Application of BIM+ Block Chain Technology in Construction Industry Informatization

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Abstract: With the continuous development of the times and the continuous progress of science and technology, all walks of life in China have also realized the comprehensive construction of information technology. Under the influence of the scale of modern urbanization construction and the expanding scope of economic construction, the construction industry has also ushered in the spring of development, and the economic benefits of the construction industry have been greatly increased. According to the trend of economic benefits, the construction industry continuously carries on the research of high and new technology, and the BIM technology fusion block chain technology is developed and applied in this context. BIM technology is based on computing technology ,3 D three-dimensional technology and modern communication technology based on the system construction and wide application, and in the modern industrial development cluster and industrial chain management concept gradually occurred integration, and realized the combination and application of block chain technology, the construction industry is truly linked to achieve the overall industrialization development.

1. About BIM Technology and Blockchain Technology

1.1. BIM Technology

BIM technology is a model making and application technology 3 D three-dimensional presentation technology. It has obvious characteristics of visualization, simulation and synergy. Among the construction industry, the BIM technology integrates the engineering data model of construction information and data about many links of construction projects, which makes the digital technology used in the construction projects iconic technology. From the academic point of view, BIM technology is a modern engineering management method with advanced design, construction and whole process management. The main external forms are the modeling information flow, including the overall structure design, function design, construction management, schedule management, safety management, risk management, acceptance management and other links. It can also condense the personnel information of the construction project, build the model of the related information such as material and equipment, and it is the database that all the information can gather together to form the system. As shown in Figure 1:

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Figure 1 Structural design of construction industry under BIM technology

BIM technology can also realize the explicit data of the data information of the construction project, and can also add the time line to carry on the overall simulation of the construction progress, make it a four-dimensional model, and truly realize the whole life cycle of the construction project[1].

1.2. Block Chain Technology

Block chain technology is based on the discovery and trading technology carrier of bitcoin, and the basic advanced technology of information encryption and transmission and data storage for bitcoin is built through block chain technology. The application of blockchain technology began in 2009, which is also the first blockchain in human history. At the beginning of its application, blockchain technology is mainly used as the underlying technology of Bitcoin to perform its functions. The main function is to record information data, which is similar to the database technology in information technology. However, with the continuous expansion of the scope of application, the functionality and characteristics of the party chain technology are also developed and applied by various enterprises in the financial and trading circles, and began to explore the database functions in the digital block chain technology, as shown in figure 2:

Figure 2 Block chain technology industry ecological zoning display (part)

On the one hand, it can detect the authenticity of relevant data information, on the other hand, it can realize the formation of new data blocks and the password connection between multiple data blocks. Block chain technology has the characteristics of non-tampering and decentralization, transparency and so on. At present, the application of blockchain technology can be divided into public chain, private chain and alliance chain.

2. Relationship between BIM Technology and Blockchain Technology

The original party chain technology platform is to add value to the virtual nature of Bitcoin to achieve industrial incentives. And with the application of block chain technology in various

industries gradually widespread, but also more industrial block chain, most of the application of block chain technology and virtual coin separation. In terms of expansion, the application of blockchain technology in industry is not mainly in the form of issuing virtual currency, but in the form of incentive and application of blockchain technology because of its main function. With the widespread promotion of industrial location chain technology, the incentive mode of non-virtual coin has gradually formed an incentive mechanism adapted to its own industrial nature. At present, the construction industry is trying to integrate the BIM technology with the blockchain technology in depth, and feedback the intelligence produced by the BIM technology system to the blockchain platform as an incentive to realize the combination of the industrial platform BIM technology enables blockchain technology platform or B blockchain technology to enable BIM technology, it needs to start with the architectural relationship between BIM technology and blockchain technology[2]. in fact, BIM technology can remain independent from blockchain technology, and blockchain can also achieve independent of BIM technology, but can connect architectural relationships through big data platform architecture. For example, using BIM technology to carry out the connection carrier of block chain technology, when the block chain obtains the carrier carrying of BIM technology, it can realize the acquisition of external power and promote the forward superposition effect of block chain, and realize the connection and fusion of multiple block chain efficiency. Make it become the database information storage system of the whole industry. So that the industry can form a vertical industry nature, the realization of platform-based economic industry and platform-based enterprise construction. As shown in Figure 3:

