TocaGames DAO

Metauniverse + GameFi platform

White Paper

Preface

As an emerging technology that can provide multiple business models for the future economy, the blockchain industry has developed rapidly in the past two years. Reviewing the development of Internet and information technology, there will be a new technology or new wave almost every six or seven years. In terms of technology and innovation, blockchain is one of the biggest waves in recent years.

As a distributed ledger Technology (DLT), blockchain can enable all participants to build trust at the technical level, and has the potential to become an infrastructure for building a free circulation network of value in the future, that is, to form the Internet of value. In some specific fields, several partners or participants in the industrial chain are jointly establishing a blockchain trust network. This value LAN is already in the implementation process, not just a concept. The core value of blockchain is to build a trusted multi center system, promote the decentralized and independent single center to a unified multi center with multi-party participation, so as to improve the trust transmission efficiency and reduce the transaction cost.

The TocaGames team found that many good business models, or business opportunities, require a large number of applications. If there is a platform that can more systematically provide tool engines to help these enterprises in the game industry land, and combine blockchain technology with it, it can provide great help to these game industry participants. Moreover, since the game is one of the earliest and largest blockchain application fields, the needs of developers and users in the

industry are taken as the design starting point of the initial version of the project. Therefore, the Toca GameFi project was born.

This white paper describes the design idea and technical implementation principle of TocaGames for the development, operation, management and circulation of decentralized game applications and assets in the application on the blockchain ecology. It includes:

1) Application development framework supporting multiple operating systems and blockchain environments;

2) Fully scripted, component-based and data-driven application development tools;

3) An existing toolset for high-performance applications, closely combined with the block link interface layer, makes it easy for all games to support the block chain.

TocaGames can support developers to program, debug and publish decentralized applications and hybrid architecture applications facing the blockchain environment. At the same time, the platform integrates the blockchain based distributed user account system, wallet and digital asset circulation platform, which can realize the off chain permanent preservation and cross chain use of assets in the application. At the same time, this white paper will also summarize the prospect of TocaGames from the aspects of project background, blockchain technology core, industry development pain points and technical solutions, and

deeply interpret the development mode, design principles, technical characteristics, technical architecture, application ecology, communication economic model, core team and foundation management of TocaGames Partners and investors have a better understanding of the core values of TocaGames.

目录

Chapter I Blockchain Technology and Games

1.1 Development of meta universe

Metaverse can be simply understood as a virtual world parallel to the real world. What people can do in reality can be realized in the meta universe. As a vision for the future development of the Internet, the meta universe is expected to bring changes to the society, such as entertainment mode, social communication mode, improvement of social operation efficiency, re exploration of personal value, and become a new long-term development of the society Phase I exploration direction. At present, four core technologies are helping to realize the meta universe era:

• interactive technology: VR / AR, whole-body tracking, whole-body sensing and other multi-dimensional interactive technologies bring an immersive interactive experience of the meta universe;

• communication technology: 5G, WiFi 6 and other communication technologies improve the transmission rate & reduce the delay, and realize the integration of virtual reality and the interconnection of all things;

• computing power: as a productivity in the digital economy era, its development releases the pressure on VR / AR terminals, improves endurance and meets the cloud demand of the meta universe;

• core algorithm: promote the rendering mode of meta universe, improve video quality, AI algorithm, shorten the creation time of digital algorithm, and enable the development of multi-level industries such as virtual avatar.

In general, technically, on the basis of the traditional Internet, metauniverse puts forward higher requirements in many aspects such as immersion, participation and sustainability. Therefore, its operation will be supported by many independent tools, platforms, infrastructure and protocols. With the improvement of the maturity of AR, VR, 5G, cloud computing and other technologies, the meta universe is expected to gradually move from concept to reality. In the process of landing, NFT is expected to become the most important carrier connecting reality and the meta universe.

The scope of metauniverse is very broad. It includes social networking, e-commerce, education, games and even payment. All kinds of Internet applications familiar today will have their own presentation in the meta universe.

E-commerce has also experienced great changes. For example, in the mobile phone era, a new species of e-commerce has emerged, that is, local life. Because the mobile phone can provide users with accurate positioning, the application of local life can promote high-quality services within 3km to users, which cannot be achieved in the PC era. Therefore, local life is a new user experience created based on the new features of the new platform.

In the era of VR and AR, it is likely that everyone has a virtual avatar through

which they can communicate face to face in the virtual world. Under such a setting, it is likely that many applications such as social networking and e-commerce will change.

The technical essence of VR and AR is new display and new interaction. In the past, no matter on PC or mobile phone, the display interface was two-dimensional, and no matter what application it was, it was based on windows one by one. Therefore, in those days, Microsoft's operating system was called "Windows" - everything was a window, and user interaction was mouse click and drag in the window. However, on VR and AR glasses, the display and interactive interface are three-dimensional.

Users will be immersed in a virtual information world, and there may be a virtual person in front of them to communicate face-to-face with them; Then beside you, there will be a virtual shelf with a wide variety of goods; Then far behind, there may be an amusement park where you can go and play games. Moreover, in this three-dimensional virtual space, we can interact with applications through limb movements, language, gestures and eyes. Under this setting, the display and interactive interface is three-dimensional.

Display and interaction are the bottom layer of all applications. When there are such significant changes in display and interaction, the upper layer applications will have a great revolution. From hardware to operating system to software, all industry patterns will change. Similar to the revolution from PC to mobile phone,

such great changes will happen again. New giants will rise, and some slow giants will inevitably fall.

1.2 Market prospect of game industry

As a sunrise industry, the game industry has maintained rapid growth in the past 20 years. With the development of Internet technology, the game industry will be a larger industry. In 2020, 2.67 billion gamers worldwide created an output value of 174.9 billion US dollars. By 2023, this figure will be $3.05 billion and $217.9 billion, respectively. Among them, virtual goods are the main source of income in the global game market, accounting for more than $150 billion, accounting for more than 66% of the overall game market consumption.

In terms of the revenue of various business models, in-game purchase is still the main business model and is becoming more and more popular. The revenue proportion is predicted to be 74% in 2020 and 77% in 2023. Regionally, the revenue from the Pan Pacific region reached 84.3 billion, accounting for 48%, with a year-on-year increase of 17.5%; North America followed, with revenue of 44.7 billion, accounting for 26%, a year-on-year increase of 21.4%. Although the income of the Middle East, Africa and Latin America is relatively small, just over 6 billion, it has good development prospects. The year-on-year growth rate of the Middle East and Africa exceeds 30%.

With the continuous growth of global game players, the total output value of the global game market will also continue to grow. Whoever can occupy the top of

the game industry will have global value users.

With the development of the global game market, the value of the game industry, the number of game users, game developers, operators and promoters will rise rapidly. Key indicators such as the growth rate and retention rate of game users, and the benchmark rate of willing game consumption will also grow rapidly with the development of the game industry. It is estimated that in 2021, the total output value of the global game market will exceed 250 billion US dollars. Virtual goods, advertising and guided consumption will continue to be the main source of revenue in the global game market. It is predicted that the growth rate of virtual commodity consumption will be the fastest, with an annualized compound growth rate of about 15.2%. Among them, 33% of players consume once a month and 25% of players consume once a week. With the coming 5g era, more new types and new IP mobile games will attract more global players. It is estimated that in 2021, mobile games will account for more than half of the total game market output value.

