



GreenPower.Stream

-A Protocol of Green Power

Table of contents

The philosophy of liquidity.....	3
Market dilemma.....	4
The enlightenment from European power grid.....	6
GreenPower.Stream.....	8
A protocol of green power.....	8
GPS intelligent microgrid and mining machine.....	9
GPS mining machine.....	10
Difficulty of grid connection.....	10
GPS double-layer mining machine mechanism.....	11
GPS financing market.....	12
GPS energy P2P market.....	14
Realization and purchase.....	15
Energy and derivatives trading.....	16
Coupling convergence.....	17
GPS Green Certificate P2P Trading Market.....	18
Green certificate system.....	18
Tracking system.....	19
Design of the GPSChain.....	20
PoGEC+DPOS multi-level mining consensus mechanism.....	22
Energy production signifying mining PoGEC.....	22
Ledger layer,contract layer and application layer.....	24
Smart Contract.....	24
Oracle.....	25
Decentralized exchange (P2P)	25
Cross-chain relay protocol.....	25
GPS token economy.....	25
GPSU distribution rules.....	27
Usage of raised funds.....	28
Route map.....	29
Core team.....	30
Introduction to the GPSChain Foundation.....	32
Risk disclosure.....	32



The philosophy of Flow

Why can the wind sway without bounds, and the water flow freely? Nevertheless, the electric charges, being able to stream freely, are constrained to the concentrated power grid.

By looking back into the technological advancements over the last century, we can find that many technological developments work to make the world stream faster. For example, computers, the internet, finance, and the industry of transportation, they help to speed up the stream of the world in the aspects of physics, information, prices, or values. In 2008, the Bitcoin was introduced to the world, and then the Blockchain was further derived. They both provide an incomparable liquidity of values.

However, as one of the most important components of the world, the framework of the power grid is almost the same, in essence, with the one when it was firstly invented. The design is based on a concentrated structure, which means that several large-scale power stations generate electricity, and the power grid help to transport to users, who are hundreds or thousands of kilometers away. But as to the users, their voices are extremely limited in front of the tremendous power grids. The system of power grid can be described as one of the systems which are lacking information reforms to the most extent.

The industry of power presents a typical economic instance of tragedy of the commons. At the early stage, heavy cost must be invested to construct the power grid, which makes the government have to take the responsibility to maintain the common wealth. But the low efficiency of the government has resulted in a lack of liquidity, which becomes the reality we have to confront.



However, at the age of Blockchain, we can make good use of the technology to solve this tragedy of the commons, and immit incomparable liquidity to this traditional industry which has been solidified.

Tragedy of the commons: On a public grassland without property rights, as a rational person, every shepherd wants to maximize his own income. On this public grassland, each additional sheep has two consequences: one is to increase the income of one sheep; the other is to increase the burden to the grass, and it is possible to overgraze the grass. After thinking, the shepherd may decide to increase the number of herds regardless of the ability of the grass to bear. Then he will increase his income due to the increase of sheep. Taking it profitable, many shepherds will join the ranks. Due to the unrestricted entry of the flock, the pasture will be overused, and the situation of the grassland will be deteriorated rapidly. That is how the tragedy occurs.

Market dilemma

Despite the proven power technology, complex mesh topology and backup equipment, the centralized grid structure is still inadequate in terms of systematic flexibility and reliability. In the centralized power grid structure, the monitoring and control regulation system is relatively weak at the distribution network level, not to mention the individual user level. Therefore, this central network model fundamentally lacks necessary intelligent control and managing ability for the user side. Secondly, the changes in the power generation side and the power consumption side also bring huge challenges to the power grid, such as large-scale grid connection of new energy sources, electric vehicles, DC power supplies or loads, etc. These factors were not fully anticipated when the power grid was originally designed. Negative consequences caused by this situation have already appeared.

Nowadays, the traditional power grid faces the following issues:



1. The traditional electricity generation process, based on energy consumption, generates serious polluting problems . Each year, 20 billion tons of carbon dioxide are generated, and the amount is to continuously increase to aggravate pollution to the environment.

2. The monopoly of traditional centralized power stations makes it impossible to accurately adjust the power supply according to the regional dynamic demand. It can only meet the needs of users by building power grids and transmitting through long distances, but power wastes during the transmitting process are extremely serious.

3. The development of distributed power generation: In the coming decade, photovoltaic power generation will increase from 1% to 30%, through technological reform and development and progressive cost reduction. In some European countries, the proportion of solar power generation has exceeded 50% of the country's total power generation, becoming the main source of energy. The development of distributed power generation brings micro power grid and virtual power station into reality, and how to integrate them with the main grid leads to a series of problems.

4. Across the world, especially in China, Asia, due to over-investment and difficulties in transmitting power to the outer grid, the phenomenon of abandoning light and electricity is very serious. In 2017, China abandoned 7.3 billion kWh of light, and it is still increasing every year. The proportion of light and electricity abandonment is more than 13% on average, and large amount of energy is wasted.

5. Ever-growing demand for electricity: The global electricity consumption will quadruple over the next 20 years. If electricity prices are assumed to rise at the current level each year, after 20 years, the price will be 3.2 times higher. Due to the urgent demand for electricity across the world, there is a strong need for distributed virtual power plants with low costs.

6. The information island in the power industry is serious, and the power companies



are facing huge difficulties to finance.

All of the above issues ultimately lead to the essential problem , that is how to get higher liquidity for power assets. In this situation, the supply and demand of the market can get balanced. The peaks and valleys of power load can integrate. And the market prices may converge.

