Turing Logic (TGC)

English White Paper 1.0

May 2019

Pay tribute to the great
mathematician and logician,

Alan Mathison Turing

(June 23, 1912 - June 7, 1954)

Catalog

Foreword

Complex logic stems from simplicity.

Calculations are everywhere.

In 2013, AlphaGo defeated the human professional Go player and became the first artificial intelligence robot to defeat the world champion of Go.

This seems to prove that the tool will have to go beyond its maker in more ways. And all of this comes from more and more sophisticated calculations. The calculation seems to be omnipotent, like a new God. But even this "God" can't escape the boundaries of logic.

The first person to find this is Turing. Alan Mathison Turing, a British mathematician and logician, is known as the father of computer science and the father of artificial intelligence.

For the first time, Turing linked the computational and automated machinery to a huge impact on later generations. This automaton was later called the Turing machine.

Turing's theory has been validated over the next decade and has evolved into our computer today.

The biggest inspiration for the Turing machine is not how to do mechanical calculations, because this is something that modern programmers can easily do, but any complex thing follows simple logic or can be derived from simple logic.

In order to express a respect for the great mathematician Turing, we call the method of deriving complex things with simple logic "Turing logic." Our project is called "Turing Logic" or TGC for short.

TGC logo design

TGC's logo design condenses three core letters T/G/C from the appearance, and displays the diversity of users and nodes in a polygonal pattern. The overall shape of the partial opening is open and inclusive. It means communication and communication all the time.

1. Based on the perspective of the future

1.1 Mobile Internet and Big Data

The rise of the mobile Internet is a watershed in the era of big data. In the PC era and the Internet era before the mobile Internet, traditional enterprise information systems are mostly small data or structured big data. After entering the era of mobile Internet, especially Android and iPhone smart. The popularity of mobile phones has made everyone a data generator, even without your input, your location, attention, social, etc. have been generating massive amounts of data, as well as an increasing number of enterprise mobile applications, generated data. The amount is amazing. It can be said that without the popularity of the mobile Internet, we cannot enter the era of big data.

Even in the Internet of Things era, the mobile Internet will remain the core of the Internet of Things. It is highly likely that people will control everything through mobile terminals.

1.2 Building Artificial Intelligence by Computing

Jim Gray, the Turing Prize winner and founder of relational databases, defines the development of human science as "four paradigms". Thousands of years ago, science was mainly about recording and describing natural phenomena. It was called "experimental science". That is, the first paradigm. Its typical cases were drilling wood for fire. Hundreds of years ago, scientists began to use models to summarize the phenomena recorded in the past, and developed a "theoretical science", the second paradigm, with typical cases such as Newton's Three Laws, Maxwell's Equations, Relativity and so on. In the past decades, the emergence of scientific computers has led to the birth of "computational science", which simulates complex phenomena and deduces more and more complex phenomena, such as simulated nuclear

tests, weather forecasting and so on.

Today, as well as the future trend of science, with the rapid growth of data, computers will not only be able to do simulation, but also analyze and summarize, and get theory. That is to say, the work done by scientists like Newton and Einstein in the past can be done by computers in the future. Jim Gray turns this way of scientific research into the fourth paradigm, data-intensive science.

Big Data Intelligence represents a new cognitive paradigm. The ultimate goal of Big Data Intelligence application is to use a series of intelligent algorithms and information processing technology to realize human deep insight and decision-making intelligentization under the condition of massive data, and ultimately to achieve universal human intelligence integration. This is not only the extension of traditional information management, but also the core technology driving force of human social development management intellectualization.

We call the ability of a series of intelligent algorithms and information technology to process large amounts of data computational power, or "computing power".

2. Introduction to Turing Logic

2.1 The original intention

We believe that everyone is a huge database, which is worth tens of millions of dollars, but for individuals, these data are losing all the time, they do not belong to the producer of data. How to help everyone find an effective way of data collection, we believe that mobile Internet-based mobile terminal is a feasible and efficient way.

