



Abstract

The evolution of the energy industry never stops. From the proposal of “Energy Internet”, to the introduction of the blockchain technology with its permeation of innovative ideas nowadays, it brings renewed vitality for the upgrade of the new energy industry!

By taking full advantage of the blockchain technology and its creative thinking, with combination of other innovative technologies such as Internet of Things, Big Data, Artificial Intelligence, Multi-party computation, **DEC Global Intelligent Distributed New Energy Network** adopts the network architecture of “Main chain + Side chain”, and integrates different scale and type of producers, service providers, operators, operation & maintenance service providers and other supply side in the new energy industry all over the world. It'll not only empower the new energy equipment “intelligence” and “interconnection”, but also provide both supplier and demander a full set of intelligent solutions of “intelligent matching, intelligent deployment, intelligent recommendation, intelligent maintenance, intelligent payment, precision marketing” based on business negotiation and incubation, which reshapes the productivity and production relationship, supply and supply-demand relationship of the whole new energy industry chain. Furthermore, through binding the equipment's equity units and DEC digital wallet with unique digital identity and smart contract, **DEC Global Intelligent Distributed New Energy Network** realizes the asset digitization and securitization within the industry. As the value medium in the value network, DEC token and stable DECC points can be circulated and transacted, inspiring the initiative and innovation spirit of people participating the development of renewable energy source, so as to build an intelligent distributed self-operation community and a world of data right which is “**open with transparency, fair with reliability, low in costs, community self-governed, industry consensus achieved and multi-collaborative**” for the new energy industry.

There equips six core business modules in DEC ecological network system including distributed micro-grid, distributed sharing charging, distributed sharing equipment rental, distributed new energy store, distributed new energy crowd-funding and distributed social network, with derivations of financial and big data value-added service based on these business statistics. Therefore, DEC is able to link supervisors, financial institutions, core enterprises in the new energy industry, community, individuals together to make contribution to the healthy development and upgrade of the new energy industry!



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1. Project Background

1.1. Development Status and Problems of The Energy Industry

Energy is the foundation of social development which plays an essential role in human life as well as the economic status and national influence for a country. The energy industry never stops its way of evolution by using technologies. It is replacing the fossil energy in every process from production to application. Moreover, the proposal of “Energy Internet” moves the industry forward to a new stage, laying a foundation for the integration of multi-energy, cyber-physical and multi-market, also providing basis for the innovation by introducing new technology and permeating new thinking.

With the development of the energy internet, many distributed resources such as distributed wind power, distributed photovoltaic power will be integrated into bulk power system, which will deeply affect each process of energy production, conversion, reserve, deployment, control, management and utilization, improve the efficiency and depuration of the energy production and consumption, and open new opportunities for a trillion market. However, during the new round of energy revolution, it's not only the problem that where the energy comes from that will be solved, but also exist questions like who produce the energy, and who does the management. Therefore, the unification model of centralized production, deployment, planning in the energy industry used before cannot be able to realize the synergetic development and interconnection. The specific problems are analyzed as follows:

- **Different energy system are separated in self-governance status for a long period, which is difficult to realize the multi-coordination and interconnection**

Currently, power system, thermal system, gas system and other different energy systems are isolated and self-governed over a long period of time. They are under the administration of different supervising departments, which is tough to establish a united deployment department to operate and manage for the multi-coordination. Besides, the physical specifications of different energy system are completely distinct and their deployment models are diverse enormously, making the unification of controlling methods, interval time of control and signal instruction cannot be easily achieved. Thus, these independent energy systems are lack of standardizing deploying platform for



“conversation” which can synchronize the statistics among different energy systems with secure and reliable data. Finally, there is no business model crossing various platforms among these systems, lacking the incentive and integrated mechanism designed for the different energy system specifically.

■ **Centralized energy operation structure cannot meet the requirements of deployment optimization, which leads to the resource waste and expensive operation costs easily**

Presently, most national distribution network companies are relatively independent and isolated. With the development of many new energy and active distribution network, the existing highly centralized structure becomes redundant and miscellaneous during the process of deployment, operation and optimization, resulting in wasting resources and increasing operation and transaction costs between the suppliers and consumers, which is hard to maximize the social welfare. According to the information, there are 38% of the electricity charges from customer now paid to the power transmission infrastructure and the loss of electrical energy.

■ **The transaction information is grasped by central institution without transparency, which exists information security danger and crisis of trust**

At the moment, the vast majority of energy transactions on energy internet are completed in the transaction department of dispatching center, such as electricity trade, whose transaction centers are almost held by huge state-owned enterprise. The transaction department in charge takes excessive authority without the external supervision, incurring loss of trust easily. Moreover, the non-transparency of the transaction information and benefit distribution mechanism increase the credit costs, which exists the information security danger and crisis of trust.

■ **Government subsidies are going to an end, which needs new market-oriented profit model and solutions urgently**

It's known that lots of countries cut the massive subsidies used to support clean energy, even to the extent of abolishment. It can be learned that authority is advocating market-oriented business model like “the electricity generator allocates the power it produces with priority for the local use, transfers the extra electricity within nearby area first, and sells out the left to

the National Grid". But there comes no better solutions till now. While the authority abandons the non-market business model of pure subsidy gradually, it brings the severe profit reduction for both producers and sellers, leaving the electricity acquired by electricity sales companies who then sell it to final users with higher price and obtain major benefit. As a result, it's a new solution that we urge for. A solution that is based on free market rule and ecological consensus of incentive mechanism without depending on the subsidies, brings benefit and value to all the stakeholders.

■ **Energy enterprises frequently meet the financing difficulties because of technology, company size, policy and other factors**

Energy companies face enormous obstacles and uneven treatments when developing asset securitization and rapid financing with low costs due to the reasons like the existing technology becomes old and obsolete or the new technology faraway to be sophisticated, industry policy changes and so on. At present, the development of the energy enterprises pushed by pure capital is turning to the dual drive-technology and capital. Nevertheless, the asset securitization of the energy industry puts the breaks sharply, and the source of financing is relative simple, not to mention the expensive financing costs and low availability of market-based financing methods, which leads quite a number of energy enterprises, especially the medium and small size ones, to encounter difficulties in financing.

In conclusion, the new energy industry requires an intelligent distributed coordination platform which is open with transparency, fair with reliability, low in costs and multi-collaborative.

Distributed, randomness, participation, marketization are the specific traits shown in the new energy industry ecology. For the energy internet in the future, the selection and transaction of virtual power resources should meet the demands that are open with transparency, fair with reliability, low in costs, multi-collaborative and intelligent interconnected.

1.2. Blockchain + Energy Internet

The introduction of blockchain technology and the permeation of its innovative thinking can bring a brand-new chapter for the new energy market as well as the energy internet. It'll open a data right world with openness, transparency, fairness, reliability, cheap costs and high efficiency.



As a new database technology, the decentralization, openness, transparency and other characteristics of blockchain technology stay in common with the idea of energy internet. Therefore, the blockchain technology has potential to become one of the most important technique solutions for the challenges from the new ecology of energy internet in the future. The specific characteristics of blockchain are as follows:

■ **The authenticity and traceability of statistics based on distributed ledgers**

Blockchain is able to take records of the electricity source in order to make sure that every power generated from clean energy, coal and gas can be recorded and traced, as well as the generating costs and real time electricity price. Thus, the electricity in the future may become a tool for value storage. The distributed network structure possessed by the blockchain technology is matched for the market structure of distributed photovoltaic energy, satisfying the demands from electricity users who ask for energy supply and service with high efficiency, low cost, rapid response and free choice.

■ **The efficient management based on decentralized consensus mechanism**

The blockchain technology is capable to change the basic rule of energy transaction and broke the boundaries between the vendor and buyer. It will also play a significant role in the micro-grid and demand side management. The technology itself is innovating and reforming the status and models of the traditional internet, which takes the trust guarantee as the core, in order to promote the transaction and authentication with high efficiency. It can also connect, transfer and trace the distributed energy in real time, supporting the mutual switch of the distributed energy, so as to realize an efficient and stable operation for the energy system/network.

■ **Organizational coordination based on decentralized multi-participation**

In the energy internet era, the blockchain technology will also facilitate the coordination of different types of energy and the participants, promote the further integration of information and physical system, and realize the diversification and low cost of the transactions. Organization coordination is an important assurance for the energy internet to improve the operation efficiency

and stimulate the new energy consumption. The energy types of energy internet are no longer limited to the electricity, but including electricity, heat, gas and other energy. Participants are not only restrained to “generator, transmission and distribution service provider, and final user”, but also involved with numbers of participants like energy storage operator, electricity seller, energy agent and so on. Under the reasonable mechanism, the promotion of distributed organization coordination for multiple types of energy and multi-participant requires two conditions: Firstly, it needs reasonable benefit distribution so as to improve the motivation of all the participants. Secondly, it has to ensure the authenticity and reliability of the information exchange in order to realize the great efficiency of the coordination. The blockchain technology is able to assure the reasonable benefit distribution for each party through open and transparent measurement, and ensure the reliability of the information on the other hand. For instance, when different energy participants carry out the decentralized coordinated operation for optimizing, the blockchain system is capable to record the operation status and energy marginal cost for all the energy participants in the multi-energy system. Each node in the system can make the optimal decision according to its own demands, and achieve the target of ecological operation driven by profits, which is able to optimize the system operation within a bigger room for efficient energy utilization.

■ **Being interconnected and intelligent based on the smart contract**

The blockchain technology emphasizes the interconnection and intelligence of the participants in the value network. The influence of the blockchain's smart contract is not only as the literal meaning shows that can exchange the real or digital asset merely. The real effect of the smart contract is to utilize the statistics on the blockchain directly, implement all the logical function that can be calculated, output the results and carry out the function under the condition that the codes input previously cannot be disturbed or slightly disturbed based on the tamper-resistant and collective consensus characteristics of the blockchain. Therefore, the real significance of smart contract is to provide intelligent rule for the interaction among the participants on the blockchain. It can also perform various complicated logical function with no one participating, which is also called Turing completeness. From this point of view, if the intelligent equipment network on the energy internet wants to realize complete unmanned intelligence, it's afraid that the help from the blockchain technology



cannot be denied, especially the smart contract techniques arranged on the blockchain.

2. The Birth and Vision of DEC

Our Birth:

According to the needs of the new energy development and numbers of problems urge to be solved, by adopting innovated technologies such as Internet of Things, Blockchain, Big Data, Artificial Intelligence, Multi-party Computation and so on, DEC integrates worldwide outstanding energy producers, operators, service providers and other supply sides, and reshapes the productivity and production relationship of the whole industry chain in the new energy industry, to provide a series of intelligent solutions for new energy suppliers and demanders.

Our Vision:

- Reshape the productivity relationships and operation mechanism for the global new energy industry chain. Provide integrative intelligent solutions for worldwide users (demanders) such as intelligent matching, intelligent dispatching, intelligent payment, intelligent recommendation and so on which are based on the electricity purchase, charging, equipment renting service with security, transparency, quickness and efficiency. Also offer the producer (supplier) an expressway that is component to run business inexpensively and variously by the achievement of accurate arrangement, targeting and precision marketing. And give ecology co-constructor an intelligent platform that can incubate the derived value from the industry, and inspire the motivation and innovation spirit of people who take part in the development of renewable energy, so as to establish a self-operated community ecology which is free, safe, transparent, self-governed and reaches consensus within the industry.
- In the DEC ecological network, all the information will get data linked to the blockchain through DEC to realize the asset digitization and securitization in the energy industry. And based on the distributed ledgers, tamper-resistance, smart contract and other blockchain technology advantages, it can confirm and transfer the rights for the counterparty easily, thus build a world of data right for the new energy industry chain.



3. The Panorama of DEC Ecology and Business

3.1. Overview

What DEC creates is a global intelligent distributed new energy network. By taking advantage of innovated technologies such as Internet of Things, Blockchain, Big Data, Artificial Intelligence, Multi-party computation and so on, DEC integrates global outstanding new energy operators and users, to deal with the relationships between the supplies and demands “focusing on the energy” among different areas all over the world. DEC do provide intelligent matching, intelligent dispatching, intelligent recommendation, intelligent maintenance, intelligent payment, precision marketing and other excellent services for both suppliers and demanders.

Depending on the superior fundamental service and technology advantages, DEC network mainly generates six business modules, including the distributed micro-grid, distributed sharing charging, distributed sharing equipment rental, distributed new energy store, distributed new energy crowd-funding and distributed social network under the circumstance of sharing economy from which the financial and big data value-added service derives. Thus, it's possible to interconnect financial institutions, supervising departments, government and core new energy enterprises together to strive for the healthy development and upgrade of the new energy industry.

As members of DEC ecological business partner, the operator/service provider/operation and maintenance service provider or individuals will deploy their new energy equipment like charging in various application scenarios at different places. Therefore, DEC's business ecology will grow as the operator keep expanding their business. Besides, DEC provides new energy crowd funding platform to help solve the financing problem during the business development, and offer efficient and intelligent service for the business incubation as well.

Within the DEC business ecological network, important information such as transaction will link to the blockchain, following that all the rights will be digitalized and securitized as well. As a crucial medium in the ecological network, DEC token will realize the value circulation and delivery in the world of data right for the new energy, which can be safe, convenient, fast, settled in real time, transparent, traceable and intelligently contracted at the same time.



Figure 1: Panorama of DEC Business Ecology

3.2. The Co-constructors of DEC Ecology

The co-constructor of DEC ecology consists of three types of members:

- **Type 1: The co-constructors of DEC intelligent distributed new energy productivity and service provider**

This type of members mainly involve the producers with their productive relationships, and service provider with the service relationship of their users on the new energy industry chain. DEC integrates and inspires the new energy producers and service providers to develop their business and achieve the industry upgrade all over the world. DEC helps them to carry out the digital capitalization and securitization by utilizing the blockchain technology, make the data and information from the entire process of energy production, consumption, transmission and storage to get on the blockchain, save the statistics covered with timestamp and establish a transparent, self-sufficient and self-operated digital economy system for the new energy by using the



smart contracts on the DEC chains.

■ **Type 2: The co-constructors of DEC community consensus**

These members are mostly made up of the ecological contributors of DEC basic ecological public chain and side chain for application use, who contribute to generate the ecology consensus and realize the self-operation, such as making decision or advises of optimizing innovation for the ecological development by using the information of productivity and productive relationships on the industry chain recorded. Based on the consensus and incentive mechanism, the rewards are distributed through the smart contracts.