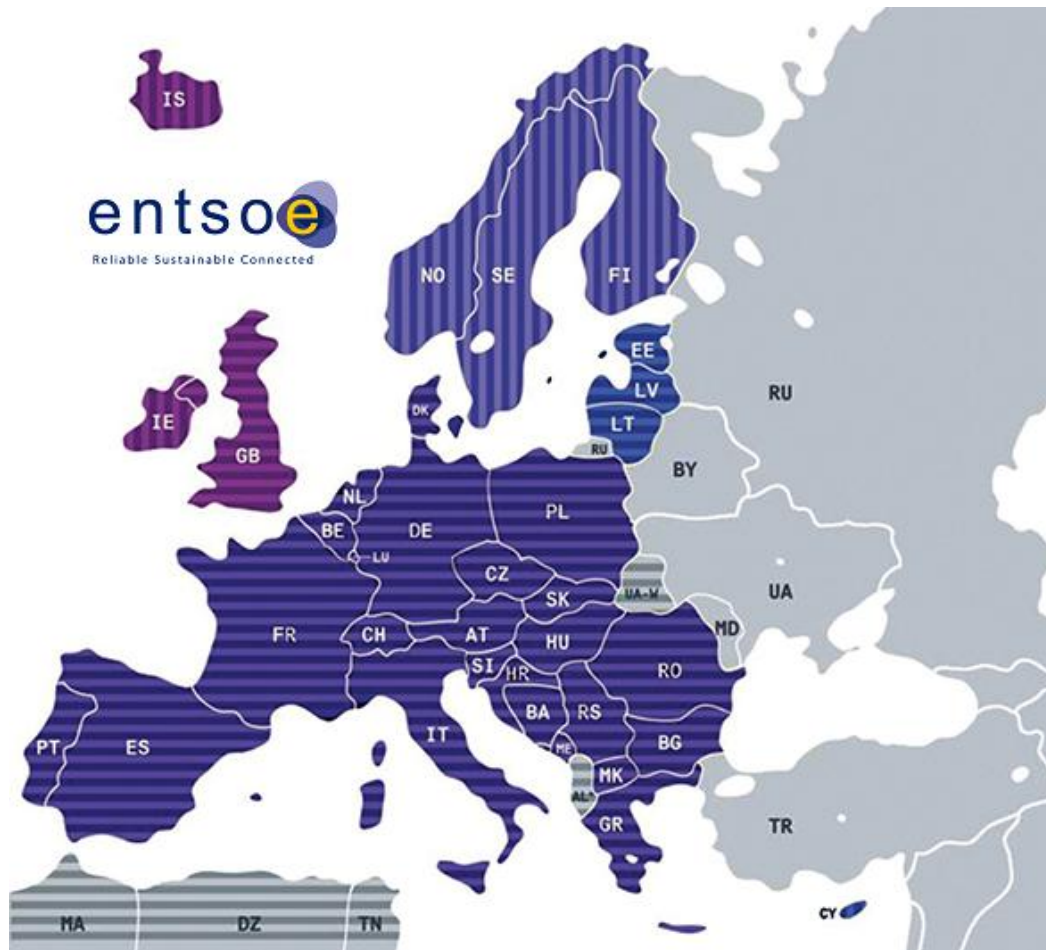
The enlightenment from European power grid

Concerning the existing constructions of power systems in countries around the world, there are two typical representatives.

One is a national power grid like the one in China. It can be said that the largest single grid system of the solar system is in China. The chief technical engineer of China Power Grid has designed the most complex and efficient grid in the world. This grid is connected to more than 400 million households of 1.38 billion people in China, and it crosses all the land from the cold to the tropics. It has to be said that this is an industrial miracle. However, in such a power network, users do not have bargaining power and have to accept the nationally unified price of electricity and getting connected to the grid.

The other is a highly fragmented and market-oriented interconnected power grid, such as the European power grid. From the start of the three-country market coupling of Dutch, Belgian and French in 2006, to the current unified European Union power grid. In this grid, there are power producers, grid operators (transmission system operator TSO, distribution system operator DSO), grid customers, balance groups, backup power suppliers, Federal Network Administration, etc. These institutions participate in the operation of the entire grid in a market-oriented way. Thanks to the interconnection of the European power grid and open market, Vndebron.nl, an innovative power trader based on the Internet, can emerge.





Entso-e

It can be said that the EU grid has taken a big step towards the marketization of the power industry, but this is not enough. The transnational power grid in Europe is the result of political and economic integration and the inevitable orientation of the European energy structure. Due to this particular condition, there is no possibility to replicate the same model in other countries.

For these scattered power producers and users, they need further solutions. GreenPower.Stream is coming into being.



GreenPower.Stream

A protocol of green power

Based on the enlightenment from the marketization of the EU's large power grid and the development of Blockchain technology, we developed GreenPower.Stream (GPS), to make the power industry of more liquidity.

The GPS Blockchain platform is established to achieve efficient energy circulation.

GPS provides an open and distributed energy Blockchain platform where all energy resources, especially distributed new energy resources, can be connected to their GPS grids to get the most liquidity of their power assets.

The GPS platform can provide three major liquidity markets for energy:

1. GPS financial market: financing of power generation assets, debt and property rights transactions
2. GPS energy P2P trading market
3. GPS Green Card P2P Trading Market

The Blockchain intelligent microgrid interconnected by the GPS platform can achieve:

1. Supporting distributed power generation of various new energy resources
2. Quick to get isolated, with no influence to the main power grid
3. Being able to get connected or isolated to the power grid, plug and play, seamless switching
4. With a storage system, supporting shifting peaks and filling valleys
5. High reliability power supply, safe and stable intelligent micro network
6. Efficient energy management to improve energy efficiency
7. Supporting multi-level intelligent microgrid
8. Adapting to existing power management systems in various countries
9. Consumption of the nearest to improve energy efficiency

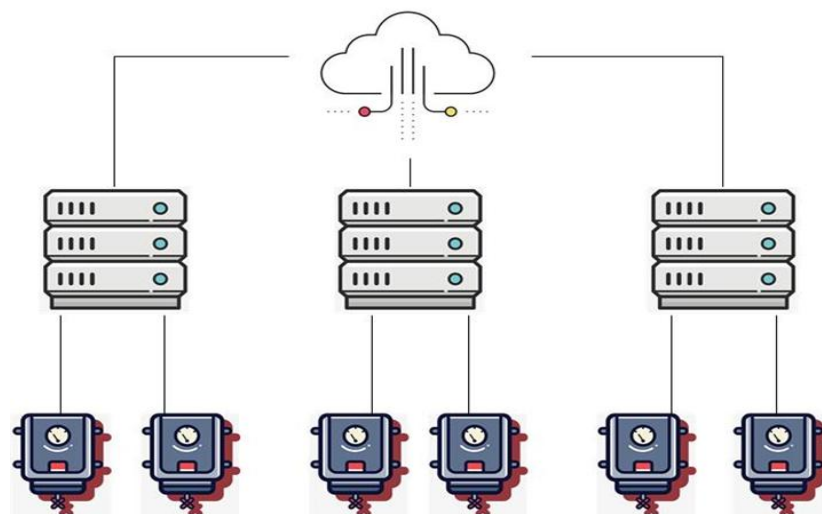


The Blockchain intelligent microgrid interconnected by the GPS platform has the following characteristics:

1. Monitorable- Adopting advanced measurement and sensing technology
2. Predictable - Reasonable prediction and distribution of power through model simulation and flow analysis
3. Controllable - Effective control to the monitoring status
4. Compatible - Getting access to distributed power generation, adaptive processing technology
5. Real-time analysis - Upgrading from data to information, optimizing operation mode

GPS intelligent microgrid and mining machine

Due to limitations of hardware in real life, the circulation of electrical energy must go through physical carriers, and it is unrealistic to reconstruct a new physical grid for GPS. GPS will open GPS.Protocol to encourage single microgrid to connect to the GPS platform by connecting GPS mining machine (smart meter supporting GPS.Protocol), and form a new distributed power grid through the connection of nodes.



GPS Smart Grid



GPS mining machine

The GPS mining machine is a smart meter that integrates the GPS core Blockchain algorithm.

