

Industrial Blockchain (DIPNET) White Paper

Summary: Manufacturing service that puts emphasis on flexible manufacturing, rapid response to the needs of front-end consumers, is the future direction of manufacturing development. However, the business models such as the traditional manufacturing industry and even the emerging industrial internet cloud platform still cannot meet the essential requirements of the market, so the business model needs an improvement. Based on the multi-party collaborative trust mechanism brought by blockchain technology, this paper proposes a new business model for sharing factories, upholding the value proposition of “One click repeat customization”, and using “Cloud Chain blending” technology to process mass customization production. At the same time, this paper designs an economic system that conforms to the business model of “DPOS+DAG” double-chain consensus. There are three main application scenarios: First will be the digital sharing factory relying on the “cloud chain mixing” processing method; Second is decentralized e-commerce platform to meet mass customization needs through multi-party synergy mechanism of digital sharing factory; Third one is film industry scene customization to meet the individual needs of consumers; The fourth is value lifecycle management (VLM) based on blockchain technology.



Blockchain



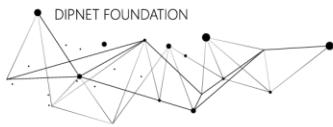
Business model



Economic system



Application scenario



— Manufacturing service industry is becoming a new trend of manufacturing transformation and development

Manufacturing is the main body of the national economy, the instrument of rejuvenating the country, and the foundation of a strong country. After entering the new century, some scholars expounded the strategic choice of enterprises in the internet era, and consumer-led fragmentation demand has become an important consideration point^[1-2]. The data shows that since 2016, the global high-end consumer goods index has been increasing month by month, directly reflecting consumers' preference for high quality supply.

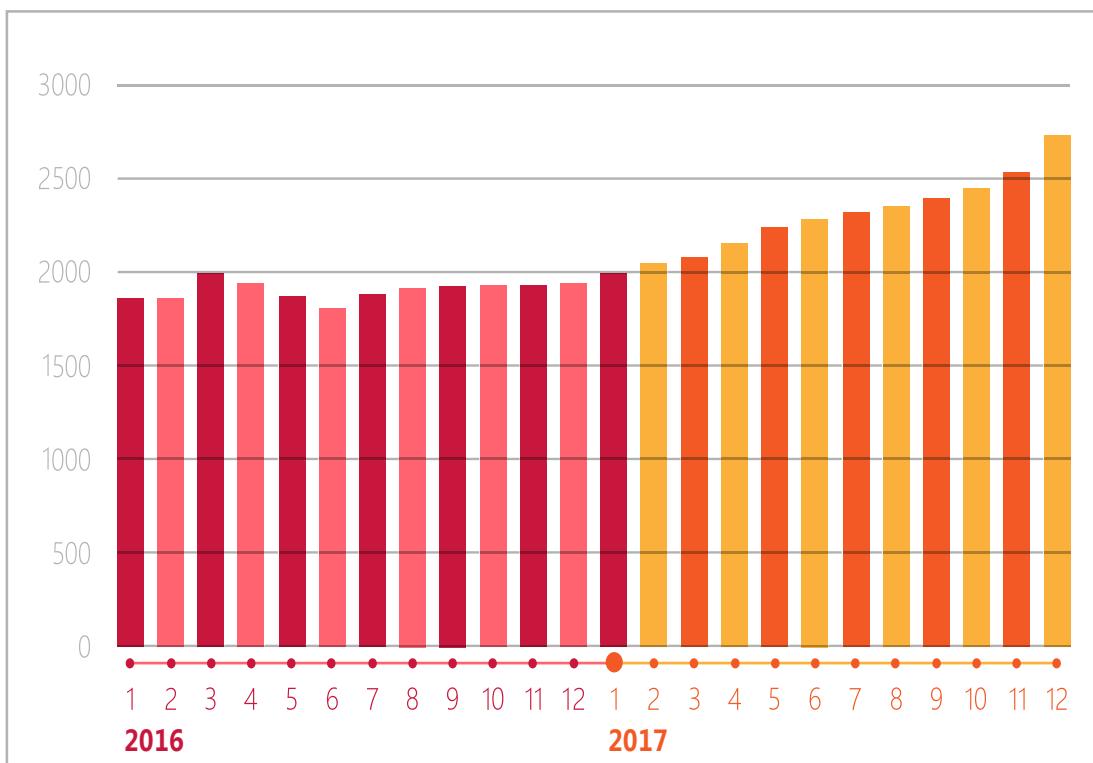


Figure 1: Global high-end consumer goods index
(Source: WIND database)

While the demand side is gradually changing, the global manufacturing division is accelerating its restructure, and intelligent manufacturing model with information technology and manufacturing



development of manufacturing, which has a profound impact on the future development model and development mode of the manufacturing industry.

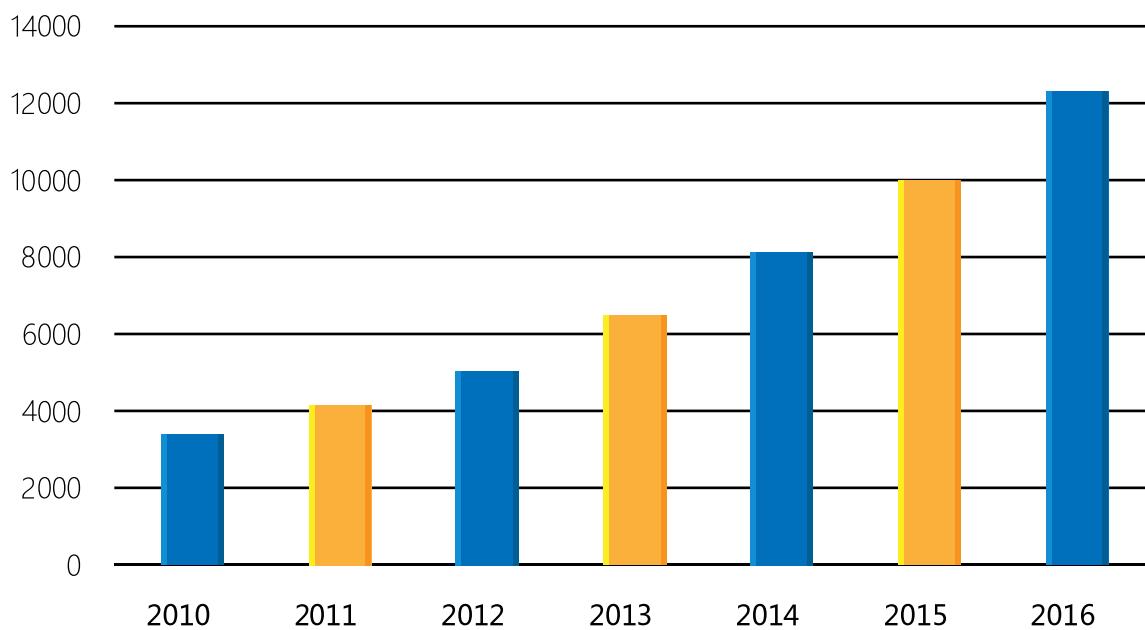
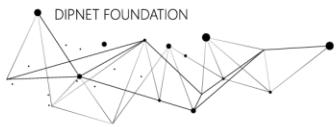


Figure 2: World intelligent manufacturing output scale

(Source: Forward-looking Industrial Research Institute Intelligent Manufacturing Industry Report)

Affected by the rise of a new round of scientific and technological revolution, increased pressure on resources and environment, and rising labor costs worldwide, the demand for intelligent manufacturing has become more and more obvious on a global scale in these years.