Undoubtedly, all kinds of APPs in the Internet era are collecting personal data all the time, but these data do not know where to go. What's more, data leakage causes great harm to personal privacy. Our data needs to be well protected. Block chains can protect the privacy of each of us very well through encryption algorithms and other technologies.

How does protected personal data generate value? They can't produce value directly. They need to be calculated. The aggregation of massive data will change qualitatively - it will become the computing power of artificial intelligence.

Artificial intelligence is based on immeasurable large data, which are derived from the contributions of everyone. The Block Chain Economic System will reward this kind of contribution behavior - Data contributors will benefit, so we will realize the good wish of "personal data as personal assets".

2.2 Steps forward

Turing Logic TGC will promote this system engineering in three stages:

The first stage is the supercomputer stage. Establish a super-community to attract more individuals, through the development of Turing Logic Mine arithmetic game, strengthen community cohesion, thus forming a supercomputer to complete the construction of Turing Logic TGC model.

The second stage is data contribution and distributed storage. On the basis of the first stage of network, the functions of personal big data encryption, collection, storage, authorization and revenue are gradually opened, and the main body of Turing Logic TGC is built.

The third stage is data training model promotion stage. Human big data, through large-scale parallel computing, big data, in-depth learning, human brain chips and other technologies, has become an artificial intelligence product, making everyone's life more intelligent.

2.3 Project Introduction

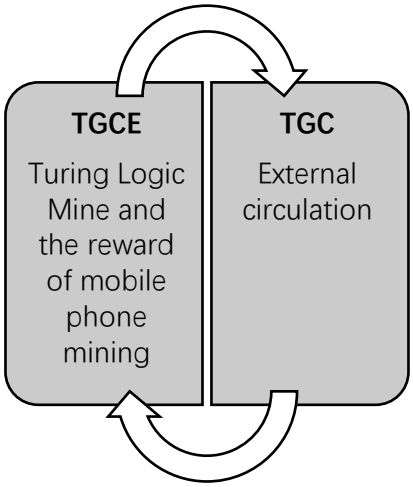
Undoubtedly, this is a huge system engineering, but as mentioned earlier, complex logic comes from simplicity.

Turing Logic TGC aims at contributing to the intelligence of big data. Through mobile internet, big data, block chain, distributed storage, encryption algorithm and other technologies, it builds and protects databases derived from personal willingness to contribute data (including idle storage space); through developing and operating the TGC community, as well as economic incentives on this basis, it rewards. Data contributors help them generate revenue. The scope of research and development of TGC is defined at the level of technology and organization management, in order to reduce the threshold of the project and improve the feasibility of the project.

3. Primary Value TGC

3.1 Definition of TGC

The intrinsic value of Turing logic system is embodied in the form of Token. The system adopts double Token mechanism: TGCE and TGC, TGCE as internal circulation Token and TGC as external circulation Token. The inner circle includes the inner circle of Turing Logic Mine and the reward of mobile phone mining. External circulation refers to the external trading market. TGCE and TGC can be converted 1:1.