With the rise of metauniverse NFT mode, blockchain, digital currency and games will collide with new sparks, especially games under the concept of metauniverse.

1.3 Existing pain points in the game field

At present, there are several pain points in the game ecology under the traditional mode. These problems make it difficult to realize a truly unified and cross platform game ecosystem under the traditional mode. These elements can be

summarized as: fairness, value guarantee of game assets, liquidity of game assets, community and distribution channels.

1) Lack of impartiality

During the development and operation of most games, there are a large number of activities involving random probability, including probability obtained props, randomly triggered events, lottery system, skill effects, etc. However, the algorithms of these random events are usually not public and difficult to pass the test and analysis, As a result, game developers and operators can control these variables through "black BOX operation" without notice (called "dark change" by players), resulting in adverse effects on game fairness, operation reputation and sustainable operation ability.

2) Lack of effective guarantee for the value of game assets

The value of digital assets in games usually fluctuates with the heat of games. The single game assets will become extremely frothy because of the lack of fair collateral. Once the game fever decreases and the game player loses, the asset value will fall off. The assets between multiple games will also be difficult to obtain unified circulation value and value support due to the lack of consistent value endorsement.

3) Game assets have no liquidity

On the one hand, digital assets in the game can make players have higher user viscosity to the game, but on the other hand, virtual assets lacking liquidity will

reduce players' game enthusiasm and liquidity, increase the difficulty of asset exchange between games, resulting in the loss of game groups. In addition, laws and regulations generally do not allow virtual assets in the game to be traded in legal currency (RMT), It further aggravates the loss of player groups, resulting in the decline of game operators' profits, the increase of game promotion difficulty and the reduction of promotion efficiency;

4) Monopolized communities and distribution channels

For most game companies, how to find a good distribution channel is a crucial link, especially for small and medium-sized game companies and independent game developers. The importance of distribution channels can even determine life and death at one stroke. Not every game can have the good luck of flappy bird and plants vs zombies, but large channels share 80% or even 90% in game distribution, and the game development team makes little profit. In addition, establishing a stable community is also an important link to maintain game operation and profitability. The famous Blizzard Entertainment in the industry still has the problem of continuous loss of player groups, not to mention small and medium-sized game players.

1.4 Application of meta universe + game

Game is one of the earliest and largest meta universe applications. Metauniverse + game is exciting because it can empower players and comprehensively improve their experience. Through blockchain games, players can

enjoy the following main benefits:

1) Ownership of game items

All props and elements in the game can be chained. No matter the scarce resources, rare props, coveted trophies, characters and avatars in the game, any entity in the game environment can exist in the form of encrypted assets.

Generally speaking, This is manifested as homogeneous tokens (in the form of game tokens) or non-homogeneous tokens on the existing blockchain network (in the form of props and avatars). The core component of the blockchain is to provide users with ownership of their value. When game elements are chained, they can interact directly with players. When avatars and accounts are associated with players' wallets, players can send the collected booty and accumulated currency to their wallets, which they win in the game. In such a system In, players can harvest what they sow. They rarely have all kinds of props, which will always belong to the player. Developers have no right to take back anything won by the player. Even if the game is closed, these items still belong to the player. They can send props to other wallets and sell them to others to make real profits. Players' ownership of their items allows them to reap tangible fruits from their efforts and success.

2) Provable fair play

The wrong game is played badly. When players cheat their opponents, or the game doesn't run the way people expect, this experience is very bad for every player. Blockchain games can achieve "provable fair game play". When the game is

chained, game logic and gameplay elements are also shared. The consensus mechanism to ensure blockchain network security also ensures the security of the game. This means two things for players. First, swindlers or anyone else who tries to invade players cannot succeed. If their actions contradict the logic of the game, their activities will be rejected; Second, the game is transparent.

3) Cross game communication

What do players do when they stop playing their favorite games? Either they quit or the game disappeared. That is, either the community leaves or the developers no longer operate. Unfortunately, there's not much they can do except find the next game and start from scratch. The game exists in a suspended independent universe. In terms of the current industry, there is no continuity between different games. With blockchain, all this will change. When games and game assets exist on the blockchain, they can communicate with any other environment on the same blockchain.

If the developer makes a sequel of the game, the props of the previous game can be brought to the second game. Avatars can be used in multiple games. Tasks or events can be performed across games. More importantly, players may never have to start all over again. Ideally, the player has a single universal avatar that follows the player in different games. Players' virtual currencies and props can be used across games.

4) Reduce costs

The payment rate of the game development industry is low, and the related costs may be higher than the revenue. Without a good revenue model, even if the game has a certain user base, the expenses such as game distribution, server maintenance and player services may be a burden that developers can't afford. By building games on the blockchain, all these costs can potentially be outsourced to miners or verifiers. Online game publishing and dissemination may be a zero cost thing.

5) Enhance player base

Both existing and future players in blockchain games are interesting subsets of consumer groups. These players have a strong interest in their game playing methods and get more attention through game revenue. Blockchain games connect developers with the "super player" community and have more resources and investment in games. Compared with traditional game opponents, the two sides can build a more positive, efficient and beneficial relationship.

1.5 Birth of TocaGames

Through years of in-depth research in the fields of blockchain, encrypted digital currency and games, TocaGames has continuously explored the application of blockchain technology in traditional game ecology, and quickly gathered a large number of international top game, blockchain and smart contract talents, aiming to take the blockchain game industry as an opportunity to drive industry reform, Build the world's leading blockchain game top platform and ecological application

system.

The "vision" of TocaGames is the complete decentralization of TOCA games, the application of meta universe games with coins and virtual augmented reality. In TOCA games, you can immersively experience the meta universe world corresponding to the mirror image of the real world. Players can freely design any virtual scene and build a new interstellar world. At the same time, they can also form parties and games with family and friends. So that value can flow in all directions. The "mission" of TocaGames is to build a user ecosystem with all-round circulation of game value. Through the game chain, realize the chain of all items in the game, improve the disadvantages of traditional games, and let players have a 100% sense of belonging as the owner of the game.

In addition, through the research and development of the value circulation of the real industry by the TocaGames team over the years, the market continues to implement a more efficient payment basis. Another value of the birth of TocaGames is to change the value circulation mode of the existing payment system, collect all kinds of resources and create value. The era of borderless circulation is coming.

Chapter II Overview of TocaGames Project

2.1 GameFi ecological plate

The gamefi ecological section of TocaGames platform will include NFT +

gamefi, play to ear and other services.