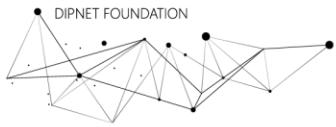


Many countries accelerate the implementation of the "smart manufacturing" strategy, and the scale of world smart manufacturing output has expanded year by year. Meanwhile, as technologies such as the internet, cloud computing, big data, and artificial intelligence are widely applied to smart manufacturing perception, analysis, and decision-making processes, and broke the boundaries between industries, causing boundaries between manufacturing and service industries became increasingly blurred, the global manufacturing industry has gradually begun to change from "production-oriented manufacturing" to "service-oriented manufacturing", and manufacturing serviceization has become an important development trend.

Global manufacturing	Service business income as a percentage of total	
	Average	Proportion of top 10 % companies
Aviation and defense	47%	More than 50%
Car manufacturer	37%	More than 50%
Electronic information industry	19%	More than 50%
Biological and medical equipment	21%	More than 50%
All manufacturing companies	26%	More than 50%

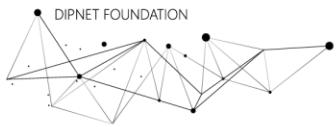
Chart 1: Proportion of service business in global manufacturing

Source: Deloitte's 2010 research report



The world's manufacturing leading countries have taken it as an important way to improve manufacturing levels. The wide application of a new generation of information technology to promote enterprise production from the traditional product manufacturing as the core to provide a rich content of products and services. For example, IBM has successfully transformed into the world's largest total solution provider of hardware, network and software services; The output value of GE (General Electric)'s "Technology + Management + Service" has accounted for more than 2/3 of the company's total output value; The leading products of the Rolls-Royce have evolved from aeronautical engines in the past to aero-engine time-of-flight, providing maintenance and repair services to users through "rental service hours".

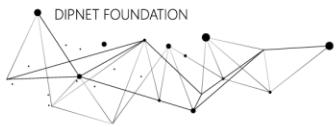




二、Traditional industry model does not fit

(一) The core of intelligent manufacturing

The origin of intelligent manufacturing came from the German Industry 4.0 concept, which aims to improve the level of intelligent manufacturing, establish a resource-efficient smart factory based on network entity technology and the Internet of Things, and integrate customers and business partners in business processes and value processes. Real-time communication, mutual identification and effective communication between people, equipment and products through CPS (Cyber-Physical Systems) network, enables personalized products to be produced in a streamline. The essence of Industry 4.0 is data, and data is taken to a new level as a production factor at the input end of “Digital Production Digitalization”. **The different point of Industry 4.0 is that it establishes a digital production mode to break the boundaries of traditional industries, and reorganizes the industrial chain division through newly established production cooperation relations, and establishes the “connection” of the originally isolated economic entities.** This report believes that Industry 4.0 is to modularize the industry and make it into LEGO bricks. No matter how the front-end market changes, the back-end can be docked. In other words, when the external market accelerates change, the entire production chain of the enterprise backend should also change accordingly. As a result, the cost of re-coordination of the traditional industry chain will also become higher, because it's in the industrial chain, and product model



changes will involve more enterprise cooperation, thus, Industry 4.0 is to achieve rapid changes in back-end factory production. On the other hand, the research on Industry 4.0 clearly pointed out that intelligent production in the Internet era, or mass-customized production based on "digitalization" will become the mainstream production mode of the future manufacturing industry [3-4].

(二) Traditional manufacturing model

Traditional manufacturing typically uses a serial production model:

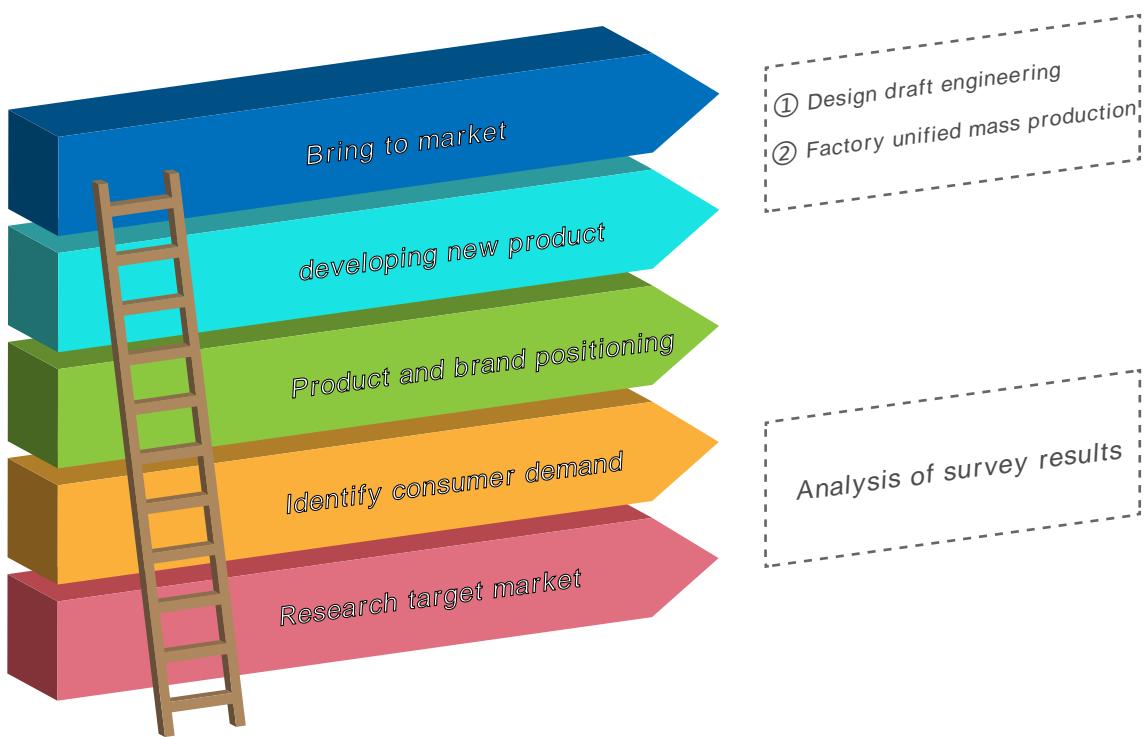
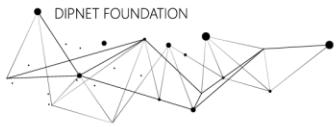


Figure 3: Serial production model

First, the manufacturer conducts a survey on the target market, and “Then” find the consumer demand based on the research results, “Then” position the product and brand, “Then” design to develop new



products based on demand, “Then” engineer the product design, “Then” unified batch manufacturing through factory, and finally push to the market through multi-layer distribution pipelines.

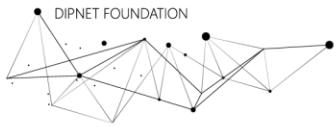
However, there are three obvious problems with this production method:

1. Production cycle and quality are difficult to guarantee

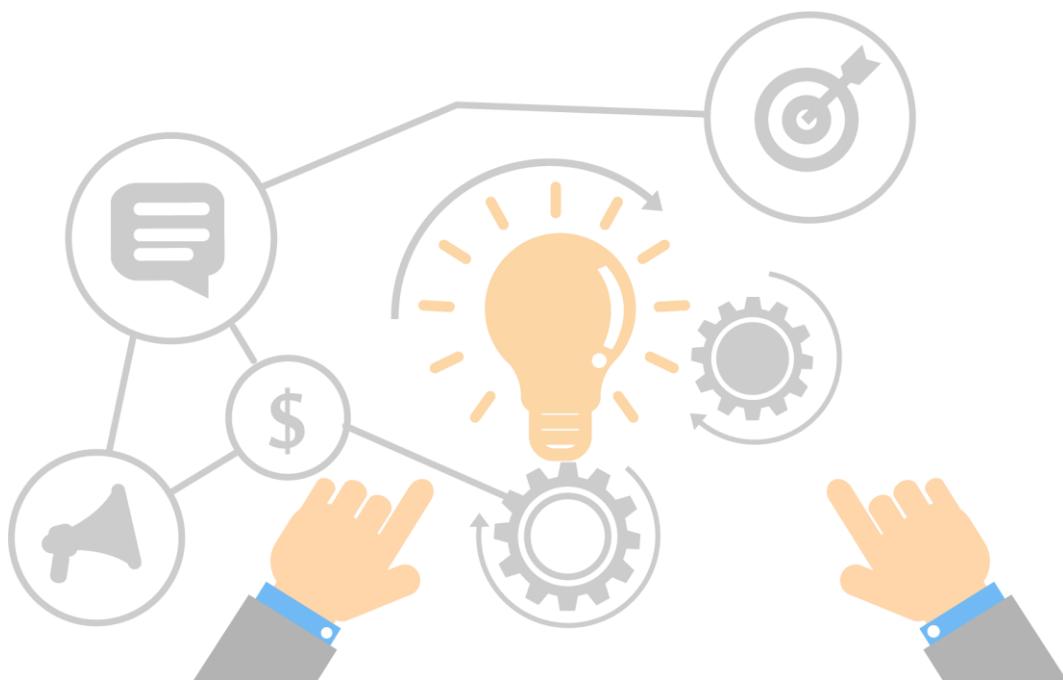
In the entire social production chain, each production unit is an information island, and if any link has problems, every subsequent link need to be returned, which leads to a very long cycle of development from product to sales. Furthermore, production units are also averse to risk, which greatly limits the innovation ability of the real industry. At the same time, social production often has a number of production units (organizations, individuals) collaboratively completed, and it is difficult to find the bottlenecks easily in any part of the quality problem.

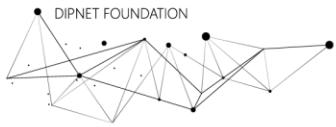
2. Low manufacturing flexibility

Most producers will invest a lot of resources to improve the automation level of the production system, but typically the higher the automation level of a single production line, the less flexible it is.—— Product replacement of a purely manual production line only needs to retrain the workers, but for an automated production line, they need to rebuild the whole production line.



However, the products produced by traditional manufacturing methods, the user demand is “conspiratory” by the market research of the producers, and generally have certain rigidity requirements, but in terms of creativity and design, they may not be welcomed by users. User can accept because there is no other choice, especially for the customized products that users need, the traditional manufacturing method is difficult to achieve with low-cost and fast response, and it is difficult to customize the production with large-scale production efficiency.

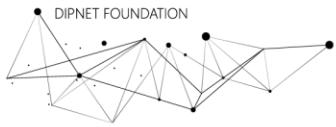




3. Too many middle men

There is a lot of waste in design works because it is difficult for manufacturers to accurately grasp the specific needs of the market, but because of the expensive mold-opening costs, they have to choose one of the many design works to produce. Many excellent design works cannot realize value through production. There is also the same waste in production and distribution: before production, raw materials are transported to the factory through logistics; In the production process, the main methods of mold casting and machining are adopted. The styling ability is limited by the tools used. The more complex the shape of the object, the higher the manufacturing cost; After the product is produced, it needs to be transported to various places, which will occupy many resources such as energy, transportation, warehousing and manpower.

Due to the existence of these three types of problems, the traditional manufacturing model cannot respond to the fragmentation requirements in the industrial 4.0 business model and cannot adapt to changes in consumer demand.



(二) In-depth analysis of the cause

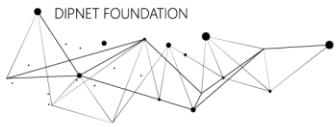
Under the Internet era, the traditional serial model based on the subjective prediction of consumer demand is gradually becoming the production mode with consumer fragmentation demand and mass customization as cores. However, from a long run perspective, the "efficient use, high cost" customization that meets individualized needs and the large-scale standardized production "inefficient, low-cost" have been in a dilemma, so that it is difficult to effectively match the supply and demand.

The reason is not a simple mismatch in the manufacturing process, but **the current manufacturing business model still emphasizes that the product is the root of value production. The transmission of value and the realization of value are reflected by the product, and the service is only a subsidiary of the product.** This is contrary to the principle that smart manufacturing emphasizes the value generated by serving customers. So, it is obvious that the manufacturing business model needs to be reconstructed.

二、Blockchain technology reconstruction business model

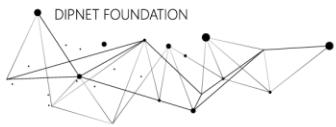
(一) The value revolution brought by blockchain technology

The founder of the World Economic Forum, Klaus Schwab, proposed that the digital revolution will be the fourth industrial revolution, and blockchain technology is the result of the fourth industrial revolution.



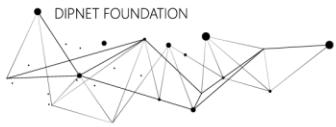
Satoshi (2008)^[5] of the early "Nature" journal believes that blockchain technology is the basic technology for constructing Bitcoin data structure and transaction information encryption transmission, but after nearly a decade of development, the blockchain is generally considered to be a distributed ledger technology, or a distributed database. Through horizontal split (time-packed) full replication (each node can download all data) storage, allowing nodes to only synchronize some of the data blocks, ensuring data integrity and non-destructive modification, and improving data query effectiveness. The blockchain data structure can be described in three levels, first the chain, then the block, and finally the transaction. The transactions in the same time period form a block, and the transactions in the block are organized according to the Merkel tree. Each block has a pointer to the previous block, which is formed by linking in chronological order to form Blockchain, and the signatures between the transactions are to record the flow of money, so that it can play a role in anti-counterfeiting.

In the tamper-proof technology, the blockchain system allows each participating node to obtain a copy of the complete database in the form of a distributed database. Once the information is verified and added to the blockchain, it will be stored permanently. Unless one can control more than 51% of the nodes in the entire system at the same time, the modification of the database on a single node is invalid; In terms of anonymity, since there is no need for mutual trust between



nodes, there is no need to disclose identity between nodes, and each participating node in the system can be anonymous. The two parties involved in the transaction pass the information through the virtual address, even if they have obtained all the block information, they cannot know who the two parties involved in the transaction are; At the same time, blockchain technology uses a set of consensus-based mathematical algorithms to establish a “trust” network between machines, thereby creating credit through technology endorsement rather than centralized credit institutions, and changing the centralized credit creation method. With the help of the algorithm proof mechanism, data exchange between each node in the blockchain network does not require a trust process; The blockchain system is open. For the public chain, in addition to the private information of the parties to the transaction being encrypted, the blockchain data is open to everyone in the network, and anyone can query the blockchain data and development related applications through the public interface, so the entire system information is highly transparent.

Therefore, as far as the nature of technology is concerned, **blockchain creates a de-intermediation clearing method that can connect big data with artificial intelligence to form a production method of value transmission**. As the authoritative commentary of The Economist magazine: “The Blockchain allows people to



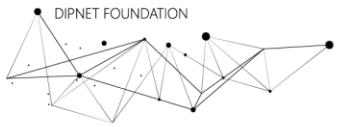
collaborate with each other without mutual trust and without a neutral central organization. It is a machine that creates trust and realizes value, and achieves point-to-point delivery of value.“

(二) Industrial Blockchain (DIPNET) business model innovation

This report proposes to build a cloud-chain hybrid distributed intelligent production network based on the value transmission production method brought by blockchain technology, which reconstruct the overall manufacturing business model.

1 . Value proposition: One-click repeat customization

In the Internet era, the manufacturing industry has gradually turned to meet the consumer fragmentation demand and mass customization as the core production mode. The development of the production service industry has gradually become a new trend of manufacturing transformation and development. In this realistic context, the Industrial Blockchain (DIPNET) advocates that the production of enterprises is not a simple copy, but the value creation on meeting the individual needs of consumers. The Industrial Blockchain (DIPNET) will also strive to provide a convenient contract paradigm for every access company, giving each repeat a unique value.