■ **Type 3: The co-constructors of Dapps in the DEC network ecology**

The group is powerful distributed derivative strength for the rapid development of DEC network ecology with the expansion of DEC core and deriving business. They develop the side chain DAPP on their own based on the whole industry chain and derivative valued business of the new energy by taking advantages of the DEC public chain, which is able to help the DEC network ecology to construct the application scenario like DEC intelligent payment rapidly, and to develop the derivative financial, big data and other derivative business scenarios as well. They help DEC to play a greater value in economy and society.

The co-constructors of DEC ecology have following roles:

- The new energy producer
- The new energy service provider/operator/operation and maintenance service provider
- The customers in the new energy industry
- Internet maintainer
- DEC community
- DEC side chain business developer
- Media related to the new energy industry
- Advertiser related to the new energy industry
- Financial institution
- Government



- Supervising department

4. DEC Business Solutions

4.1. Six Core Distributed Business Solutions of DEC

4.1.1. Distributed Micro-Grid

■ Overview

DEC distributed micro-grid primarily solves the relationship between production and consumption based on the rapidly intelligent dispatching and matching for the energy supply and demand side.

The distributed micro-grid is a relatively independent and comprehensive energy system which is constructed on the local intelligent distribution network where wind energy, solar energy, biomass energy, natural gas and other various distributed energy can be complemented for each other, equipped with capability for electricity access of distributed energy at high proportion, and aided with energy storage, dispatching system to realize the flexible interaction with the public power network. Distributed micro-grid is typically characterized by its cleaning, small size, self-governance and friendly usage, which is able to make the balance between local energy production and consumption.

According to the location of energy suppliers and demanders and the demanding information of contracting parties, DEC establishes the distributed micro network based on intelligent matching, intelligent dispatching and smart recommendation in the area where both the suppliers and demanders exist by utilizing the core technologies such as Internet of Things, Big Data, Blockchain, Artificial Intelligence and so on. The micro network can be subdivided into minor networks on the basis of the distance. Within each minor or micro network, the self-sufficient local micro energy network ecosphere is able to be realized, which can not only avoid the problems of wasting, time-consuming and inefficient on account of the long distance, but also make strong complementation of various energy business with the public electricity network, to achieve the balance between local energy production and consumption and promote the upgrade of the energy industry.

All the basic information of supplier sand demanders as well as the transaction facts will get on the blockchain on the DEC platform, with backup storage

completed by linked structure under the mechanism of timestamps to make the transaction safely. The way that trading information is uploaded and copied after the public key encryption not only guarantees the confidentiality of the trading information, but also the implement automatically by smart contract without default risks when dealing with the forward transaction/pricing.

■ Our Solutions

As the picture shows blow, DEC will construct a completely new self-operated production and consumption scenario by connecting and integrating the energy producers of different size and various types of electricity users within the regional distributed micro-grid. With the equipment of smart electric meters for the suppliers and demanders which are bound to the unique digital identity (eID) after the identification of each other, the functions of getting on the blockchain, statistics and settlement for the energy data can be achieved. DEC is able to provide recommendations of intelligent dispatching and matching according to buyers' requirement order and the conditions of suppliers and demanders' location and price. And the unified way of payment by DEC digital wallet improves the energy availability and reliability by consuming the clean energy in the network nearby firstly. DEC can also trade freely without agency, thus increases producers and sellers' economic benefits and reduces the users' electricity costs. Because of the storage technology is widely used, DEC is capable to complement the national grid efficiently through connecting the energy stored by micro-grid to it when meeting abnormal power-off.

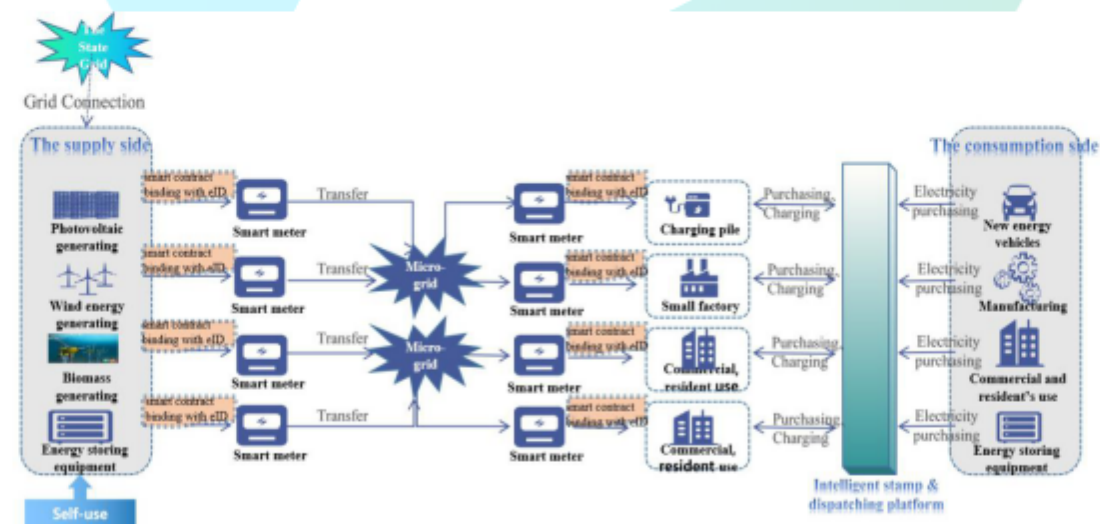


Figure 2: The business model of DEC distributed micro-grid

The asset digitization and securitization of micro-grid based on



intelligent electric meter:

The intelligent electric meter is the hardware entrance of our platform (It can be independent hardware, sensors on the photovoltaic panels or the hardware inside the charging pile), known as blockchain nodes, responsible for the electric data to get on the blockchain and the electrical energy statistics, which is the representation of power energy owner's equity certificate. Smart meters are instruments that take the collection, calculation and transmission of the original electrical statistics as the task, using microprocessor as the core device. They are the foundation of information integration, analyzing, optimizing and presentation, which are capable to fulfil the functions such as bidirectional measuring, distant/local communication, data interchange in real time, billing for complicated electric price, quality monitoring of electrical energy and customer's interaction. Algorithms of load recognition will be embedded into the smart meters in order to improve the accuracy and utility of the load recognition. As long as there exists the internet, the users can learn the situation of their electricity utilization anytime and anywhere, analyze whether their behavior of electric using is reasonable, remotely monitor and control the household appliance, and judge whether the energy consumption of appliances being used is normal.

Automatic settlement based on smart contract:

Through the smart contract, DEC also allows the suppliers and demanders in the micro-grid network to set and submit quotations at the DEC application port to realize the commissioned transaction. The intelligent matching program and licensed program at the physical layer of the system on the DEC platform will work synergistically and generate the transaction contract. Once the conditions on the smart contracts are complied with, the blockchain system will enforce the contracts automatically to finish the benefit distribution. Moreover, the transaction between some large power plants and ordinary users can turn into the long-term electricity purchasing agreement on the basis of smart contracts and make the transaction in real time, which is not only fair and efficient, but also helpful for reducing the credit cost. The entire settlements of the transaction in the system are shared by all the nodes, avoiding the costly transaction fee from centralized institution, which is low-priced. When designating transaction, the transaction logistic will report the logistic implementing information of the trading object to DEC automatically. According to the execution state, DEC platform will execute the settlements, transfer



account of the digital money as well as the auto-settlement of penalty from the party who fails to fulfill the contract.

Aiming at the business of distributed micro-grid, DEC constructs a complete set of solutions for the intelligent distributed micro-grid integrating "electricity generating, storing, selling, using and settling" together. DEC intelligent distributed micro-grid is made up with numbers of hardware and software system such as distributed power sources, energy storage devices, smart meters, digital wallet, settlement system, intelligent dispatching system for electricity purchasing and selling, intelligent operation and maintenance management system, reservation and queuing system, risk control system and so on(as the following picture shows)

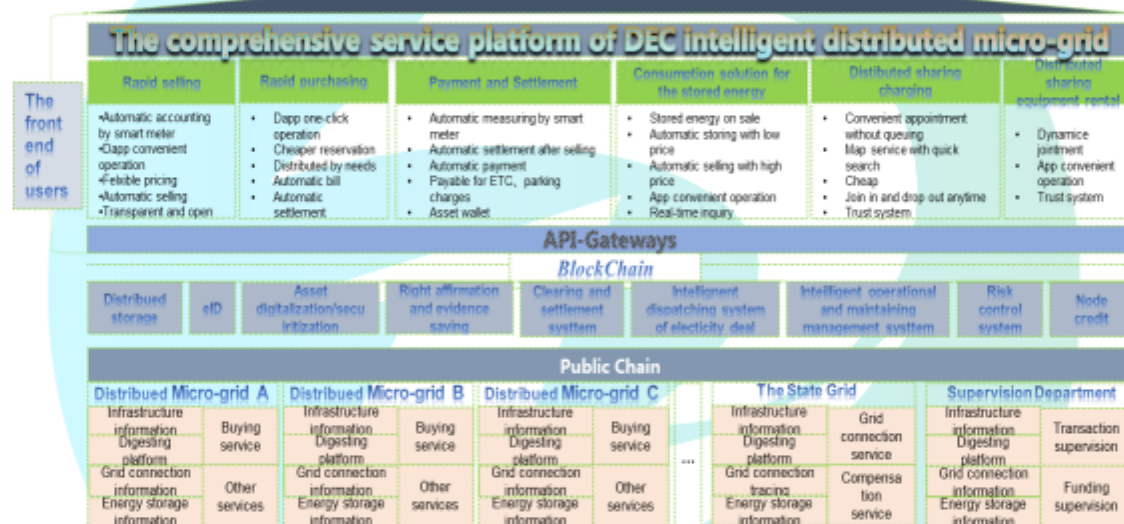


Figure 3: The business architecture of DEC intelligent distributed micro-grid comprehensive service platform

From the production side, the DEC distributed micro-grid platform integrates different types and size of production ends such as new energy generating enterprise, community, shopping mall, household and individuals. By using the KYC smart contracts and smart meters, it gathers electrical resources into the micro-grid and puts data on the blockchain. DEC will digitalize and securitize the assets transferred to the distributed micro-grid which is facilitated to deal, circulate and analyze the data hereafter.

From the equipment operation side, the DEC distributed micro-grid platform integrates the charging pile, advertising board and other operation companies. Provide intelligent monitoring, alerting, operation and maintenance for the equipment, and offer reservation management and settlement services as well



via DEC platform to improve the availability and increase the profits of the devices.

From the consumption side, the DEC distributed micro-grid integrates different kinds of users who can not only realize the self-sufficiency and nearby consumptions of the new energy electricity within the areas by the micro-grid, but also enjoy other services like other electric utilization, charging, equipment leasing and so on. And the DEC convenient payment can get through their business application scenarios. Besides, consumers could also make the second sale to earn profits through DEC platform.

The real-time monitoring platform based on big data and artificial intelligence: the DEC distributed micro-grid is able to monitor the transmission of electrical energy, the operation and utilization of the charging devices and weather changes on the platform in real time. The power prices fluctuate automatically within certain range according to the relationship of the supply and demand (taking the price volatility of DEC token at the first beginning and middle of the time into consideration, this business model will stabilize the electricity price by the steady DECC points). After the accumulation of certain amount of data through big data and artificial intelligence technologies, it can predict the peaks and valleys and the electric insufficiency caused by weather changes previously. And DEC platform is capable to dispatch resources under these circumstance, and connect to strong grid or power-up by storage equipment, so as to realize the balance of the supply and demand, which will maintain and optimize the user's experience and realize the healthy development of the new energy ecology.

The model of power generation and supply by distributed micro-grid also provides overwhelming support for the development of distributed sharing charging and sharing equipment rental so that DEC is able to realize the closed loop of the business.

■ The Core Roles of The Business

- **The production side:** electricity generation companies or individuals by new energy such as photovoltaic energy, wind energy or biomass energy, also called electricity supplier;
- **The consumption side:** the enterprise, community or individuals who purchasing the electricity, known as electricity demander;

- **DEC intelligent distributed micro-grid comprehensive service platform (DEC platform for short hereinafter):** a series of intelligent comprehensive service platform providing quick intelligent dispatching and matching for energy supply and demand sides.
- **The National grid**
- **The Working Mechanism of The Platform and The DEC Economic Model**

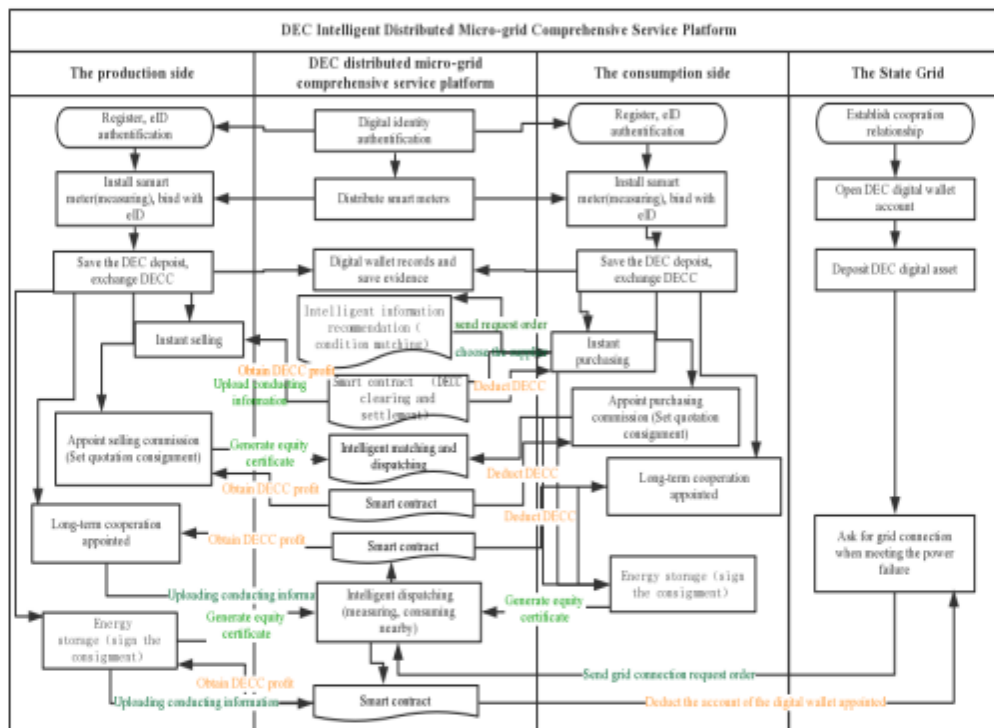


Figure 4: The working mechanism of DEC intelligent distributed micro-grid comprehensive service platform and the DEC economic model

Process 1: Make the application and registration to the platform, generate digital identity, deploy and construct the business infrastructure

1. Both **the production side** and **the consumption side** apply for the connection on **the DEC platform**, register with real name and complete the digital identity authentication;
2. **The production side** and **the consumption side** install the infrastructure of the micro-grid--the intelligent electric meter, binding it with the unique digital



identity;

Process 2: Save the DEC deposit, available to exchange the stable points of DECC, send requirement order/set terms for consignment agreement

3. Both **the production side** and **the consumption side** need to save the DEC deposit on **the DEC platform**, and exchange to the DECC stable points in order to develop the business on the platform;

4. After the deposit is saved, it's possible to launch requirement orders or to make the quotation consignment agreement according to demands respectively. The equity certificate will be generated automatically after the electricity selling consignment agreement from the production side has been set successfully;

Process 3: The intelligent information recommendation and intelligent business matching on the DEC platform

5. **The DEC platform** makes intelligent matching and recommendation on the basis of requirement orders or conditions set by consignment agreement from both the production side and consumption side to realize the business matching.