NFT+GameFi

TocaGames platform game ecology and gamefi system aims to establish an NFT + gamefi application platform and high-value chain game revenue ecology. Adhering to the concept of in-depth application of the concept of defi + NFT + gamefi, TocaGames platform will open a new era of value Internet. Thanks to the advantages of sustainable development and innovative technology, extensive commercial application and fine governance, TocaGames platform is competitive in the following aspects:

• increase player participation, modify or optimize the game: each player can participate in the improvement and upgrading of the overall game. Players who obtain game governance tokens can upgrade and improve the game by voting to obtain a better game experience. Players and games have higher interaction and stickiness.

• chain game has no central control and no unified operation center: it is not owned by a company. Players and developers jointly maintain the game. It is completely driven by the market. The higher the popularity and better the experience, the higher the game players. For games on the blockchain, computing was originally developed, and the company can not fully grasp the development trend of the game, or close the game.

• play to ear can realize Qisong control: playing while earning is the biggest

selling point of TocaGames game. It can not only obtain game pleasure, but also tokens, equipment, props, NFT, etc., which can be sold in the blockchain market.

• decentralized distribution: since each node and miner in the block chain of TocaGames platform must follow the same bookkeeping transaction rule, which is based on cryptographic algorithm rather than credit, and each transaction needs the approval of other users in the network, the decentralized transaction system of TocaGames does not need a set of third-party intermediary structure or trust agency endorsement.

• tamper proof and encryption security: the TocaGames blockchain adopts a one-way hash algorithm. At the same time, each newly generated block advances in strict chronological order. The irreversibility of time makes it easy to trace any attempt to invade and tamper with the data information in the blockchain, resulting in exclusion by other nodes, so as to limit relevant illegal acts.

In addition, the TocaGames platform will provide more users and third-party developers with a high-performance and highly scalable blockchain game basic service aggregation platform, which has the ability to quickly build upper application services and meet the application scenarios with a large number of users. On the basis of the team's continuous technical breakthroughs and innovations, TocaGames platform has formed a series of technical features and advantages in terms of performance, scalability, security, operation and maintenance. That is, with the support of underlying technology, the main network

of TocaGames platform can provide developers on DAPP with easy-to-use and perfect blockchain game infrastructure, including visual development kit and on-chain ecological environment. Developers can directly complete the development of blockchain games in a graphical way, low threshold, fast and efficient without paying attention to the implementation of blockchain technology.

TocaGames platform hopes to provide players with a fair, just and open game environment with transparent data, transparent rules, no background manipulation of prop drop rate and malicious consumption induction. It hopes that the assets of game players can be saved in a long-term, safe and decentralized manner. Meanwhile, TocaGames platform hopes to carry the value fission of digital asset economic model through NFT + gamefi mode.

2.2 Introduction to TocaGames

TocaGames is a community driven GameFi platform. Players who hold Toca tokens can have a say in the development route of TocaGames. Players are governed by DAO (decentralized autonomous organization). The type of online games on the platform and the use of funds are determined through the participation of DAO. The TocaGames ecosystem improves user participation and entertainment through token rewards. Using the revolutionary token economy, it is a good combination of defi and NFT.

It uses the financial mechanism and game system to empower users, creating a truly unique and lasting ecosystem of free play and easy profit. At the same time,

TocaGames is an open platform that enables game developers to launch and publish their own games on the platform. TocaGames is a completely decentralized meta universe game. It is built based on the decentralized concept, implements the token reward system, realizes the balance of token supply and marketing, ensures the two-way exchange of assets, and allows game players to have a super user experience.

The emergence of TocaGames breaks the bottleneck of existing blockchain games and the business logic of traditional game development, returns the game revenue and value to players, subverts the new playing method of traditional game mode, and combines blockchain technology and concept to better protect the interests of players, so that players can not only enjoy the fun of the game, but also obtain benefits from it, Finally achieve a win-win situation between the platform and players.

The TocaGames game scenario is a business ecosystem integrating consumption, investment, trading, entertainment and making friends, and constructs an asset value preservation system for players. While acquiring NFT game assets, players can also realize the value-added and application of game revenue in the ecology, effectively protecting the interests of players.

TocaGames takes adhering to the core concept of blockchain as its own responsibility, and is committed to creating a platform for global game players to realize life value and wealth freedom, and leveraging the hundreds of millions of

game market.

2.3 Value pursuit of TocaGames

TocaGames hopes to provide gamers with a fair, just and open game environment with transparent data, transparent rules, no background manipulation of prop drop rate and malicious consumption induction. It hopes that gamers' assets can be saved in a long-term, safe and decentralized manner.

At the same time, we hope to help developers and players achieve better interest consistency through the digital asset economic model carried by the blockchain: help developers capitalize their operational value, make them continuously obtain income in the process of asset use, management and circulation, and provide convenient trading channels; Help players convert the data formed by their time and energy consumption and the props obtained by consumption into assets that can be safely stored and circulated, so that players have the right to manage and commercialize them.

2.4 Technical Support

In order to achieve the above objectives, TocaGames will provide the following technical features, including but not limited to:

1) Multi platform game running environment with blockchain system interoperability interface;

2) High speed consensus based on dpos improvement and entrusted witness

mode;

3) Test chain including high-efficiency chain network and high-speed contract virtual machine;

4) Cross chain acceptance gateway supporting homogeneous and heterogeneous digital assets (NFT);

5) Enhanced asset authority system;

6) Smart contracts that can be executed continuously across blocks;

7) Atomized transaction operations;

8) Support syntax level consensus tasks;

9) Small range consensus and random number;

10) support endogenous credible stochastic processes;

11) Support minimal on chain transaction confirmation cycle;

12) It supports precise timer in the chain, standby mode and contract operation mode with heartbeat support;

13) Transaction verification mechanism to prevent BP / developer cheating.

At the same time, it provides functions including but not limited to the following:

1) Go to the intermediary asset (prop) operation interface;

2) Examples of non homogeneous assets (NFT) circulation platforms;

3) Player autonomy and support of DAPP mall mechanism;

4) Visual IDE (including visual editing of game programs and contracts);

5) Complete wallet, user system and blockchain browser;

6) An iterative and renewable smart contract system;

7) HTML5 games and applications with blockchain functions such as smart contracts and transactions.

2.4 Ecological value

As mentioned above, the TocaGames platform hopes to integrate e-sports, interactive social entertainment, mobile games, computer games and host games through the blockchain network and token mechanism, so as to integrate the online virtual environment with the physical environment. Therefore, TocaGames is more valuable in application.

1. Game asset transaction

TocaGames platform has a secure and free decentralized trading platform composed of multiple high-performance nodes. The nodes of the exchange can be expanded and adjusted at any time to provide users with all-weather, real-time, safe and stable free matching trading or directional trading services. The cross regional acceptance gateway group provides inter currency exchange and consumption services for game assets circulating in the exchange. In addition to providing automatic acceptance system construction services for game

manufacturers, TocaGames platform also allows them to become node service providers of the exchange and jointly maintain the trading network.