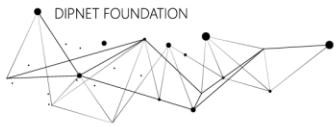


2. Value production: Integrated and intelligent

In the future of distributed intelligent production network, most of the cases adopt centralized industrial cloud technology, which is more efficient, faster, and consumes less energy. The inter-organizational data mutual trust in production is all completed through the blockchain. The order information, operation information and historical affairs are all recorded in the chain, with the properties of distributed storage, non-tamperable, and traceability, and management of all products will be safer and more convenient. The transaction process in the entire supply chain in the distributed intelligent production network is automatically executed by the intelligent contract, which can solve the problem of uncontrollable account period in the industrial production, and greatly improve the economic operation efficiency. At the same time, through the combination of blockchain technology and digital factory technology, it is possible to generate “digital twins” of virtual worlds for each physical world's industrial assets, and to confirm and transfer, complete the digitization of industrial assets, and help heavy asset manufacturers realize Light asset expansion.

3. Value transfer: service and ecological

The distributed manufacturing model formed by the distributed intelligent production network is represented by the user-created content, which enables everyone to manufacture and participate in the whole life cycle of the product, completely subverting the traditional manufacturing model, and the production enterprise can also benefit from it. In terms of



product development, the new model has shifted product design and manufacturing from the original producer-led trend to consumer-driven trend. Consumers can participate in product design and manufacturing processes earlier and more accurately, and continuously improve products through a large distributed network, making it easier for companies to adapt to market demands and obtain profit guarantees; In terms of product innovation, the new model extends the boundaries of innovation. Normally, R&D and innovation cannot be closely linked due to cost issues. Nowadays, the cost of using the new model in the initial stage of the product has dropped drastically, and the production and research of new technologies and new products have been closely combined. In addition, with the help of large-scale distributed manufacturing networks and other social resources, the company's innovation capabilities and research and development capabilities can be greatly enhanced, and the boundaries of innovation can be extended.

4. Value realization: standardization and networking

Data can be transmitted point-to-point between any nodes, and information can be exchanged in real time to realize data access in R&D, design, production, manufacturing, and sales. Order information, transaction history records, etc. are recorded on the chain, and since distributed storage cannot be falsified, decentralized collaboration can be achieved, and product traceability is safe and convenient. The trading process is automated by smart contracts to increase efficiency.

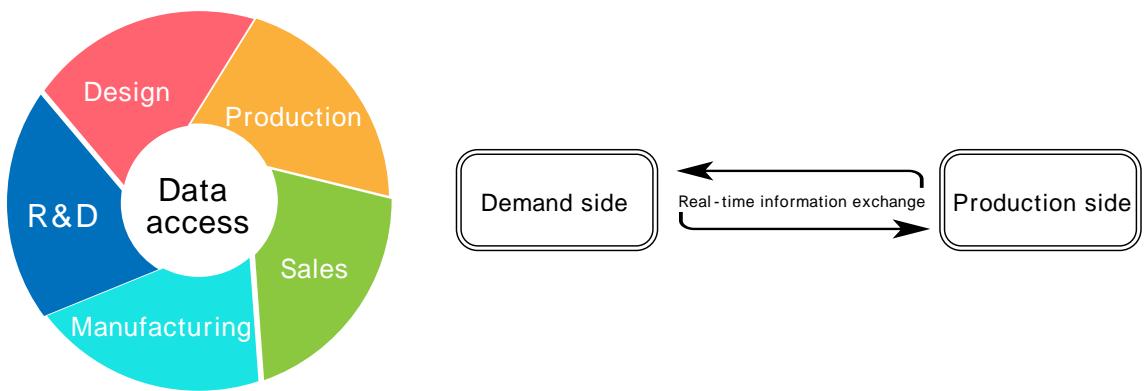
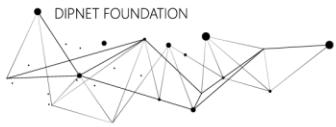


Figure 4 : Standardized transaction process

This will create a new flat, cooperative global new industrial market, rather than a traditional, top-down, industrial structure. A distributed manufacturing network formed from thousands of nodes replaces everything from design to manufacturing, dramatically reducing production costs.



三、Industrial Blockchain (DIPNET) Economics system

(一) Overview

Industrial Blockchain (DIPNET) is a smart contract platform for industrial manufacturing, providing complete implementation of the underlying protocols, supporting tools, and API interface sets. The decentralization, security, and anonymity of blockchain technology attracts traditional manufacturing companies, which attempt to reconstruct enterprise value circulation and information flow based on blockchain technology. The Industrial Blockchain (DIPNET) helps manufacturers easily enter the blockchain network by abstracting the enterprise business flow into a smart contract paradigm, realizing the generalization of business flows and accelerating enterprise resources and information flow. The enterprise on the chain will reconfigure the supply chain system with blockchain technology, and on this basis, build a shared factory and decentralized e-commerce platform.

Industrial Blockchain (DIPNET) uses a mother-child double-chain model to use different consensus schemes for different production links in the industrial manufacturing sector, taking into account reliability and performance.

The Industrial Blockchain (DIPNET) project is an open source project that follows the MIT protocol.



(二) Basic structure

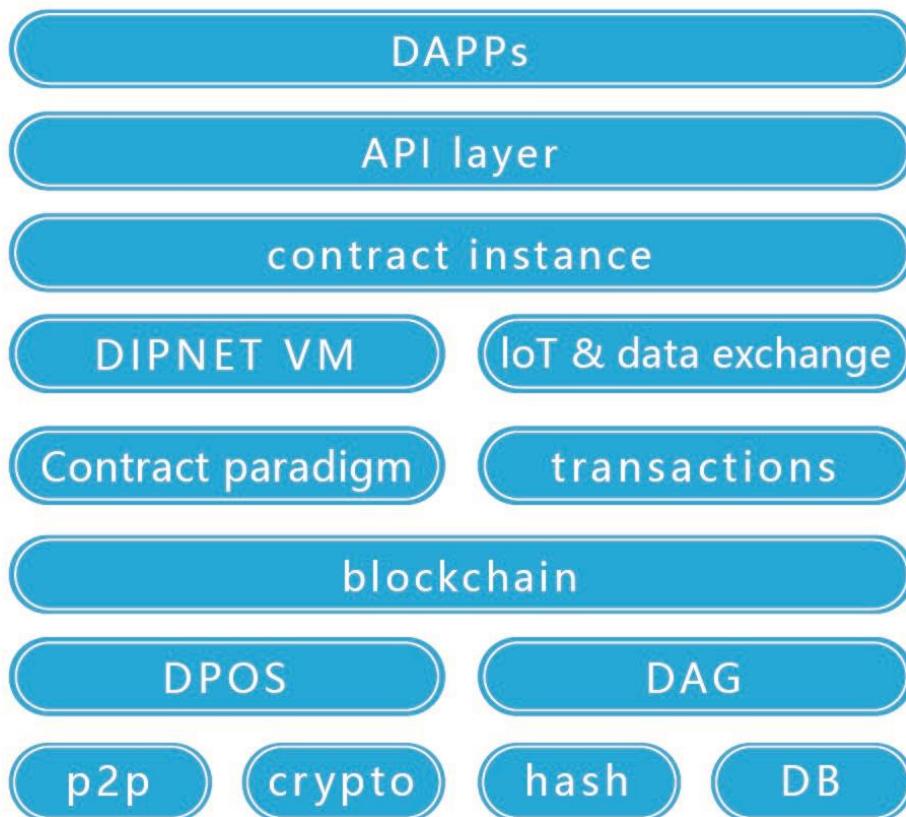
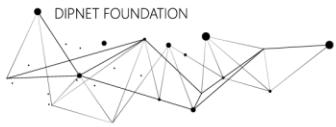


Figure 5: Industrial blockchain (DIPNET) layered map



Industrial blockchain (DIPNET) is mainly divided into:

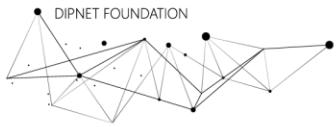
- Network layer: Implement basic node discovery, data transfer and other functions.
- Basic service layer: Realize data transaction, block generation, and maintain consensus.
- Contract layer: Implement smart contract paradigms and smart contract instances.
- Interface layer: Provide external block data access, intelligent contract interaction and other interfaces.