GPS mining machine, including the following technical features:

1. Smart meter
2. Automatic meter reading management system
3. Interactive distribution energy network
4. High voltage DC line
5. Dynamic power transmission limit technology
6. Solar power forecasting technology
7. Battery technology

Difficulty of grid connection

From a technical point of view, various new energy power generation equipment, such as photovoltaic generators, do not have the ability to directly integrate into the main power grid. Even in Germany, where the new energy law EEG has been in existence for nearly 14 years, the process for distributed PV grid to get connected has brought considerable difficulties and extra work to TSO and DSO operators. Only 10% of the 900 operators in the power system claim to have the ability to enable large-scale distributed access of photovoltaics (the definition of large-scale access: the installed capacity of photovoltaic power is greater than the average load value), and ensure stable operation of its network.

During the process of grid connection, the following problems or more may occur:

1. The effect on the local voltage stability of the distribution network.
2. Under steady operating state, the voltage is theoretically gradually reduced along the direction of the power flow of the transmission line, resulting in a voltage deviation exceeding the technical specifications of safe operation.
3. Impact on grid frequency stability.



-
4. In the circumstance of large-scale access of distributed photovoltaics, when a short-circuit fault occurs in the transmission line, due to insufficient short-circuit current capability of photovoltaic inverter, the fault on the line may not be detected, causing the protection responds fail to work.
 5. The impact on the quality of power. Poor power quality can cause damage and interference to nearby power generation systems, sensitive electrical equipment, and signal transmission, in the worst case.
 6. The harmonic and flicker generated by distributed PV may affect the grid and load.

In the previous Blockchain projects in some power industries, we can not find any consideration and solution to these technical difficulties in reality. The technical problems, discussed above, will cause management pressures on the whole network, when the single-point distributed power supply to be connected to the grid on the hardware. It is required that the connection of the microgrid and the main grid should be supported with certain hardware equipment and management qualifications. Therefore, GPS pioneered the introduction of a double-layer mining machine mechanism.

GPS double-layer mining machine mechanism

In the process of accessing the entire GPS network, the entire microgrid is only allowed to access through the super node (super mine). Individual plants in the microgrid will firstly get connected to the microgrid through a mining machine.

The mining machine corresponds to the individual power generators or electricity consumers in the microgrid, obtaining the liquidity of the power assets by accessing the GPS network, and getting the PoGEC mining revenue.

The super node corresponds to the microgrid management party or the custodian, obtaining the super node qualification, when the technical threshold is reached, and obtaining revenue from the provision of liquidity and more PoGEC mining benefits.



The mining benefits and algorithms of PoGEC will be described with details in the following parts.

In this way, GPS can build a microgrid in the place where is not accessible to a centralized power grid. At the same time, with the agreement of the centralized grid, it can access an effective marketized supplement. The microgrid can operate by itself as an isolated island, and can also get connected to a centralized grid. However, in both cases, the microgrid can join the GPS settlement network through the miner and the super node.

Microgrid: Microgrid refers to a small distribution power system (including energy storage devices if necessary) consisted of distributed power sources, power loads, power distribution facilities, monitoring and protection devices. It is divided into grid-connected microgrid and independent microgrid, which can realize self-control and autonomous management. The grid-connected microgrid can be operated in parallel with the external grid or independently from the network. The independent microgrid is not connected to the external grid, and the power is self-balancing. The shape and structure of the microgrid may vary depending on the purpose of construction and the economic environment, but their technical architecture is generally similar.

GPS financing market

Because of information islands, the traditional power market is confronted with financing difficulties. Moreover, there are also difficulties in the confirmation of rights and responsibilities, cutting, and circulation, caused by the power plant's management rights, property rights, and income rights. These difficulties further lead to insufficient liquidity to the power generation assets

Based on GPS, we have developed GPS.Finance which enables power companies or individuals to finance. There are two options for them to finance. The first one is to



tokenize the future income of the virtual power plant (GPS.Token), and the second one is to make discount sale with the electricity produced in the future(GPS.Bet).

In the GPS financing market, all parties involved can take what they need:

1. New members can become part of the new energy project by purchasing new energy projects from the GPS platform. As members, they will get their share from the total power production, based on their purchased quantities of wattage, and they will receive monthly payments within the time limit.
2. The seller can immediately realize benefits from its new energy power plants of short, medium and and long terms, and can accelerate the flow of funds and invest in larger projects.
3. Buyers will be able to invest in renewable energy remotely to achieve short, medium, and long term gains, and make profits, without initial investment in building new energy power plants.
4. The demand side of the project is connected through the trusted Blockchain, which greatly reduces the cost of the financing party.

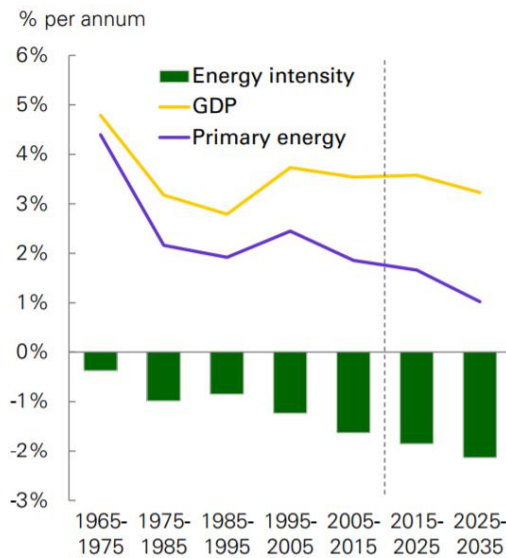
Through the financing platform of GPS, if you find that the neighboring photovoltaic generator has a 10% annual yield, and the neighbor happen to be willing to sell some of his generator with a 50% discount, because of shortage of funds. Then as to you, it is equal to purchase an investment product of a 20% annualized rate of return.

If Florida is hit by a hurricane, then on the second day after the hurricane's departure, you may find it a good idea to fish bottom of the GPS.T of Sam's photovoltaic generator, in case that his home is slightly influenced by the hurricane.

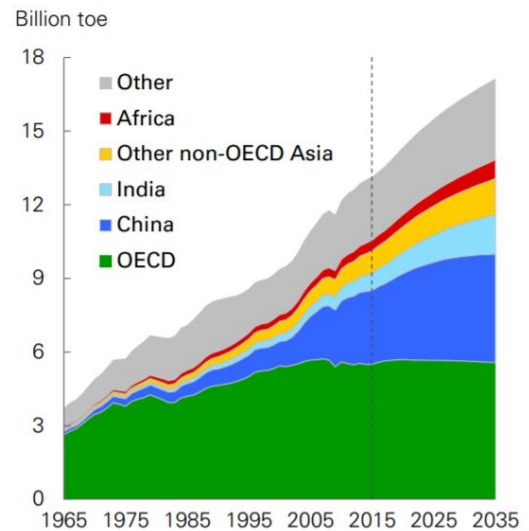
In the context of global currency inflation and the continuous growth demand for electricity, the power assets provided by GPS, being able to finance, can be a good anti-inflation option.