2. Democratic game environment

• fair and open game environment: all game data on the TocaGames platform, including game prop reward probability, random event parameters in the game, player matching balance value, etc., inherit the tamper proof characteristics of the blockchain system. In addition, thanks to the efficient processing ability brought by the underlying framework, it perfectly solves the low transaction efficiency of most game platforms Unfair issues such as game oligopoly.

• open and transparent system: the TocaGames platform will be launched on GitHub, the world's largest third-party open source site More than 90% of the source code of the core system is open on COM, and users around the world can jointly witness the open, transparent, safe and reliable attitude of the TocaGames platform system.

3. Multiple incentive system

TocaGames platform aims to establish an ecosystem of high-quality game players, publishers, player groups and operation groups, and take activity and contribution as the standard to measure the number of users' benefits. All business activities on the TocaGames platform need to be driven by basic tokens. These tokens are recovered by the system in the form of service fees and deposited in the capital pool for reward to users who contribute and are active to the whole

system and the whole network. The ways to obtain tokens include but are not limited to: issuing games, issuing assets, actively participating in transactions, providing node support for the whole network Actively operate the community, etc.

4. System security

The decentralized trading platform of TocaGames platform provides users with automatic matching and directional trading services. The mutually redundant nodes cooperate with the connection quality detection / link selection program, so that the

TocaGames platform has sufficient high performance, security and robustness, and can effectively resist access pressure, theft risk and node failure.

• redundant security: deploy nodes in multiple countries and regions, and accept third-party node operators to provide safe, robust and uninterrupted trading services.

• high performance: the theoretical throughput capacity of TocaGames platform can reach 1000000tps, which is enough to support asset trading behavior and game applications on the chain.

ChapterIII Technical Architecture

3.1 Operating environment

1) Multi platform game integrated running environment

TocaGames provides a complete set of blockchain game development tools, which is open to developers and provides one-stop development tool flow technical support. At present, by using the TocaGames blockchain SDK, all games developed based on the TocaGames engine tool can easily access the blockchain, allowing developers to quickly create a game and application that provides blockchain functions such as unified digital wallet pass, smart contract and transaction. TocaGames believes that the running environment of future blockchain games should have the following characteristics:

- consistent and perfect chain interoperability interface;
- downward transparent undertaking mode;
- encapsulated atomic operations;
- multi platform compatibility.

In order to simplify the use process of developers, TocaGames has designed a set of integrated running environment that can adapt to various types of apps and supporting interoperability interfaces. Combined with TocaGames, it simplifies the docking process between game programs and blockchain, makes the interaction in the chain transparent to developers, and allows developers of traditional games to develop or migrate blockchain games without threshold.

The game running SDK on the TocaGames chain is integrated into the TocaGames engine runtime to provide a complete chain interaction interface for the game. Game developers complete the access of game content to the

blockchain network based on the TocaGames SDK. The chain interaction process is transparent and structured. The game development team no longer needs to invest in R & D to adapt the chain network and different devices. Meanwhile, the operating environment will be compatible with native Android, IOS, PC web, mobile H5 and other systems and environments. Games in the operating environment will have native cross platform capabilities to realize the barrier free operation of games on the chain on multiple platforms.

2) Blockchain interface

TocaGames provides a development environment for chain interaction, so that developers can easily interact with the chain through this environment. The blockchain interactive development environment of TocaGames provides development components compatible with a variety of working platforms, including SDK for Android and IOS systems, JavaScript library for front-end web applications, Python and PHP libraries for back-end applications, etc.

Developers can use these development environments to develop their own blockchain software and realize data interaction, such as user registration, user information and asset operation, user game data operation and other functions. The on chain data interface allows users to store homogeneous or heterogeneous assets on the chain (NFT) data, and in order to provide the best compatibility and customizable features, the blockchain system will not force asset data to be stored in clear text. Game developers can more flexibly design their own data storage

structure on the chain, so that these information can be more safely parsed through game clients and market plug-ins. At present, the chain interactive development environment mainly provides Encapsulation of homogeneous and heterogeneous digital assets (NFT) and prop query, transfer, ownership change, transaction submission, proposal and voting.

3) acceptance gateway

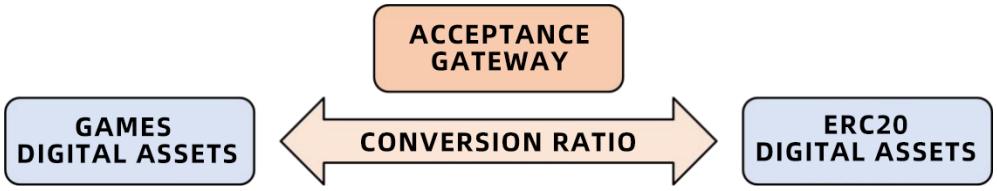
TocaGames supports homogeneous / heterogeneous assets (NFT) and Multi Chain riveted acceptance gateways. In the TocaGames chain, homogeneous, heterogeneous assets (NFT) and smart contracts are separated. It can be predicted that there will be a large number of continuous transactions in the TocaGames network, so it is necessary to reduce the operation cost of asset resolution and circulation as much as possible to make it easier to realize heterogeneous assets (NFT) cross chain acceptance, and "separation of assets and contracts" is a safer design.

TocaGames provides a set of acceptance gateway for automatic acceptance of game gold coins and props. Under the unified value measurement system, it can realize the smooth transition of content between different games and different platforms on the chain. The content that can be used for acceptance includes game gold coins, game equipment data, etc.

1) Acceptance of game digital assets

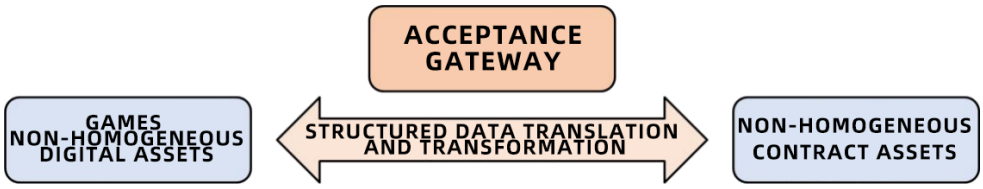
The acceptance of game digital assets and Ethereum erc20 digital assets is

shown in the figure below:



Game gold coins support asset transfer with other alliance chains and independent chains through acceptance gateway.

2) Acceptance of game non homogeneous assets (NFT)



TocaGames -nhas-1808 is a non homogenous digital asset (NFT) standard applicable to decentralized Distributed Accounting Network in the application of TocaGames. It has the characteristics of separation between assets and contracts, extensible and customizable data area, and is compatible with other non homogenous asset (NFT) standards.

Erc875 and erc721 digital asset standards are Ethereum's standard protocols for non homogenous digital assets (NFT). To some extent, erc875 is more like an "abbreviated" upgraded version of erc721. Erc721 creates non homogenous digital assets (NFT) is the first of its kind. Erc841 and erc821, which are updated later, are optimized and modified in some part of it, while erc875 standard is more simple and direct. Its defined functions include name, symbol, balanceof, transfer, transferfrom, totalsupply, ownerof and trade. Compared with erc721 standard, erc875 function is simpler.