3.2 Mining methods

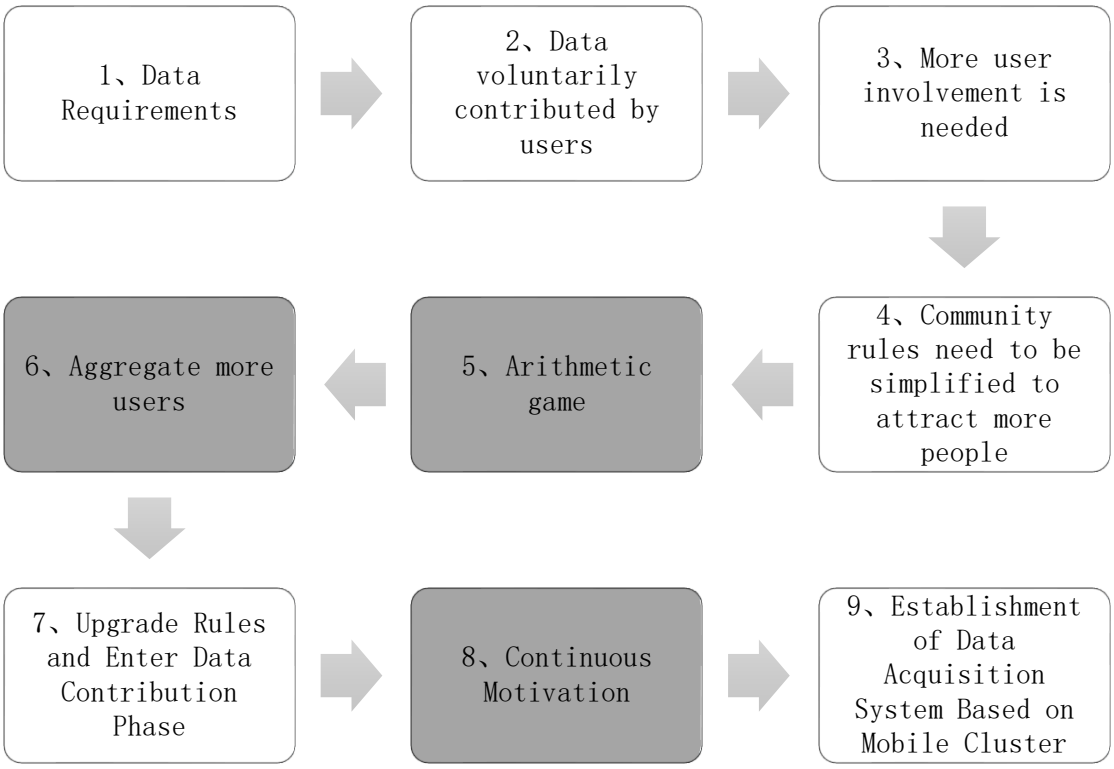
Turing Logic will support users to upload mobile data and storage to the block chain cloud platform at any time and anywhere. Block chain cloud is different from centralized cloud platform which is widely used at present. It is a transparent and tamper-proof cloud storage platform in decentralized environment. Users can encrypt and decrypt their data with their private keys to protect their personal information.

TGC adopts a two-tier progressive incentive mechanism. Through the internal

and external circle incentives of TGCE, it opens up the mode of "information encryption and mining" and continuously encourages the behavior of personal information protection and data contribution.

3.3 The Value of TGC

Why was TGC born? We express our thinking logic in the form of flow chart, and then reflect the value of TGC.



In the fifth stage of the arithmetic game, TGC will act as an activity tool to participate in arithmetic exercises as the original energy value; in the sixth stage, the reward allocation of TGC will attract more users to participate and play the role of expanding the cluster; in the eighth stage, TGC will be used as an incentive means to achieve the final goal of the project. With the circulation of TGC, its value will gradually be reflected. To sum up, the role of TGC in the system is: activity tool, incentive tool, incentive means, value embodiment.

3.4 Distribution of TGC

The total amount of TGC is 1.8 billion. It consists of 100 million openly pre-excavated and 1.7 billion later excavated.

Open pre-excavation of 100 million, consisting of 18 million angel wheel, 20 million main node bonuses, 30 million exchange cooperative bonuses, 10 million preachers, 12 million initial community builders, and 10 million prizes for market data platform.

Distribution	Amount
angel wheel	18 million
main node bonuses	20 million
exchange cooperative bonuses	30 million
preachers	10 million
initial community builders	12 million
market data platform	10 million
Total	**100 million**

In the latter stage, 1.7 billion mines were mined, rewarding 70% of data contribution and 30% of mobile distributed storage.