- If **the consumption side** give orders that purchase electricity in time, **the DEC platform** will offer the nearby sellers' information from **the production side** according to consumer's location and price, which is free for consumer to choose and make the transaction. The DECC steady points of equity trading will realize the settlements automatically by smart contract. The production side will upload the executive Information of electricity transmission after it obtains the profits. If there is any abnormality, **the DEC platform** has the rights to deduct the DECC profit from the deposit this time.
- If **the consumption side** send the requirement orders of reserving the consignment of purchasing electricity, **the DEC platform** will make intelligent matching and dispatching according to the quotation and other consignment terms and locations from both sides. And it will conduct the automatic distribution for the equity and benefit via smart contract. That is to say, the DECC deducted from the consumption side will be transferred into the personal account of the production side. The one who earns the profits can exchange the DECC into DEC token on their own.



- If **the production side** and **the consumption side** have achieved long-term cooperation, they can carry out open and transparent transaction on **the DEC platform**, and realize the settlement automatically through DEC smart contract. Similarly, the production side still needs to upload the executive information of electricity transmission flowing to the consumption side, so as to guarantee the rights for both side.

6. The grid-connection of **National grid**: **The DEC platform** is able to motivate **the production side** and **the consumption side** to realize the development of energy storage business on account of its introduction of energy storage technologies in **distributed micro-grid business**. Both sides can obtain related equity certificate and earns the profits afterward by making consignment agreement with **the DEC platform**. When **the National grid** (who has cooperated with DEC, opened DEC digital wallet account and obtained DEC deposit) breaks down without normal power supply, it can send grid-connection requirement orders to **the DEC platform**. **The DEC platform** will dispatch the energy stored nearby and settle automatically by smart contract according to the location of the orders, which can consume the electricity in DEC distributed micro-grid network nearby, to improve the availability and reliability of the energy and generate complementary business relationships.

■ Advantages and Values

Advantages and Values1: Decentralization and Ecologicalization of dispatching and operation motivates all parties to make contribution to the ecological development

The integrated model of DEC ecological resources is facilitate to gather more virtual resources together. The blockchain make the electricity dispatching in the DEC distributed micro-grid do not rely on the traditional unified controlling center to realize the decentralization. DEC distributed micro-grid is able to share the information of electricity supply and demand from different power generating resource/system in several areas within the micro-grid network. By the intelligent matching and recommended information for different energy within the area, each entity in the multi-energy system can do the dispatching and decision making by themselves to optimize their own profits.

The information transparency mechanism of the blockchain can promote the energy storage to make contribution to all the DEC distributed micro-grid. With



reasonable and transparent measuring and certification, it can activate the positivity of the scattered and concentrated energy storage to participate in the market with supporting services for the efficient and cleaning operation of the energy system so as to obtain the return correspondingly. For example, based on the characteristics of P2P on the blockchain, the system can publish its backup needs for the peak load regulation and frequency adjustment in real time, and the distributed energy storage is competent to provide the service amount during different periods by itself which is able to realize the self-dispatching for the stored energy, so as to improve the synergetic work for the distributed energy.

Advantages and Values2: Open and transparent quotation and trading system realize the information transparency and reduce the credit costs

Depending on its decentralized ability, intelligent transaction matching capacity based on the blockchain and the traceable and tamper-resistant characteristics, the DEC platform can help the production side and the consumption side to record the quotation and complete the transaction reliably and rapidly. All the data is stored by the nodes distributed on the network to realize the transparency of the information, which not only decreases the credit costs, but also reduces the energy using charges for the final users.

Advantages and Values3: Realize the automatic operation and self-coordination of the business

According to the blockchain's characteristics that smart contract could be generated, the production side and the consumption side can both submit the quotation consignment transaction at the application end. Once the condition for smart contracts are accomplished, the blockchain system will execute the contracts automatically, then the DEC intelligent matching program will work together with the licensed program at the physical layer of the system synergistically to generate transaction contract. When comes to the designated transaction, the transaction logistic will report the logistic implementing information of the trading object to DEC automatically. According to the executive status, DEC platform will execute the settlements, transfer account of the digital money and impose the penalty with auto-settlement from the party who fails to fulfill the contract.

DEC distributed micro-grid builds the bridge for the communication and coordination between different types of energy systems based on information



like prices via blockchain technology. The operation mode and trading model of different energy system are quite dissimilar. blockchain provides a unified and standard “conversation platform” for the information of different energy system which is able to realize the collaboration among these systems without changing their modes of dispatching, operation and trading.

Advantages and Values4: Carry out safer way of trading and realize energy saving and efficiency management

As to the safe transaction, DEC makes use of the timestamp mechanism, backups the storage by lined structure, and stores the information on the blocks safely such as the quotation information, contracts generating, conduction situation, logistics, capital flow information on the digit wallet from new energy production side and the consumption side. It offers enquiry mechanism to the authorized users to realize the traceability of the transaction without data losing or being manipulated caused by hacker attack.

On aspect of energy saving efficiency management, the new energy data is measured accurately and uploaded to the DEC platform in real time by using the intelligent measuring equipment on the intelligent electricity meters. DEC will package and store the new energy data with timestamps, and synchronize it with other ledger nodes, which generates the blockchain distributed ledger of the new energy data to realize the reliable measurement and audition and ensure the tamper-resistance, open and transparency of the data. DEC also authorized the access right to the supervision department of the government with the audit function to maintain the operation statistics on the platform together.

Advantages and Values5: Guarantee the information confidentiality of users and transaction

It can guarantee the confidentiality of the user's information and trading facts due to the encryption process and distributed storage. The DEC platform will encrypt the transaction information of different new energy by public key, then upload and copy it to ensure the confidentiality of the trading information. As to the sharing messages like prices that can be enquired publicly, stored by blockchain distributed ledger can secure the authenticity and reliability of the information without being manipulated easily, which is fair as well.

Advantages and Values6: The business data precipitated can provide



statistic assistance for the business optimization of micro-grid related enterprises and supervision departments

The business data precipitated from the DEC distributed micro-grid business is able to provide powerful statistic assistance for the related companies and regulators to make operation decisions about multi-energy complement and business optimization.

4.1.2. Distributed Sharing Charge & Distributed Sharing Equipment Rental

■ Overview

By taking advantage of the fast growing of global sharing economy, distributed sharing charging business integrates global outstanding operator/service providers of sharing pile, sharing wireless charger, sharing wired charger, offering them (the suppliers) and charging users (the demanders) with the quickest, cheapest and most efficient services of intelligent matching and recommending, so as to create the optimist sharing charging business system in the world.

DEC distributed sharing equipment rental business is also benefit from the sharing economy dividends, building a safe, transparent, rapid, efficient and cheap equipment rental business network by integrating the operators of sharing equipment leasing. The business mainly refers to the rental business for new energy vehicles sharing, charging pile sharing, wire/wireless equipment sharing. DEC plays an important role in the rental business by solving the problems like picking users (demander) up and vehicle charging rapidly to handle the production/service relationship between the suppliers and demanders via intelligent services based on the core technology and resource advantages.

■ Our Solutions

By constructing distributed sharing charging network and distributed sharing equipment rental network, we will provide the worldwide new energy service providers and users of different size with a set of comprehensive services such as intelligent information matching and smart payment avoiding extra fee from the third parties in order to realize decentralized safe transaction and perfect combination of application products in charging scenario and intelligent



charging solutions by enabling the charging equipment to become “intelligent” and “interconnected”.

Firstly, we'll give the new energy charging devices or other equipment (such as the new energy vehicles) a unique digital identity on the blockchain and connect them to the distributed energy storing equipment on the DEC distributed micro-grid. Once the equipment which has digital identity connects into the charging devices (such as charging pile) in the DEC network, the users can enjoy the charging/equipment utilization services they need easily with unattended operations. Each user is able to install the DEC Dapp on the smart phone and charge money to the digital wallet. They can search the available charging devices or other new energy rental equipment nearby and start reservation. After the deal has been made between users and service providers, the user can enjoy the charging service or equipment leasing service. Dynamic password will be obtained after the successful reservation. Through the dynamic password, when the clients use the equipment or start charging, devices will recognize and confirm whether it's the customer who has the reservation or how long the charging/equipment using services begin. The utilization of the devices will be forbidden during the starting moment, which will greatly improve the availability of the equipment and user's convenience.

Secondly, by using blockchain and smart contract technologies, we can not only make the whole DEC network to trade independently, maintain and manage the transactional capital, but also solve thorny problems like discrepancies of the payment methods and the scarcity of the equipment. The introduction of states channels technology of raiden network can handle the problems of transaction speed, charges, safety and privacy on the platform, so as to overcome the problems such as large quantity of user's frequent login, the congestion of the blockchain network caused by the enormous growing transaction information in short time. Specifically speaking, we construct a raiden network payment channel for the users and service providers through the smart contract on which both of them can save certain amount of money and generate the certificate of balance. Only the counterparties are able to get access to the capital in the payment channel. The smart contract on the blockchain will calculate the amount of charging/device using, time and costs when users charge or use the devices. According to the costs, the transactional capital (usually the frozen trading amount is more than the actual



service cost) of both side will be frozen then and saved on the payment channel. During the process of charging/device using, the smart contract will quote on the basis of the production cost in real time and calculate the actual costs of the charging/consuming for users this time. Then redistribute the frozen capital, which means funds are credited into the account, based on the rule of sharing. The whole redistribution process do not rely on the blockchain time, time spent by miners and periods when transaction is waiting till it's picked up and recorded. When repeated transactions end and the channel is going to close, both side can update the distribution of their left amount based on the certification of balance with both signatures. During this process, users and service providers could make deals with small amounts frequently off-chains (such as the raiden network of sharing new energy vehicles) which releases the pressure on the blockchain at the same time.

■ The Core Roles of The Business

- **Service provider:** the service providers who offer wired/wireless charging, charging piles, the new energy vehicle rental and other equipment leasing by connecting to the DEC platform, also called supplier;
- **User:** the customers who use sharing charging devices or rent sharing equipment by registering DEC Dapp, also known as demander;
- **DEC intelligent distributed sharing and equipment rental comprehensive service platform (DEC platform for short hereinafter):** a series of intelligent comprehensive service platform providing quick intelligent dispatching and matching for the supply and demand sides of sharing charging and sharing equipment rental;
- **Equipment maintenance provider:** The service providers who offer comprehensive maintenance for the devices services providers.

■ The Working Mechanism of The Platform and The DEC Economic Model

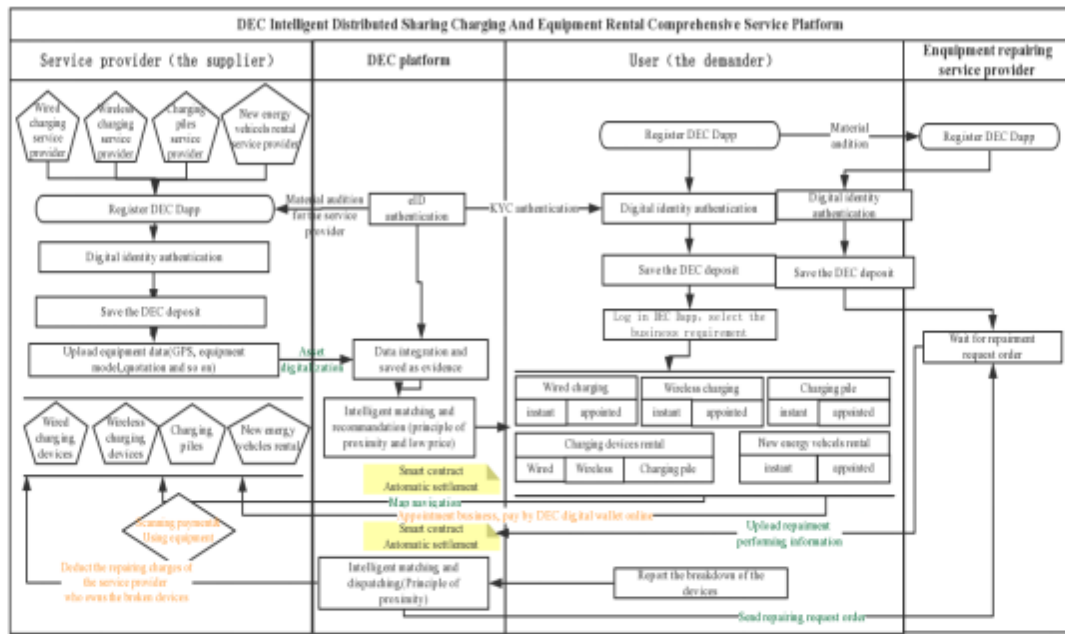


Figure 5: The working mechanism of DEC intelligent distributed sharing charging and equipment rental comprehensive service platform and the DEC economic model

Process 1: Make the application and registration on the platform, generate digital identity and save the DEC deposit

1. All of **the service provider, equipment maintenance provider and user** can apply for the access on **the DEC intelligent distributed sharing and equipment rental comprehensive service platform**, register with real name, complete the authentication of digital identity and save the DEC deposit;
2. **The service provider** will upload information related to the equipment, including location, device type, charge, quotation and so on. **The DEC platform** will integrate the uploaded data and save for the evidence after the labelled analysis.

