Globalvillage ecosystem

A Trustworthy, Distributed Global Village Ecological Network

Project White Paper V4.0.1

G V E Foundation

December 2017

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Not everyone can participate in the project: Not everyone can participate in GVE and the GV Eco network system. Participants may need to complete a series of steps, including providing identifying information and documents.

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Points to note with regards to Globalvillage Token: GV Eco Token" or "GVE" is the cryptographic token

of the GV Eco blockchain network.

GVE is not a virtual currency: Before this document has been completed, GVE cannot be used in exchanges for goods, services, or transactions; neither can it be used outside the GVE Eco Token network.

GVE is not an investment product: No one can guarantee, and there is no reason to believe, that the GVE you have will increase in value; the risk exists that it may even reduce in value.

GVE is not proof of ownership or control rights: Owning GVE does not confer ownership or stocks in Cuncunle and the GV Eco network system; neither does it confer the right to directly control Cuncunle or GV Eco, or to make any decisions for them.

Reminders of the risks associated with GV EcoToken

Risks created by incorrect behavior on the part of the user

1) **Risks created by losing the private key:**

   Before GVE is distributed to participants, they will receive a public-key account linked to GVE. The GVE public-key account can be entered with the private key, which is randomly assigned to participants. If this private key is forgotten, participants may lose their GVE in the associated public-key account. We recommend that participants practice how to operate the system so that they will be able to safely back up their private key on multiple local devices, preferably in a non-networked environment.

2) **Risks created by the private key being leaked to a third party:**

   Any third-party individuals or organizations which have obtained the private key of participants' public-key accounts may dispose of the GVE in the associated account. We recommend that participants protect their relevant devices to prevent unauthorized access and reduce the risk.

3) **Risks that may occur as a result of participating in voting:**

   GVE holders who participate in voting and engage in malicious or irresponsible voting behavior are extremely likely to lose their GVE as a result.

Risks caused by network safety while using GVE

1) **Risks associated with the Ethereum network protocol:**

   GV Eco will initially issue ERC20 tokens developed based on the Ethereum protocol; any malfunctions or unknown functions in the Ethereum protocol may cause unknown, undesirable situations to appear in GVE. Local-unit accounts on Ethereum or based on the Ethereum protocol may lose all value just like GVE. For more information on the Ethereum protocol, see: www.ethereum.org

2) **Risks of non-official substitutes for the GV Eco network:**

Since the code and protocol are open-source, after the GV Eco network system has been developed, it is extremely likely that others will copy it and set up a similar network system. The official GV Eco network system may need to compete with these plagiarized network systems; all users must bear the negative consequences that this will cause for the GV Eco network system.

3) **Risks originating from unlawful intrusion by malicious third parties**

Malicious third parties such as hackers and other groups or organizations may attempt to interfere with the development of the GV Eco network system, through methods including but not limited to the following: DDOS, Sybil, spoofing, smurfing, or attacks based on the consensus mechanism, etc.

4) **Risks caused by security flaws in the software of the basic facilities of the GV Eco network system**

As this network system is open-source, the risk exists that GV Eco staff or other third-party organizations may intentionally or unintentionally introduce bugs into the network's core systems. This will cause risks and losses to GVE.

5) **The risk that major technological breakthroughs in the field of cryptography will lead to hidden weaknesses being uncovered and exploited:**

Cryptographic technology is an important part of blockchain technology, and advances in cryptography or other high-tech advances may bring the risk of theft or loss for GVE and the GV Eco network system.

6) **The risk of a malfunction of the GV Eco network system:**

As the GW Eco network is a high-tech system, it may encounter unacceptable or unexpected network malfunctions. This may create the risk of GVE disappearing, or affecting other markets.

7) The risk that GV Eco may be subject to mining attacks because of its high value:

For many decentralized cryptographic tokens and virtual currencies, the GVE generated through the blockchain technology of the GV Eco network system may be subject to mining attacks. This is not limited to double attacks, large-pool attacks, "selfish mining" attacks, or race-condition attacks; new, unknown forms of mining attacks may appear which bring huge risks to the functioning of the GV Eco network system.

Risks created by market uncertainty

1) **The risk that the GV Eco system will have few users:**

The GV Eco system will produce appropriate value with time. If the GV Eco network system is not used by more businesses, individuals, or other organizations and cannot receive more public attention, causing it to have few users, this may limit or lower the use and value of GVE.

2) **The risk that the liquidity of GV Eco from exchanges will be insufficient:**

At the moment, transactions with GVE are not being carried out at exchanges. After transactions are opened at the exchanges, it is very likely that because these exchanges are newer and less familiar with

various laws and regulations, they are more likely to fall prey to fraud and failure than established, well-known exchanges where normal transactions are carried out with other mature virtual tokens. Problems with exchanges may result in a large proportion of GVE transactions encountering fraud or other operation-risk problems, which would reduce the value and liquidity of GVE.

3) **The risk that the development of the GVE network system may not keep up with GVE holders' expectations:** The GV Eco network system is still in the development phase and may change significantly before it is formally released to the public. Participants' expectations of GVE or the network system may be different from at the actual time of release, and changes in the actual situation surrounding design and execution may mean that release cannot happen according to plan.

4) **The risk that participants will not be able to receive insurance when facing losses:** GVE token public-key accounts are different from bank accounts, accounts with other financial institutions, or other social-network accounts; the GV Eco foundation does not generally purchase insurance for its network system. If GVE is lost or the network system loses its value, there will be no insurance organization that can provide damage-claiming services for GVE holders.

5) **The risk that the GV Eco project may disband:** The GV Eco project may be affected by various factors, such as crashes in the value of bitcoin or Ethereum, business failures, or damages for intellectual property rights, that may cause it to be unable to continue operating. This may mean that the project cannot be successfully released, or that the team must disband.

6) **The risks associated with regulatory policies by the judicial or executive departments of relevant regions and countries:** At the moment, blockchain technology has received support and approval around the world, but has also been subject to close review by various regulatory departments. The functions of GVE and the GV Eco network may be affected by some of these regulatory policies, including but not limited to restrictions on use or possession of GVE digital tokens; this may hinder or restrict the development of the GV Eco network system.

7) **Other unknown risks**: Blockchain technology and the corresponding digital token technology is relatively new and not yet fully tested; as such, more risks may appear that cannot be predicted, and which may appear in many forms.

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1 Summary of the Globalvillage Ecosystem

Globalvillage Ecosystem (abbreviated as GV Eco; the Foundation is abbreviated as the GVE Foundation) is a trustworthy, distributed global village ecological network developed and completed by a blockchain technology team from the US, China, and Singapore. As the country with the largest rural population in the world and the most progress in networking, China is our first choice for the implementation of the project.

After carrying out investigations and research into agriculture-related Internet businesses around the world, the GVE Foundation decided to comprehensively cooperate with China's Cuncunle, and finally chose Cuncunle's business scene to be the first to use this system to create a new ecosystem in which blockchains and villages are combined.