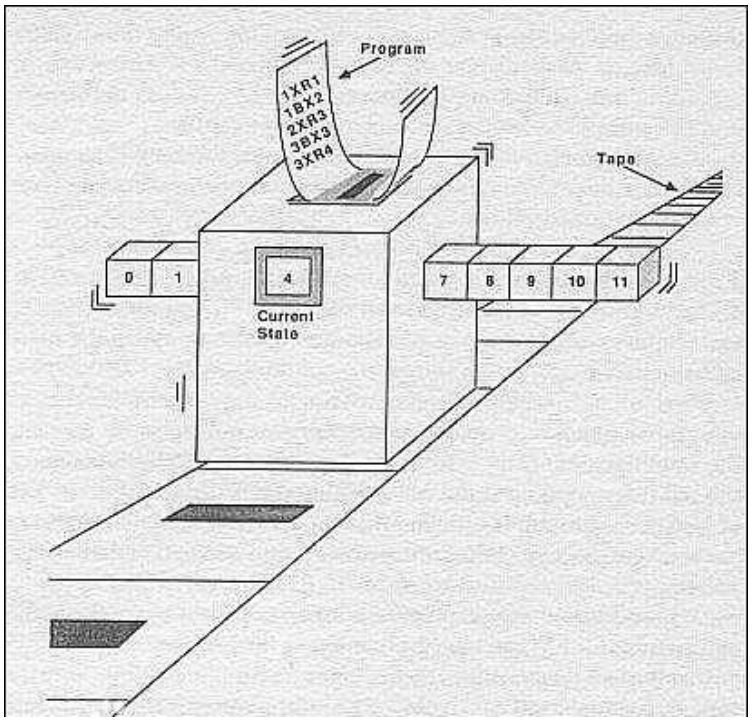
Distribution	Description	Proportion	Quantity
data contribution	Data Contribution and Personal Willingness Data Contribution Based on Public Chain	70%	1.19 billion
Mobile Distributed Storage Contribution	Reward Community Users for Contributing Mobile Surplus Power and Storage Space	30%	510 million

4. Turing Logic Mine

According to market expectations, the vast majority of the 100 million openly pre-excavated pieces will be used for the arithmetic game, the Turing Logic Mine.

4.1 Enlightenment of Turing Machine

Turing put forward Turing machine for the first time in his paper "On the Application of Digital Computing in Decision-making Difficulties". Turing's basic idea is to use machines to simulate the process of mathematical operations with paper and pen.



Composition of Turing Machine

We refine the working steps of Turing Machine as follows:

- Preparation

  - Lattice Initial Words on Storage Tapes
  - Setting the current state of internal state memory

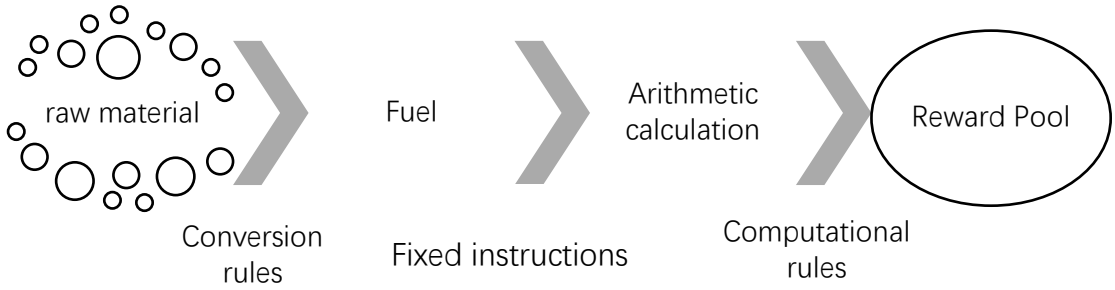
- Read and write headers are set to the grid positions initially made on the memory tape
- Prepare control instructions (control programs).

Repeat the following steps until shutdown.
- Read and write headers to read out numbers or symbols in the current grid
- Find the corresponding control instructions according to the current state and read letters or symbols
- According to the control instructions, perform the following three actions
1. Erase or write a number or symbol on a grid by the read-write head
2. Change state to a new state
3. Read and write headers move one grid to the left or right