Process 2: Login the DEC platform and promote the business according to the buyer's needs

3. **The users** login the **DEC Dapp** on the mobile and select the business type they need. **The DEC platform** will make the intelligent matching and recommendation according to the business type selected, and offer the nearby information of the available service equipment in prioritization manner to the user. **The user** can choose freely and make the



appointment anytime (The appointment needs online payment by the DEC digital wallet. A dynamic password will be obtained after the successful payment. The smart contract will make the settlement automatically. Once the reservation has been made, the charging devices/other equipment will stop other online reservation service or supply of instant service);

4. After the choice from the **user**, **DEC Dapp** will provide map navigation service, guiding the users to go to the charging/equipment rental service zone;
5. Once **the user** arrives the service location, charging/device using is available by scanning code payment if it's an instant service. If the reservation service is chosen, the user can enjoy the appointed service by inputting the dynamic password.

Process 3: Equipment maintenance service

6. At the time when **the user** utilizes charging devices or the new energy vehicles, taking photos to report the equipment breakdown once the accident occurs;
7. **The DEC platform** will make intelligent matching and dispatching according the maintenance inquiry information from the user, and send the maintenance demanding order to the nearby devices maintaining service provider;
8. **The equipment maintenance provider** will react rapidly after receiving the order, and carry out the maintenance offline with uploading the maintenance implementing information to the smart contract which will do the settlement automatically and deduct the maintenance charges from **the service provider's** account who owns the broken devices.

■ Advantages and Values

Advantages and Values1: Decentralized operation model brings convenience and welfare to both the supplier and demander

We will gradually complete the transformation of decentralization, the centralized operation to professional services and the centralized investment to investment services by taking advantage of the idea and technology from the blockchain in the new energy industry in order to provide full services for more enterprises, organizations and individuals who enter the industry.



As to the users of charging, they only need to login the DEC Dapp and select the charging devices/ rental equipment they want, waiting for the platform to offer him/her information of the nearest available service supply promptly. Those information will also make intelligent recommendation comprehensively combing the user's behavior habit and advantages of price, location, comments and so on. In terms of operator, it can help them to find users rapidly and improve the users' utilization and make precision marketing to reduce the costs of advertising and the system development like customer's behavior analyzing on the other hand.

Advantages and Values2: Construct safe, rapid and convenient payment channel based on smart contract

Smart contract can control the assets encryption in the blockchain and provides the rules agreed by the user and service provider, that's the contract, promoting the execution of the transaction contract for both side. It can also contract the micro-payment channel in the raiden network, transfer the capital out of the chain, also called off-chain trading, save the frozen capital for the counterparties which will distributed when the micro-payment channel close with synchronizing and broadcasting the results on the chain at the same time.

Advantages and Values3: Enable the equipment to become “intelligent” and “interconnected” to launch the products for scenario application and intelligent charging solutions

The products for scenario applications and intelligent charging solutions is the market trend which can be realized under the condition that enabling the equipment to be “intelligent” and “interconnected”. By integrating bilateral resources, DEC can operate under distributed collaborative mechanism on the basis of the consensus that series of mechanism can generate self-operation, which is not only convenient for the nearly users but also earn profits for the storage equipment owners. The equipment enabled to be “intelligent” and “interconnected” will improve the efficiency of utilization and make considerable influence to the society.

4.1.3.Distributed New Energy Crowd-Funding

■ Overview

In order to help the new energy equipment service provider/operator to expand



their business and arrange their capital, assist other new energy industry to solve the funding problems and bring a transparent, safe and popular income channels for DEC community members by investing the green industry of new energy, the DEC platform establishes a new energy crowd-funding platform based on the blockchain technology to incubate excellent green industry events and promote the upgrading of the industry.

In terms of DEC, at the time when the crowd-funding on the blockchain solve the capital issues of equipment arrangement for the new energy operator/service provider, it also open different payment scenarios for DEC which makes great contribution to the development of DEC ecology.

The whole life cycle of the capital and rights by the crowd-funding are supervised by the platform transparently under full processes. The crowd-funding plan will be written into the contract when it registers on the platform as well as the equity units saved as evidences by the platform, which means that all the middle process in the middle will be replaced by the smart contract and the trust and credit problems will be solved safely and efficiently.

■ Our Solutions

DEC constructs a ***transparent and safe distributed new energy crowd-funding platform with self-generated trust*** by making use of the technology advantages of the blockchain and big data. As the following picture shows, DEC distributed crowd-funding platform will make real name authentication for the fundraisers and audit their fundamental information and crowd-funding plan via the technical characteristics of the blockchain such as tamper-assistance, traceability and smart contract. Once the fundraiser is approved, all the information will be saved as evidence on the chain right after the electric certificate. The process of DEC platform crowd-funding is the procedure for asset digitalization and securitization. It will generate digital equity certificate for the investment behavior by investors. The certificate can be easily exchanged or transferred. And the smart contract will perform the duties for each party according to the crowd-funding agreement automatically and make the automatic dividends of the incomes.

Because all the data during the whole process will be put on the chain and information is forbidden to be manipulated, the investor and other shareholders can trace and check in order to learn the operation status for the event and realize the transparent supervision. Besides, by the transfer of DEC

token, the crowd-funding capital is traceable making sure that fixed fund is used for fixed purpose, improving the fund transfer and settlement efficiency of the crowd-funding at the mean time.

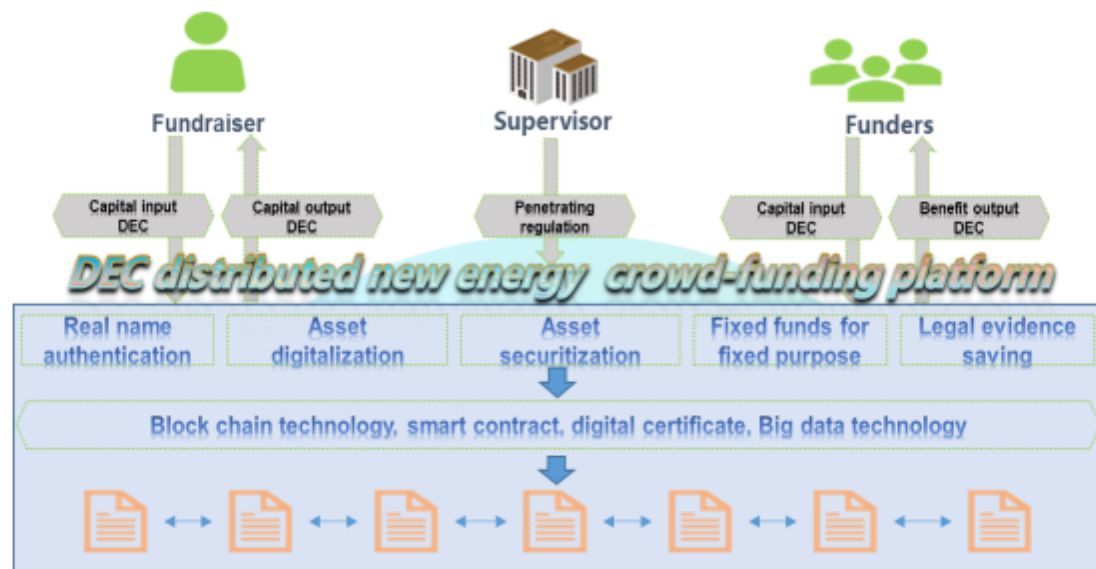


Figure 6: The business logic of DEC distributed new energy crowd-funding platform

■ The Core Roles of The Business

- **Fundraiser:** The service providers, equipment providers and operators who solve the problems in the energy industry such as equipment arrangement and production, research, operation and so on;
- **Funder:** The person or institutions in the DEC community;
- **DEC distributed crowd-funding platform (DEC platform for short hereinafter):** Decentralized distributed crowd-funding service platform working for the fundraisers, investors and regulators will make the capital using information during the whole process transparent, in order to ensure fixed fund for fixed purpose and guarantee the benefits for each parties

■ The Working Mechanism of The Platform and The DEC Economic Model

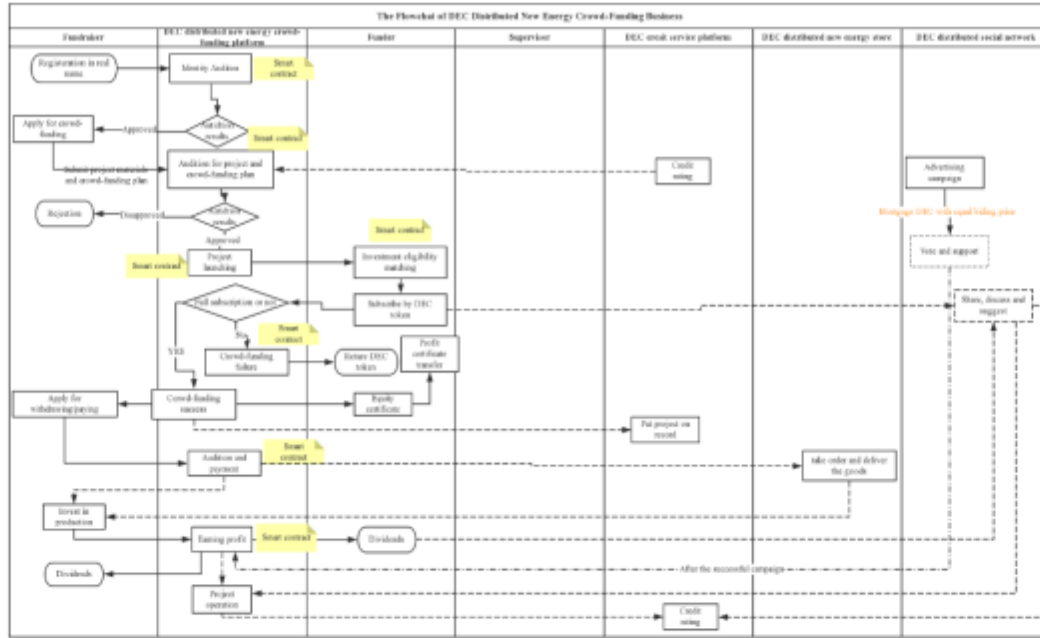


Figure 7: The working mechanism of DEC intelligent distributed crowd-funding platform and the DEC economic model

Process 1: KYC authentication and digital identity creation

1. **Fundraiser** makes real name register on the DEC crowd-funding platform;
2. **The DEC crowd-funding platform** will audit the fundraisers based on the smart contract with precast rules to ensure the authenticity of the provided information and make sure the fundraiser is qualified;

Process 2: Launch and participate the crowd-funding

3. The **fundraiser** who is approved by **the DEC crowd-funding platform** submits the project material and crowd-funding plan;
4. Considering the audition mechanism and the credit rating of the DEC credit service platform, **the DEC crowd-funding platform** will check the project material and crowd-funding plan from **the fundraiser**. After the audition is passed, the plan can be written into the smart contract and the application materials and audition records can be saves as evidence on the chain;
5. The crowd-funding project is launched officially on **the DEC crowd-funding platform** to start fundraising online. The smart contract records fundraising limits and other requirements;



6. **Funder** can choose to invest or not freely when they find the crowd-funding project on the platform. **The DEC crowd-funding platform** will also make appropriate investment matching for the product investor to invest via big data, then report the matching results and predicting risks to the investor. It will use the DEC token to make the purchase for the project under the condition that the investor learn and accept this project. And it's also possible to share the project with which the investor agrees to **the DEC community** for the recommendation and discussion (reward points are available);
7. The ending of crowd-funding will trigger the smart contract automatically. The subscription amount in full payment means the crowd-funding is successful or the failure of insufficient payment where the DEC token invested will be returned to **the funder's** account automatically;
8. Once the crowd-funding is successful, **the funder** can make the certificate of earning right according to the investment situations which will be written into the block and smart contract. **The funder** can choose to keep holding it to get the dividends later or to transfer and drop it out. **The fundraiser** could withdraw the deposit or make the payment online;

Process 3: The whole life cycle management for the capital and information

9. **The fundraiser** who make the drawings needs to update the project status regularly and save the evidence for the real-time checking by **funder, regulator** and the **DEC credit service platform**. The DEC crowd-funding will exchange the DEC token into the capital and transfer it into fundraiser's appointed account (Service fee will be charged);
10. **The fundraiser** who applies the online payment will get his orders paid on **the DEC distributed new energy store** as long as the smart contract makes the judgment that the fixed funds is used for fixed purpose, which means the DEC token will be transferred to the payee's wallet;
11. When withdrawing the deposit or receiving the equipment after the payment for the orders, **the fundraiser** could put them into the production and operation for the crowd-funding project. The status of capital utilization and operation need to be get on the chain in time;

Process 4: The establishment of earning, dividend and evaluate system



12. The profits and settlements of the crowd-funding project is generated during the business operation in DEC ecology, thus it's transparent for the investor and related beneficiaries. With profits distribution plan and time appointed by the crowd-funding program, **the DEC crowd-funding platform** will pay the dividends automatically. Besides, DEC distributed crowd-funding is able to obtain other derivative gains such as advertising benefits. The advertiser could get periodical advertising permissions on sharing charging devices like charging piles via bidding combining with the support by the votes from the community whose profits will be divided according to the investment proportion from the investors;
13. **The funder** can set up sharing and discussion for project dividends and overall situations on **the DEC distributed social network**. The overall operation status can be inquired and traced on the crowd-funding platform. The operation situation of the crowd-funding product and related discussion are important evaluation factors for **the DEC credit service platform**.

■ Advantages and Values

Advantages and Values1: Realize intelligent matching and precision marketing

DEC distributed new energy crowd-funding service platform can realize intelligent matching and precision marketing via big data technology. The platform will analyze the risk tolerance, investment expertness and preference and carry out intelligent matching by using the smart contract and the characteristics of the crowd-funding product to offer intelligent recommendation and risk alert matched for the investor. The investors could decide to subscribe the crowd-funding program on their own after fully understanding the matching extent and risks. This will avoid the risks of blind investment caused by insufficient understanding of the events or risks for ordinary investors and help the fundraisers with precision marketing meanwhile.

Advantages and Values2: Realize the fixed fund used for fixed purpose and the whole life cycle transparent supervision for capital and information

DEC distributed new energy crowd-funding platform operates in the DEC ecology so as to make sure the fixed fund is used for fixed purpose which



solve the problems like the fundraisers' frauds or illegal funding in the traditional and internet crowd-funding so as to improve the positive social effect of the crowd-funding and reduce the supervision costs as well. It can also guarantee the transparency of the whole process life cycle management for the capital utilization and information avoiding a set of moral and trust risks caused by the information asymmetry such as fundraiser concealing the information, lying or capital abuse in the traditional and internet crowd-funding. The profits will be distributed by the smart contract automatically to make sure the reasonability and compliance of the revenue distribution, improve the efficiency of distribution settlement and reduce the dividend settlement costs for the fundraiser.