1.1 Globalvillage Ecosystem—a trustworthy, distributed global village blockchain

The GVE Foundation is a non-profit corporation registered in Singapore. Its chief mission is to develop and research blockchain solutions that can be used for a global village ecosystem, and to provide funding and technological support for the development and maintenance of blockchain technology and the operation of ecosystems for related businesses.

The GV Eco team is an internationalized blockchain technology and operation team comprising members from countries such as China and the US. Through research into the social environment of villages in multiple countries, the team discovered that villages and cities have major differences. Villages are mainly acquaintance societies which have gradually formed semi-closed social

networks characterized by blood relations, human relationships, and the pattern of difference sequence. These kinds of social relationships have limited the development of villages, as well as curbed their economic growth.

It is precisely those limitations of village society that the GVE Foundation saw when it decided to start off with the establishment and maintenance of village networks, in order to gradually set up a distributed, coordinated blockchain network based in villages around the world, with peer-to-peer task allocation and reliable identity verification.

In the GV Eco blockchain network, the distributed task-allocation system uses task-confirmation certificates to record the execution and feedback of tasks on the chain, and the service system uses rights certificates to record the confirmation and reception of service on the blockchain. Furthermore, a reliable, smart contract and transaction system uses transaction and exchange certificates to record exchanges of property on the chain.

The credibility of the GV Eco network ecosystem comes from the transparency of its event records; the key to this is that the maintenance of the global network system is based on a distributed form of operation, creating a globalized applied ecology. During the distributed operation of the network system, members who are carrying out maintenance on the network system can use GV Eco's digital service layer to freely, efficiently, and transparently participate in verification and assessment work regarding task allocation, task execution, content transmission, and message and transaction confirmation.

1.2 Cuncunle—a crowdsourced village platform based on the acquaintance society

Through research into popular service platforms in villages and their peripheries, the GV Eco team discovered that the business model of Cuncunle, which is rooted in Chinese village society, is highly compatible with Globalvillage's development mission and design ideals. Since it was founded in 2009, Cuncunle has consistently devoted its effort to researching and promoting the development of new ways of life in villages, and has creatively brought into existence a "new ecology of village e-commerce based on the acquaintance society". Cuncunle has integrated various resources available in villages, provided a helping hand to the economic development of villages and towns, set up village information networks, and become an Internet platform for villages with wide coverage and high potential for penetration and growth.

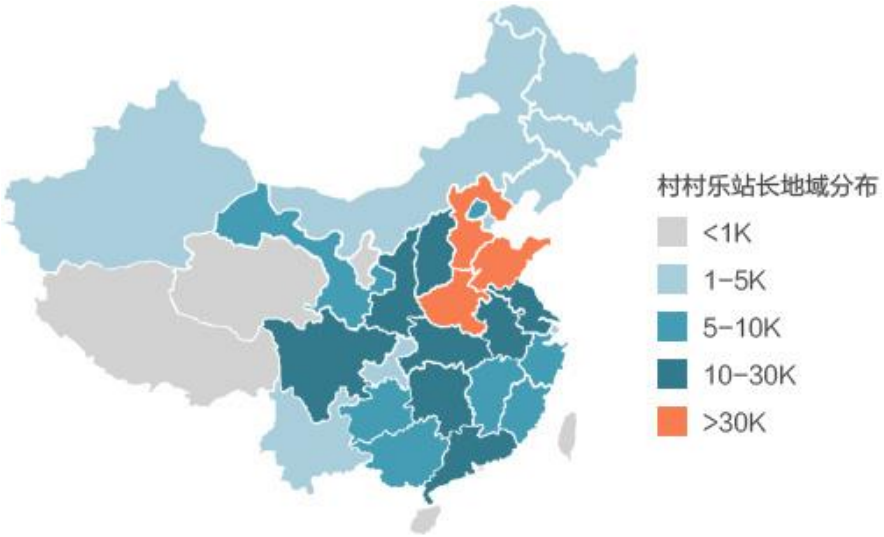


Figure 1: Distribution of Cuncunle stationmasters by region

After eight years of development, Cuncunle's network service has expanded to cover over 600,000 administrative villages in China, and the platform has over 15 million members. Cuncunle has basically realized a membership coverage of 80% across villages and ensured that each village has a stationmaster; it has almost 350,000 active stationmasters, and over 4 million offline personnel capable of action, thus activating the new ecology of village e-commerce. The distinguishing trait of Cuncunle is that it has "people in the villages"; the platform makes good use of its advantages and draws support from its huge numbers of village stationmasters to connect resources in cities in villages, and uses its online crowdsourcing model to guide villagers to create wealth, becoming a direct bridge between city and village economies.

Cuncunle has followed a different train of thought from other platforms in developing village markets. In 2010, Cuncunle started emulating alumni websites to create BBS forums—"village-friend websites" based on villages' acquaintance societies. Within a year, the members were numbered in the millions. In 2014, it created a portal website based on village

heads; by this time, over 10 million users and 20,000 village heads had registered. Cuncunle plans to set up a new village service platform in 2018, and predicts that the number of registered users will exceed 20 million.