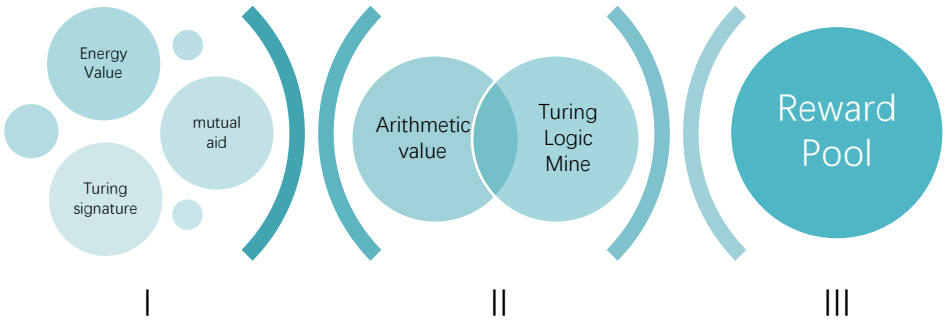
Generally speaking, the model structure of Turing machine can be understood as "input set, internal state, fixed program instructions, output set".

4.2 Basic Principles

Turing logic TGC follows the basic logic model of Turing machine. Input set includes raw material and fuel, fixed program instruction includes conversion rule, fixed instruction and calculation rule, and output set includes reward revenue and reward pool.



Users obtain certain original energy values (TGC tokens) through mobile phone mining and free trading, and obtain Turing signatures through community mutual assistance. Turing signature is a golden key to open Turing Logic Mine. Getting Turing signature means opening a Turing Logic Mine. For each unit, the nodes providing community assistance will be rewarded, and the reward relationship will be traced upwards. The community establishes incentive pool to incentive the nodes running the mine continuously, so as to embody the principle of fair benefit of self-organizing community.

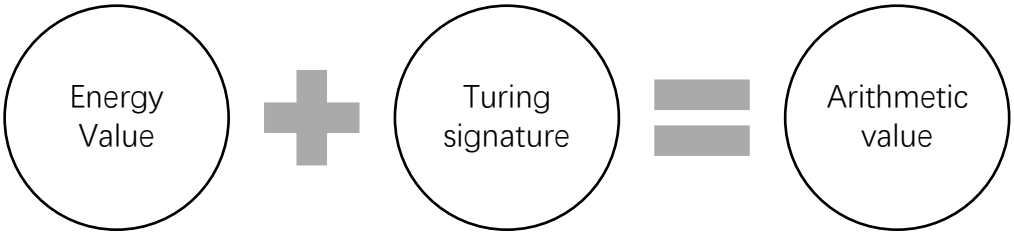


Logic schematic diagram of TGC operation

4.3 Turing Signature

Turing signature is the abbreviation of the combination of "Turing" and "user signature", which represents an identity and qualification. Acquiring Turing signature is the first goal of all energy value owners, that is, to have Turing signature, to have the ID of the quasi-mine owner, and to qualify the energy value to be converted into the arithmetic value. When the conversion of energy value to calculation value is completed, it can be called a real mine owner.

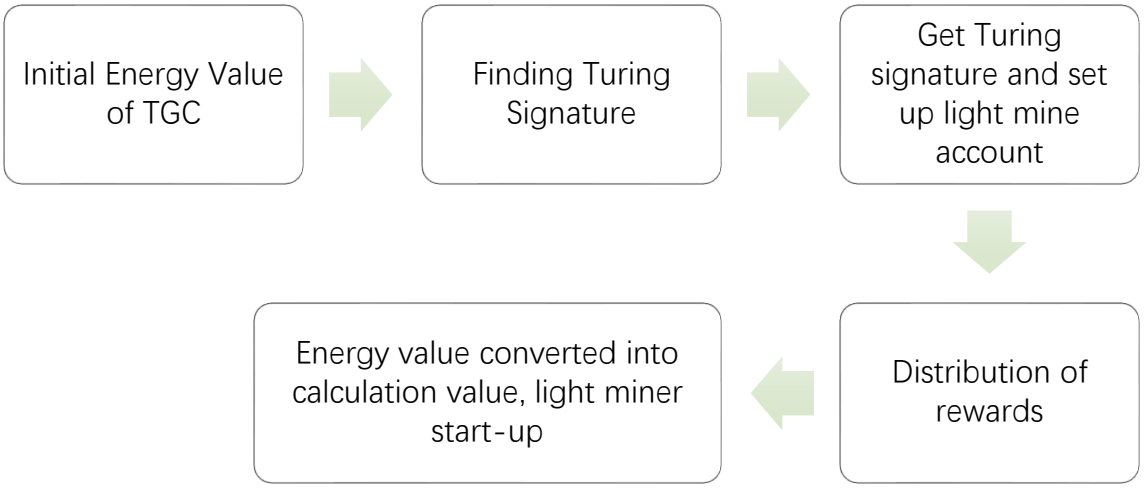
Owning energy value, not inherently having Turing signature, needs to be sought through community mutual assistance and the owner of energy value. The incentive mechanism of the community always makes someone willing to provide Turing signatures, so that both sides can get what they need.