Advantages and Values3: Realize the digitalization of the equity, smooth transfer and delivery

The process of the DEC distributed new energy crowd-funding platform is actually a procedure of asset digitalization and securitization. Therefore, the DEC token plays an important role as the medium during this process to help to realize the asset digitalization and securitization as well as the authentic right and usufruct for the fundraiser and funder's equity whose certificate can easily transferred and delivered, which solves the problems like traditional crowd-funding which is lack of the selectivity and flexibility when dropping out or that the quit costs is expensive, and decreases the crowd-funding costs for the ordinary people.

Advantages and Values4: Realize the great development of DEC intelligent payment application scenario to prompt the ecological development and industry upgrading

Meanwhile the DEC distributed new energy crowd-funding platform solve the capital problems of equipment arrangement for the new energy operators, it also help DEC get through the DEC intelligent payment application scenario which will become one of the most important business for the DEC to develop ecological business. The important medium value that DEC token has in the ecological network combing with the contract spirit of automatic execution by the smart contract make DEC intelligent become easy, convenient, safe and transparent, adding to the incubation process for the new energy by distributed crowd-funding, which are all helpful to the industry upgrading for the new energy industry.



Advantages and Values5: The funder who participates the DEC distributed crowd-funding can earning more profits and equities.

The distributed new energy crowd-funding platform constructed by DEC on basis of blockchain is a much more democratic and open platform. The funders could vote to support the project they prefer on their own and make recommendation or comments. Besides, the profits is not only limited to the dividends of the crowd-funding project itself, but also the dividends of derivative profits from other projects, such as the advertising profits and so on.

4.1.4.Distributed New Energy Store

■ Overview

The DEC network platform generates the “online + offline” distributed new energy store based on the large quantity of community members, operators and dealers of the new energy industry. The DEC distributed new energy store focuses on the trading of the new energy vehicles, charging piles, wired and wireless chargers. Making use of the technology advantages of big data and blockchain on the platform, it helps to prompt the deal between the seller and buyer, dispose of the dealers and producers’ stock and improve the efficiency of payment, clearing and settlement via DEC digital wallet to provide the best consuming experience with better way of consumption for the customers.

■ Our Solutions

We integrates different size of the new energy dealers, producers or small stores all around the world both online and offline and labels the seller and its products precisely via big data technology, generating a worldwide store ecology online and offline with safe and convenient payments offered by DEC digital wallet. The buyers only needs to login the store and search the goods they want to buy or the related stores. The relevant matching and recommended information will come out automatically from the Dapp side/Wed side on DEC store which is provided on the basis of comprehensive analysis of evaluation system, price advantage, location and other factors. Those information can not only help the buyer to choose freely and purchase easily, but also help to sellers to realize precision marketing, stock disposing and make data foundation for the derivative business later.

■ The Core Roles of The Business



- **Buyer:** The one who needs to purchase the equipment or the new energy products;
- **Seller:** The one who want to sell the new energy products stored through DEC distributed store;
- **The DEC distributed new energy store:** A platform which will prompt the deals of the new energy industry;

■ The Working Mechanism of The Platform and The DEC Economic Model

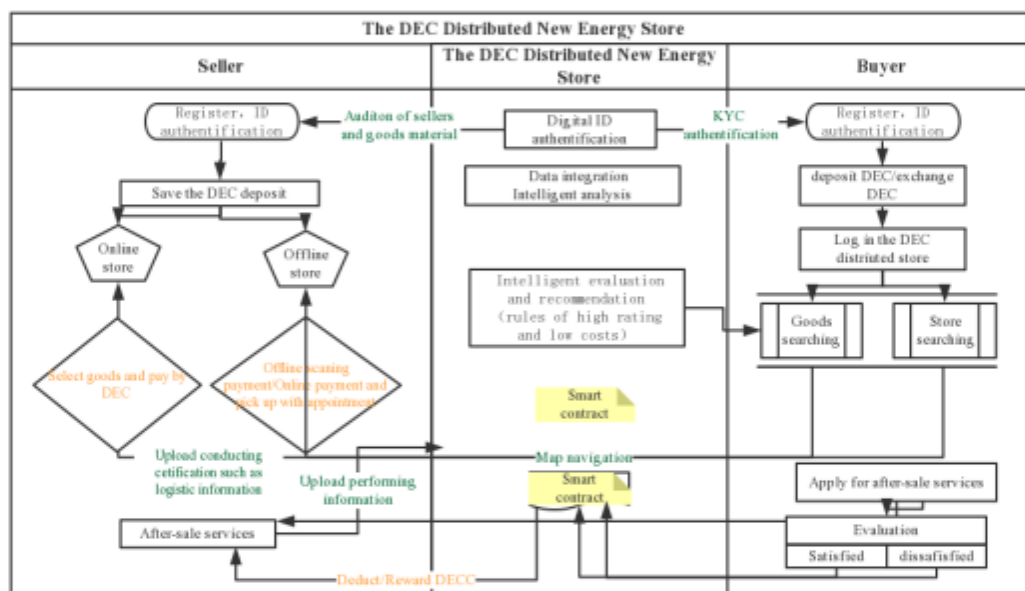


Figure 8: The working mechanism of DEC distributed new energy store and the DEC economic model

Process 1: Complete registration and identity authentication, deposit or exchange DEC

1. **Buyers and sellers** apply for the entering **the DEC distributed new energy store** and register;
2. **Buyers and sellers** need to save the DEC deposit in order to develop the business or complete the deal at the store;

Process 2: Log in the DEC distributed store and make deal

3. **The buyers** login the DEC distributed store and search the needed goods



or nearby store to realize the online or offline purchasing;

4. **The DEC distributed store** backstage will match buyer's searching information with seller's information and recommend them to the buyers in comprehensive order intelligently;
5. **The buyer** search the information and select the goods and store freely according to the searching information;
 - If it's the online dealing for the goods that is chosen, the buyer can make the deal with payment online and **the seller** needs to upload performing information like logistics to **the DEC distributed store** which will be recorded by the smart contract;
 - If the buyers choose offline dealing in the store, they can find the target store with map navigation and complete the purchasing by scanning payment, or make the payment online previously and have the appointment with entity store to pick up the goods;

Process 3: The after-sale service and evaluation system

6. **The buyers** can apply for after-sale services after the purchasing. **The sellers** will handle it as soon as possible after they receive the after-sale services request from buyers and upload the after-sale services implement information to the smart contract. **Buyers** can make comments to the **sellers'** after-sale services. The smart contract will give DECC reward points to the sellers automatically if the buyers are satisfied or make the deduction on the contrary. It has essential influence to the **seller's** rating and later business development.

■ Advantages and Values

Advantages and Values1: Decentralized resource integration generates the ecology of the distributed new energy store

The platform is useful in digesting the stock and realizing the precision marketing by integrating different size online and offline sellers such as dealers, producers, stores or individuals in the distributed new energy industry all over the world. And it builds data foundation for the later business derived from ecology and generates worldwide distributed new energy store ecology.

Advantages and Values2: Conduce to realize the easy, convenient, safe trading model



Taking advantage of DEC digital wallet and smart contract, it can help sellers and buyers to complete the transaction easily which is safe and convenient. The smart contract can take records of seller's performance information (such as logistic information, after-sale service information and so on) which is able to restrict sellers' production quality assurance, service quality, after-sale service system in order to make positive development.

4.1.5.Distributed Social Network

■ Overview

DEC distributed social network is a window providing "free discussion, value transmission, community co-governance and industry consensus" for DEC network ecological business.

■ Our Solutions

DEC distributed social network constructs a distributed social network combining "media, advertise, social, vote" together based on the blockchain technology advantages of information on chain, privacy protection, smart contract and so on which is able to build a diverse distributed social network ecology among community members, users and companies, and companies:

- Among users: establish a co-governed block chain new energy social network of the community with "community free discussion + incentive mechanism";
- Between companies and users: build a block chain new energy e-commerce social network with "community free discussion + goods/service comments + advertisement marketing"
- Among companies: construct a blockchain new energy B2B commercial social network with "commercial negotiation+ mutual evaluation+ smart contract".

Information gets on chain: In the traditional business model, the transaction information, clients' evaluation and other important statistics are usually grasped in sellers or data service providers' hands which results in the counterparties' information asymmetry problem seriously. Even in the internet era, the problems of information asymmetry and false news are still everywhere, even getting worse, such as the negative comments are forced to

delete, positive comments are offered when buying. The DEC distributed social network not only provides a communication and sharing platform for the user side, but also offers a business and trading negotiation platform between the service side and the production side, the production side and the user side, the service side and the user side. And the negotiation information will get on the chain as the fair evidence and tracing information for the disputes solutions when the contracts are violated which demanding the quality improvement of their goods and services for the suppliers in order to obtain more positive evaluation with better experience for the demanders. The openness and transparency of the information are also helpful for the entire new energy industry to establish the trust foundation which will reassure both the suppliers and demanders. It will provide value network for the positive development of the new energy industry.

The favorable combination of incentive mechanism and smart contract:

The combination of social network sharing and smart contract makes users' social advantages related to the media and advertisement in order to earning profits. All the users' behavior such as information comment, recommendation sharing, complaining and accusation, voting for support, proposal and so on can get DECC points or DEC token awards to resolve the contents publishing problems of expensive channel charges, inefficiency, low covering, untargeted in the traditional advertising which also circulate the value in the whole DEC network ecology.

■ The Working Mechanism of The Platform and The DEC Economic Model



Figure 9: The working mechanism of DEC distributed social network and the DEC economic model



As is mentioned before, the DEC distributed social network constructs a community self-governed social network between the users, an e-commerce social network between the user and enterprises and the commercial social network between the enterprises which is a “free discussion, value transmission, community co-governance, industry consensus” distributed social network based on information on chain, incentive mechanism and smart contract and other core block chain technologies. Any friendly and contributed behavior will be rewarded here. By setting DECC reward points system and the economic model based on incentive mechanism designed by DEC token in order to realize the free exchange and circulation of DECC and DEC token. The specific economic model of social network is listed below:

- Share, discuss, complain or invite other users: obtain DECC;
- Reward: consume DECC;
- Recommend, report, make suggestions: Mortgage DEC and earn multiple times as much deposit as a reward after the success;
- Vote for supporting : Consume DEC.

■ Advantages and Values

Advantages and Values1: Broke the value monopoly of information social network and generates a social ecology that is beneficial to multiparty.

Our construction is based on the block chain distributed social network which breaks the value monopoly of the information social network and generates a social ecology that's beneficial for multiple parties such as the content producers, users, advertisers, merchants and so on to provide a value network for the positive development of the new energy industry.

Advantages and Values2: Protect the freedom of expression under the privacy and make community self-governance

It's safe and efficient to protect the privacy of the user's statistics based on the anonymity and freedom of the expression of the social network. Through the incentive mechanism on basis of DECC and DEC token, it can inspire the community members to participate the community self-government deeply to purify the network environment spontaneously. Meanwhile, the binding with



smart contract can solve the distribution and trust problems.

4.2. DEC Derivative Business

4.2.1. Derivative Big Data Business Service

■ Overview

Data and statistics are the treasures of the enterprise which drives the company's development. Making good use of data improves the operation efficiency, business expanding and competitiveness of the company. Massive data will occur during the operation process of the DEC distributed new energy grid, DEC distributed sharing charging, DEC distributed new energy crowd-funding and other platforms. We are able to offer series of derivative data services driven by the enormous statistics.

■ Our Solutions

By using big data, artificial intelligence and other technologies and taking data acquired by IoT equipment, shared by cooperated companies, obtained from application software and internet crawler as the data source, DEC will start the data acquirement, cleaning and integration via ETL technology. According to the business requirement and architecture design, data will go into the data mining and analyzing platform to get batch processing and computing based on the technologies such as spark, MapReduce and become knowledge after the data modeling and data mining. Some of the data will turn into enterprise-class data warehouse and hub after entering into the data integration platform and others will provide real-time or real time to be data service after the flow calculation and rule engine through data subscription services.

After the data processed by the data mining and analyzing platform, data integration platform, real-time flow calculation and analyzing engine, a 360° real-time portrait of the equipment and users can be generated to analyze the distribution of the electrical utilization peak, customer's using habit, the usage ratio of the charging devices, the distribution of the traffic flow and user's trail on the platform, the weather and environment, the generating structure of the distributed grid and the related relationship among these events. It will then check, position, associated analyze, make loss stopping suggestion, predict the incidents based on the artificial intelligent real-time analyzing engine and

realize the bottleneck positioning, trend forecasting model inventing and decision suggesting by the medium and long period analyzing engine.

Finally, it will turn the operation statistics into the decision making suggestions via big data including the intelligent maintenance for the equipment, the intelligent dispatching for the resources, the intelligent recommendation for the service, the intelligent optimization of the operation and the precision injection of the advertisement which ensure the efficient maintenance and full utilization of the equipment and improve the user's experience so as to establish an efficient, intelligent, environmental ecology.