Growth in GDP and primary energy



Energy consumption by region



Growth in the world economy requires more energy (From 2017 edition of BP's Energy Outlook)

At present, the GPS-based financing platforms have to issue Token and Bet after reviewing permissions from the GPS Foundation, and getting the project-related information written into the smart contract.

With the mature of the GPS network, the GPS Foundation will build the guarantor process. The guarantor will take the responsibility to review the qualification for issuing users of Token and Bet, and help to get the qualification for admission through the mortgage GPSU. The guarantor can obtain a higher guarantee leverage by continuously providing effective guarantee services.

GPS energy P2P market

All records of Blockchain technology will be recorded and run through smart contracts, so that the intelligent microgrid is also transparent, standardized, efficient, tradable, immutable and many other features, which are very beneficial for P2P decentralized energy trading.

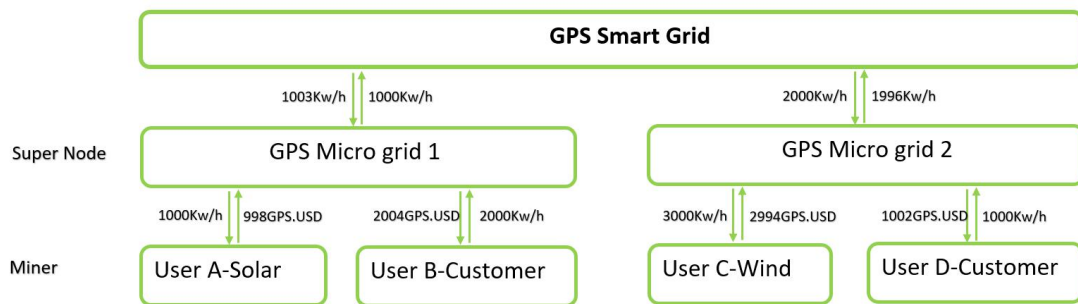


The GPS energy P2P market can provide users with various benefits:

1. Users can realize their surplus power in time through the GPS network, and also enjoy cheap power supply.
2. Users can conduct various types of energy and derivatives trading through the GPS energy P2P market.
3. By coupling numerous single microgrid, electricity prices in different regions can also be coupled.

Realization and purchase

In the following simplified microgrid environment, we will show you the application of the GPS energy P2P market.



GPS Smart Grid Economy

The above picture only shows the simplest GPS energy P2P market(The above parameter settings are for reference only, and in the actual operating environment, you need to adjust specifically). In this case, it is unified pricing. And during the operation of the network, 50% of the user transaction fee is given to the GPS network, and 50% is given to the super mining machine as the operating expense.

Based on the GPS energy P2P market above, we can also do a lot of extra upgrades. For example, it can support different users to sell their own energy according to different prices, to control their own energy sales, and to set different time periods to trigger trading and trading price. And because of this difference, there will be arbitrage space.



Case: In the most extreme case, James can fully charge his Tesla at home during night, assuming that the electricity price is 0.6RMB/kwh. Under normal circumstances, the battery loss is about 75%. If the power price is 1RMB/kwh in the factory where James works, then James can leave 20kwh in his 100kwh battery as a commute, and the remaining 80kwh is sold to the factory at the price of 0.98RMB, so that James can get a daily income of $(0.98-0.6/75\%)*80=14.4$ RMB.

Of course, depending on specific environmental conditions, the arbitrage space may be more or less. Except Tesla, household batteries can also be accessed as virtual power plants. But GPS does not plan to envision these instances. For GPS, all powers get accessed to the network are taken as virtual power plants. Whoever obtains power from the network is taken as the user. GPS will provide standardized open access conditions to all virtual power plants and users, allowing the market to make optimal adjustments.

Energy and derivatives trading

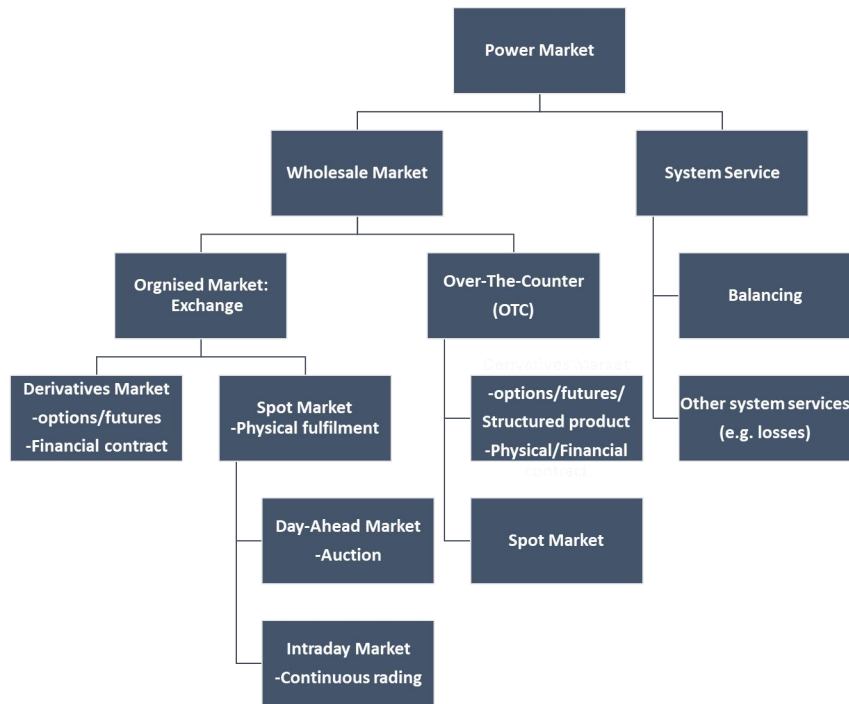
In addition to real-time energy P2P transactions between users, there are many market segments in the traditional power market. The picture below shows the full picture of the electricity market.

The electricity market can be structurally divided into wholesale markets and system services. The wholesale market is mainly to commoditize electricity, emphasizing its economic attributes, including pit and ex-pit transactions. The pit transaction can further be divided into spot market and derivative market. The spot market is eventually divided into day-ahead market and intraday market.

In this trading market, there are many arbitrage opportunities. However, users in the centralized grid area can only be forced to access the national grid in an uneconomical way, and there is no way to maximize the economic benefits of their distributed



energy. And a Blockchain network connected to the global electricity market can provide great liquidity to all nodes' power assets.