4.4 Light Miners

According to the different structure of the mine, the Turing Logic Mine is divided into light and heavy miners.

The Turing Logic Mine provides enough space for individuals to grow up in the community. Through mutual assistance, sharing and other ways, the community will become a huge self-organization, including several sub-items of self-organization, or even, individuals gradually expand into a self-organization through the power of the network. Among them, light and heavy miners are the necessary ways to promote the formation of self-organization.



Construction process of light miner

4.5 Heavy Miners

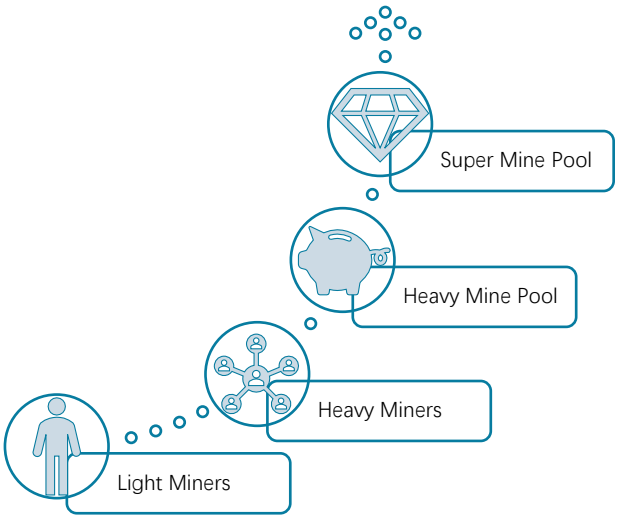
As mentioned above, the owners of mutually-assisted multi-person mines can expand indefinitely by self-organization. Through mutual assistance, the number of light mining machines can reach 820, which can be called the mine owner of heavy mining machines.

4.6 Heavy Mine Pool

The mining revenue of Turing Logic Mine is summarized in the heavy ore pond. Heavy ore pond is also a reward pond for TGCE. It has three functions: accepting the residual rewards of mutual assistance, accepting the computer contribution income of each heavy mining machine, and the rewards of the initial distribution of the system.

4.7 Super Mine Pool

Super Mine Pool is the long-term benefit pool of the heavy miner. The owner of the heavy miner divides the TGCE in the super Mine Pool according to a certain proportion. The goal of Super Mine is to continuously promote the internal circulation of TGCE. Super mine has built-in intelligent regulator,



which can effectively adjust income distribution, and help to build a long-term stable internal ecology.

5. Community governance

5.1 Self-organizing Production Relations

In the age of arithmetic, everything becomes more intelligent. Individuals are more free, and collaboration between individuals is more efficient. Self-organization, a new organizational form, will gradually evolve, or existing organizations will be transformed into self-organization.

So what is self-organization? The secret of self-organization lies in life itself. From DNA to cells to living organisms, a series of activities are self-organizing processes: DNA splitting, molecular self-assembly, intracellular free assembly, and cooperation with extracellular environment. For example, a tree does not know how to turn into a forest, but the forest does begin with individual trees, as do grasslands and coral reefs, which are all forms of self-organization.

From the perspective of enterprise management and organization management, organization is an evolutionary journey, not stop at a certain point. With the evolution of the times, the organizational system is in fact constantly changing and iterating, from the pyramid form in history to the complex system form. The change of organization reflects the change of the relationship between people.

With the development of productive forces, the world is looking forward to new relations of production. With the help of networks, algorithms, block chains, consensus mechanisms, intelligent contracts... It is possible for us to construct such a production relationship in this era, which is a new type of relationship among people with decentralization, free cooperation and self-management.