By further expanding the digital asset technology supported by the acceptance gateway, the gateway will be able to support non-homogeneous composite contracts represented by erc721, erc875 and TOCAGAMES-nhas-1808 in the future. The acceptance of game props and non-homogeneous contracts by the acceptance gateway is similar to a special compiler through the translation and conversion of structured data, Realize the two-way acceptance from non-homogeneous contract to game props in the chain, be compatible with more types of prop circulation inside and outside the chain, and provide richer game content and user experience.

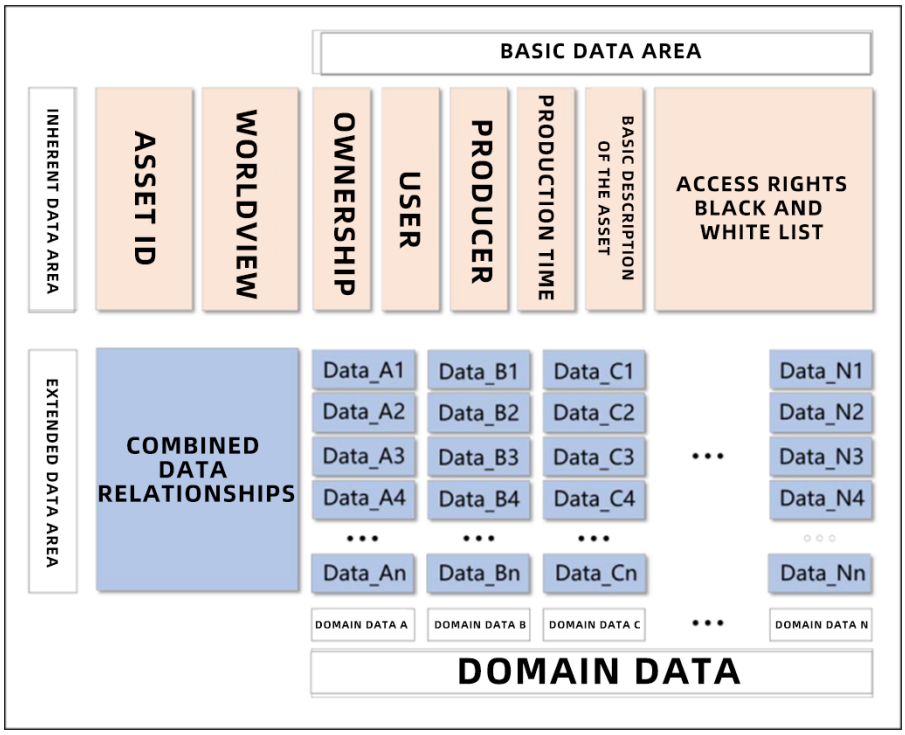
3.2 System optimization, expansion and improvement NFT

1) Improved non homogeneous digital asset (NFT) data structure

Non homogeneous digital asset (NFT) is a type of digital asset applied in distributed accounting network. Asset instances are unique. By optimizing the structure of non homogeneous digital asset (NFT), it can more flexibly serve blockchain online games.

TocaGames redesigned the data structure and 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 adjusted accordingly to match the new data structure. The prop data in the TocaGames platform game is only fully recorded in the block data during generation and attribute change. For

ordinary transactions and flow, only hash pointers are recorded to ensure that the volume of block data will not grow too fast due to long-term transactions.



2) Data separation of assets and contracts

Homogeneous, heterogeneous assets (NFT) and smart contract data are stored separately on the chain. There will be a large number of continuous transactions in the network of TocaGames, which needs to reduce the operation cost of asset analysis and circulation as much as possible. The separation of assets and contracts can realize the separate analysis and execution of contracts and the operation of necessary results on the chain.

Under the design of separating asset and contract data storage, 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 damaging asset

attributes or calling other people's assets by modifying the contract content due to the non separation of asset contracts, and it is easier to realize the cross chain acceptance of non homogeneous assets (NFT) without considering the constraints of contract factors. Therefore, the separation of assets and contracts is a safer design.

3) Improved dpos consensus mechanism

The consensus layer of TocaGames test chain adopts dpos consensus algorithm.

The DPO algorithm infers the producer of the block and the out of block time through the predetermined witness and the specified time slot. Generally, the time slot interval is 5 seconds. In the actual use process, the time slot interval is set to 3 seconds for faster network broadcasting speed and greater network throughput. If the predetermined witness arrives in the specified time slot, If there is no normal blocking due to network reasons or equipment hardware failure, the time slot will not be blocked, and the network will wait for the arrival of the next time slot and select another predetermined witness to block.

In TocaGames, all scheduled witnesses are voted by all shareholders from the witnesses. The scheduled witnesses are collectively referred to as active witnesses, and the number of active witnesses is usually 11-101. All active witnesses have the same block out reservation probability in the witness reservation algorithm of dpos consensus algorithm, which ensures that the block out probability of all witnesses is

consistent with obtaining the block out reward. Graphene voting update time is usually 24 hours, but for the sake of security, stability and fairness, the online voting update time at the initial stage of the project is usually short, which may be 12 hours or less.

CHARACTERISTICS	POW	POS	DPOS
HIGHER THROUGHPUT EFFICIENCY	✗	✓	✓
FASTER CONFIRMATION	✗	✗	✓
HIGH EFFICIENCY AND LOW ENERGY CONSUMPTION	✗	✓	✓
COMMUNITY INCENTIVES	✗	✓	✓

4) Using modern cryptography to ensure security

The full name of ECC algorithm is elliptic curve cryptography (elliptic curve cryptography), which was proposed by Neal Koblitz and Victor Miller respectively in 1985. Modern cryptography technology is a cryptography technology based on mathematical principles. At present, it has been widely used in many industries in the Internet field. Common symmetric encryption technologies include AES encryption used in WiFi, as well as asymmetric encryption algorithms (public-private key cryptosystem) RSA and ECC. ECC (elliptic encryption algorithm) is a commonly used encryption algorithm in the field of blockchain. These algorithms design an encryption and decryption system with unacceptable solution consumption through mathematical principles to prevent the encryption from being broken. On the premise of not obtaining the key correctly, all attempts to crack such encryption algorithms will lose the value of cracking behavior due to the excessive amount of calculation, resulting in too long implementation time (it

usually takes nearly a hundred years to try to crack / guess the key system).