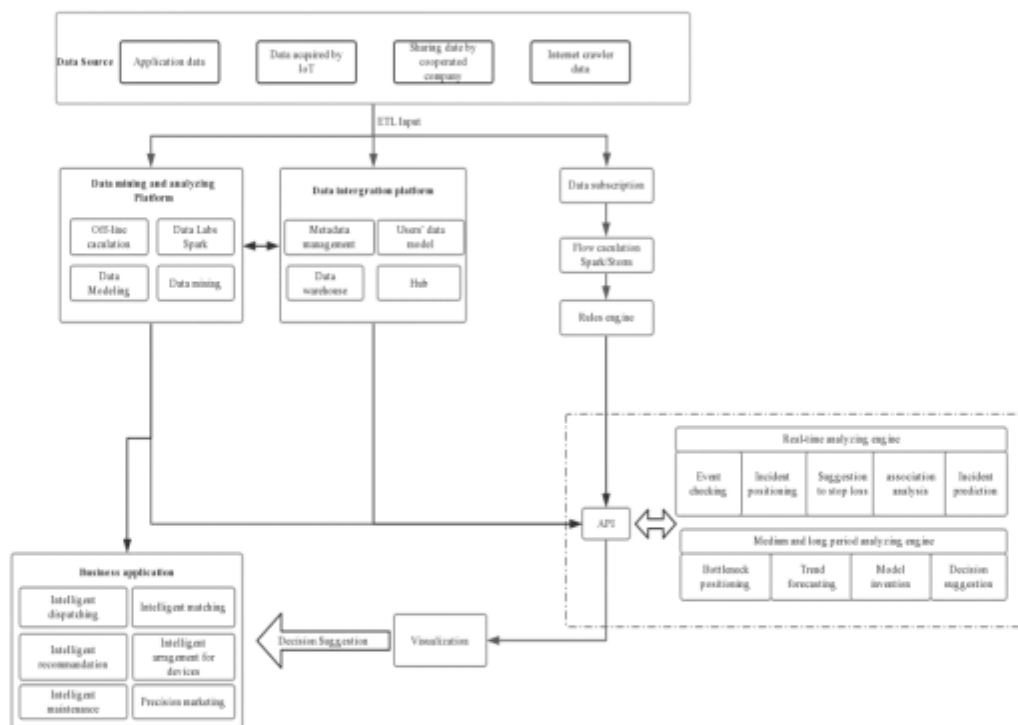


Figure 10: The Panorama of DEC derivative big data business solutions

According to the solutions mentioned, we'll provide the derivative big data business as shown below:

The individual side:

- Intelligent recommendation based on customer behavior;
- Establish customer portrait based on all the customer's information and behavior;

The enterprise side:



- Precision marketing and advertising service: Provide precision marketing and advertising service according to the client's preferences, behavior habits and scenarios;
- Build company portrait from multiple dimension analysis;
- Big data decision making support: It can analyze the operation status of the enterprises using the energy by big data analysis, and support them to make decisions like international precision strategy, precision production and storage reduction with combination of the business information from the DEC network;
- Optimize the equipment arrangement of the company: it can optimize the equipment establishment and arrangement on account of the utilization rate of the devices arranged by the user;

The platform side:

- It can provide the intelligent dispatching service for the electricity resources according to the distribution of the supplies and demands;
- Devices breakdown analysis and intelligent maintenance;
- It can predict peaks and make preparations previously on basis of the deep learning of Big data;
- Construct information system for the quality monitoring.

■ Advantages and Values

Advantages and Values1: Improve the utilization rate of the devices according to the analysis of breakdown and usage status

The IoT devices arranged on the equipment will collect the statistics of the equipment such as operation information, health status, surrounding environment, using records and so on which can be used to make data modeling and processing and analyze the frequent equipment failure, the relationship between the environment and equipment failure and the applied load of the devices to optimize the production and arrangement of the equipment, so as to improve the utilization of the equipment, reduce the maintaining costs and optimize the operation strategy.

Advantages and Values2: Predict the peak and accidental situations and make intelligent dispatching for the resources



It can provide intelligent dispatching service according to the distribution of the supply and the demand, predict the peak periods and make preparations previously via the deep learning of the big data.

Advantages and Values3: Multiple dimension analyze to realize the risks control by Big Data

It can integrate the internal and external data by the big data technology. Enormous data can analyze the risk control object in real time from multiple dimensions such as client's habit, way of travelling, social credit, consumption ability, family situations which is flexible and suitable for the internet.

Advantages and Values4: 360° customer's portrait to realize the precision marketing

It will paint a 360° clients' portrait based on their behaviors and realize precision marketing on account of their preferences and requirements.

Advantages and Values5: Generate risks control and credit platform by Big Data and help to develop new business

It can derive much more derivative business which is safe, diverse and innovative based on the generation of big data risk control and credit platform such as the supply chain finance, credit investigation and so on.

4.2.2.Derivative Financial Business

■ Overview

With the expansion and extension of the DEC business ecology, the lack of capital and funding problems for the supply chain will restrict the development of the platform. Developing financial technique will not only be able to keep DEC business ecology growing stably, ensure the steadiness of the entire DEC ecological supply chain and improve the competitiveness of the DEC business ecology, but also revitalize the users' purchasing power in the DEC business ecology.

The business model such as DEC distributed micro-grid accumulate lots of statistics such as enterprises, users, equipment, transaction, evaluation and so on for the DEC platform which stores the data resources for the financial business construction like credit rating platform, consuming finance, supply chain finance and financial lease. Carry out credit rating, supply chain finance,

financial lease, consumer loan and other derivative financial services under the guarantee of the big data risk control and blockchain self-credit via technologies like Blockchain, Big Data, Artificial Intelligence and so on.

■ Our solutions

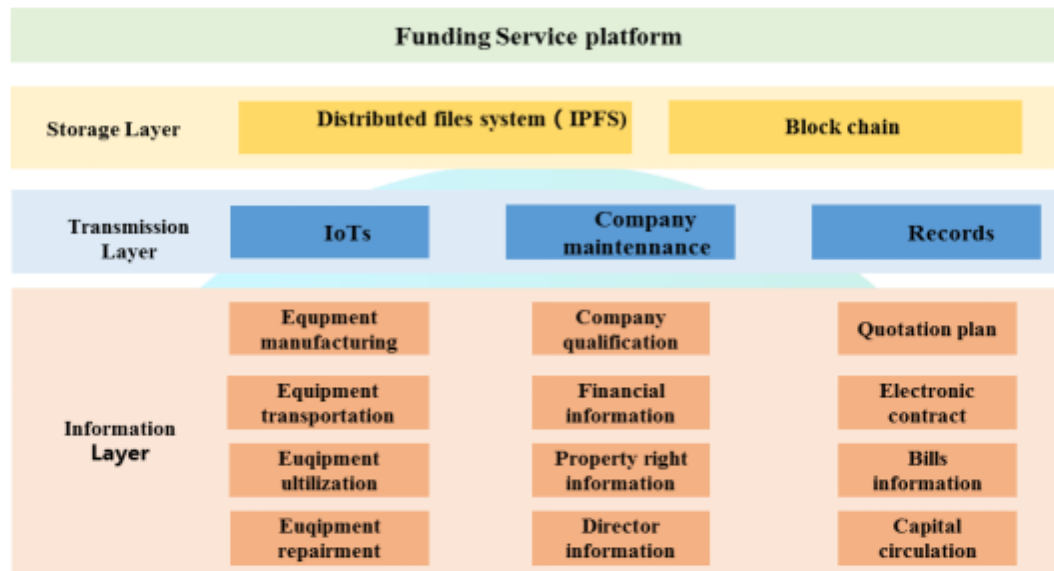


Figure 11: The business architecture of DEC derivative financial service platform

The information of equipment production, transportation, utilization, maintenance acquired by DEC distributed micro-grid, company information submitted by enterprise's registration trading information and capital settlement information generated by transaction makes up for the information layer of the DEC financial service platform. The transmission layer acquires data from the information layer mainly through IoTs, enterprises' active maintenance and DEC business platform's records. The data on the transmission layer will be stored by IPFS, blockchain and data warehouse which will then be integrated via semantic analysis, ETL, big data and other technologies and support the business operation of financial technique platform after the modeling to provide supervising audition and financial services for the DEC platform. The supply chain finance and credit rating service can be carried out rapidly in the finance services.

DEC platform is a comprehensive service platform integrating electricity (generating, transmission and utilization), equipment maintenance, payment, settlement and other resources which is constructed by advanced technologies such as Blockchain, Big Data, Artificial Intelligence, Safe Multi-Party Computation, naturally solving the problem of the expensive costs of the funder's risk control, low efficiency and high costs of the enterprise

funding caused by the credit insufficiency itself in the traditional financial services. The blockchain can enable the enterprises to obtain the self-credit on the supply chain in the DEC business ecology and transfer the credit through asset digitalization to solve the difficulty and expensiveness of the funding for upstream suppliers and construct a DEC supply chain funding platform which can solve the supply chain funding problems. Big data can help to establish the DEC credit rating system (DEC credit investigation platform) in order to make precise risk control, reduce the risk control cost and improve the real-time controlling ability of the risk control for the funder.

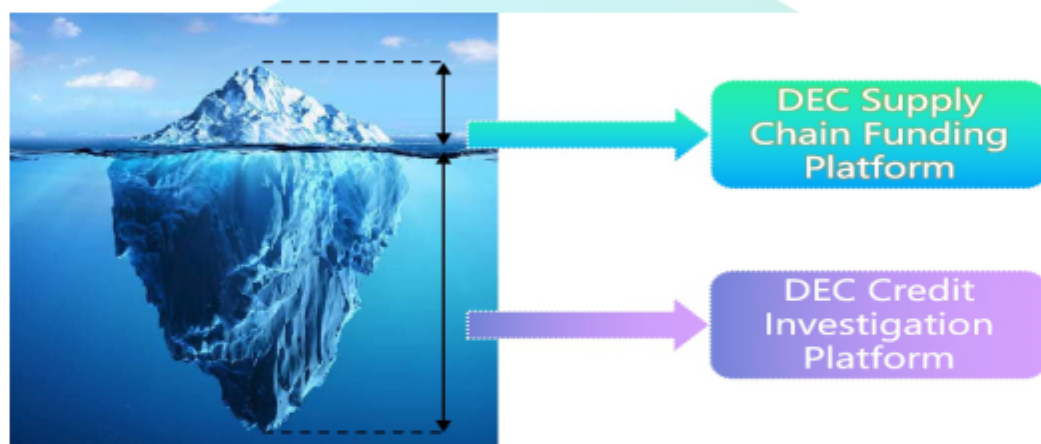


Figure 12: The design of the DEC derivative finance business module in the earlier stage

➤ **DEC Blockchain New Energy Supply Chain Financial Service Platform**

DEC blockchain new energy supply chain financial service platform adopts the alliance chain based on the blockchain technology mainly solving the information asymmetry and trust problems. It makes the complete equipment suppliers, financial leasing companies, financial institutions, project companies, supervision departments as the nodes in the blockchain, and appoints some of the nodes having the right to account and others with functions of distributed storage and information verification. The technique advantages of independent storage and collective maintenance make the confirmation of the equity right more clearly and conveniently.

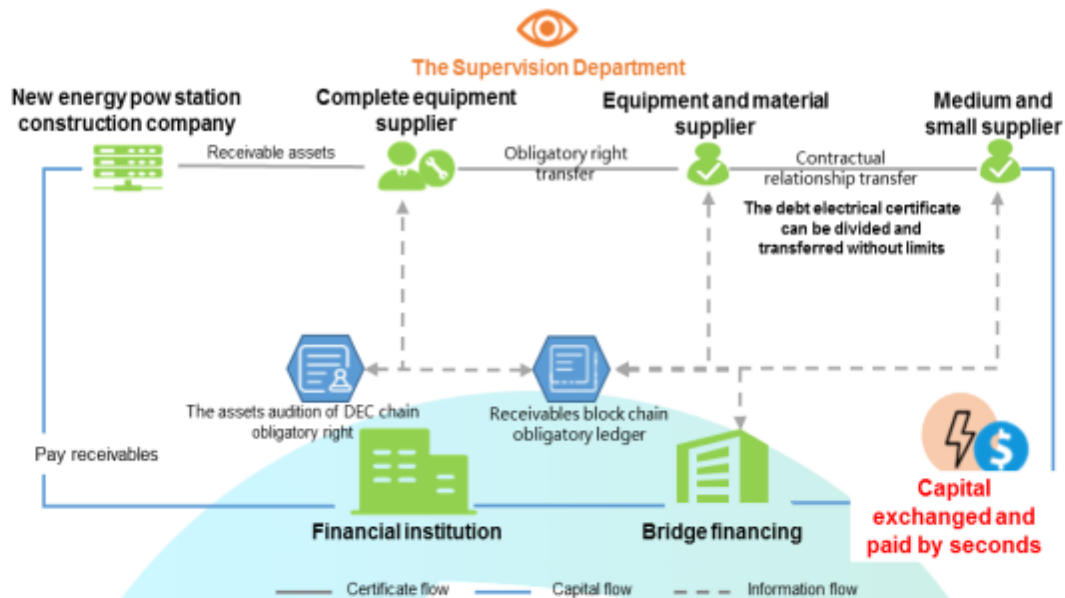


Figure 13: DEC blockchain new energy supply chain financial service platform

The business model is as the picture shown above. After the project company gets the construction approval of the new energy power station, it can apply for the funding from the financial leasing company who will make the payment to the appointed equipment supplier to help the project company to buy the equipment. The authoritative broadcasting of the transaction information will be recorded and saved as an evidence after the authentication by the nodes. After the trading, the financial leasing company will receive “**The rent collection right of income pledge guarantee for the electricity charges**” from the project company as the equity certificate by which to apply the **receivables funding** from banks and other financial institutions who will provides the supply chain financial services according to the real trading background.

Taking the liquidity into account, the financial leasing company usually pays by installment, which will transfer the financial pressure to the equipment supplier in the upstream. Most new energy equipment supplier are lack of self-owned capitals and the ability of funding from others. They can apply the **order funding** from the banks depending on the order information recorded on the DEC blockchain new energy supply chain financial service platform and the credit spillover of the financial leasing company. And the medium and small suppliers in the upstream for the equipment supplier can also apply the **order funding** from the banks based on the upper extension of the equipment orders and agreements in the supply chain. These suppliers can arrange the production properly and optimize the inventory management according to the



order information on the platform.

After the supply chain bring the third-party logistics in, the supplier can mortgage the inventory to carry out **financing warehouse funding** and the financial leasing company can make **confirmed warehouse funding**. Each party will publish related information to the blockchain information platform and realize the affirmation of the rights easily. The banks can be aware of the pledge in real time through the DEC platform and ensure the safety and risk controllability of the capital invested. The insurance company can also take part in the DEC platform, underwrite the quality insurance and trace the product information in each process easily at the same time which enables to make comprehensive evaluation for the enterprises and products to support the appointed insurance products and avoid the risks fixing on the insurance company. The insurance company can **package up the insurance to be securitized** so as to realize the risk diversification further.

The agreement signed between the supply members will be recorded by the smart contract which will be broadcasted within the whole network and written into the blockchain after the authentication. When triggering the conditions, the smart contract will make the execution automatically to complete the delivery of corresponding assets/rights. Moreover, the DEC platform can also help the regulator to supervise the real-time trading information in the supply chain which only needs to write the regulations into the smart contract and realize the real-time and initiative supervising mechanism by stopping the transaction and sending the alert automatically when the trade triggers the regulations. In the process of insurance claims, smart contract can simplify the claiming procedure and reduce the requirements for manually checking. The electricity utilization agreement will be written into the smart contract during the electricity charges collection process, which will realize the automatic capital transfer to the accounts of financial leasing company or upstream suppliers to improve the efficiency of the payment and settlement.