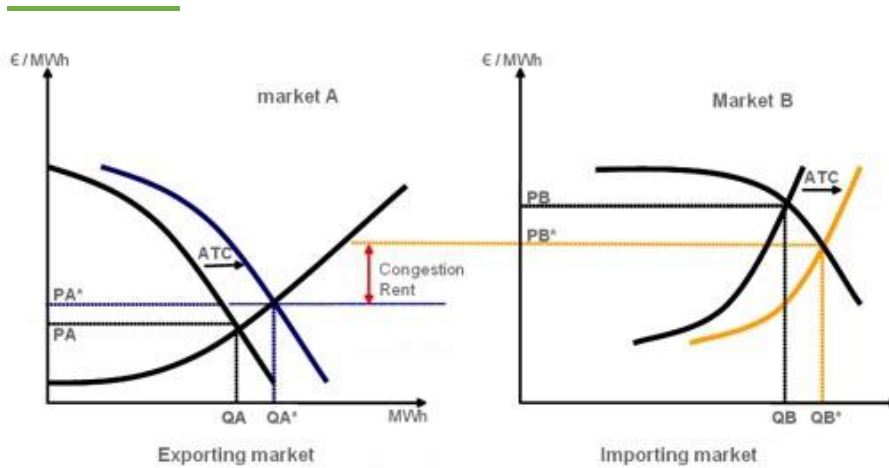


Power Market

Coupling convergence

The following chart simply shows the principle of coupling between the two markets. The export market presents a relatively low price, while the import market provides a higher price. Market coupling ensures that electricity flows from a relatively low-price region to a relatively high-price region. For the export market, if demand increases, the price curve moves to the right, and the price increases. Conversely, the import market electricity supply increases and the electricity price decreases. The prices of the two markets are becoming more and more similar, which is called the convergence of electricity prices after market coupling.



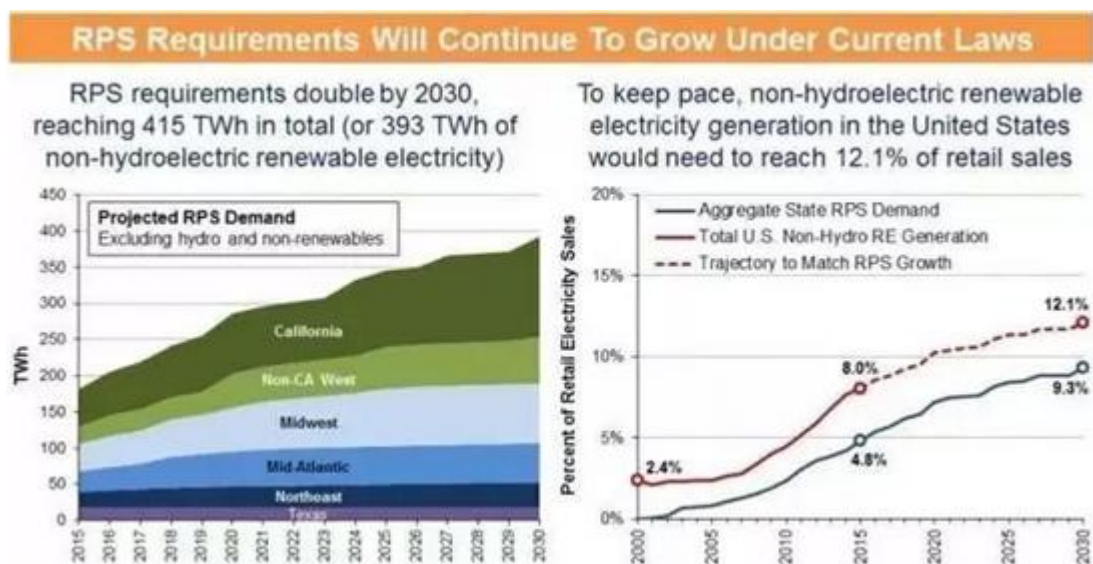


Through the coupling of the global electricity market, GPS optimizes the overall resource efficiency within the GPS network and reduces the overall user's electricity costs.

GPS Green Certificate P2P Trading Market

Green certificate system

Since the beginning of the 21st century, people have become more aware of the importance of environmental protection. The concept of carbon emissions began to be taken seriously. For example, in the United States, there is a renewable energy quota system.



2016 Annual situation report about Renewable Energy quota in the USA



Since the purchase of the Renewable Energy Quota System (RPS) is mandatory, the Renewable Energy Certificate (REC) market has emerged. REC generally takes 1000 kWh as a unit, and power companies can purchase REC to accomplish the goals and tasks of RPS. The Renewable Energy Certificate (REC) system is a necessary means to realize the renewable energy quota system and the green power consumption declaration. On the one hand, the power sector avoids repeated counting and affirmation, on the other hand, it satisfies the buyer's quality standards for green power requirements.

The Renewable Energy Certificate (REC) system, also known as the Green Power Certificate System, is a policy tool based on the renewable energy quota system. The implementation of the quota system needs to be run in conjunction with the renewable energy certificate trading market. It can be said that purchasing RECs is a means to implement RPS and a proof of implementing RPS.

Of course, the specific rules vary from country to country. For example, in China, it is called China Green Power Certificate (Green Certificate), but China does not have a mandatory renewable energy quota system. Most of the current green certificates are based on the valuation of power generation. They are issued to the energy companies through the issuing authority. The actual electricity generated is not necessarily equal to the electricity calculated by the green certificate. There may be informational errors and costs of supervision.

In the GPS network, energy companies can use GPS mining machines to simultaneously mine GPSC when producing green energy. GPSC can be freely circulated in the market after being dug up.

Tracking system

A tracking system will be necessary in the process of green certificate circulation.



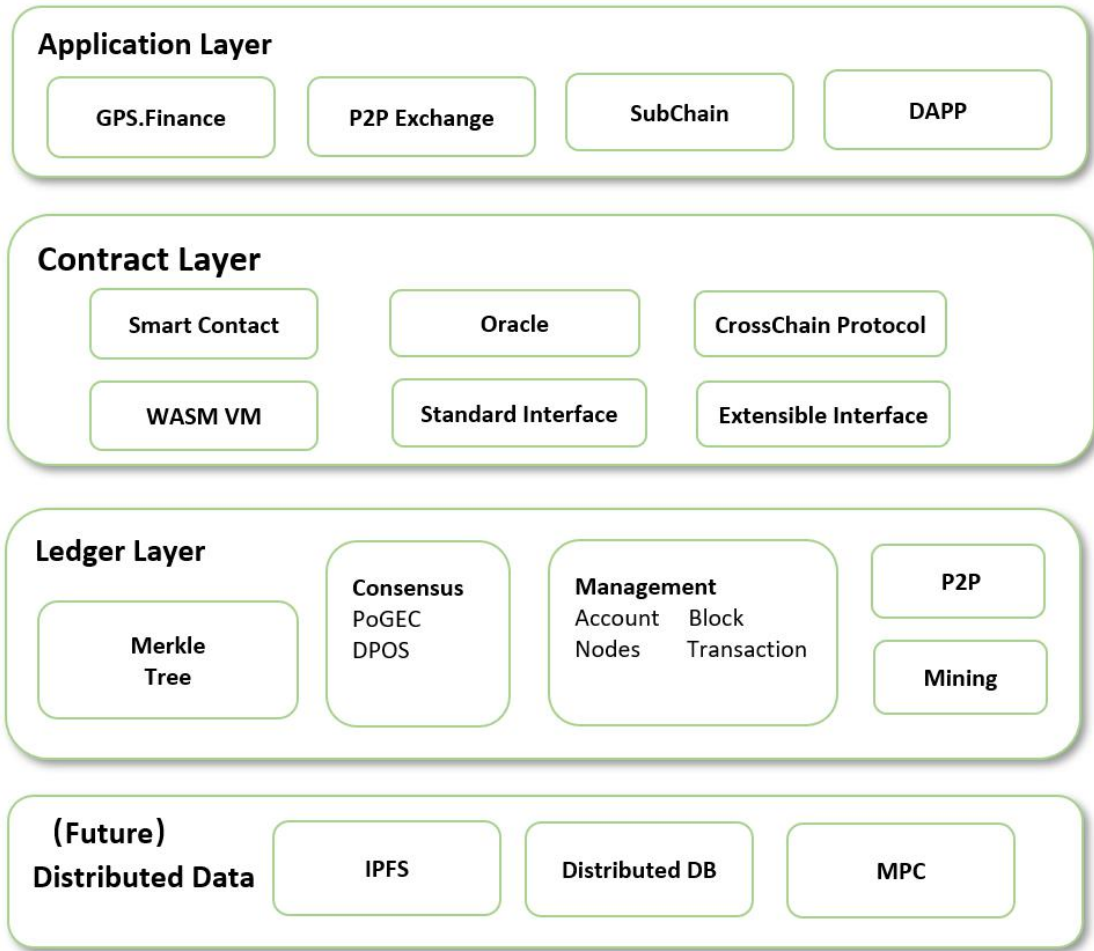
The above is the operation chart of the tracking system. The key points of the tracking trading system include, metering data based on electricity meters, recording the quantities of renewable energy generated, ensuring that the counting is not repeated or double-issued, facilitating the transaction, and recording canceling behaviors of quota accomplishments and voluntary subscriptions.