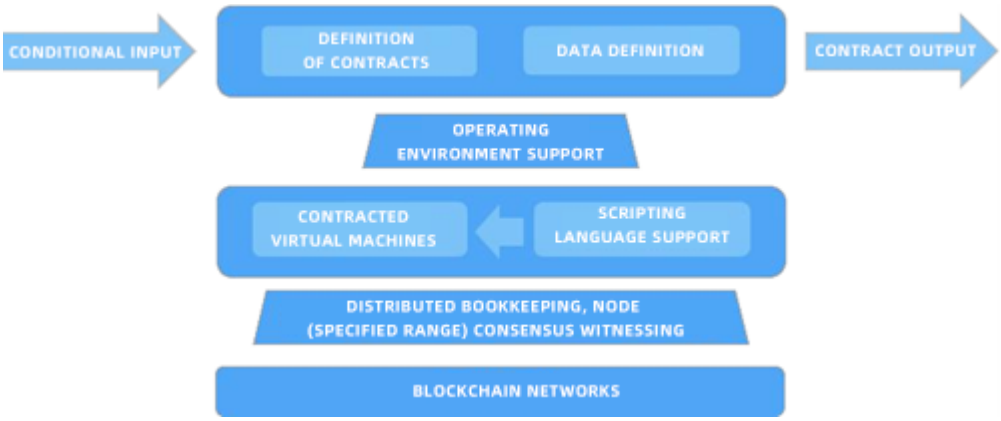
3.3 Virtual machine system

TocaGames has sufficient high concurrency processing capability. At present, the vast majority of online games, when the user scale reaches a certain degree, its server needs to carry out a large amount of data processing in a short time, which can not be realized in the existing Ethereum network.

TocaGames adopts the improved dpos consensus, with a theoretical throughput of about one million TPS. Its high concurrent processing performance is sufficient to support the development and normal operation of existing games under the design of reasonable data management mode, basically meet the operation demands of large-scale online games in the platform, and ensure that the user's game experience is almost the same as the existing centralized games.

Due to the high frequency of data interaction in large-scale online games, DNF has set a record of 600000 people online at the same time, and the steam game platform has amazing data of 14.2 million people online at the same time. If each online user submits data, it is deemed to have initiated a consensus application, and the limited throughput capacity of TocaGames is not enough to support such a level of processing requests, The development team designed different witness entrustment modes according to the needs of witness speed (Delegation Templates) the first mock exam is not a consistent witness and processing for all the running

games, but also focuses on the work of multiple types of games. The game is based on the data submitted / witnessed by different games. The game is based on the asynchronous mode. The data verification of can be completed through the database service on the chain, that is, users verify and complete data access on the chain. This process is very efficient and sufficient to support player data operation in large-scale game scenes.



A contract is a program that can be executed automatically and as a system participant, Perform preset tasks according to the basic rules of the environment (compiler rules). The contract can define input and output, accept and store value, and send out information and value at the same time. The smart contract is based on the "distrust principle" Designed on the premise that each node considers each other untrustworthy. Due to the distributed saving characteristics of the blockchain, each node on the chain saves the same contract execution code. The operation results of the contract are jointly witnessed by the computing power of the whole network, and whether the operation results are recognized is determined by a plenary vote. The contract of TocaGames supports the definition of witness

delegation.

3.4 Distributed Accounting System

As mentioned above, the final form of the game on the chain is to realize the online operation of the overall logic of the game, but the existing blockchain technology does not meet the minimum characteristics necessary to carry the complete logic of the game. The most key points include:

1) Data volume and time cost of node data synchronization

Only the complete node has the ability to execute the contract, but the complete node stores all transaction data of the whole network, the amount of data is obvious and easy to see, and the time consumption of synchronizing these data when creating a new node is also amazing;

2) The game logic is complete and the chain needs to be able to support large contracts

If the complete logic of the game is realized, the contract itself will contain all the background logic of the game, and the contract may become very large, or even exceed the block size of general blocks. Under the design of existing blockchain technology, contracts that cannot be accommodated by blocks will never run and get results;

3) Continuous execution of contract

When the game logic is fully linked, it means that the game contract will

continue to run before the end of a game application, that is, the running time of the game contract is much longer than the out of block cycle and executed across blocks. No existing blockchain technology can support such a contract operation mode;

4) Transaction execution delay

The complete chaining of the game means that all transactions that may be executed in the game are processed on the chain, many of which require high-speed response. The transaction response of the traditional blockchain depends on the outbound behavior, and the fastest confirmation speed is also limited by the outbound cycle, which is difficult to meet the needs of the game contract for real-time response to transactions;

5) Random processes cannot reach consensus

The random process rules on the chain are described by the smart contract, and the process of the contract is public. If it is necessary to produce random results that cannot be calculated by the third party, the noise of nodes needs to participate in the input of this process during the operation of the contract, but the noise of different nodes cannot be consistent, That is, other nodes cannot run the contract again to verify whether the result of the random process is correct, resulting in the failure to complete the consensus;

6) Timer and heartbeat implemented in the chain

Timer and heartbeat mechanism are the preconditions for all contracts and

game contents on the chain to realize regular operation, automatic operation and conditional operation. Behind this feature, there are also processes such as time synchronization and synchronous anti-counterfeiting, which is a completely blank area for the existing blockchain technology;

7) Digital asset permissions

Traditional blockchain digital assets are recorded in the contract data area, and the assets cannot be separated from the contract. Therefore, the contract owner has the right to modify the digital asset data, which may cause losses to the asset owner.

To solve these problems, TocaGames puts forward the idea of in-depth transformation of the existing distributed accounting system, and puts forward the following characteristics and mechanism design, so as to finally realize the goal that the games on the chain can actually run on the ground:

• reduce data volume and time costs;

• support consensus tasks at the syntax level;

• continuous execution of the contract;

• minimal transaction delay; • trusted random processes in the chain;

• timer and heartbeat in the chain;

• add the concept of authority to the data structure of non homogeneous digital assets (NFT).

Chapter IV TOCA General Economic Model

4.1 Introduction to TOCA

TOCA token is made on the currency security intelligent chain (BSC) by the TocaGames platform and issued in the TocaGames game, and provides functional tokens used on the platform. TOCA token is the only token of TocaGames platform. It will undertake many functions such as platform governance, ecological circulation, social voucher and so on. TOCA token is the only exchange pass for NFT props and assets in the game. It provides superior liquidity for the ecology through game consumption, realizes the pass incentive of game data and props assets, and creates a high-value game entertainment pass for global players and investors.

TocaGames is a fair start project. Tokens are distributed according to users' activities on the platform, such as revenue mining, NFT mortgage and games.