(1) Network layer

Ethereum's devp2p protocol has been implemented through the Ethereum network for many years, and its privacy, robustness, performance and other aspects have been well verified. We will implement industrial blocks based on the Ethereum devp2p protocol (DPT, IPFS, etc.), and realize the underlying network of the chain (DIPNET).

(2) Basic service layer

The Industrial Blockchain (DIPNET) adopts the chained block structure of DPOS consensus. Later, as the number of transactions increases, it supports DAG implementation, and transfers data unrelated to payment to the DAG sub-chain, and provides underlying support for large-scale data of IOT.



The block service layer provides services such as account management, organization transactions, transaction verification, and block verification for the Industrial Blockchain (DIPNET).

The Industrial Blockchain (DIPNET) uses the ECDSA-secp256k1 digital signature scheme. There are three types of accounts in the Industrial Blockchain (DIPNET):

- Ordinary account
- Contract paradigm account
- Contract instance account

The ordinary account is controlled by the user's private key, and the contract paradigm account and the contract instance account are all generated by a specific algorithm. The block service layer accepts the parameters passed in the upper layer, and can construct a specific type of transaction data. After the signature of the transaction sender, the transaction broadcast is realized through the network layer.

For DPOS main chain and DAG sub-chain transactions, the Industrial Blockchain (DIPNET) will use different verification strategies. In particular, for the DAG subchain, there is no concept of a block.

(3) Contract layer

The Industrial Blockchain (DIPNET) implements smart contracts through VMs. All contract paradigms and contract instantiation transactions are only allowed to be submitted in the main chain to guarantee the timing and reliability of the smart contract. Precisely, the contract paradigm is submitted by the developer, and the smart contract instance is initialized by the user through the contract



paradigm. Smart contracts can directly access data in the DAG. The contract layer is the core link to realize the Industrial Blockchain (DIPNET) business. The fulfillment of order intention and order delivery are automatically executed by smart contracts.

(4) Interface layer

The interface layer provides users and Dapp with access to the underlying block data, Industrial Blockchain (DIPNET) accounts, smart contracts, contract paradigms, and is the primary ways of interacting with Industrial Blockchain (DIPNET) services.

(三) DPOS and DAG double chain consensus

The choice of consensus program is mainly considered from three aspects: Security, decentralization and robustness. These three constitute an impossible triangle.

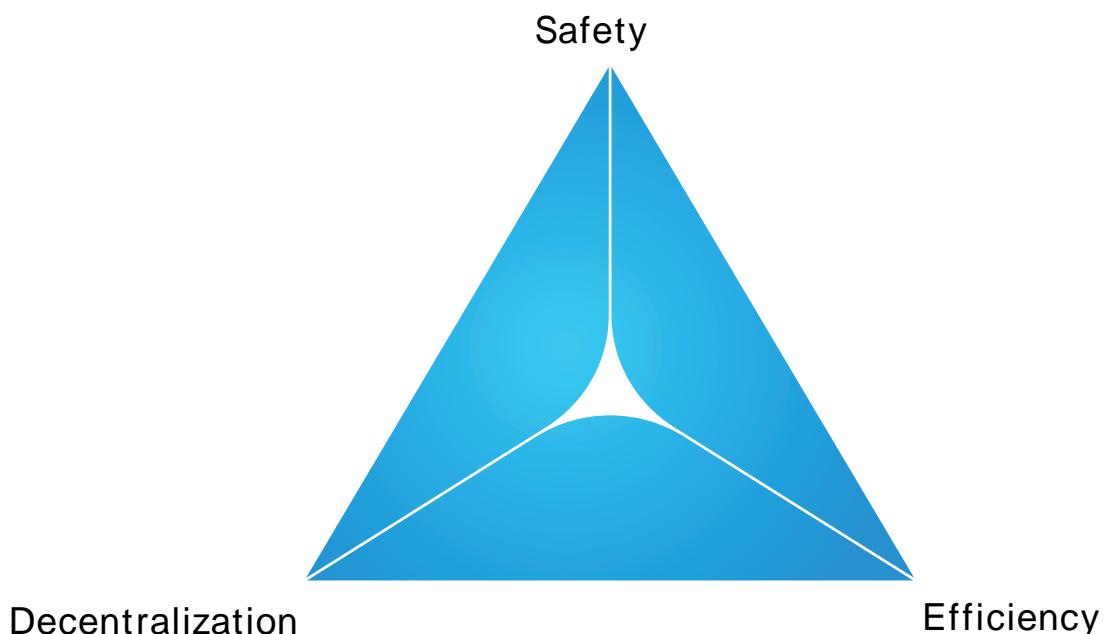
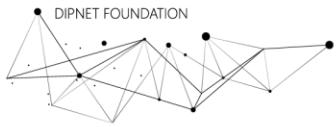
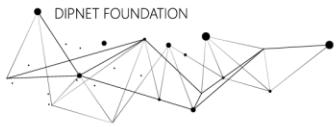


Figure 6: Impossible triangle



Industrial Blockchain (DIPNET) selects the DPOS consensus mechanism to implement the parent chain, since we believe that the DPOS consensus mechanism is a balance between efficiency, security, and decentralization. Under the DPOS consensus, the supervision of the super nodes through the community ensures that most nodes are honest and at the same time able to achieve higher efficiency and a simpler network structure.

The Industrial Blockchain (DIPNET) determines the supply chain for each order and presets a fast settlement system within the supply chain, and all suppliers directly reach a settlement relationship with the final consumer. For a specific order, we pay different attention to each link in the order, which is, we want to keep a reliable record when placing orders and signing. However, for the flow of the units in the order supply chain, only the general record needs to be retained. Therefore, we consider the circulation information, logistics information and other IoT related information in the supply chain to be recorded on the DAG sub-chain, and only the final transaction and liquidation results are recorded in the main chain. The DAG subchain is a completely asynchronous data model and can theoretically have an enormous data bandwidth. DPOS and DAG dual-chain mode provide additional consensus options for data with different characteristics, especially when the industrial blockchain (DIPNET) is combined with the Internet of Things, a large number of production and logistics data can use DAG sub-chains.



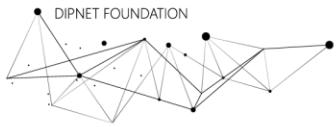
(4) Contract paradigms

The contract paradigm is a smart contract template published by the developer, and the developer will provide detailed application guidance instructions, which will be reviewed by the community and provided with a credit endorsement. Users do not need any development experience. They only need to choose a contract paradigm suitable for their own business from the massive contract paradigm according to the instructions, and complete a reliable smart contract deployment through simple configuration. The contract paradigm is a special transaction on the parent chain. It is an incomplete smart contract code. It only provides some common static interfaces and instantiated interfaces, and does not provide any business-related functions. The developer account is also specified in the contract paradigm. Developers can get a small fee from the user's transaction as a reward to achieve the "development or mining" model.

(5) Industrial Blockchain (DIPNET) major participants

The token circulating in the Industrial Blockchain (DIPNET) is called the Industrial Blockchain (DIPNET) Token, or DPN for short. It will be used for users to pay for gas, various fees, and is a certificate for using system resources.

Industrial blockchain (DIPNET) main related parties are witnesses (miners), ordinary users, developers, communities.



1. Witness

Witnesses vote for an odd number of executive witnesses and a number of candidate witnesses by all DPN holders. All witnesses need to make a block in the order of their own rotation. If a witness refuses to give a block, the next round of witnesses will make up the block. If the witness repeatedly refuses to issue a block or gave a wrong block, a substitute will be selected from alternative witnesses. There will be a specific period to re-select witnesses.