5.2 Historical Experience

In the history of the development of block chain organizations, there have been some decentralized autonomous organizations, the most representative of which is the Decentralized Autonomous Organizations of DAO. But DAO is not run by wealthy people in Silicon Valley. It operates on a network of machines, consisting of irrefutable computer codes that follow the same basic principles as driving Bitcoin. So, DAO is run entirely by the community, which buys DAO tokens to support future development. The more money you invest, the more votes you vote.

But in the actual community operation, DAO exposes a series of problems, in addition to security issues, the biggest problem comes from the chaos of community democracy. Community decision-making can only be carried out with the majority of DAO's "voting rights" voting consent, and the size of voting rights depends on how much voters invest. But the problem is that voting rights are often concentrated in the hands of "big households". Decision-making is difficult to reach agreement, which greatly reduces efficiency.

The complexity and uncertainty of community governance also occur in other similar projects. Therefore, to reduce the complexity of community governance and simplify community rules is what self-organization needs to do at this stage and at a certain stage in the future. Rules are simple and easy to operate, in order to attract more people to participate, and then promote the development and growth of the community, make decentralized organizations more decentralized, improve the efficiency of community operation, so as to make the community benign operation.

5.3 TGC Self-Organizing Community

Turing Logic TGC (hereinafter referred to as "TGC") is a self-organizing community development project supported by arithmetic.

The self-organizing community of TGC based on computing power has the basic characteristics of block chain project: no centralized control mechanism, Distributed Accounting system, based on a large number of cryptographic algorithms, incentive mechanism within the system, etc. At the same time, the self-organizing community of TGC has its own characteristics.

There is no centralized organization to control the TGC community. Everyone is more free, the environment is fairer and the ecology is open to all. All people need to prove their value according to certain rules and standards, and with actual actions or effective results, strive for their own position, and obtain corresponding benefits. Distributed books will protect this open and transparent, cryptography guarantees everyone's basic right to protect personal privacy. This kind of production relationship does not deny the human nature of seeking profits. The incentive mechanism within the system promotes everyone to be good and jointly promotes ecological development.

People in the ecosystem may be acquaintances, but more likely they are strangers to each other. They take each other as nodes, communicate and cooperate through the network, and achieve the effect of 1 + 1 > 2. Each individual is like a cell, a tree, a grass, a coral insect. With the power of the network, each individual superimposes and sublimates into a vibrant life, a vibrant forest, an endless grassland, and a majestic coral reef.

5.4 TGC Community Concept

TGC will become a self-organizing system to simplify community rules as much as possible, a digital system to minimize human intervention, and an open and friendly community in which everyone can participate.

The development of block chain is gradual, and the growth of community needs gradual cultivation. In the virtual world, too complex game rules will lead to a smaller community, which is not conducive to the cultivation of block chain ecology. TGC upholds the concept of simplifying community rules and simplifies the rules of community collaboration as much as possible in a

project. When new rules come into being or become complex to a certain extent, new communities will emerge. The benefits of doing so will make communities more transparent and thus more efficient. At the same time, the simplified rules reduce the threshold of user participation, and gradually enlarge the audience, from the minority to the public. The development of the block chain is ultimately the growth and development of the community. The community will also follow the principle of "simplicity is beauty", which is the attitude and opinion of the TGC.

6. Technological development

6.1 Technical Architecture

The structure of Turing Logic Common Chain is divided into transaction layer, block layer, contract layer, infrastructure layer and supporting tools.

Transaction layer: Provide access services, CA security authentication, message services, traffic control and other integrated support framework functions to the application layer.

Block Layer: Provides core technology functions of block chain, integrates state-secret algorithm and pluggable consensus algorithm management.

Contract layer: The middle contract layer provides the transaction layer with intelligent contract dynamic management based on Docker container, the reliability control mechanism of transaction execution and the asynchronous conversion mechanism of transaction requests.

Infrastructure layer: Provide basic services of block chain.