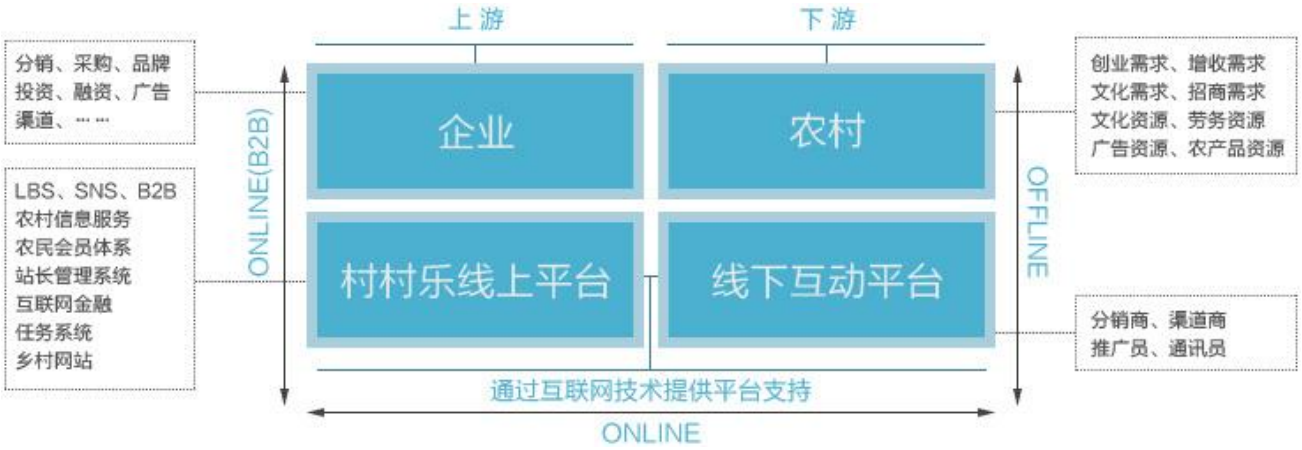


Figure 2: Cuncunle's crowdsourcing model

The huge populations of villages' acquaintance societies enabled Cuncunle to grow quickly, and many commercial demands began to emerge on the Cuncunle platform; from 2013 and 2014, various forms of publicity such as wall-painting or movies being taken into the villages rapidly developed on the Cuncunle platform through the online crowdsourcing model, and were also able to make profit. In the second half of 2015, Cuncunle's chemical fertilizer business arose at an opportune time; as the largest cost in crop farming, chemical fertilizer is a product with inelastic demand. Through its unique e-commerce model that combines crowdsourcing with small-batch group purchases, Cuncunle replaced multiple levels of rural-capital agents, and has had a horizontal price advantage within the industry ever since. In 2016, Cuncunle expanded its advertisement business in rural media into an "integrated marketing path in villages", and had major breakthroughs in all its various industries. From simple advertising revenue (over 20 types of advertising, such as wall-painting, storefront displays, and in-store posters), to "advertising +

on-the-ground promotion + sales and rebates", its media business has obtained the diversified profits of integrated marketing. On 11.11 in 2016, Cuncunle took Taobao orders for wall-painting advertisements from villages throughout the country, and later won the tender for the New Year's shopping festival as well. By this time, wall-painting, storefront signboards and other businesses had become a standardized product and service for marketing and promotion in village markets. Directly connected with Alibaba, JD.com. Xiaomi and other platforms with large amounts of type-B resources, this let Cuncunle come into contact with advanced resources over a large surface area and opened up a new model, fulfilling the demands of many manufacturers for accurate positioning, diversification, and customization during the marketing process in village markets.

Figure 3: Andy Hu giving a talk at the Harvard Business School

In 2016 and 2017, Cuncunle was selected into the Harvard Business School's collection of case studies on Chinese businesses, specifically on the Internet and the three rural problems. Founder Andy Hu visited the Harvard Business School twice to share Cuncunle's real-life experience in endowing China's villages with greater capacity through the Internet.

1.3 GV Eco's opportunities, visions, and plans

As a non-profit corporation, GVE is the core of the entire Globalvillage Ecosystem network system. The reason it devotes effort to developing a blockchain network ecosystem based in villages is that the GVE Foundation has seen the enormous rural market around the world, as well as the huge population with great development potential covered by this market.

Taking a bird's-eye view of historical development in societies around the world, the "three rural issues"—centered on the agricultural industry, rural villages, and peasants—have become the basis of politics, economics, culture, and education in societies around the world since agricultural societies first formed. Peasants throughout vast rural areas nurtured the whole society with the

sweat of their labor, deeply rooted in the land just like the well-developed root systems of a tree; even the tiniest root makes the most of all its power to nourish the growth of the entire tree, but the peasants themselves live in the bottom level of society. According to calculations by the World Bank, 702 million people around the world still lived in extreme poverty in 2017, and the vast majority of them were concentrated in economically underdeveloped areas such as rural villages; helping these extremely poor populations escape from poverty has become an important task for all of society. Business tycoons with responsibility around the world are all exploring this issue and making attempts; Microsoft has been actively preparing and going deep into villages and schools to try to set up high-speed Internet connections for rural villages; Alibaba has organized peasants to learn Internet technology, in order to truly help them onto the Internet, increase the productivity and efficiency of the agricultural industry, and increase the earnings of peasants.

Many of the world's poor live amidst war; some live in extreme areas with shortages of food and water, and even more are poor because of inequality in society's development. In 2006, the Chinese government formally abolished the agricultural tax, which had existed for thousands of years; this was a historic achievement that opened the battle to precisely uplift the poor. The achievements of the Chinese government over the next 10 years were impressive. In the matter of uplifting the rural poor, the Chinese government advanced the reasoning of going from transfusing to creating blood; from the government to businesses, all actively devoted themselves to the work of precisely uplifting the rural poor, and managed to bring roads, electricity, water, postal services, and the Internet to each village, creating a Chinese model of uplifting the rural poor. The work of uplifting the rural poor is an urgent issue that must be solved throughout the world; the mission of the GV Eco team is to connect villages across the world and create a trustworthy, win-win village

ecology, devoting its effort to the cause of totally freeing rural populations across the world from poverty.

The GV Eco team is devoting its effort to creating a village ecology based on globalization. Based on its thorough research on villages throughout the world, including in developed as well as developing countries, the team believes that for an important social enterprise like Globalvillage Ecosystem, the first location in which the project is to be implemented is vital. The location where the Globalvillage Ecosystem applied project can be implemented is limited by various indicators, such as the area's urbanization, economic development, transport situation, population density, and Internet penetration rate; after a strict selection and comparison process, the GV Eco team discovered that the Chinese rural market is the best choice to set up a business topology. Overall, this can be seen from the following sides:

1. Enormous population of Internet users: In 2018, the number of Internet users in China's rural areas will reach 240 million, which is more than many countries' entire populations. For China, cities and villages below third-tier will be the largest group of Internet users, and have enormous potential for development;
2. The disposable income of villagers is increasing each year: In 2016, the average disposable income of villagers in China was over 12,000 RMB per capita. The average disposable income of city and town inhabitants was 33,000 RMB, but this figure is under the circumstances of the villages not yet having obtained full development.
3. The number of online-shopping and online-payment users is increasing rapidly: In 2016, there were over 77 million online-shopping users in China, and over 62 million users who

often made payment online. This was an increase of almost 40% over the previous year, and based on predictions, both these numbers might break the 100-million mark in 2017.

4. The rural market's enormous potential for development: China's rural market for e-commerce consumption is over 10 trillion RMB, but the actual current level of consumption is below one trillion RMB.

From the points above, we can see that China's recent achievements in developing rural villages and uplifting them from poverty have been significant; how we can spread China's model of poverty-allocation to developing countries around the world is an important cause which we are actively preparing for. Furthermore, we discovered that Chinese villages were the most suitable as a site for the application of the GV Eco blockchain network ecosystem, because of their unique ecological environment; the characteristics of Chinese villages, namely the acquaintance society, the pattern of difference sequence, the society based on human relationships, and their autonomy and exclusionary nature; as well as the characteristics of consumption in villages, namely the pragmatic nature of spending, the power of public opinion, the concentrated nature of spending, and the presence of single channels. We know that China has 5,000 years' history of agriculture; the formation of these social patterns is based in deep-seated historical and social factors, and has differences from the structure of rural societies in other countries.