Industrial Blockchain (DIPNET) witnesses will control the security and fairness of the entire network. The community requires all witnesses to lock a certain number of DPNs and unlock them when they expire. If the witness makes a sinful or refusal to make a block during his term of office, he will receive a punitive deduction DPN, and the deducted DPN will be distributed to all DPN holders to encourage the community to strengthen the supervision of the witnesses.

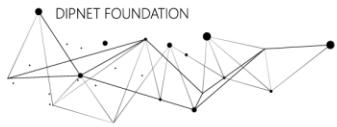
Industrial blockchain (DIPNET) Witness can earn block gas gains when witnesses correctly fulfill witness obligations.

2. Developer

The developer is responsible for developing the contract paradigm and deploying the contract paradigm to the parent chain for the user to choose. When a normal user uses a contract paradigm developed by him to generate a smart contract instance, the developer will receive the commission declared in the contract paradigm.

3. Community

The community will be responsible for reviewing the smart contract paradigm submitted by the developer and endorsing the credit. The



process of identifying users.

4. Ordinary user

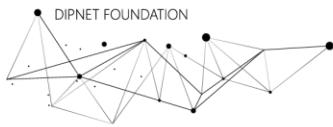
Can be the consumer or the producer, and will be completing the ordering logic by calling the producer's contract instance.

四、Application scenario

(一) Digital sharing factory

With the de-intermediation trust mechanism brought by blockchain technology and multi-party synergy, the Industrial Blockchain (DIPNET) economic system will be first applied to the capacity sharing field of China's manufacturing industry.

According to the “China Manufacturing Capacity Sharing Development Report (2018)” released by the National Center for Information and Economics in February 2018, manufacturing capacity sharing mainly refers to the use of the Internet platform as a feature and the sharing of usage rights, focusing on all aspects of the manufacturing process, integrating and deploying decentralized manufacturing resources and manufacturing capabilities to maximize the new economic form of manufacturing productivity. In 2017, China's manufacturing capacity sharing market was about 412 billion yuan, which was an increase of about 25% over the previous year. The number of enterprises providing services through the capacity sharing platform exceeded 200,000, and the market scale gradually expanded.



At the same time, many policy documents in the world have proposed to encourage the development of a shared economy for the manufacturing industry, and the collaborative sharing platform, the digital shared factory advocated by the Industrial Blockchain (DIPNET) will be an important solution.

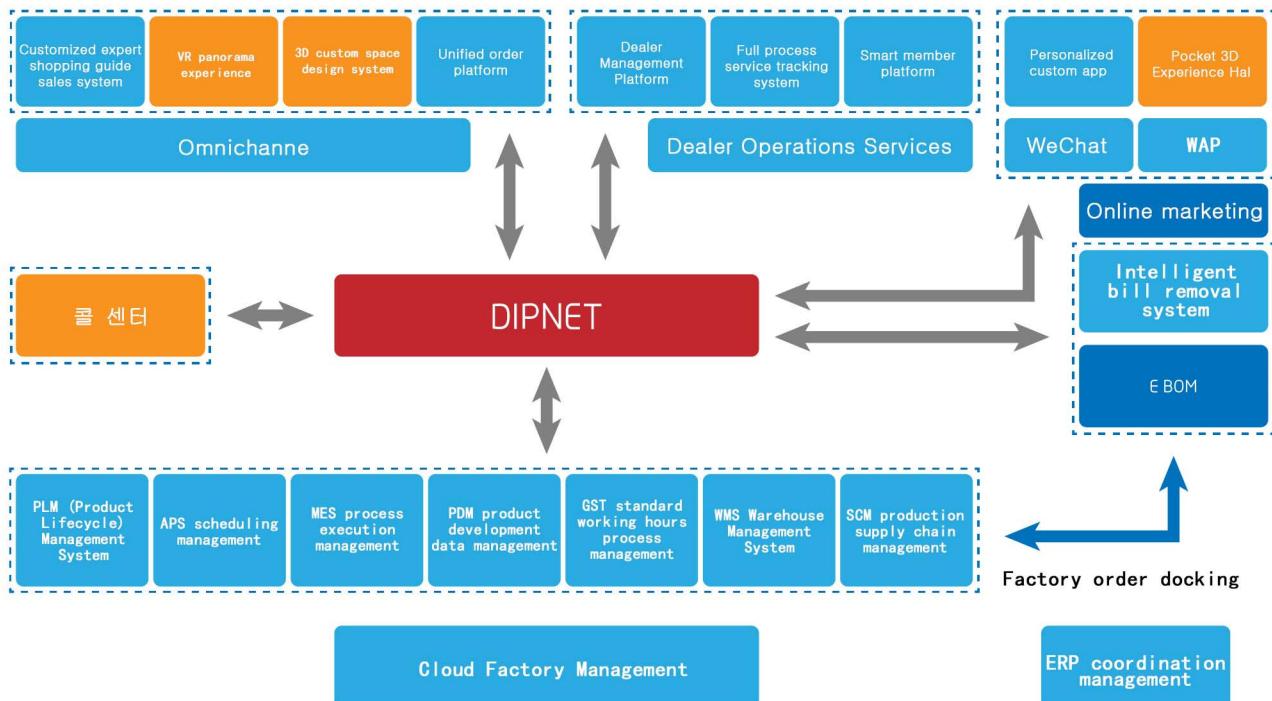
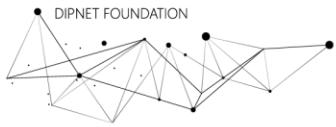


Figure 7: Digital shared factory example

(Chart source: DIPNET applied to the example of Yuanjiacheng clothing customization system)

The digital sharing factory will rely on the cloud-chain Industrial Blockchain (DIPNET) economic system to fully consider the technical feasibility, data security and cost controllability, and provide different multi-party collaborative modes for enterprises.

The biggest difficulty in multi-party collaboration between factories is the security of information. Based on this, the Industrial Blockchain (DIPNET) economic system provides the factory with blockchain encryption services of different security levels, and carries out intermediary transfer of important data between factories to ensure the



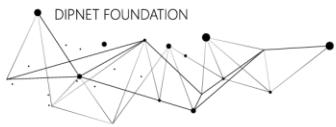
encryption security of important production data.

In the internal management of the factory, mainly from the perspective of feasibility, the Industrial Blockchain (DIPNET) economic system provides mature industrial cloud technology. Furthermore, cloud management of general production information can not only maximize production efficiency but also reduce Cost of production.

(二) Decentralized e-commerce platform

After nearly 20 years of development, the e-commerce platform has formed three major changes: The e-commerce 1.0 model is about “To gather people by goods”. The main feature is that the products are rich, the price is cheap and the payment is convenient. The core of the model is “Flow”; The e-commerce 2.0 model is “To gather people by quality”. The main features are quality assurance, high distribution efficiency and high service quality. The core of the model is “Quality”; The e-commerce 3.0 model is “To gather people by people”. The main features are demand personality, value matching and time-saving. The core of the model is “Personality”.

From the perspective of model changes, consumer-led market demand has become an important driving force for the transformation of e-commerce platforms. At present, high-end consumers around the world are trending to have large-scale personalized needs, but the centralized e-commerce platform will be difficult to meet the complex and diverse customization requirements, and it is also difficult to achieve “on-demand design + quantitative production + zero



turnaround + zero inventory + zero funds" through the centralized platform.

The decentralized e-commerce platform of the Industrial Blockchain (DIPNET) economic system will rely on blockchain technology and digital sharing factory to provide freely designed consumer platforms for personalized users, providing real and effective customization orders for digital sharing factories, realizing the E-commerce 3.0 with "on-demand design + quantitative production + zero turnover + zero inventory + zero funds".