Matching tools: Provide a variety of product support tools, such as development, testing, deployment, operation and maintenance of life cycle supporting tools.

6.2 Encryption Algorithms

The encryption algorithm of TGC is based on elliptic curve cryptography (ECC), an evolutionary algorithm for establishing public key cryptography, which is based on elliptic curve mathematics. The main advantage of ECC is that in some cases it uses smaller keys than other methods, such as RSA encryption algorithms, to provide comparable or higher levels of security. Another advantage of ECC is that it can define bilinear mappings between groups, based on Weil pairs or Tate pairs; bilinear mappings have found many applications in cryptography, such as identity-based encryption.

ECC is widely considered to be the most powerful asymmetric algorithm for a given key length, so it can be very useful in connection with very tight bandwidth requirements.

ECC has high security. It has been studied that the 160-bit elliptic key is the same as the 1024-bit RSA key. At the same time, ECC algorithm is faster than RSA and DSA in the speed of encryption and decryption of private key, and has the characteristics of small storage space and low bandwidth requirement.

6.3 DAPP Enablation

Only by allowing developers to live and work in the block chain network, will DAPP developers follow suit. If we build a good ecological environment, there will be magnetic field effect.

TCC public chain will continue to self-repair and evolve, which is the key to stand out in the competition of future public chain. At the same time, the diversification of DAPP choices can create more valuable de-centralized applications for ordinary users, and ensure that the introduced DAPP can cover more fields and meet different levels of interest in the user layer.

In addition, transparent screening mechanism can attract more interested developers to join, and strict screening will ensure the quality of the whole ontology ecological DAPP, while avoiding vicious competition from similar projects. In terms of specific implementation, the screening criteria will be published open source, the centralized scoring system will be adopted in the early stage, and user voting and peer evaluation will be introduced in the later stage.

After DAPP was successfully stationed, it did not interfere too much with the specific details of its operation. Similar to Wechat's decentralization of small program developers, ordinary users can enjoy endless convenience in small programs. Eventually, the entrance of these programs is still Wechat. TGC will

adopt a similar management approach. But not to interfere does not mean that regardless of management and decentralization, to achieve early announcement, violations must be investigated, so as to ensure the legitimate interests of other DAPP developers.

In addition to the official technical support, development incentive support and publicity and promotion help of TGC, TGC also provides information sharing services. On the basis of its own ecology, it provides project developers with user portraits, Market Research and analysis, preference trend analysis and other services using the big data of its own platform.

How to give the project side sustained incentive beyond the interests, TGC will build the project side - TGC - the project side's self-cycling ecological chain. For example, an ontology-based social application can be implanted into the game DAPP as a support application for screen and private trust. On the contrary, ordinary users can get corresponding token rewards when they play social applications: this is a strong symbiotic relationship.

This self-recycling ecological chain can benefit both TGC and project owners, increase user stickiness, enhance user experience, and open up more incremental markets.

7. Future prospects

Futurologist Kurzweil believes that progress over the past 100 years of the 20th century can be achieved at the rate of 2000, which is five times the average rate of development in the 20th century. He believes that it will take only 14 years from 2000 to achieve 100 years of progress in the whole 20th century, and then seven years (2021) from 2014 to achieve another 100 years of progress in the 20th century. According to the law of accelerated return, Kurzweil believes that human progress in the 21st century will be 1000 times that of the 20th century.

Artificial intelligence is not far from us. Because we are now in a world full of weak AI. Weak AI is machine intelligence equal to or more than human intelligence/efficiency in specific fields. Some common examples are that there are many weak AI systems in automobiles, ranging from computers controlling anti-lock braking systems to computers controlling gasoline injection parameters. Driverless vehicles include a lot of weak AI.

There is still a long way to go for human beings on the road to strong artificial intelligence. Block chains are borderless technologies and will play an important role in this process.

Artificial intelligence and machine learning need to scientifically mine data. Turing Logic TGC will systematically and directionally extract training data in the process of data mining to carry out research and practice in the field of artificial intelligence. Turing logic is not omnipotent, but it will continue to promote the exploration of artificial intelligence in a way peculiar to the public chain.