This is a very inefficient system, but this is precisely the area where smart contracts in the Blockchain can help the power system to make changes. In the process of mining, GPSC will write the information that needs to be tracked through the smart contract, and the cost of the tracking system can be greatly reduced by the non-tamperable characteristics of the Blockchain. The high liquidity of the token system can also increase the system efficiency.

Design of the GPSCChain

Considering that the application of GPSCChain has certain requirements for TPS, after evaluation, we think that EOS technology can meet the requirements of the bottom layer design of our Blockchain at present. GPS.Finance will be achieved through smart contracts, and the decentralized trading on GPSCChain will be used to implement energy P2P and green certificate P2P, and all transaction data is tractable on the chain.





GPSChain

As to the specific design, GPSChain will be divided into three layers. The first layer is the underlying ledger layer. It is optimized and improved by using the existing and mature EOS underlying technology. It can be ensured that when the main chain is officially running, TPS can reach thousands of orders and become the top throughput in the first echelon of the public chain project. The second layer is the middle contract layer. By adopting the WASM virtual machine, it can support more developers at the same time. And it can provide predictive machine function, helping users to get more information of the future trend of electricity prices, leading to more favorable trades. There is also a cross-chain relay protocol which helps to extend the parallel sub-chains for greater scalability.

Except the storage model of the base chain, we will also retain the idea of supporting



distributed storage. The technology will mainly refer to IPFS. Before that the project can resolve its consensus mechanism and economic incentives, nodes will still be responsible for providing the mode of storage.

PoGEC+DPOS multi-level mining consensus mechanism

Energy production signifying mining PoGEC

New energy, especially the micro-distributed new energy network, will surely grow rapidly to one of the main sources of energy supply for human beings. In order to encourage people to use more independent new energy sources, GPSChain has designed a multi-level consensus mechanism called PoGEC (Proof of Green Energy Contribution) for new energy production, or mining in other words. The mining machine is only responsible for mining, and receives the token rewards through the PoGEC consensus mechanism. The super mining machine belongs to the super node while mining. It uses the DOS consensus mechanism of EOS to keep accounts by taking turns, and gets additional billing rewards. (Note: DPOS is a very mature consensus mechanism at the bottom of EOS)

Thus, when people connect new energy production sources, such as photovoltaic, and wind power generation equipment, through a GPS.Protocol-compatible mining machine, the power generated can be registered and recorded on the GPSChain through the mining machine and the GPSChain super node. And the GPSU can obtain rewards from GPSU(GPS.Utility)+GPSS (GPS.Stable) +GPSC (GPS.Carbon), and complete the mining process.

GPSU represents GPS to award the super nodes and mining machines which take part in the construction of GPS networks in the early stage.



GPSS represents the mining machine to sell revenues gained from energies.

GPSC represents the mining machine to get the green certificate by contributing green energy.

Any energy ownership and use rights that have been verified after excavation remain unchanged by the producer, and the GPSChain does not intervene and suggest.

The system, which works to collect, integrate and redistribute these distributed power resources, solves the monopoly of the traditional centralized power supply. And more importantly, it greatly improves the power generation efficiency. The excess power can be directly supplied to the surrounding areas lacking powers or directly sold to the power grid. It helps to establish a new systematic power ecology, which will no longer have power cuts and power outages, and encourage the participation of more users with token incentives to promote the establishment of this benign ecology.

GPSChain creates a block per second, with attenuated release, and halves every 150,000,000 block as reward. The first block becomes the Genesis Block, and will be set to zero. Each subsequent block is incremented by one. In the first phase, each block gets the reward of 15 GPSU, of which 5 GPSU is used for super node accounting, and 10 GPSU is used for mining machine mining. When all tokens are dug, the community vote to determine the annual increase ratio as the inflation plan.

Revenues will be counted on the base of single computing power. The token will allocated according to the proportion of the single computing power in the total computing power occupying the entire network. The computing power of the mining machine comes from the energy interaction between the node and the GPS network.

Mining machine computing power = number of energy generated by nodes * coefficient Y

Mining machine revenue = mining machine computing power/ mining machine computing power of the entire network *10GPSU



Super node revenue = sum of mining machines(supervised by the super node) computing power/ mining machine computing power of the entire network*5GPSU

Ledger layer,contract layer and application layer

Although our GPSChain is positioned as a bottom-level public chain project, we have profoundly discovered in the technical research that designing a brand-new public chain is not in line with our positioning. We aim to establish an intelligent microgrid for distributed new energies, which will enable new energy production, storage, supply transmission and free trading in commercial and residential communities or pure residential communities of large and medium scales. A financial platform for new energy projects will be built, which will mainly focus on applications in essence, but the current mainstream public chains have their own problems. Coupled with our energy production mining mechanism, we believe that the optimization and improvement of the basic chain based on graphene technology and EOS underlying technology can best meet the needs and achieve faster landing. The following picture shows the scenes of the concept of our future application.