Looking on a world scale, the countries around China are very similar to it in terms of the structure of village society, because they have been influenced by Chinese culture; other countries have been influenced by different cultures, and exhibit vivid differences in terms of the governance of village societies. Overall, village societies are still in a half-closed state, based on the acquaintance society and human relationships, and characterized by their autonomous and

exclusionary nature. These characteristics of the ecological environment in villages bring both advantages and disadvantages to the villages' development; on one hand, the acquaintance society reduces the amount of trust capital required, but on the other hand, the existence of this acquaintance society restricts the creation and development of new consumption and marketing channels based on the Internet.

Adapting to the direction in which this era is developing, the GV Eco team is bringing together the semi-closed nature of village society and its need for poverty alleviation, and using blockchain technology to create a trustworthy, distributed crowdsourcing model and a reliable and convenient consumption model, to reduce operation costs, and to increase participation and creativity. Through this, it will bring about population return and the economic development of village society, and progressively raise the expandability and dynamism of the Globalvillage Ecosystem network system.

The Globalvillage Ecosystem blockchain network system will combine existing business models to create a trustworthy global village blockchain foundation platform, through cooperative maintenance by community members as well as an integrated marketing path. At the same time, we will use our practice on the Cuncunle platform to actively consolidate our experience of success, and progressively take our mature GV Eco ecological network system to villages around the world for application. The greatest characteristic of Cuncunle is that it goes deep into the lowest levels of village society and effectively connects each semi-closed self-organization, allowing close links and interaction to become established between ends in society. The use of blockchain technology will break the limitations of these relationships, and gradually set up a global village ecosystem based on social trust.

The establishment of the Globalvillage Ecosystem will break the walls formed because of political, economic, cultural and other reasons, take rural development models gradually formed in each country and rapidly push them to regions where they are appropriate. The effect that China's experience in precisely alleviating poverty has had on villages will quickly spread to other countries; similarly, advanced agricultural production models from the US, Israel, Germany and elsewhere will quickly arrive in other developing countries with the appropriate conditions, collaboratively realizing the total alleviation of poverty in rural societies and promoting the further development of rural economies.

2 The structure and functions of the GV Eco system

GV Eco will use new blockchain technology to design GlobalvillageChain, which is compatible with global-village business use; all business uses in the GV Eco ecosystem will be released on GlobalvillageChain. From a function-design perspective, it addresses the core of the issue and tackles the problem of trust between self-organizations formed in a semi-closed state throughout rural society, by creating a trustworthy network system between these self-organizations, while simultaneously creating a peer-to-peer distributive cooperative body between self-organizations, businesses and users, and users and other users, thus building a trans-regional task cooperation network.

Property exchanges, etc., on GlobalvillageChain will be recorded on the distributed network, which provides multi-layered and multi-item categorization during saving according to needs.

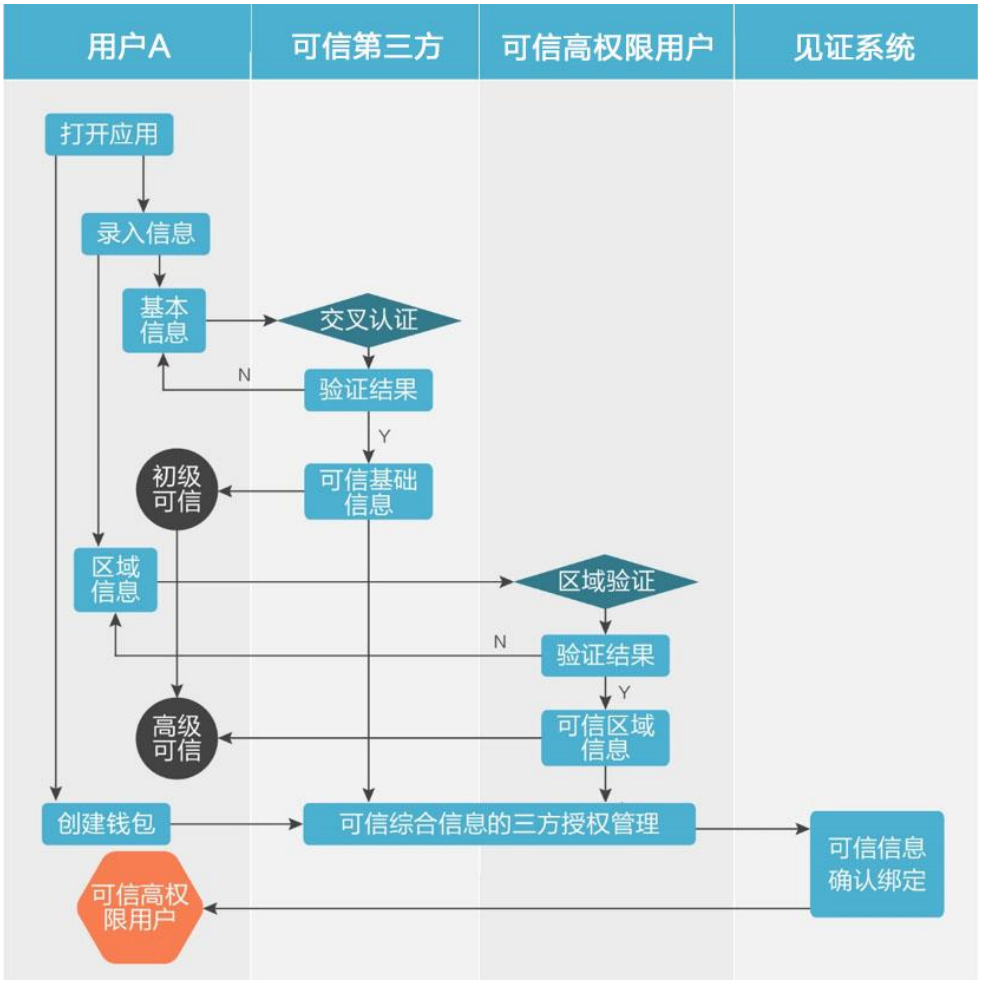
Throughout the blockchain, we will set up a multi-system distributed account function in order to gradually set up an applied system for village ecology with regional and national characteristics.

2.1 The core applied function of the GV Eco blockchain network: a trustworthy identification system

The GV Eco blockchain network starts by establishing a trustworthy blockchain-based identification system. The most crucial parts of the whole application system are the identification and verification of identity, as well as the prevention of attacks on and theft of identifying information; therefore, the identification system will be a standalone distributed account system.

The GV Eco blockchain network connects to the work environment through a public key. Users use their exclusive public and private keys to authorize third parties to use their user information to authorize the protocol to temporarily save their identifying information; then through applied systems such as Cuncunle with a real-name requirement for users, they provide effective identifying information (e.g. ID information), bank card information, telephone number information, etc. Apart from this, they must also go through anti-money laundering identity authentication and identification, as well as authorize the cross-verification of their identity and bank information. Through the blockchain network, GV Eco users can receive their exclusive public key address, and link their confirmed information with their account. It will be saved on the chain through service confirmation certification.