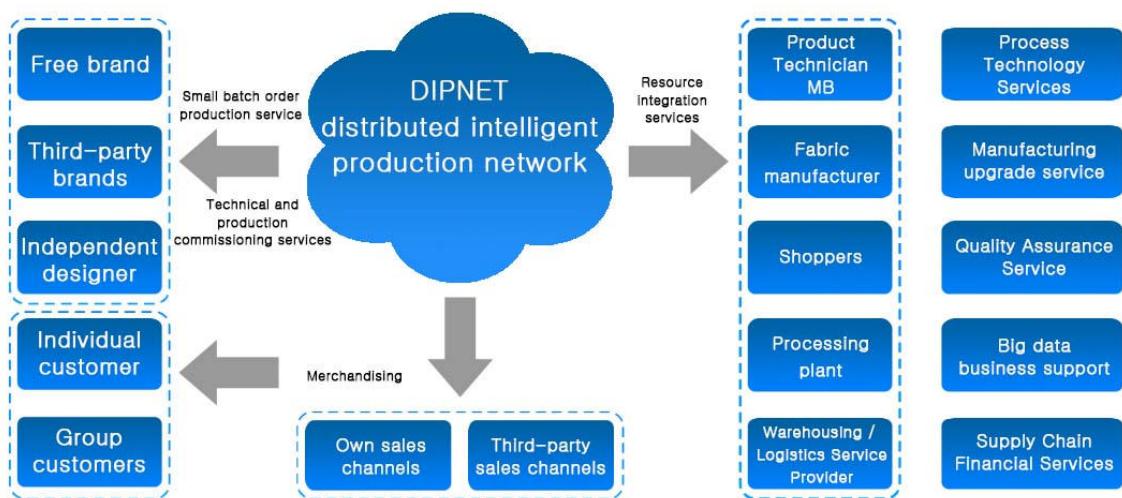
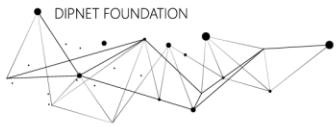


Figure 8: Industrial Blockchain (DIPNET) decentralized e-commerce platform example
(Chart source: DIPNET applied to the example of Yuanjiacheng clothing customization system)

注释1：

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The Industrial Blockchain (DIPNET) decentralized e-commerce platform has two important features:

(1) Quick meet with personalized needs from users

In the industrial age, we are always using big data technology to mine user's needs. The Industrial Blockchain (DIPNET) e-commerce platform will allow users to adapt to "products" rather than businesses to actively change "products". By accessing multiple designers and generating a value-output carrier based on the design, the user can self-select the design demo, personalize the design, and the final order distribution will be done by the DIPNET production network, so that the digital back-end factory can respond quickly.

(2) Industry operation efficiency has increased significantly

Since the on-demand e-commerce platform uses the pre-sale model, it will not cost capital, and the funds can be circulated in more valuable places and operated more efficiently. After the consumer completes the pre-sale, the order is directly sent to the digital sharing factory through the DIPNET production network. The factory directly produces and delivers the goods to the user according to the order. There is no intermediate link, which leads to a substantial increase in the efficiency of the supply chain.



(三) Film industry scene customization

The Industrial Blockchain (DIPNET) economic system, which is based on “one-click re-customization”, is dedicated to helping digital factories meet the fragmentation needs of individual consumers. The entertainment industry has obvious consumer-led attributes, but there is a significant industrial demand in China, which is one of the application scenarios for the Industrial Blockchain (DIPNET) economic system.

1、The dilemma of the Chinese film industry

The rapid development of China's film industry has entered a golden age. Since 2012, the size of the Chinese film market has ranked second in the world. According to the data released by the State Administration of Press, Publication, Radio, Film and Television, the total box office of Chinese films in 2017 was 55.911 billion yuan, a year-on-year increase of 13.45%, and the domestic box office was 30.104 billion yuan, accounting for 53.84% of the total box office. China has also made important contributions to the steady growth of the global film market. In 2012, the total box office of the Chinese film market was 25% of the North American market, and in 2017 the data reached 77.63%.

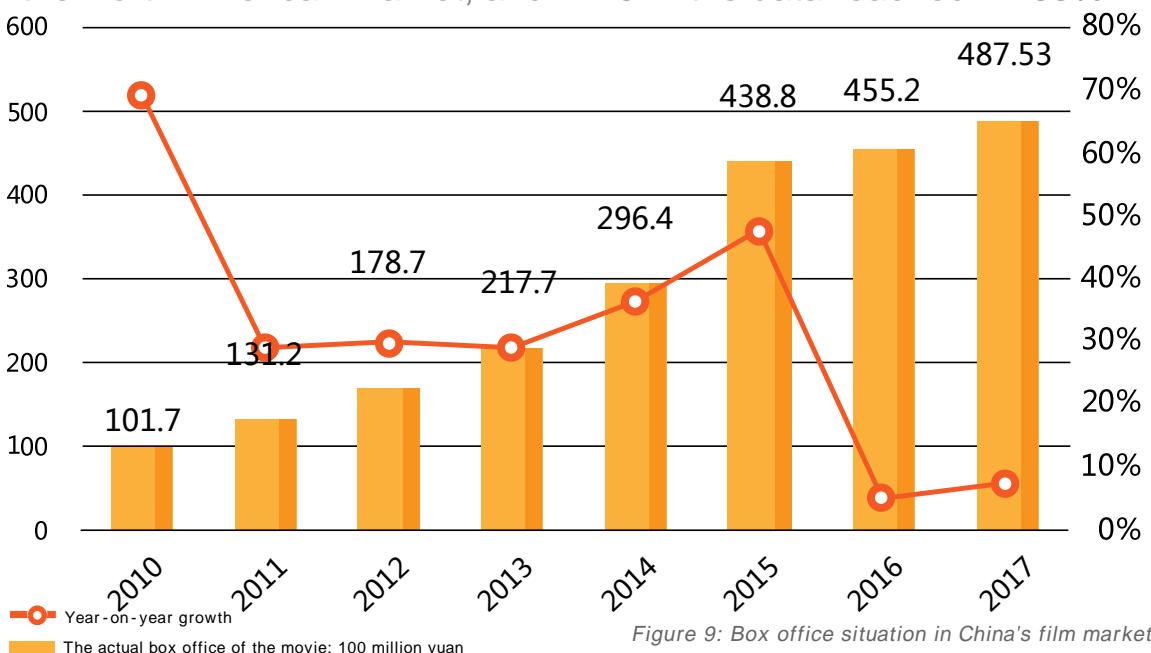
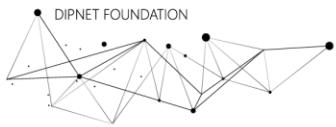


Figure 9: Box office situation in China's film market
(Source: China Industry Information Network)



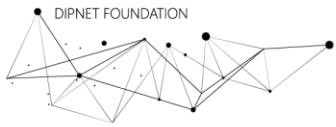
The 2017 China Residents Consumption Development Report released by the National Development and Reform Commission said that the rapid growth of the Chinese film consumer market has benefited from the continued boom in cinema construction. In 2017, a total of 1,435 cinemas were added to 49 cinema lines in China, with a total of 9,446 theaters; 9,957 new screens, with a total screen number of 50,776, which is 3.87 times that of 2012, ranking first in the world.

However, a series of public opinion storms beginning with the "Mobile Phone 2" incident caused national sentiment to resist the film company and capital; it also triggered the collective "fear" of the market and capital to the film industry. Key words such as "star taxation" and "equity pledge" touched public opinion for the first time, accompanied by the fact that the market value of film and television listed companies evaporated billions of dollars overnight, and stock prices fell to the bottom.

The high growth for many years, when the real economy was not prosperous, attracted a large amount of capital to enter. "Hot money" swarmed, which is the industry's total disk expansion, but also spawned a lot of bubbles. The content supply, which is essentially inconsistent with the box office growth rate, quickly responded to the market. After the growth rate slowed down, the "outside" capitals lost money and quit a lot, escaping almost at the same time, and the naked swimmers gradually emerged.