➤ **DEC Credit Rating System**

By analyze the qualification, consuming habits and the agreement keeping status of the enterprises and individuals on the DEC platform combining with the basic commercial and judicial information, announcement and financial report and public sentiment obtained by internet crawler, it will construct a credit rating system targeted for the individuals, enterprises and between



individual and enterprise based on data modeling, trust modeling design. It can offer different service module for company and individuals according to the credit rating system. The credit rating system is generated by the accumulation of massive data and knowledge from DEC business ecology which will provides credit support for the DEC ecology business and earning service charges by offering external service as independent credit investigation platform at the same time.

■ Advantages and Values

Advantages and Values1: Resolve the supply-chain funding problems and ensure the competitiveness of the platform

The business in new era is no longer the battle between the companies but the competition between the supplies. The DEC supply chain financial funding platform constructed based on the blockchain can solve funding problems which is difficult and expensive for the upstream enterprises to guarantee the stability of the supply chain and improve the competitiveness of the platform.

Advantages and Values2: Develop business and improve the profits of the platform

By continuous authentication and updating, the DEC supply chain financial funding platform and DEC credit rating system can provide external financial services to earn service fee which makes the platform not only an electric power service platform but also a financial service platform to develop science and technology business improving the profits of the platform enormously.

5. DEC Technical Solutions

5.1. The Multiple-Chains Architecture of “Main Chain + Side Chain”

DEC adopts the network architecture of “main chain + side chain”. The main chain keeps simple and stable function. In order to realize the seamless access of different new energy projects and the adaption of diverse techniques and economy characteristics, different new energy projects can plug into the main chain via side chains. It's because the side chain is independent block chain which has its own nodes and network and relatively independent codes and data that it will not increase the burden of the main chain when operating

to avoid the exceeding data expansion. Each side chain will provide various and suitable smart contract function based on different characteristics. It will make the DEC ecology network with more promising application future.

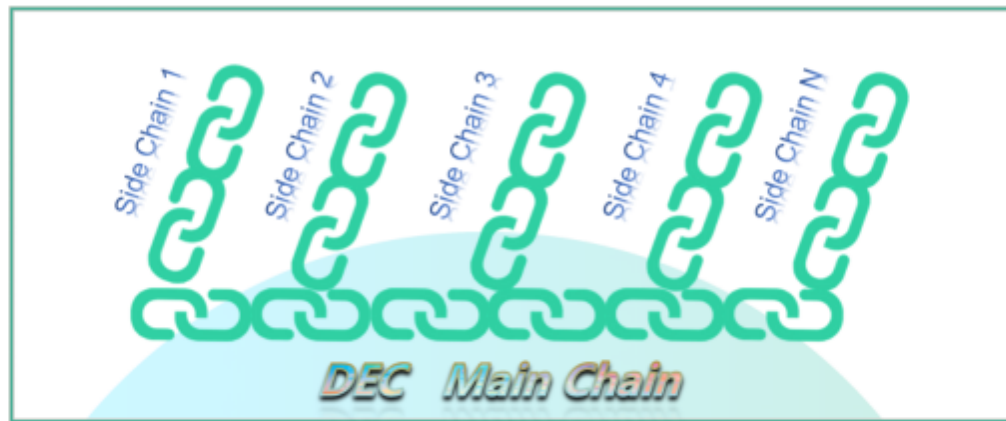


Figure 14: The DEC multiple chains architecture

5.2. DEC System Architecture

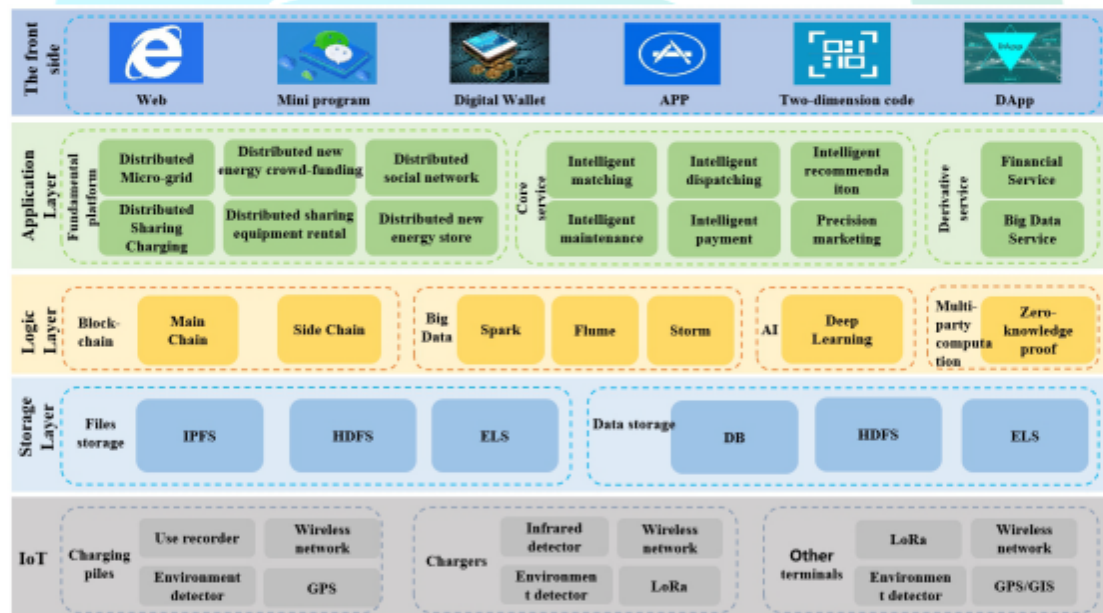


Figure 15: The DEC technology architecture

DEC system architecture is made up of the basic layer of Internet of things (IoT), storage layer, logic layer, application layer and the front side.

■ Internet of Things (IoT)

As the basic layer of the system, IoT arranges IoT equipment such as sensors, GPS, environment detector and surveillance devices on the distributed grid, charging piles, personal charging devices and other terminals which will carry



out the equipment interaction, health checking and data collection by using technologies like LoRa, ZigBee, Wi-Fi and so on.

■ The Storage Layer

The structured and unstructured statistics generated by the IoT and application platform will be stored via technologies of IPFS, HDFS, ELS and DB and get key statistics on chain and save them as evidence.

■ The Logic Layer

The blockchain adopts architecture of “main chain + side chain” where the main chain keeps the stability of the business and the side chain ensures the business expansion. The main chain is the foundation of operation of the platform and the supporter of the core business. The side chain is the derivation of the business on the platform which can be opened to the ecological partners to develop more applications and services on their own.

The main chain and side chain anchors in two different directions ensuring the continuous of the business and the circulation of the values so as to construct a distributed, self-credit, efficient business ecology. The big data will process and analyze the statistics accumulated on the DEC platform via Spark, Storm, Flink and other technologies to improve the operation and customer services ability. The artificial intelligence technology will reduce the cost, improve the efficiency and promote the upgrading of the services by the deep learning of the business scenarios. Through technologies like zero-knowledge proof and homomorphic encryption, Multiple-party computation can get the calculation results according to its own demands under the condition that the partner and competitor’s statistics do not leave the controlling domain and the privacy can be guaranteed in order to improve the innovation and service ability, decrease the error costs and risks accumulated by the system.

■ The Application Layer

The three modules of basic platform, core services and derivative service make up to the DEC application ecology among which the basic platform includes distributed micro-grid, distributed new energy crowd-funding, distributed social network, distributed sharing charging distributed sharing equipment rental, distributed new energy store are the six business module of DEC (Please find the details in business introducing chapters).

Based on the technologies used in the basic layer mentioned above, DEC will



provides the six core services of the intelligent matching, intelligent dispatching, intelligent recommendation, intelligent maintenance, intelligent payment and precision marketing comprehensively on the business foundations to improve the service efficiency and customer experience by using the big data and deep learning. Besides, DEC also derives financial and big data value-added services such as supply chain finance, financial leasing, credit investigation, risk control by big data and other derivative services on the basis of the fundamental platform and core services.

■ The Front Side

According to the requirements of different roles and application scenarios, the front side of DEC includes services such as Web, App on the cellphone, Mini program on the Wechat, DEC digital wallet, DApp, two-dimension code and so on to satisfy the customer's application needs in various scenarios.

5.3. DEC Consensus Mechanism

The DEC chain adopts the innovative method of PoW + DPoS and allocates the smart contract of the new energy assets mapping on the upper layers. At the bottom layer, we use the new way of PoW which means consumption is mining. Clients can carry out mining by charging (consuming) and obtain DEC token or the DECC new energy points (stable token) return. While in the upper layers, we utilize Delegated Proof of Stake (DPoS) and select several agents at the nodes who is in charge of the authentication and keeping account. The qualified agent will get transaction charges which are from consumer's each new energy consumption, for example the digital assets trading charges in the process of electricity generating, sharing rental and crowd-funding as a reward after keeping accounts. Moreover, we get new energy assets (such as charging piles, the new energy vehicles and so on) mapping into the blockchain to become digital assets from which the service providers and users are able to acquire the benefits.

5.4. Smart Contract

Smart contract is a new technology generated from the blockchain technology which is essentially a computer program. It will automatically process the contract as long as the requirements of the contracts can be satisfied, DEC platform will build self-credit through the smart contract mechanism to simplify



the business process and support the business innovation. The characteristics of DEC smart contract are as follows:

■ Turing Completeness

The transaction requirements of DEC chain is enormous and complicated. In order to meet the demands that the new energy blockchain technology in the future might be applied into more scenarios, the smart contract of DEC chain possesses the Turing Completeness. One of the most obvious characteristics of language of Turing Completeness is circulation supporting which means the program is able to carry out continuously. However, under the distributed circumstance supported by the blockchain, it's impossible to prove that a program can be stopped or not (the problem of Turing shutdown). Therefore, the language of "smart contract" needs to guarantee that the program it writes doesn't exist endless loop. And that's why we bring Gas in the DEC chain by which each calculation process will consume certain amount of costs avoiding the processing with no end.

■ Correctness and Safety

The correctness and safety of the smart contract is the essential requirement to guarantee the regular work of the blockchain system which is also the basis of the people's trust in the blockchain technology. Once there appears loopholes in the smart contract program, the safety of virtual money during the transaction cannot be guaranteed. However, it's extremely difficult to write a smart contract that is absolutely safe. All the smart contracts operates under the Byzantine environment where each participate of the contract might be Byzantine which means evil. On one hand, both fake users and malicious Program have rights to use the methods in any smart contract which is hard to be supervised currently. On the other hand, the smart contract with multiple trading users participating has many similarities with the traditional concurrent program by shared memory. As we all know, it's very easy for concurrent program to produce loopholes and it's hard to ensure the correctness based on its experiences which provide opportunities for the evil users. But the current facts is the loopholes of the smart contract occurs frequently and it's impossible to avoid the possible loopholes in the smart contract completely just depending on the experiences and manual tests.

As to the Gas Mechanism which is used to calculate and pay the costs, the smart contract is also different from the traditional programming languages.



Therefore, the developer needs to make sure that each function can operate as planned without the limitation of the Gas when write the smart contract. Inappropriate resource analysis might lead to the operation failure of some part of the smart contract due to the Gas limitation which makes the capital to be stuck. However, there doesn't exist this limitation in the traditional software system.

■ Better Compatibility

The smart contract used by DEC chain adopts go-lisp smart contract technical architecture and make deeper refinement and innovative optimization based on it so that the DEC system is able to support various applications safely, stably and efficiently with better compatibility.

5.5. DEC Digital Wallet

The digital wallet is the tool case for blockchain's digital assets management which is also the entrance of the DEC ecological business. At the meanwhile to ensure the convenience of the utilization of the assets and service, it also guarantee the safety of the assets and support the assets retrieval. DEC adopts light wallet which needs no download of entire blockchain data and use the mnemonic word to help the users to find the asset back. There is no differentiation between the merchant's wallet and the user's wallet for DEC wallet because the role of merchant and user is relative (for example, the individual users can sell the electricity stored).

The DEC digital wallet for users and merchants has bellowing functions:

➤ Fundamental services:

- 1) Apply and manage DEC, DECC account and address;
- 2) The charging, storage, deposit, exchange, transfer and payment of DEC, DECC;
- 3) Review the historical transaction bill;
- 4) Obtain the profits or incentive dividend of DEC/DECC;

➤ Other business application services:

- 1) Purchase electricity (charging leasing and so on) through the DEC distributed micro-grid;

- 2) Launch crowd-funding or crowd-funding subscription via DEC distributed new energy crowd-funding platform;
- 3) Pay the parking fee, toll and so on;
- 4) Acquire the profits and incentives from related business on the platform.

6. The Development Roadmap and Plan

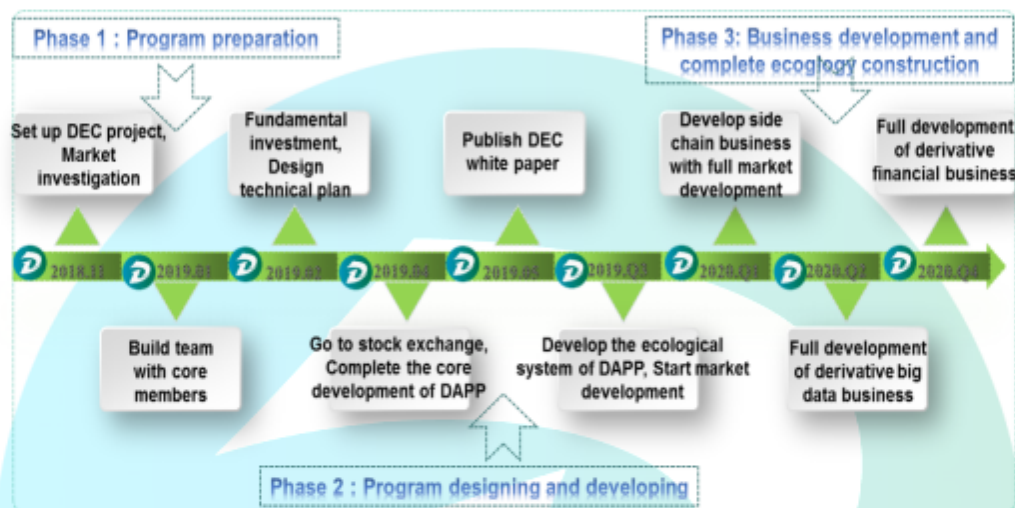


Figure 16: The development roadmap and plan of DEC

➤ Phase 1 (2018.11-2019.02): Project preparation

This phase is the project preparation period mainly for the project investigation and team building;

➤ Phase 2 (2019.02-2019.12): Project design and development

It's the period for the specified design for the business and technique issues of the project as well as the research for the application of the design.