When GV Eco users provide distinctive personal information, the system will verify the degree to which this information matches the users' identity. After interactive confirmation by acquaintances in the same area, including confirmation by stationmasters and the confirmation of



task execution through the witness system, said information will be automatically saved on the chain.

The establishment of a trustworthy identification system creates trust and common understanding among users in the network system, clearing an important path for trans-regional communication in rural society.

图 4 可信的身份识别系统流程简图

2.2 The first-choice usage scenario for the GV Eco blockchain network: peer-to-peer task distribution

Looking at the state of economic and social development around the world, in the numerous countries that have developed from an agrarian culture, the process of urbanization and industrialization across the country has always involved sucking the blood of rural areas. It is rare and difficult for rural villages, which are at the ends of society, to be taken into account. How do we open up rural markets and promote the development of rural economies? There are many problems with completely relying on a marketization approach. The population of rural areas is very large, but the vastness of these regions has meant that the structure of human habitation is loose, forming a stark contrast with the compact societies of cities. This means that operating costs are especially high.

How do we break through this loose structure to allow cities to give back to villages through marketization, and uplift peasants from poverty to wealth, including increasing the income of non-agricultural elementary laborers? Cuncunle's model of rural crowdsourcing effectively broke through this bottleneck; through each village's stationmaster, it can directly enter the market and meet its demands. The combination of the trustworthy GV Eco blockchain network system with Cuncunle's crowdsourcing model has formed a trustworthy distributed task-distribution model that lets smart contracts work with witness rules to automatically execute, bringing about perfect peer-to-peer task distribution and breaking through the difficulties in the market created by the looseness of rural society.

Figure 5: Diagram of GV Eco's peer-to-peer task distribution model

The peer-to-peer task-distribution model includes many types; for example, Cuncunle's existing system of crowdsourcing in rural media includes offline tasks such as wall advertisements, market research, billboard advertisements, shop-window advertisements, flagpole advertisements, advertisements on vehicles, advertisements on the canopies of rural shops, county and town TVC advertisements, villagers' committee broadcasts, and town fairs. It also includes online work on the Internet, such as content creation and the pushing of advertisements.

Figure 6: Task distribution: wall advertisements

Figure 7: Task distribution: a wide variety of tasks

In the task-distribution system, the relevant applications are used to carry out task release; the contents of the release include task type, execution location, task time, task content, task reward, and the body responsible for the release. After the task has been released, the GV Eco blockchain network generates a smart contract for task distribution, in order to carry out independent management of task distribution. After the task has been completed, and the various conditions of the task-completion state have been fulfilled, the witness mechanism will be activated, the smart contract will be executed, and the reward will be given out.

When releasing and executing tasks, the task-distribution management system will introduce the “witness” and “assessor” into the system management. The witness will witness the transaction between the task releaser and the executor; after both sides have confirmed the completion of the task and gone through the witnessing process, it will be recorded on the blockchain, and the token reward will be carried out. If a conflict arises between the two sides, an assessor will be randomly

introduced through the complaint system; the assessor will carry out arbitration through voting and confirm the final result.

A comparison using the task-distribution process for wall advertisements for JD.com household appliances

1. Cuncunle's crowdsourcing model:

1) Cuncunle takes over wall-painting work from JD.com in a centralized manner, receiving a down payment

2) Cuncunle sends tasks out to each location through the stationmaster platforms it has set up

3) Cuncunle checks and accepts each of the completed tasks

4) Cuncunle submits the results of the checking process to JD.com, and JD.com verifies the state of the task execution again

5) JD.com pays Cuncunle for the tasks, and Cuncunle then pays each stationmaster

2. GV Eco's peer-to-peer task-distribution model

1) JD.com makes the task-execution request and releases it

2) Through the task request, the GV Eco system creates a smart contract for task execution

3) The platform system pushes out tasks according to the location of the smart contracts

4) A trustworthy task-executing user accepts the task, and provides feedback after executing the task

5) The task releaser and the witness judge the result of the execution

6) The result of the judgment is executed and confirmed on the GV Eco blockchain network system

Note: Throughout the entire task-distribution system, witnesses and task releasers must all hand in the prescribed amount of GVE, which will be locked through the smart contract. This is to ensure that the task-distribution system is not abused, as well as to ensure fairness, justice,

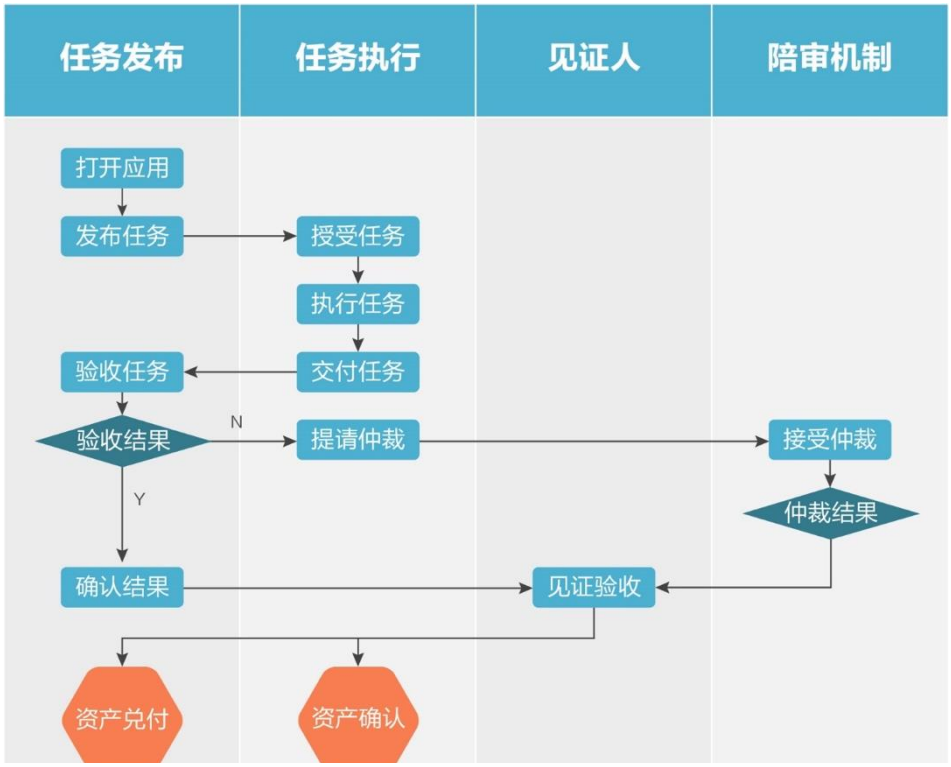


Figure 8: The stages of the peer-to-peer task distribution system

openness, and transparency.