2、Industrialization of the film industry

The underlying reason behind the above problems is that the Chinese domestic film industry is still in the early stage of



industrialization, and the links in the industrial chain are far from reaching the level of industrialization, which is far from the mature industrial system of Hollywood. However, even in Hollywood, there were many problems in the early days of industrialization. In contrast, the growth rate and market capacity of the Chinese market has surpassed that of Hollywood. At the same time, there are plenty of opportunities for cancer.

The standards for film industrialization are: scale, standardization, standardization, and synergy. Industrialization should solve uncertain problems like how to better have budget management and production management capabilities; solve from simple dependence on box office to broad non-box office income.

3、Industrial Blockchain (DIPNET) film eco mode

The Industrial Blockchain (DIPNET) film eco-model is based on distributed production network technology, and uses a variety of financial tools to build a new film industry industrialization model.

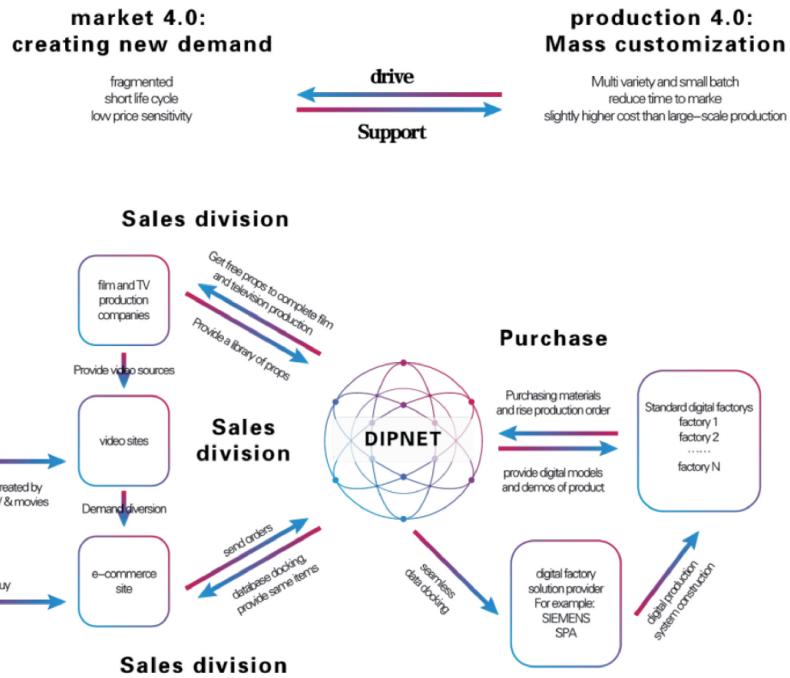
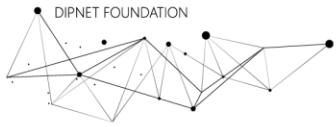
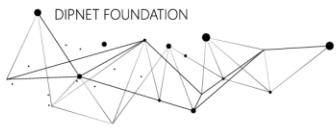


Figure 10: Industrial Blockchain (DIPNET) movie scene customization map

Derivative production is a back-end transformation of the film industry, including fragmentation requirements for film and television props and IP products. Adhering to the value proposition of “one-click repetitive customization”, the industrial blockchain (DIPNET) film eco-model uses distributed production network technology to quickly respond to front-end fragmentatized requirements and flexible manufacturing.



(四) Value lifecycle management

In the traditional industrial 4.0 system, product lifecycle management (PLM) is an important component and direction for international companies such as Siemens. PLM is a closed-loop management of the data of R&D, design, production and sales from the perspective of the life cycle of a product to realize "data flow automation", which is the "end-to-end technology" in the three major integrations of Industry 4.0.

Today, the Industry 4.0 system is evolving to a more advanced stage, which is value lifecycle management (VLM) centered on industrial blockchain (DIPNET) technology. VLM is a closed-loop management of data on the preparation, production, circulation, value-added, depreciation and elimination of product value from the perspective of the life cycle of a product or an industry chain to realize "value flow automation". This also belongs to the category of end-to-end integration in the three major integrations of Industry 4.0, but based on different perspectives.

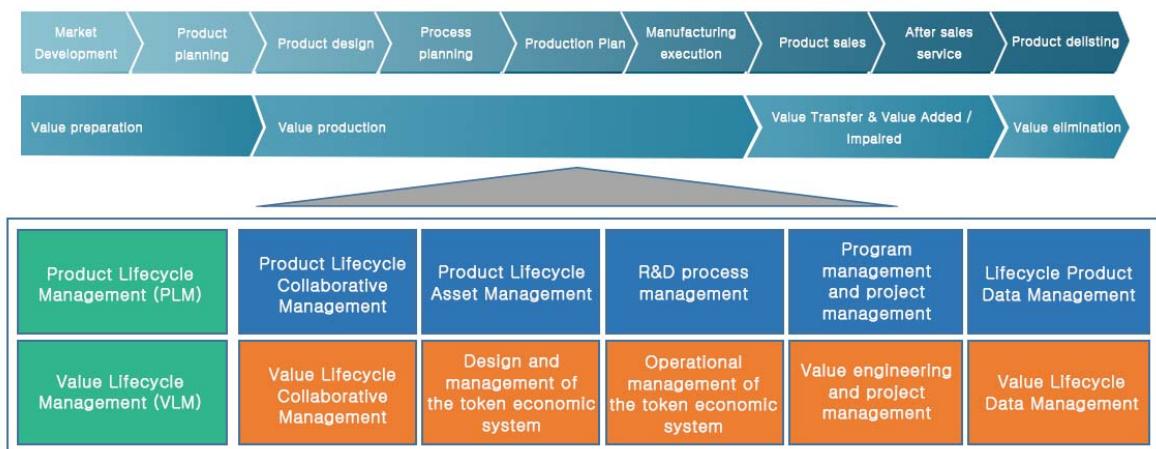
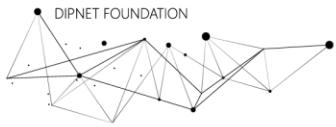


Figure 11: The PLM and VLM

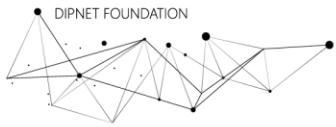


Through VLM, enterprises can easily manage logistics, information flow and value flow in a unified way, and the technology and digital factory technology can be better connected. Moreover, the financial technology and the real economy will be deeply integrated, which is the future of industry and finance.

五、Conclusion

With the pursuit of high quality life, personalized customization has gradually become the future direction of manufacturing. However, the existing production mode or business model is based on the serial mode of “prediction-production-inventory-sales”, which cannot meet the flexible logic of intelligent manufacturing and the business logic of rapidly changing corresponding market demand. In recent years, the industrial cloud model promoted globally can meet the demand of large-volume orders, but it still cannot solve the trust problem in multi-party collaborative production.

The foundation of the fourth industrial revolution - blockchain technology has created a de-intermediation clearing method that can connect big data with artificial intelligence, form a production method of value transmission, and provide feasible protection for multi-party collaborative production. Based on the reality of the manufacturing business model and the advantages of blockchain technology, this paper proposes a new business model for sharing factories, using the “cloud chain hybrid” information transmission method, emphasizing the value proposition of one-click repetitive customization, and



designed The “DPOS+DAG” double-chain consensus economic system which provides a viable way for the access of various business modules, providing reliable empirical evidence and practical cases for the development direction of intelligent manufacturing. There are three main application scenarios for Industrial Blockchain (DIPNET). One is the digital sharing factory relying on the “cloud chain hybrid” processing method; The second is to decentralize the e-commerce platform to meet the needs of mass customization through the multi-party coordination mechanism of the digital sharing factory; The third is to customize the film industry to meet the individual needs; The fourth is value lifecycle management (VLM) based on blockchain technology.

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