital fully integrated, so as to better stimulate the efficiency of the organization and realize the value flow, provides a good idea to solve the existing organization management problems.

The full name of D A O in blockchain is "Distributed autonomous Organization" (Di st ri b u t e d A u to n o m o us O r g a n i z a t io n), which is a blockchain-based form of organizational structure.It is able to operate autonomously without intervention and management through some open and just rules.These rules often come in the form of open-source software, where anyone can buy shares in the organization or participate in the form of providing services.The DAO is somehow like a fully automated robot, and when all its programs are successful, it starts running according to the original rules.In the process of operation, it can also constantly self-maintain and upgrade according to the actual situation, through the continuous self-improvement mechanism, to adapt to its surrounding environment.

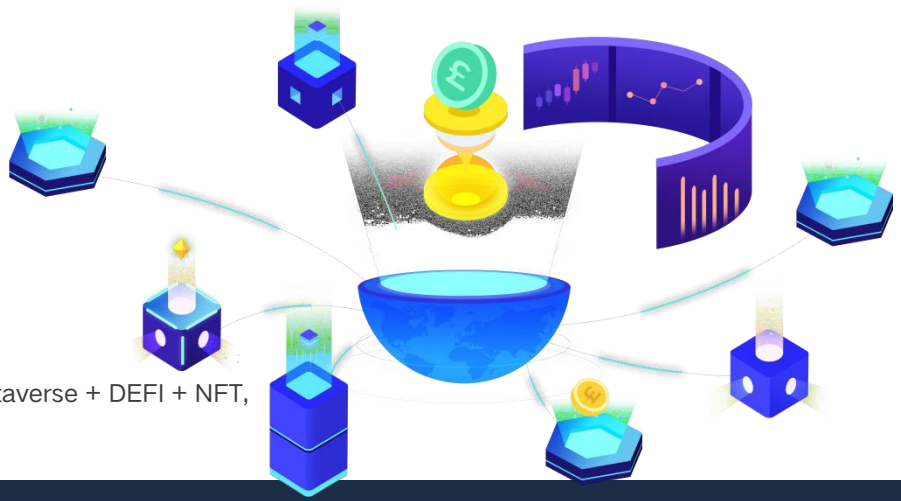
DAO changes very much, it can be a digital currency, a system or institution, or even a driverless car.Their valuable services to their customers can be currency transfer (like bitcoin), application platforms (like ethereum), domain management systems (like domain currency), or any other business model, apparently more like a stock of a particular institution than a single currency.

Each DAO has its terms and conditions.Users will always have the right to view DAO shares, in the form of digital and money.

The Haino community has a strong consensus that it will build a DAO autonomous community with 100% community self-management.After the project is launched, the community will vote to develop its own decentralized applications and DAPP.Global community building in Haino DAO follows a high degree of decentralization, conducted through a combination of on-and sub-chain patterns.After all the Haino DAO programs are successful, it starts running according to the original rules.In the process of operation, it can also constantly self-maintain and upgrade according to the actual situation. Through the continuous self-improvement mechanism, it not only eliminates the trust problem, but also realizes the unprecedented level of collective coordination, so as to form the technical foundation of Haino DAO.

- Smart contracts enable Haino DAO's rules;
- The universal proof economic model gives the benefit distribution of Haino DAO a realistic incentive basis;
- Blockchain itself is connecting individuals or organizations around the world, allowing Haino DAO to break through regional limits.

Haino tokens are used as a value circulation certificate and incentive means, and then smart contracts are used to determine member collaboration and benefit distribution patterns.There is no clear identity division between members, such as investors, developers, collaborators, operators, consumers, etc., which will become a part of the community for holding Haino tokens.Members can constantly seek the shortest path by constantly optimizing the contract structure, and maintain efficient collaborative ability and better development direction.



Metaverse + DEFI + NFT,

Chapter 7: Haino Foundation Governance

7.1 Foundation architecture

In order to realize the rapid development of the Haino project, we will take the Haino Ecological Development Foundation as the project management organization, and contribute to the transparency of the development and governance of the Haino project, to promote the safe and harmonious development of the open source ecological community.

The Foundation entrusts a third party with credibility to assist the team to set up the operation center entity and maintain the daily operation and reporting affairs of the behalf of the entity structure.Through the Foundation, the appropriate community participation members are selected to join the Foundation functional committee to participate in actual management and decision-making.The establishment of the foundation is with reference to the operation of traditional entities, and will establish functional committees, including strategic decision committees, technical review committees, compensation and nomination committees and public relations committees.

The Strategic Decision Committee is the highest decision-making body of the Foundation.The main objective of its establishment is to discuss and address important decision-making matters faced in community development, including but not limited to:

- Modify the Foundation governance architecture;
- Establishment and rotation decision of the decision-making committee;
- Appointment and rotation resolution of the Secretary-General of the Foundation;
- Appoint and remove the executive responsible persons and the heads of the various functional committees
- Review and revision of the Foundation's Articles of Association;
- Haino Development strategic Decision for Haino;

- Changes and upgrading of Haino core technology;
- Emergency decision-making and a crisis management agenda, etc.

Members of the Strategic Decision Committee and Foundation Chairman serve two years and the Foundation Chairman cannot be re-elected for more than two terms.After the expiration of the decision committee, the community will select the consensus mechanism of the next 一 generation Haino, and then select the core personnel of the decision-making committee. The selected core personnel will make important and emergency decisions on behalf of the Haino, and need credit investigation during his tenure and disclose compensation.