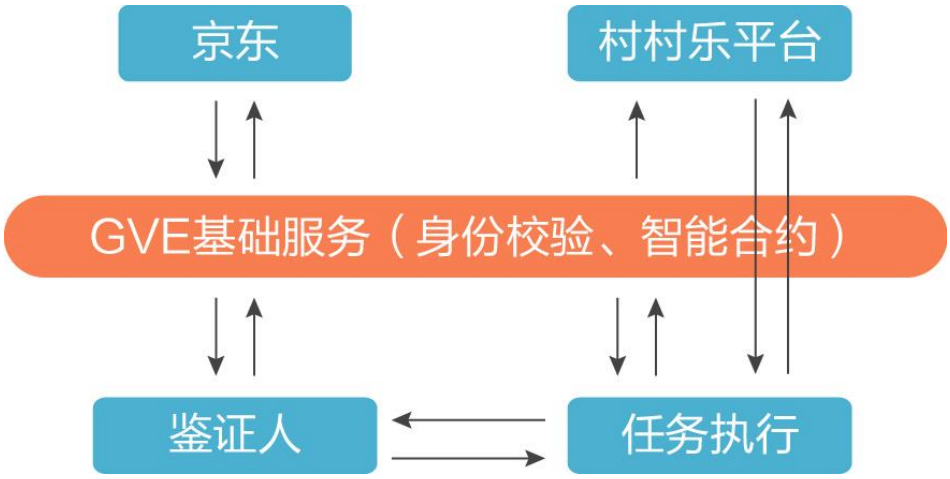


Figure 9: Peer-to-peer task distribution and execution

GV Eco's peer-to-peer task-distribution system has lowered the workload of the Cuncunle application platform, while simultaneously increasing the efficiency of task execution and allowing for direct connection between the task releaser and executor. As for the task model, it has expanded from the large-scale commercialized crowdsourcing tasks of the past to a diversified task model, in order to avoid being restricted to purely commercial types of tasks; this allows us to expand in the direction of entertainment and enjoyment.

Cuncunle's task-crowdsourcing model has successfully operated for three years; in terms of commercialized operation, it is fairly stable and mature. The use of a blockchain can build on the foundation of the existing mature model and use smart contracts to drive the operation of the entire ecosystem, turning it into a fully open ecosystem and breaking regional restrictions to create a natural global-village ecosystem. This brings about a three-in-one operation structure that combines the flow of money, goods, and information.

2.3 A trustworthy village self-organized ecosystem based on the acquaintance society

In rural areas, with which we are both familiar and unfamiliar, each village is a community in which people help each other. Our textbook impression of a village is simplicity; urbanization has trapped each individual within the boxes of each apartment building. The interpersonal network of acquaintances that was set up in traditional agrarian culture has a natural mechanism of mutual trust. The saying that “people don’t pick up lost belongings on the street, or close their doors at night” isn’t only true in utopias or the ideal society of Great Harmony; rather, this mutual trust between people has always been preserved in the simplest of villages. Another idea we might have about villages is that they are “closed”; in reality, they are not closed, but simply lack effective and reliable interaction with the outside world. Through the natural trustworthiness of blockchain technology, we can break through these walls of trust and bring about mutual trust between village self-organizations.

2.3.1 GV Eco: trustworthy, distributed network cooperation

GV Eco takes the trustworthy self-organizations based in villages and connects them to form a distributed network cooperation model.

Through the traceable MsgTx and the distributed bookkeeping model, the blockchain technology has ensured trustworthiness and prevented tampering. Distributed coordination is part of the blockchain technology; Cuncunle’s business model in the Chinese market has made excellent use of the idea of distribution by making each village’s stationmaster the communications center of

that self-organization, connecting the distributed self-organizations through the Cuncunle platform, and creating a distributed cooperative body.

The maintenance and operation of the GV Eco blockchain network system requires more people to participate in the data management, bookkeeping, and witnessing work of the entire system. The GV Eco team has combined this with Cuncunle's distributed management model; village-level trusted users, centered on self-organizations, will be able to participate in the maintenance and operation of the network. This essentially brings about distributed bookkeeping on the blockchain and allows witnessing of various transaction certificates to be saved on the network system, ensuring complete traceability and immunity to tampering.

In terms of the overall direction of the industry, the photovoltaic business is one with relatively more potential for development within the field of alternative energy. Through its extensive preparation, the Chinese photovoltaic industry has occupied the vast majority of markets throughout the world, and has also created the problem of excess production capacity. Cuncunle has seized opportunities provided by government policy to strongly promote photovoltaic energy to villages throughout the country, and the Chinese government has also provided financial and policy support. As long as the area satisfies the conditions, each household can have photovoltaic

facilities installed. This means that not only can it satisfy its own energy needs, it can also provide excess electricity to others, and can also use this excess electricity for the distributed maintenance and operation of the GV Eco blockchain syste; users who participate in witnessing and bookkeeping work will also receive the corresponding reward. Cuncunle designed this distributed cooperative model from the foundations; in this way, this type of trustworthy, distributed network cooperation system can be created, while being compatible with local policies and current conditions.

2.3.2 A content-provision platform built on a trustworthy self-organization system

Our studies of rural areas around the world have identified that from the Sinosphere to the Arab and Indian cultural spheres, each region has its own unique characteristics of rural literature; however, the ones taking the lead on culture in rural areas are usually those who are highly educated and cultured. Not only are they able to accept and effectively use the Internet, they are also opinion leaders in their villages with regards to their thoughts and emotions. Rural literature has been an important element of culture throughout thousands of years of Chinese history; from the Shijing and the Yuefu to “The Hurricane” and “White Deer Plain”, countless major figures of literature have made accomplishments here. The creation and reading of rural literature has created a unique form of social interaction; however, in recent years the urbanization of the main sites of literature creation has resulted in the decline of rural literature, and there have been no further classic literary works.

Based on a foundation of trustworthy identification and identity confirmation, the GV Eco blockchain network gives trustworthy content providers the right to create content, with the mission of encouraging rural literature to thrive and promoting the rural lifestyle. Superior created content can receive awards from readers through tokens, and content that receives likes will also be rewarded by the system; any content published on the platform will be confirmed by witnesses. Content that has received large rewards from the system will be automatically stickied and promoted, and will also be saved in the system's bank of content to ensure its original copyright.

GV Eco will also categorize content as it is distributed, in order to set up a platform where content characteristic of rural areas can be shared and distributed. Evaluations by acquaintances and the witness mechanism will prevent the release and spread of content that is illegal or that violates rules.

2.3.3 An evaluation system based on real identities

In applications related to GV Eco, only ecosystem participants who have been identified will be able to take part in relevant evaluations, such as evaluations of messages, transactions, and the release and execution of tasks.