Smart Contract

GPSChain offers two smart contracts, standardized contracts and programmable contracts. Standardized contract, which is mainly for business needs where the scenario is relatively simple, the degree of standardization is high, and the execution efficiency requirement is very high, such as transaction consistency guarantee during asset exchange, and pending orders and matching of asset transactions. Standardized contracts can be directly linked to the chain through configuration generation, without programming or virtual execution, reducing the cost of upper-layer applications and improving the efficiency of contract execution. To deal with complex business logic from users, GPSChain also supports user self-programming, and provides rich components for users to quickly build applications for specific needs, such as encryption components, rights management components. At the same time, GPSChain provides corresponding templates for common scenarios such as assets and



certificates. Users do not need to write code from scratch. They only need to change the key parameters of the template, and add the characteristics of their own business to build mature contract applications.

Oracle

The oracle inputs reliable data outside of the chain into the GPSChain, which not only provides support for the electricity price forecast, but also can be derived into other scenarios. This application facilitates the calculation of smart contracts and various DAPP, and greatly enriches the application range of GPSChain for the future.

Decentralized exchange (P2P)

Decentralized exchanges provide a P2P trading platform, which helps to truly realize the pricing power and decision-making power of users on their own assets, eliminate the monopoly effect of the oligarchs. Thus it will play extremely significant role in the power industry.

Cross-chain relay protocol

Cross-chain relay protocols can realize trusted interactions between GPSChain and parallel sub-chains, various application chains, and even business alliance chains, belonging to isomorphisms or heterogeneous chains.

GPS token economy

In order to cope with the complex power market, GPS applies a multi-token mechanism. The following tokens are included in the GPS network:

GPSU

GPSU: GPS.Utility is the most important token in the GPS token economy.

GPSU application scenario:



-
1. To obtain GPSS through mortgaging GPSU. This program draws on the mechanism set by the stable currency of DAI. (Because stable currency is another complicated topic, we will not go into details here. And due to the complexity of the stable currency, GPSU will directly refer to the open source design of the stable currency which is comparatively mature.)
 2. To lock part of the GPSU to access the GPSU network(after PoGEC mining).
 3. The basic token used in the GPS financing market is GPSU. For financing or issuing bonds through GPS, a fee of 0.5% is required.
 4. GPS Energy/Green Certificate and the P2P energy trading market will charge users a 0.2% fee, 50% of which will be paid to the super node as operating expenses. The fee will be automatically converted into GPSU by the system.
 5. To work as the guaranteed mortgage for the guarantor of in the GPS financing market.

To put it in a simple way, the increase of the amount of GPSS will lead to increased value for GPSS. With the geometric coefficient increase of the GPS network, the GPSS value will also increase in geometric coefficient way.

It is estimated that 80% of all GPSU revenues from the above 3 and 4 items will burn directly, and the remaining 20% will be included into the GPS Foundation, working as operating expenses.

GPSS

GPSS , GPS.Stable is the stable currency for the GPS economy, which is an indispensable part for the GPS operation. As a Blockchain dedicated to the people's livelihood, we must use such GPSS as a value reference anchor. As long as the virtual power plant is connected through the GPS mining machine, GPSS can be obtained at the time of power generation. In actual operation, there may be local tokens such as GPSUSD, GPSCNY, GPSEUR and so on.



GPSC

GPSC, GPS.Carbon refers to the green certificate in the GPS economy. The specific token may vary according to different countries and different sources of power generation.

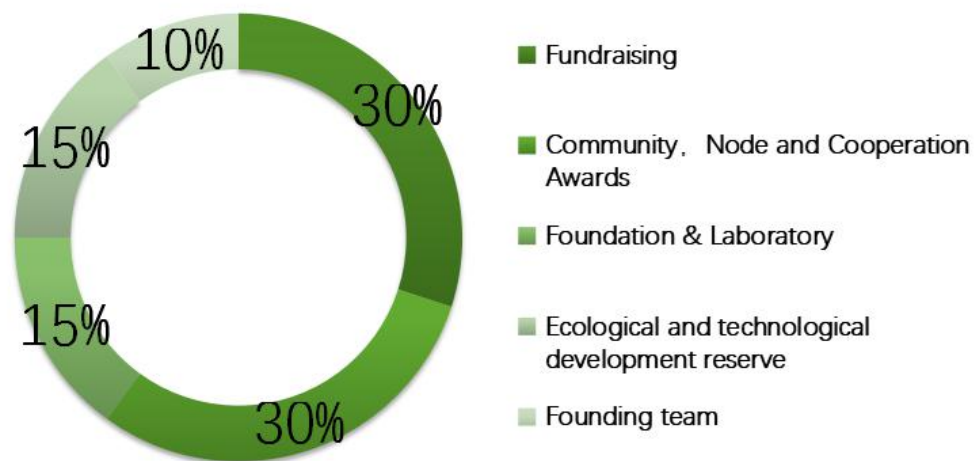
GPS.T

GPS.T, GPS Token refers to financing certificate equally issued through the GPS platform.

GPS.B

GPS.B, GPS Bet refers to bond financing documents issued through the GPS platform.

Token distribution



*In addition to the above allocation of 2.1 billion tokens, 0.9 billion tokens will be generated through mining after the GPS mainnet deployed.



Foundation & Lab

To support for community development, which will be used for long-term network management, partner support, academic funding, public work, community building, etc., and will be used for industry relationship resource reserves, technology, resources, talents, college reserves. It will be locked for 12 months and linear unlocked.

Ecological and technological development reserve

To make reserve for sustainable development of the energy industry chain

Funding

Private and public funding

Founding team

The team storage will get locked for 12 months, then thawed in six months.

Mining

Mining reward for node mining pool

GPSU hard-top xxx EHT, of which private funding xxx, public funding xxx.

Private funding proportion 1ETH=xxx GPSU, public funding proportion 1ETH=xxx GPSU

Usage of raised funds

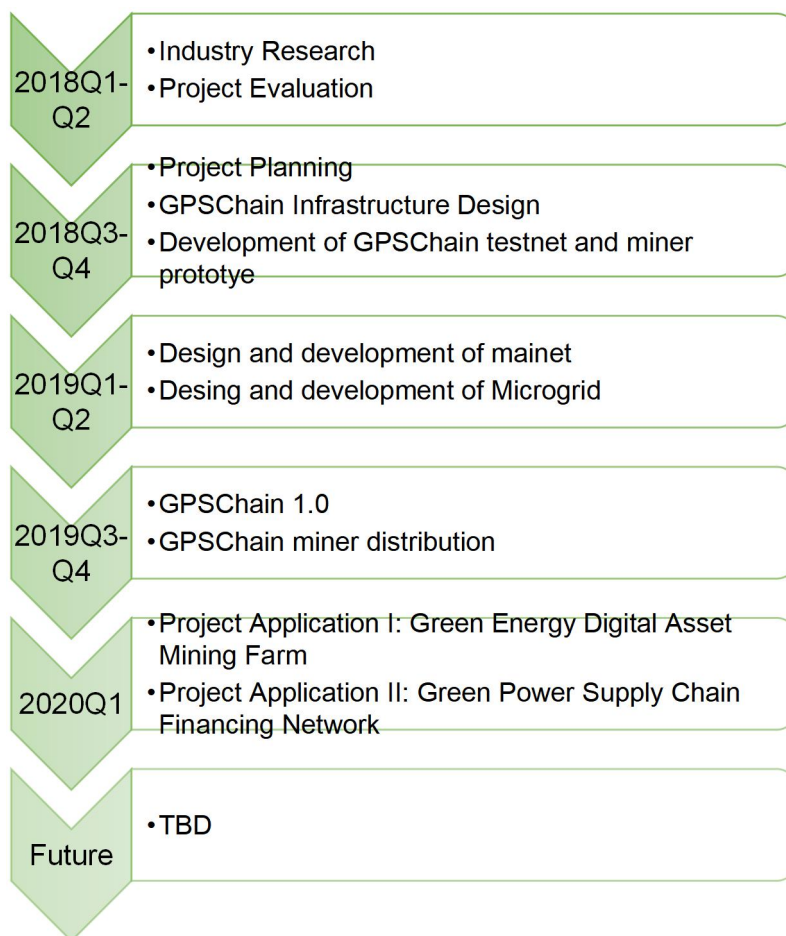
The digital assets raised through early investors and redemption are mainly used for technology and product development, community maintenance and overseas expansion, as listed in the table below.