➤ Phase 3 (2019Q3-): Business development and overall construction of the ecology

Overall ecological construction and business promotion will start from this period based on the business and technical architecture that have been constructed. We intend to carry out comprehensive marketing for six core DEC business from the third quarter in 2019. The side chain business for developing ecological partners will begin from the first quarter in 2020 to whom we support to develop the network, exchange and issue their token and DEC. From the beginning of the second quarter in 2020, the derivative big data business will be developed and the big data model will be verified as well on



basis of the data accumulation from the core business. Starting from the last quarter of 2020, based on the verification of the big data model and accumulation of the platform business, we begin to carry out the development and application of derivative financial business by interconnecting multiple parties.

7. The Introduction of DEC Token

7.1. The Economic Model of DEC

DEC is a Utility Token issued on the standard of Ethereum's ERC-20. DEC will become an important economic tool-value medium in the ecological business system of the DEC network to realize the free circulation and delivery in the data right world of the whole industry chain in the DEC intelligent distributed new energy network. The main application scenarios include consumption, transaction, incentive, crowd-funding, dividend, vote, claim, proposal, mortgage (deposit) and so on. As the points generated from the internal ecological system, DEC is the unit measuring the value of the contribution to the ecology and the measuring unit for the price stability of the DEC distributed micro-grid electricity business (The application design for this is to take a relative stable pricing measurement into consideration for the distributed micro-grid business so as to reduce the influence that price fluctuation brings to the customers during the period from the issue of DEC cryptocurrency to medium times). DEC token and DECC can realize free exchange with each other and generate the value circulation system in the DEC global intelligent distributed new energy network ecology together.

DECC owns certain social attribute in the DEC network ecology. DEC will offer points rewards according to the incentive mechanism in the points system. When users choose to leave the platform, they can deposit the DEC token with the equal value of DECC. DEC can also exchange the token of Dapp on the side chain which is developed based on the DEC main chain. As the side chain is independent blockchain having its own node network, its code and data are relatively independent. DEC will offer diverse and more complicated functions of smart contract based on the different characteristics of each side chain which enable the DEC intelligent distributed new energy network ecology to embrace broader application prospects.

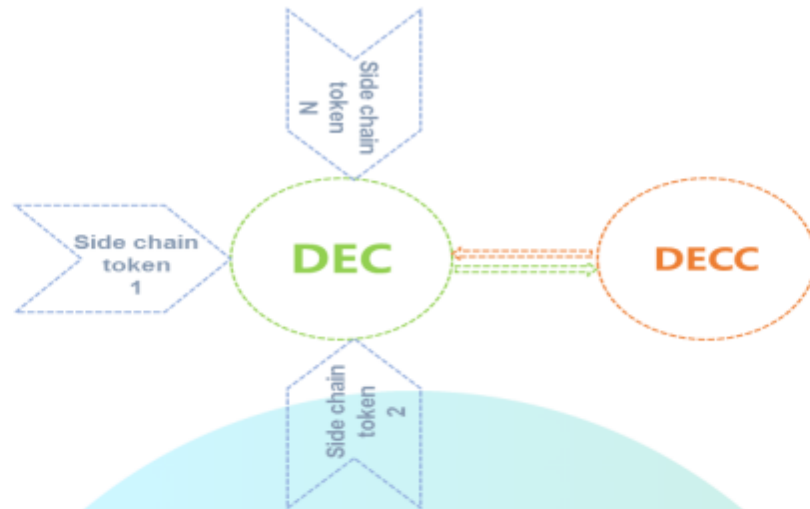


Figure 17: The economic model of DEC

7.2. The Rule of Issuing

DEC token, called DEC for short, is totally issued 319 million pieces which are distributed specifically as below:

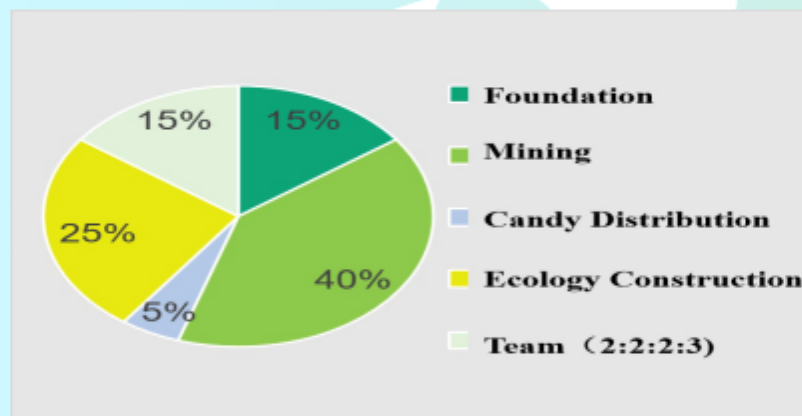


Figure 18: The proportion of DEC distribution

- * Ecology construction: Distribute by year according to the ecology construction plan;
- * Team: Release by 4 years with 20% each in the first and second year, and 30% each for last two years;
- * Others: Release in batches;

8. The Governance Architecture

8.1. The Establishment of The Foundation

DEC Foundation Ltd (“Foundation” for short hereafter) is a BVI company established abroad. The Foundation is dedicated to the development and construction of DEC with advocating and promoting the transparent governance to promote the safe and harmony development of the open source ecological society.

8.2. Organization Structure

The idea of DEC organization structure design is striving to find balance between the complete decentralization and centralization which adopts the combination structure model of “distributed decision making” & “centralized execution” so as to achieve efficient and democratic decision making mechanism.



Figure 19: The organization structure of DEC

DEC organization structure are divided into two levels in total:

- **Decision Level:** The core members in the decision level come from the DEC community members who campaign for the community representatives according to the distributed governance and voting mechanism.
- **Executive level:** A regular operation management team conducted by regular executive committee including the technology committee, operation committee, public relationship committee and risk control committee.



8.3. Decision Making Mechanism

8.3.1. The Contents of Decision-Making

- The deliberation and modification of foundation's constitution;
- The modification of the governance architecture of DEC foundation;
- The development strategy of DEC;
- The appointment and rotation decision for the secretary general of the foundation;
- The appointment and rotation decision for the director of each functional committee and core functional department;
- The alternation o upgrading decision for DEC core technology;
- Emergency decision and crisis management agenda;
- The execution of decision approved by community proposal and so on.

8.3.2. The Principle of Decision-Making

- All the decisions are open and transparent;
- The decision should be beneficial to the healthy development of the DEC ecology;
- Comply with the professional ethics, laws and regulations.

8.3.3. The Requirements for The Decision Committee Members

- **Tenure:** The tenure of decision committee members and secretary general of the foundation is two years, which the secretary general cannot serve over two term consecutively.
- **Requirements:**
 - Each representative shall accept the credit investigation and open the salary situations during his or her tenure;
 - The DEC token each representative or core member holds shall not

surpass the 20% of the total amounts;

- The decision made by decision committee can only be approved and executed with the approval of half of the core members at least(each representative and core members of the decision committee has one vote while the secretary general has two votes).
- **The council member generation model for new terms:** When the term of DEC decision committee members expires, the community will select 101 important nodes by voting in the DEC voting system according to the consensus mechanism as the representatives representing the democracy of DEC community from which 9 persons will be selected as the core members of the decision committee. The selected core members will represent the DEC foundation to execute the important decisions with the democratic suggestions that obtains the maximum votes taken by the community members behind each node.

8.3.4. The Decision Mechanism of Suggestion Approval by Community Members

The proposal submitted by community members shall get into consensus by the voting mechanism and executed by the smart contract. The related staff in the DEC organization structure will make the execution offline based on the decisions. The DEC community reserve the supervision rights.

8.4. The Coting Mechanism

8.4.1. The Principles of Voting

- The community members can participate the voting activities voluntarily and independently to influent the important decisions of DEC;
- Take advantage of the community member's wisdom based on the idea of distributed governance;
- All the voting behavior shall be conducted through the DEC voting system;
- Each voting activity shall be announced with details, mechanism and requirements in advance;
- The voting results shall be published within 2 working days after the voting



whose related details needs to be disclosed transparently on the DEC voting service platform;

- The voting campaign for the core members of decision committee of the next term shall start 2 months before the end of expiration;
- In order to guarantee the stable basis, the current core members of decision committee will become the candidates of the new core members automatically who owns the voting rights but cannot serve over two term consecutively.

8.4.2. The Voting System

The setting of DEC voting system is aimed at guaranteeing the openness, transparency and fairness of the voting and election behaviors on the DEC platform. There are four kinds of voting behaviors:

- Vote for the campaign of the members of DEC foundation and committee;
- Vote for the support of the proposal/suggestion related to the construction and operation of DEC ecological system so as to generate the result with the highest approval rate eventually;
- Vote for the support of crowd-funding projects;
- Vote for the support of other business (for example the side chain business).

8.4.3. The Standard of Approval by Voting

- The decision made by decision committee can only be approved and executed on the condition that more than half core representatives grant their approval.
- The approval of the standards proposed by the community shall acquire affirmative votes which are 10% more than the dissenting vote and compete with other proposals at the same time. The proposal with the highest affirmative votes shall be acquired and executed. The person who makes the relative proposal can get the reward.

8.5. Investment Management



Under the condition that complying with the law, DEC foundation will invest the business or activities which is beneficial to its ecological contribution, such as the investment to the infrastructure arrangement/business layout of distributed new energy and to the ecological partners.

Any investing behavior shall be approved by the voting of DEC decision committee. And there shall be professional person and the third-party audition company to carry out the supervision and information disclosure for withdrawal/return of the later funding.

8.6. Risk Control and Management

8.6.1. Transaction Security

All the transactions on the DEC platform are protected via the technologies such as blockchain consensus, tamper-resistance and safe methods like digital signature, encrypted wallet for the terminal users to guarantee the safety of user's account and capitals. DEC provides the efficient integration of the data storage, network, platform and other resource with safety in financial standard which integrates the data, application and transaction into the blockchain clouds to create safe network environment for the trading and construct secure transactions with the most trusted trading platform and technical experts together.

8.6.2. Security Audition

DEC invites the authoritative third-party security audition company to audit the codes for DEC periodically.

8.6.3. Financial Audition

DEC will annually invite the internationally famous third-party audition institutions to make periodical audition and evaluation for the funding utilization, costs and expenditure, profits distribution of DEC foundation and publish the results openly.

8.6.4. Terms of Restriction of Fund Utilization

The utilization of DEC project's assets is based on the transparent principle. It



will set independent account and make use of the address of digital asset wallet according to the distribution principle and the budget mentioned above. The digital asset flow will be supervised by trustee agency and shared to the community regularly. The using principle of open sale and purchase:

- The value exceeding 1 million RMB (or the digital asset with equal value) shall be approved by the director of financial department and the secretary general;
- The value exceeding 5 million RMB (or the digital asset with equal value) shall be approved by the decision committee.

8.6.5. Legal and Compliance Issues

The team of DEC project has established the entity of the foundation. All the operation will comply with the local law and regulations as well as the supervision requirements. If there appears any event that needs to seek legal advices, we'll ask for the confirmation from local lawyer.

8.7. Information Disclosure

The team of DEC project has established the entity of the foundation. All the operation will comply with the local law and regulations as well as the supervision requirements. If there appears any event that needs to seek legal advices, we'll ask for the confirmation from local lawyer.

Report published	Disclosure Content
Quarterly Report	Publish quarterly to disclose the project development and version upgrade of each quarter, the utilizing issues of project funding and the currency held by the market till the end of the quarter;
Interim Report	Publish in the middle of the year to disclose the project development and version upgrade of the half year, the utilizing issues of project funding, the project plan and budget next half year and the currency held by the market till the middle of the year;

Report published	Disclosure Content
Annual Report	Publish at the end of the year to disclose the project development and version upgrade of this year, the utilizing issues of project funding and the plan next year, the complete plan and budget of the project next year, the currency held by the market till the end of this year and the change of management team;
Temporary Information Disclosure	When important issues happens such as the status of technology development, related transaction, major changes in business scope, serious loss and debits, merger, division, dissolution, bankruptcy and the change of the funder or the actual controller, report the occurred time, lasting period, incident influence and other key information to investors on the chain and supervisors.

Figure 20: The information disclosure mechanism of DEC foundation

9. The Introduction of Core Members of The Team



Chief Executive Officer (CEO) : ERIC WALKER

Responsibilities: Responsible for the overall business operation, ecology planning and construction, the design of business architecture and operation strategy for DEC to improve DEC's influence in the industry.

Graduate institution: Henley Business School, the University of Reading which owns triple accreditation of "AACSB, AMBA, EQUIS"

Work experience: Worked as the relationship manager of London Stock Exchange in charge of managing the relationship between the stock exchange and the listed companies. Moved to the listed market of the blockchain and started architecturally designing the blockchain project with IPO since 2016. Now devote in building the influence of the DEC global intelligent distributed new energy network in the industry to realize the construction of ecological planning.

**Chief Marketing Officer: DANIEL VOGEL**

Responsibilities: In charge of the international marketing, commercial strategy and planning implementation, the instruction of business development and business negotiation of DEC.

Graduate institution: Graduated from McDonough School of Business, Georgetown University which is one of

the top business school in America with ranking of top 20 listed by *US News & World Report*, *Businessweek* and other authoritative college rankings. The undergraduate education of the McDonough School of Business ranked top 10 in 2012 in the United States.

Work experience: Worked in EQUITYZEN and LEARNVEST which are famous Fin-tech companies in America as the project manager or department director.

**Chief Technology Officer (CTO) : DAVID BRAIT**

Responsibilities: Responsible for research management of the entire DEC technical team, the design of the bottom ecology and technology architecture, ecologic application structure and technical realization of economic model of DEC.

Graduate institution: Graduated from Israel Institute of Technology major in Computer Science

Work experience: Worked at two well-known financial techniques service companies, MAGLAN and GUARDICORE, as the technology research and development manager as well as the team member of the Association for Computing Machinery (ACM) during the tenure. Attained the nomination of Turing award by ACM in 2014. The research direction is data storage structure, P2P distributed interconnection techniques, cryptology techniques and how to use the blockchain technology to systematically solve the massive data problems of Artificial Intelligent, Internet of Things and the supply chain finance.

**Human Resources Director(HRD) : JOEL GRUS**

Responsibilities: The strategic partner of CEO and important member of core decision level. In charge of the constructing efficient human resources system for DEC and managing relevant matters of DEC human resources.

Graduate institution: Graduate in Rutgers University School of Management and Labor Relations major in human resources.

Work experience: Worked at KENEXA and SPHERION as the Human resources director of the two companies. A senior expert of extremely high professional quality with professional ability and attitude in this area.

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And thank you for taking time to read this white book!