Total circulation: 210000000 pieces

Issue standard: BSC

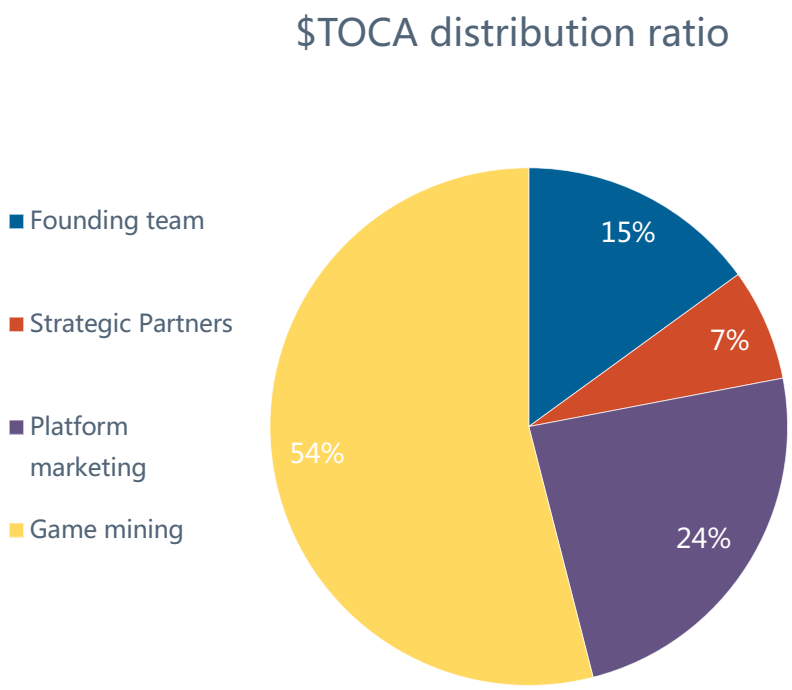
Distribution scheme:

15%: founding team (release in equal proportion for 5 years after 1 year of lock up)

7%: strategic partner (release in equal proportion for 5 years after 1 year of warehouse lock)

24%: marketing and community contributors

54%: Game mining (Users mine all games published on the platform through the GameFi mechanism)



4.2 TOCA token function

TOCA is the native functional token of TocaGames, which is used for the following functions:

In game tokens: TOCA tokens facilitate the purchase of in-game activities, such as obtaining additional characters, lucky draw and rewards for in-game activities, such as player to player (PVP).

Dao Governance: TOCA token holders will be able to submit proposals and vote to influence the development and direction of the platform.

Liquidity Mining: users can mortgage or mortgage NFT in various liquidity pools on the platform to obtain mortgage rewards paid in TOCA tokens.

NFT blind BOX: users can obtain a unique NFT blind BOX by mortgaging the TOCA token. NFT auction: users can use TOCA tokens to bid for limited NFT.

NFT Market: a decentralized NFT market for trading, renting and lending NFT.

Game creator: a set of APIs that enable game developers to launch and publish their own games on the TocaGames platform and use TOCA tokens and NFT.

NFT Creator: a set of tools for users to create their own NFT using erc-721 standard.

4.3 Acquisition and circulation of TOCA

In the process of providing game services by game operators, TOCA can also be used to measure the consumption of hardware resources, such as bandwidth and log storage resources, computing resources and DC state storage. Cloud service providers provide these resources to obtain TOCA, and game operators use these resources by spending TOCA.

There will be a certain handling fee when players consume props and trade players in the game. Part of the game asset trading fee will be recovered and precipitated into the TOCA digital asset network, part of which will be fed back to the project party issuing these assets, and some additional rewards will be given to node maintainers. The assets in the TOCA digital asset network will regularly

provide rewards to the community, so as to improve the activity of the community and maintain the long-term activity of the TocaGames trading system and the community.

In addition, part of TOCA is used as collateral during the issuance of secondary assets and locked in the disk with the issuance of secondary assets. From the economic model of TOCA, once there are more and more game assets such as distribution based on TOCA, the subsequent demand for TOCA will be greater and greater. In addition, the demands of game asset issuance mortgage TOCA and the payment demands of resource consumption will increase the scarcity of TOCA, thus increasing the value of TOCA. In addition, through the contribution of game equipment and services, users can also exchange value in the digital currency exchange through TOCA, which can also promote its liquidity.

Finally, part of the token consumed by the business in the TocaGames will be used to reward the continuous maintainers of the transaction node, the active maintainers of the community, the developers with great contributions and the maintainers of the TocaGames, so as to maintain a sustainable development trend of the whole system ecology, so as to ensure the long-term activity of the system and the community.

Chapter V Team and Community

5.1 DAO: full community autonomy

The TocaGames labs team has established a TocaGames Dao distributed autonomous organization to achieve complete community autonomy. Dao can maximize resource utilization. All contents are stored in a decentralized storage network, which is open, transparent and incorrectable. Anyone can review the company's activity rules and dispatch resources in time when taking action without consuming time due to review. The characteristics of decentralization make some cumbersome processes in life simple.

TocaGames platform Dao will make every effort to build a completely anonymous and untraceable encryption protocol and token payment circle, and build a cross regional work network and related infrastructure with universal, complete supporting functions, high performance, rich application scenarios, easy to use and good user experience, It has become the first blockchain 4.0 penetration system in the whole network to support the chaining of various anonymous applications and free access across regions. Establish top-level infrastructure space for defense breaking and cross regional work.

When making some public decisions, the use of distributed ledger will make each vote of voters truly and publicly recorded on the blockchain, without counting votes to produce election results, which is timely and reliable. On Chain + off chain combination. On chain governance realizes decentralized decision execution through smart contract, and the voting results of participants will directly affect the smart contract. Under chain governance, weak restrictive organizational governance is realized through social networks, voting systems and multi sign

wallets. Projects often adopt off chain governance in the development period, and change to comprehensive on chain governance after the products are mature, and gradually hand over the formulation of rules to the community.

TocaGames platform, a platform with self-knowledge, self-care, common management and recognized value of the whole network, enables ADAO to generate practical value due to consensus.

5.2 TocaGames Group

Jekey, an internationally renowned Data Engineer, has held key positions in many world-famous Internet big data research centers, responsible for the application research and development of Internet basic technology, participated in many internationally renowned projects, and is a pioneer in the field of blockchain technology.

Lionel - doctor of computer and big data, architect, database expert, exchange construction technical expert, 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 - a world-renowned blockchain game application expert and a global leader in blockchain technology and business application. He once served as a member of the EU Business Council, a doctor of Sociology of Columbia University and a researcher of the financial research center. He is a global authority in the application field of intelligent games and monthly entertainment technology.

Paddy - has an authoritative influence in the development of blockchain underlying technology. His career covers both academic and business fields. He is a research scholar, engineer and leader. He has held several engineering management positions at Google and Amazon.

Chapter VI Future Planning

The landing process of ecological application scenario based on TocaGames platform is as follows:

• trust building: establish a completely decentralized trust foundation based on the blockchain digital encryption algorithm;

• design Ecology: build consensus mechanism and design ecological model based on distributed computer nodes;

• make rules: make rules and reward and punishment measures based on smart contract, and the system will automatically execute the rules;

• issue Tokens: drive the circulation of tokens on the TocaGames platform through many gamefi games;

• start Ecology: the TocaGames platform circulates, accesses various entity applications and meta universe virtual reality, and starts ecology.

The project development roadmap is as follows:

In August 2021, the project was officially launched;

In December 2021, the official website was launched, the core of GameFi platform was built, and the foundation was launched;

In March 2022, the token of TocaGames platform continued to go online, and the head centralized exchange;

In April 2022, the TocaGames market was launched simultaneously, which is a decentralized NFT market for trading, renting and lending NFT and snapping up the Toca Game blind box and the TocaGames platform game blind box;

In May 2022, monster metaverse, the first card game, was launched.

In December 2022, we will develop our own public chain and make outstanding contributions to the GameFi field.