Ratio	Usage
50%	Used to the development and promotion of technologies and products, including but not limited to: Improvement of technical team members; Incentives for special talents;



	<p>Hardware cost;</p> <p>Expenditure on product operations;</p> <p>The cost of cooperation in the Blockchain with colleges and universities;</p> <p>Funding for cooperation with other agencies.</p>
30%	Used for the maintenance, operation, branding, and public relations of the GPSChain community to enhance the user experience and maintain the trust of fans from social communities.
20%	Establishing an overseas promotion team to promote GPSChain and the community.

Route map



Core team



Michael Longrie Co-founder&CEO

Bachelor of Science in Electrical Engineering and Master of Economics, University of Colorado

MBA, Graduate School of International Business, Arizona State University

Longrie has served as the senior executive in different companies and has strong coordination and management skills. During her tenure, she led the company's resource integration, internal infrastructure, investment and fund management operations, with international financial vision, international cultural knowledge transferring, professional and diversified channel business strategy, leadership for team market planning, and management skills of sales promotion through the Internet. She has experience of banking, securities and Internet project management.



David Boroughs Co-founder&COO

Bachelor of Electrical Engineering and Computer Science Student, University of North Carolina.

MBA, Duke University

In 2010, Boroughs began to invest in Blockchain and encrypted digital currency. He has extensive experience in the telecommunications industry, and is good at strategic planning and market expansion. He has been committed to the commercialization strategy research of cutting-edge technologies in the US and European markets for the past ten years. Including Blockchain technology, AI deep brain simulation, vision re-engineering and other scientific and technological fields.



Timon Zhao Co-founder&CFO

Master of Finance, Columbia University

Zhao has investment experience of Wall Street Investment Bank in the United States for 10 years. He led to the merger and listing of a number of capitals and the management of market value. In 2013, Bitcoin, an early investor in Ethereum and



many Blockchain projects, he has a wealth of contacts in the traditional investment sector and Blockchain industry.



Xiankun, Su Director of Energy Technology

Master, Royal Melbourne Institute of Technology

Su has the experience of taking three systematic projects in five years independently. He is proficient in digital-analog electrical hardware, DSP/MCU/CPLD knowledge and software development, familiar with human-machine interface design, CAN bus communication related knowledge. Rich and practical experience in energy.

Consultant



Neil Yang

General Manager of Alibaba Cloud Public Technology Division.

Former Oracle Sales Director.

Early investors in digital currency.



Li, Sun

Doctoral tutor at Harbin Institute of Technology, director of the Institute of Electromagnetic Drive and Control.

The First Prize of Science and Technology Progress Award of the Aerospace Industry Corporation, the second prize of the National Science and Technology Progress Award, having a number of new energy patents.

A well-known scholar in the fields of engineering, energy and technology, and an industry leader.



Introduction to the GPSChain Foundation

GPSChain is a foundation registered in Singapore and has been engaged in technology development and system development in the new energy industry. The GPSChain team has extensive industry experience in photovoltaic, financial, Blockchain and energy systems. It has a keen insight into the pulse energy industry and the future development of the energy industry, and is deeply aware of the pain points of the new energy industry in the future. Based on the industry, GPSChain introduces Blockchain technology and GPSChain payment scenario mode, and strives to construct a decentralized energy ecological alliance based on GPSChain Blockchain.

Risk disclosure

The information provided in this white paper should not form the basis of any investment decisions and does not constitute any specific investment advice. GPSChain is a necessary tool to participate in trading activities in the future financial ecology. GPSChain is not a share, not a security, and does not represent the ownership of the future platform. GPSChain does not give the holder the right to influence or participate in the management of the future GPSChain platform. GPSChain is not an investment product and will not give the holder any dividends, returns, and expected returns. The purchase of GPSChain is final and non-returnable.

Anyone who intends to hold a GPSChain should know: In the future, the GPSChain platform may establish operational entities in one or more countries according to its business development needs, provided that the future GPSChain platform strictly abides by local jurisdictional laws.

The business model of the future GPSChain platform may change due to new



regulatory and compliance requirements under relevant jurisdictional laws. The holder of GPSChain should acknowledge and understand that there is any future direct or indirect loss due to changes in jurisdictional law, the GPSChain platform and any associated parties will not be responsible.

In the future, the GPSChain platform will do its utmost to carry out its business and platform construction work. Anyone who intends to hold GPSChain should recognize and understand that GPSChain platform is not guaranteed to achieve the above objectives in the future. The GPSChain platform and its management and employees shall not be liable for any loss caused by the inability to use GPSChain unless such loss is caused by intentional or gross negligence.

The market price of the digital currency raised by the GPSChain is highly volatile. The funds raised may lose some or all of the value due to the fluctuation of the digital currency. Such losses can be covered without any insurance. If the issue of the GPSChain is unsuccessful or cancelled for any reason, the GPSChain platform will return the digital currency that has been raised to the participant's digital wallet, but the GPSChain platform will not be liable to losses caused by any fluctuations due to the price fluctuation of these digital currencies.

The purpose of this white paper is to introduce potential GPSChain platform projects to potential GPSChain holders. The information set forth above may not be exhaustive and does not constitute any contractual relationship, except for the Participant Statement and Warranty section below. The only purpose of this paper is to provide potential GPSChain holders with relevant and reasonable reference information for their own analysis and decision to participate in the redemption, and whether to become an early support and participant in the future financial ecology.

The GPSChain platform does not guarantee the accuracy of this white paper and the concluding content in the text in the future. This white paper is to present the current



situation, and there will be no implied or statutory representations or warranties made by the GPSChain Platform, and any such representations and warranties are expressly denied, including but not limited to:

- (1) Warranties of merchantability, fitness for a particular purpose, use, ownership or non-infringement.
- (2) The white paper content is guaranteed without errors.
- (3) The contents of the white paper is guaranteed for not infringing the rights of any third party.