3 The GV Eco blockchain network

The blockchain system developed by the GV Eco team uses distributed hash rates and information storage; thus, even if the centralized server encounters a malfunction, information loss will not occur, and the platform will not be forced to stop transactions because of third-party reasons. The blockchain network combines a commercial-grade smart contract layer and a system

functions layer, creating a trustworthy, traceable blockchain that cannot be tampered with. A commercial-grade rural service platform must solve the issues of high concurrency, transaction data safety, and account-settling on transactions faced by e-commerce businesses in rural supply chains; at the same time, it must also solve issues regarding the safety of identifying information, as well as authorization.

3.1 DAG technology allows for high-concurrency transactions

DAG technology can very effectively solve the problem of high concurrency on public blockchains, and has always been among the directions the blockchain technology development team has been exploring. Most blockchain technologies start by using the consensus mechanism to reduce the number of node verifications and increase the speed of block creation; consensus algorithms such as POS, DPOS and PBFT are all unable to handle high-concurrency transaction loads.

GV Eco has drawn inspiration from IOTA's DAG (directed acyclic graph) technology to solve this problem. In blockchains developed based on DAG technology, new blocks all verify and confirm their parent blocks, all the way back to the genesis block. The new blocks include their parents' hashes. When the data of each block changes, because its hash has changed, all its child blocks must be modified as well, and this modification becomes more difficult depending on level. DAG uses the rules of address-block sequencing in chains to effectively avoid the double-spending problem. At the same time, DAG technology has reduced the cost of transactions and increased the handling capacity of the entire distributed network.

The GV Eco blockchain network has been designed to use a separate system of distributed bookkeeping; through the DAG technology, when block backups are being created at each node, all that must be recorded is the block linked to each block, which successfully reduces the amount of data regarding nodes that must be stored.

3.2 The witness mechanism and the POT consensus mechanism

The entire system can be divided simply into the transaction-type distributed bookkeeping system and the taste-type distributed bookkeeping system. The blockchain developed based on DAG technology uses a different broadcast mechanism than other blockchain technologies; it must go through the witness mechanism, in order to prevent block creators from creating even higher blocks to tamper with data. The witness mechanism has drawn lessons from the DPOS consensus mechanism; users submit applications to participate in elections and pay the deposit to become a candidate for witness, and witnesses are then chosen through election. Users who are currently subject to witnessing cannot choose the list of witnesses; at the beginning, the system randomly allocates these and publishes the results. After a period of time, the users subject to witnessing will be reallocated witnesses, and all witnesses will share the transaction fees paid by the users subject to witnessing.

The system design touches on the issue of rewards for the volume of content being shared. We have drawn inspiration from the proof-of-taste consensus algorithm to give token rewards to content that has received likes; in order to prevent large shareholders from controlling rewards for content, we use an authorization proof mechanism with a real-name requirement.

3.3 Creating a commercial-grade smart contract layer

At the core of the GV Eco system are the identification-management system and the task-distribution system. The issues that must be tackled first are the protocol for temporarily saving third-party authorization information, the encryption and saving of numerical identities, as well as the authentication and invocation protocol for personal information. In the task-distribution system, these are the task-distribution and execution-confirmation protocols, the task-reward protocol, etc.

With a transaction protocol for a supply-chain system based on a system of social interaction, a payment protocol for the content-release system, as well as a reward protocol, the structure of the entire protocol system could be described as very complicated. In different commercial scenarios, different smart contracts are designed depending on the transaction partner, and the contracts are executed through the decentralized witness system. Community verification of the effectiveness of the task execution and the truth of information on the chain will be the foundation for evaluating both sides of the transaction.

During a contracted transaction, if any party has any objections, they can request arbitration for the decision to be reconsidered. Furthermore, the internal logistics system will be connected to confirm the execution state of the transaction.

3.4 The GV Eco token system

GVE (Globalvillage Ecosystem Token) is the token system for the blockchain, operating with a new digital cryptocurrency protocol. It is specifically created to be compatible with the Globalvillage ecosystem network and distributed procedures.

In the initial phase of development, GVE will release ERC20-based tokens on Ethereum and use them for GV Eco network applications. After the GV Eco system has been set up, the ERC20 tokens users hold will be exchanged to scale for new tokens on the GV Eco blockchain network, and their corresponding rights will also be transferred to the new blockchain network.

GVE has the following functions in the blockchain network:

1. To reward and encourage participants in the ecosystem to provide calculation power, in order to ensure the normal operation of the network
2. To reward ecosystem participants for value-added services they provide in transactions
3. To calculate rewards for the task system, and their corresponding commercial transaction certificates.
4. To provide system rewards to content providers who contribute content for readers.

The business scenarios of GVE tokens:

Rewards for task distribution, and contract deposits: Task release requires the creation of a smart contract for task distribution; this includes the content of the task to be distributed, a deposit to ensure the contract will be carried out, fuel, etc.;

Earnings for task executors, as well as contract deposits: Picking up a task requires the creation of a smart contract, including a deposit to ensure the contract will be carried out, fuel, and earnings;

Witnesses: They verify the completion state of the distributed task, and receive earnings

Participation certification for ecosystem participants: Only holders of GVE tokens have the right to participate in the ecosystem, including community management, task release, witnessing, social interaction, and e-commerce.

Distributed cooperation, remuneration, and promotion—as long as it is based on the GV Eco blockchain network system, it requires GVE for distribution and the settling of accounts.

From the perspective of token design, these tokens are mainly to be used on rural commerce platforms; because of the decentralized network system, the loss of private keys will mean that many tokens will not be able to circulate in the system, causing the entire token system to enter a state of deflation. In terms of the use of currency, severe deflation is disadvantageous for the development of commercial systems. When designing the system, in order to meet the demands of users in the ten millions, we decided to release one billion GVE on a one-time basis when the token is first set up; after the system is formally online for use, the token system will be in a state of slight inflation. The GVE, the token of the GV Eco system, will be released at a rate that produces 4% inflation every year, and will primarily enter the market through rewards for content creation; the upper limit for the total number of tokens is 10 billion.

4 GVE Foundation rights

4.1 The help the Foundation is providing to commerce promotion

The existence of the Globalvillage Foundation is founded on the authorization of community members. The Foundation will assist our partners who have worked with us in advancing commerce in relevant areas (these partners include service providers, node-information providers, providers of hash rates, market operators, businesses, and client-side users)

The Foundation will exist as a non-profit fund-management organization that maintains the normal operation of the entire system. As the body with the highest authority, the community will use voting mechanisms to participate in this management.

4.2 The missions of the GVE Foundation

1、To fairly use the authority conferred upon it by the community, and carry out commercialization work.

2、The Foundation is a non-profit organization, and does not participate in actual commercial behavior.

3、The Foundation will be managed strictly, and will comply with the relevant requests regarding the commercialization operations of GVE, as well as resource distribution

4.3 The decision-making mechanisms of the GVE Foundation

The GVE Foundation is the system with the highest authority; it is formed by the community of GVE-holding users. Community members can participate in voting on major issues in the community, but disputes regarding commercial actions cannot be handled through community voting.