After March 2023, four other games have been launched on its own public chain, namely kings and castles, terraforming Mars, the battle of polypia and the colonies.

In the future, TocaGames will continue to add new game playing methods and launch new games to realize the circulation market application value of TocaGames platform token (TOCA);

Chapter VII Risk Warning and Disclaimer

7.1 Risk tips

Systemic risk: refers to the possible changes in returns caused by global

common factors, which affect the returns of all securities in the same way. In the market risk, if the overall value of the digital asset market is overestimated, the investment risk will increase. Participants may expect the growth of token public offering project to be too high, but these high expectations may not be realized. At the same time, systemic risk also includes a series of force majeure factors, including but not limited to natural disasters, large-scale global failure of computer networks, political unrest, etc.

Risk of lack of Supervision: digital asset transactions, including TOCA, are highly uncertain. Due to the lack of strong supervision in the field of digital asset transactions, there are risks of sharp rise and fall of electronic tokens and manipulation by makers. If individual participants lack experience after entering the market, they may be difficult to resist the asset impact and psychological pressure caused by market instability. Although academic experts and official media sometimes give suggestions on cautious participation, there are no written regulatory methods and provisions, so it is difficult to effectively avoid this risk at present.

Risk of regulatory introduction: it is undeniable that in the foreseeable future, countries around the world will have regulatory regulations to restrict and regulate the field of blockchain and electronic tokens. If the regulatory body regulates the field, the tokens purchased during the public offering of token may be affected, including but not limited to fluctuations or restrictions in price and marketability. Inter team risk: at present, there are many teams and projects in the blockchain

technology field, the competition is very fierce, and there is strong market competition and project operation pressure. Whether TOCAGAMES can break through many excellent projects has been widely recognized, which is not only linked to its own team ability and vision planning, but also affected by many competitors and even oligarchs in the market, which may face vicious competition.

Intra team risks: the TOCA team has gathered a talent team with both vitality and strength, attracting senior practitioners in the blockchain field and experienced technical developers. As a leader in blockchain technology, the stability and cohesion within the team are crucial to the overall development of TOCAGAMES. In the future development, it is not ruled out that there are core personnel leaving and conflicts within the team, resulting in the negative impact on the whole project.

Project planning and marketing risk: the founding team will spare no effort to achieve the development goals proposed in the white paper and expand the growth space of the project. At present, TOCAGAMES has a very mature business model analysis. However, in view of the unforeseen factors in the overall development trend of the industry, the existing business model and overall planning ideas can not be well consistent with the market demand, resulting in the consequences that it is difficult to make considerable profits. At the same time, as this white paper may be adjusted with the update of project details, the public may not understand the latest progress of the project, and the participants or the public may not understand the project due to information asymmetry, thus affecting the follow-up development of the project.

Technical risks of the project: firstly, the project is constructed based on cryptography algorithms, and the rapid development of cryptography is bound to bring potential cracking risks; Secondly, blockchain, distributed ledger, decentralization, different tampering and other technologies support the development of core business, and the TOCA team can not fully guarantee the implementation of the technology; Thirdly, in the process of project update and adjustment, vulnerabilities may be found, which can be remedied by issuing patches, but the degree of impact caused by vulnerabilities cannot be guaranteed.

Hacker attack and criminal risk: in terms of security, the amount of a single supporter is very small, but the total number is large, which also puts forward high requirements for the security of the project. Electronic tokens are anonymous and difficult to trace. They are easy to be used by criminals, attacked by hackers, or may involve criminal acts such as illegal asset transfer.

Other risks unknown at present: with the continuous development of blockchain technology and the overall situation of the industry, TOCAGAMES may face some unexpected risks. Please fully understand the team background, the overall framework and ideas of the project, reasonably adjust your vision and participate rationally before making participation decisions.

7.2 Disclaimer

This document is only for the purpose of conveying information. The content of the document is for reference only and does not constitute any investment

trading proposal, instigation or invitation for the sale of shares or securities in TOCAGAMES and its related institutions. Such offers must be made in the form of confidential memoranda and in accordance with relevant securities and other laws.

The contents of this document shall not be interpreted as forcing participation in the public offering of token. Any act related to this white paper shall not be regarded as participating in the public offering of token, including requesting a copy of this white paper or sharing this white paper with others.

Participating in the public offering of token means that the participants have reached the age standard, have complete civil capacity, and the contract signed with TOCAGAMES project is true and effective. All participants signed the contract voluntarily and had a clear and necessary understanding of TOCAGAMES before signing the contract.

The TOCA team will continue to make reasonable attempts to ensure that the information in this white paper is true and accurate. During the development process, the platform may be updated, including but not limited to the platform mechanism, token and its mechanism, and token allocation. Some contents of the document may be adjusted in the new white paper as the project progresses. The team will publish the updated contents to the public by publishing announcements on the website or the new white paper. Participants must obtain the latest version of the white paper in time and adjust their decisions according to the updated contents. The TOCAGAMES team makes it clear that it will not bear the losses

caused by the participants due to (a) reliance on the contents of this document, (b) inaccuracy of the information in this document, and any behavior caused by this document. The team will spare no effort to achieve the objectives mentioned in the document. However, due to the existence of force majeure, the team cannot fully make the commitment to complete.

As an official token, TOCA is an important tool for platform efficiency, not an investment. Owning TOCA does not mean granting its owner ownership, control and decision-making rights to the platform. As an encrypted token used in the TOCAGAMES ecosystem, TOCA does not belong to any kind of currency of the following categories: (a) securities, (b) equity of legal entities, (c) shares, bonds, notes, warrants, certificates or other instruments granting any rights. The value-added of TOCA depends on the market law and the demand after the application is implemented. It may not have any value. The team will not make a commitment to its value-added and will not be responsible for the consequences caused by its increase or decrease in value.

To the maximum extent permitted by applicable laws, the team shall not be liable for the damages and risks arising from participating in the public offering of token, including but not limited to direct or indirect personal damages, loss of business profits, loss of business information or any other economic losses.

TOCAGAMES project complies with any regulatory regulations conducive to the healthy development of the industry and the declaration of industry

self-discipline. Participation by participants means that they will fully accept and comply with such inspections. At the same time, all information disclosed by participants to complete such inspections must be complete and accurate. The platform clearly communicates the possible risks to the participants. Once the participants participate in the public offering of token, they have confirmed, understood and recognized the terms and conditions in the detailed rules, accepted the potential risks of the platform and bear the consequences.

THANK

Blockchain is a transformative force sweeping this era. We have the honor to participate and feel the profound impact it will bring. For the better development of the blockchain, we started the journey of TocaGames with the mission of "making the blockchain popular in the game". We saw the vigorous development and opportunities of the industry, as well as the difficulties and crises. Finally, we chose to chase the wave of the blockchain era, break the waves in the wind and sail away.

Here, I would like to thank every user participating in TocaGames, your participation, your dedication and your persistence! May TOCAGAMES win wealth and freedom with you in the near future and look forward to a better life!

——To TocaGames Labs