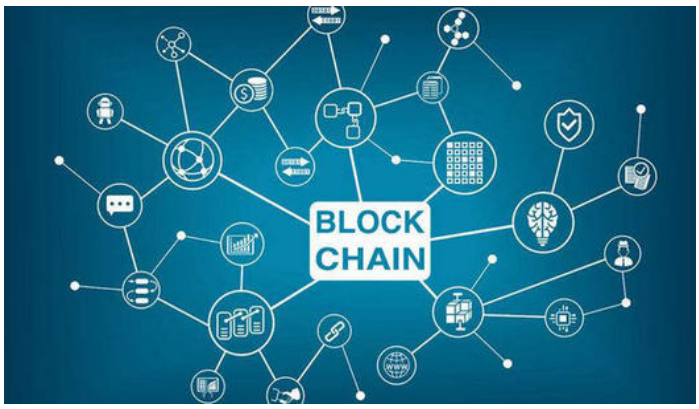

Figure 3 Illustration of information construction of construction industry under BIM technology

At this time, the intelligent information data and the function of the platform can be fed back to the blockchain technology platform, which can form the incentive and promote the mutual integration of the two platforms, thus producing a common superposition to achieve the goal of stable development of the industry[3].

3. Application of BIM+ Block Chain Technology in Construction Industry Informatization

3.1. BIM Technology + Block Chain Technology Application in Building Industry Design Information

At present, in the construction industry, the construction of the construction industry is in the stage of gradual maturity, and it attaches great importance to the information construction of each industry component link, among which the informationization of the design link of the construction industry has always been in the front end of the advanced technology. Because the application function and purpose of the BIM technology data in each industry and different link will also show different differences based on the consideration of the benefit body factor, the construction industry design team often uses the BIM technology data to carry on the construction project design quality, the overall progress and the material statistics and the data simulation, Many of them are used to simulate the whole project structure and construction process and operation and maintenance team, and how to combine block chain technology with BIM technology to realize the improvement of the

overall design effect of providing more data for the BIM visualization model. or the construction unit to actively carry out material sources, quality parameters, application data integration and so on. Whether it is an industry or an enterprise, its ultimate goal is to maximize economic profits, and the goal of enterprise management will always be how to achieve the maximum benefit presentation under the minimum cost input, which is related to the introduction of incentive incentives[3].

3.2. Application of BIM+ Blockchain Technology in Construction Informatization in Construction Industry

During the construction of construction industry informatization BIM the model created by technology is different from other professional models, which will produce some problems about the whole industry link and the combination of each link, which involves the technical intellectual property rights between the units in the industrial chain, and the use of block chain technology can realize the application of the addresses of the components and models between each industry link and the constituent enterprises, and record them on the block chain. For example, the design unit in the construction industry has established an electrical engineering family bank in the project, and has set a specific address in the block chain, Construction units and other industrial components can see and use this BIM family library, but can not modify the content and patent possession, if the use must also apply to the design unit, after being allowed to apply, its modification process also needs the design unit, the establishment unit, the use unit joint analysis and discussion, after the design unit allowed to modify and supplement[4].

During the construction of the construction project, the blockchain technology can link the components and objects in the BIM technology, which can be construction, structural materials, or equipment, facilities, etc. In the actual production process, the microchip connected to the Internet will be connected to the existing blockchain, so that the real-time recording of this physical location can be realized, and the physical quantity will correspond to the BIM, which can effectively improve the construction level of the construction link information, and enhance the supply chain management effect of the whole construction. To the greatest extent, it realizes the close connection and management unity of each part of the construction informatization[5]At the same time, it gives full play to the non-tampering characteristics and decentralization characteristics of the block chain, and also gives the BIM technology model more security functions, so that it can realize the double superposition of economic efficiency and promote the enhancement of the information level of the whole construction industry and the expansion of the scope of strategic development[6].

4. Concluding Remarks

The integration and application of BIM technology and block chain technology can realize the omni-directional construction of building informatization and the maximization and perfection of the performance of the functional platform. The BIM technology platform collects, acquires, collates, induces and feedback the data information to the block chain technology platform. What we must pay attention to is that when BIM technology + block chain technology merge and structure platform construction, we must pay attention to the low efficiency of block chain trading platform data processing. And then realize the overall industry incentive and sustainable and healthy development of the whole construction industry.

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