Major issues in the community only include incidents that affect the direction of technological development in the community, the community-management mechanisms, the use of Foundation funds, as well as movement of personnel.

5 The peripheral ecosystem of GV Eco

5.1 GVE's trading liquidity

GVE will be traded at exchanges. For GVE, this solves the pricing issue, and allows users with relevant applications to conveniently obtain GVE. Users who hold GVE will be able to exercise the corresponding community rights and commercial functions.

5.2 GVE digital asset management app

The GVE digital asset management app will be an important tool for users to verify and take care of their personal digital assets and personal information. On the app, users will be able to create new accounts, transfer GVE, insert and remove their private keys, and check their GVE use and transaction records.

Every wallet user will have access to a human-based method of management. Apart from having a randomly allocated wallet as usual, they will also have the ability to witness and retrieve their address in the community after they have linked their personal information to it.

5.3 GVE's integrated app

The integrated app is an extended service platform for the wallet app. On the app, users will be able to carry out GVE transactions, as well as functions such as identity verifications, task distribution, witnessing functions, content release, and advertisement release.

5.4 A trustworthy, distributed task-distribution and execution app

After verifying their identity and receiving wallet authorization, users will be able to accept and release tasks on said app, as well as release content, request arbitration, etc.

6 The GV Eco team

6.1 The advantages of GV Eco

The main members of the GV Eco team have had many years of experience in the application of commerce in rural communities, and have original understandings of the social and economic ways of life in rural areas. With regards to blockchain technology, the main technological personnel on the team have plenty of real-life experience in the application of blockchain technology in the commercial field.

6.2 The GV Eco team

The founding members and their experience is as follows:

Andy Hu

GV Eco founder, serial entrepreneur, angel investor, with 20 years of employment and investment experience in the Internet. He has a deep understanding of the Internet and of the three rural issues, and has uniquely created an online crowdsourcing model based in the geographical location of the lowest economic rung. Thus, a promotion company for counties and villages was born with the broadest coverage and the most influence in China, and was included in the case study of the Harvard Business School for two consecutive years.

Mark Brinkerhoff

GV Eco founder, entrepreneurship consultant in the US, as well as an expert on contemporary communication strategies with mature solutions in fields such as public relations, maintaining good relations with partners, and creating a positive brand image among consumers. At the same time, Brinkerhoff has over 10 years of experience in the result-driven field of public relations, and has a leading position in promoting market development through professional creativity, innovating new ways to spread brands, as well as how new companies can rapidly develop, particularly in the area of consumer technology and science.

Zero Gao

GV Eco founder, serial entrepreneur, deputy head of the International Blockchain Application Federation, secretary-general of the Alliance for the Promotion of Trust on the Chinese Internet; formerly deputy head of the Center for the Evaluation of Trust on the Chinese Internet; formerly deputy director-general of TMT ChinaLabs, China's top cyberspace think tank. He is an Internet veteran and the writer of a column on technology.

Yang Zhigang

GV Eco founder, has an MBA from the Chinese University of Hong Kong, created Fetion at China Mobile and oversaw the number of users breaking the 10-million market. He was among the core product inspectors in the early phase of Alibaba, was responsible for Taobao's core business, and nurtured dozens of product executives for Alibaba. He was one of the founders of Taobao Wireless and was responsible for the business of Taobao's wireless products for the first two years, such as the first Taobao phones, the Lingsu and Wushuang. He was also the founder of the first-generation Cloudphone.

GV Eco consultant team and angel investors:

Lucas Lu

Equity investor, project angel investor. In 2005, he obtained his PhD in particle physics from Southern Methodist University. When he was on a nuclear research team in Europe, he took part in theoretical and experimental research into the Higgs boson. Dr Lucas Lu was formerly the co-founder and chief technology officer at Light in the Box, a listed company on the New York Stock Exchange. Before that, he was the first general manager of the action platform at Alibaba's Taobao, as well as the general manager of another work unit within Alibaba. In 2014, Lucas started 5miles, which was selected as among America's top 10 e-commerce businesses in 2017. In 2017, Lucas started the Cybermiles blockchain project, which became the first public chain on the e-commerce system.

Zhang Yangbin

Founder and CEO of Coinbene, which reached 70,000 users within two days; former general manager of the business department of OKCoin, a digital exchange platform; former high-level executive at Baidu, and built the Baidu real-estate platform; formerly the first head of products at Meituan Takeout, and built the framework for Meituan takeout products; formerly the chief product inspector at Baisibudejie, where he oversaw the number of users going from 0 to 50 million.

Frank Lee

Graduated from Tsinghua University with a bachelor's degree in electrical engineering. GVE Foundation consultant, angel investor and serial entrepreneur, founder and partner at many companies. The first producer of Ltc ASIC mining machines.

Tian Hongfei

Partner at Green Pine Capital Partners, with a master's degree from MIT. Formerly employed at the Susquehanna International Group (SIG) as a partner. Mr Tian Hongfei has over 15 years of work experience in the fields of e-commerce and Internet safety; his work has extended to high-tech industries and investment banks in Silicon Valley, Germany, and China.

Aliaksandr Zahatski

icodashboard consultant who once led the development of all Exscudo services and the website interface. Before joining Exscudo, he was the head of information at a major electronics company. He has extensive experience developing web services for different types of companies, from huge IT companies to local businesses. At the same time, Aliaksandr also volunteers for the GitHub community, and has nearly 10 years' experience sharing open-source code.

Michael Gehlert

Consultant with Rocket ICO, a startup that was the first in the world to carry out investment using cryptocurrency. Cryptography expert and the founder of the CoffeeYourlife brand, as well as the author of a German research report entitled "The Effect of the Internet on the Search for and Selection of Lawyers". He founded an office and social-networking platform for lawyers, and has extensive real-life experience in the field of digital cryptocurrency investment and technology development.

Cuncunle Timeline:

2009: Cuncunle was formally registered and founded

2010: Cuncunle's registered members exceed one million

2012: Cuncunle's rural media is screened 3.2 million times in 55 villages in 30 provinces across the country

2014: "The number of registered members on Cuncunle's website exceeds 10 million; Cuncunle is praised as "the country's biggest wall-painting company" by the media

2015: Cuncunle was awarded the 2015 Award for Creative Businesses on the Chinese Internet

The rural Internet finance business "Cuncunrong" comes online

The rural e-commerce startup platform comes online, advancing into telephone bills, baijiu and 3C products (computer, communication, and consumer electronics)

5,000 Cuncunle fairs are held

Cuncunle signs agreements of strategic cooperation with the local governments of Henan, Shandong, Jiangsu, Shaanxi, etc.

2016: Cuncunle's founder Andy Hu is selected as one of China's 10 great economic figures of 2015

Cuncunle is selected as one of the 100 top creative companies on the Chinese Internet

Cuncunle's business model is selected as a classic case study by the Harvard Business School