The above important matters need to be voted on by the decision-making committee, and each member of the decision-making committee has 一 vote, the Foundation Chairman has two votes voting.The decision committee must be adopted by a majority of all the members of the sitting committee.In addition, the Executive shall convene an interim meeting of the Decision-making Committee within 5 working days when the 一 is:

- When the Secretary-General of the Foundation considers it necessary;
- More than three thirds of 一 decision committee members jointly propose;

The meeting of the Decision Committee shall be attended by the members of the committee themselves.If unable to attend for some reason, he may entrust in writing to other members of the committee to attend.If no representative is entrusted, it shall be deemed to waive the right of voting at that meeting.

Secretary-General: elected by the Strategic Decision Committee, responsible for the regular operation and management of the Foundation, the work coordination of the subordinate committees, chaired the meeting of the decision-making committees, etc.The Secretary-General is the top head of Haino administrative affairs, providing unified guidance and coordination of the Foundation's day-to-day operations, technology development, community maintenance, public relations, and connecting various business units to the functional committees of the governance structure layer.The Secretary-General regularly reports his work to the Decision-making Committee.

Technical Review Committee: composed of core developers in the Haino development team, responsible for making decisions on blockchain technology research and development direction, underlying technology development, open port development and review, technology patent development and review, etc.In addition, the technical audit committee members regularly understand the dynamics and hot spots of the community and the industry, communicate with the participants in the community, and hold irregular technical exchange

meetings.Such as enterprise customers, suppliers, regulators, and third-party service agencies.

Compensation and Nomination Committee: responsible for determining the selection and appointment of important managers of the Foundation.The committee sets the rules of procedure, evaluates the competence of the managers, and authorizes the appointment.At the same time, the committee sets up a compensation system to encourage those who contribute significantly to the foundation.The Compensation and Nominating Committee regularly evaluates performance on all members of the Foundation.Put forward suggestions on the adjustment of human resource structure, and propose different incentive measures to absorb and retain talented experts.

Public Relations Committee: The goal is to serve the community, responsible for the Haino technology promotion, the establishment and maintenance of Haino and business alliance, the Haino participation in the cooperation and resources exchange of various alliance parties, the business promotion and publicity of Haino, and the community crisis public relations and social responsibility.The committee is responsible for regular press conferences, announcements and inquiries to important matters.In case of an event affecting the Foundation's reputation, the Public Relations Committee will serve as a unified channel of communication to issue an authorized response.

Supervision and Administration Committee: As a high form of independent autonomy, it is set within the foundation as an independent supervision and risk control management of the overall operation of the foundation.The SC provides daily guidance to the Foundation's legal and compliance departments.At the same time, the foundation has set up a transparent and open reporting mechanism, in which the supervision and administration committee will directly accept internal and external reports, and adopt corresponding investigation and improvement processing to ensure that the operation of the whole foundation is in perfect compliance and move forward within the acceptable risk level.The SC reports directly to the Strategic Decision Committee and does not have any conflict and overlap with the other functions of the Foundation.

Other functional departments: the foundation refers to the company's institutional structure, and sets up daily operation departments, such as human resources, administration, finance, marketing, research and development (or laboratory) units.Functional departments are established to maintain the normal operation of the Avenger and to directly meet the relevant parties in the business society.

7.2 Foundation governance system

The design objectives of the foundation governance structure mainly consider the sustainability of project development, the effectiveness of strategy formulation, management effectiveness, risk control, and the efficient operation of the project.The Foundation proposes the following principles in governance structure:

1) The integration of centralized governance and distributed architecture

Although there has always been argued that blockchain is an autonomous community system "centered on" decentralized "or" distributed ", we believe that complete decentralization may bring about absolute" fairness "or more" inefficiency ".Therefore, the foundation will still absorb some core ideas of central governance in the management structure, including the highest decision-making authority of the strategic decision-making committee and the centralized discussion power of major matters, so as to improve the efficiency of the whole community operation.

2）The functional committees coexist with the functional units

The Foundation will establish permanent functional units, such as R & D, market development, operations, finance and human resources, to handle recurring matters.At the same time, a professional functional committee is set up to make decisions on the important functions of the foundation.Unlike functional units, functional committees exist in a virtual architecture, with members of the committee available To come from the world, but also need not be full-time office.However, it must meet the requirements of the Commission's expert qualification and can promise to attend and give opinions when the Committee needs to conduct discussions.Functional committees will also set up a regular meeting system to ensure the effective progress of major decision-making matters.

3）Risk-oriented governance principles

In the study of the strategic development and decisions of the foundation and projects, risk management will be set as the first important element.As a computer technology with great change significance, the development of blockchain is still in its infancy, so it is particularly important to grasp its development direction.The principle of risk management is to ensure that when the foundation makes important decisions first, it fully considers the risk factors, risk matters and their possibilities and effects, and develops the corresponding response strategies through the decisions.So as to ensure that the development and iteration of the Haino project are on the right path.

4）Technology and business coexist

The Haino project holds the purpose of the close combination of technology and business to promote the change and upgrading of blockchain games.The setting of the foundation also follows this purpose.Even if the foundation exists in the form of non-profit institutions, the foundation hopes to maximize the recognition of the business world to win benefits from commercial applications, while feeding back to the foundation and the community to further promote the development and upgrading of the Foundation and the Haino project.

5）Transparency and supervision

Referring to the governance experience of the traditional business world, the foundation also plans to set up a special supervision and reporting channel.With personnel designated in the Strategic Decision Committee as a window, community participants are welcome to participate in management, supervise operations, and are able to conduct rapid and confidential reporting of "discovery matters".These include, but are not limited to, new breakthroughs or suggestions that have a significant impact on the foundation or blockchain technology, community operation problems, crisis information, reporting fraud or fraud, etc.

Chapter VIII Disclaimer

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