Research on BIM-based Information Sharing Approach of Prefabricated Buildings in Computer Environment

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Abstract. According to architectural thinking and related theoretical research, in the process of the self-manufacturing cycle of the whole life of a prefabricated building, there are many contracts involved in each construction phase and step. During this period, the amount of information generated by prefabricated buildings is also the most¹. However, these are not headaches. Unfortunately, the excessive amount of information has caused various unprepared problems in the choice of sharing channels. The difficulty of information sharing hinders the implementation and management of prefabricated buildings to a certain extent. At present, under the guidance of the core of BIM technology supported by computer technology, scholars have conducted in-depth research on how to choose the way to share prefabricated building information. Hope this article can help related scholars find some ideas.

Keywords: Computer, BIM, Prefabricated Building, Information

1. Introduction

In fact, the construction industry occupies an extremely important position in the historical process of my country's economic development. In recent years, my country has vigorously promoted relevant strategies and policies for the sustainable development of the construction industry. In order to better meet the needs of society, scholars have proposed prefabricated buildings with a wide range of environmental protection and energy saving standards. Many of its advantages have also attracted more and more attention from academia and architecture. At present, it has become a topic of inquiry by people in the construction industry and a topic that academia wants to study first. Although the development of prefabricated buildings has received extensive support from government departments and the general public, it has encountered many difficulties as it progresses². When we combine these difficult similarities, we will find that the core problem is the information management level.

At present, the level of information management and inherited technology supported by computer technology is increasing day by day. At present, it is certain that prefabricated buildings are not only the reform of the construction methods of the modern construction industry, but also the innovation of green, healthy and humanized high-quality building products. At present, many companies are actively
using BIM technology to research and expand the integration of decoration and architectural design. Standard and integrated modular decoration methods will further enhance the collaborative design capabilities in the field of modern architecture. However, how to rationally use the computer-led BIM technology to select and manufacture prefabricated building information sharing methods is the direction that current scholars should focus on.

2. The definition of prefabricated building and the conceptual form of its specific theory

2.1. Simple definition of prefabricated building
Prefabricated building is a simplified Chinese name for prefabricated houses. However, its name in other countries is different from domestic. For example, in the United States, it is also known as the construction of industrialized housing or industrialized housing. Speaking of its origin, our thinking can be traced back to the Western Industrial Revolution during World War II. At present, the standards for the definition of prefabricated buildings are not uniform. Generally speaking, it refers to the use of the most cutting-edge technology and advanced equipment for high-level technological development and advancement of the construction industry to form a green and environmentally friendly building integration (see Fig 1).

![Figure 1. Computer supported BIM building model](image)

2.2. It has become an inevitable measure to implement a low-carbon economy in the domestic construction industry
In fact, traditional construction methods require a lot of resource consumption, and the waste in the process is very serious. In contrast, the prefabricated components of prefabricated buildings are all made in factories. It can save a lot of templates and achieve the effect of saving energy. Although this effect seems trivial, it can indeed achieve the theoretical standard of a low-carbon economy. On another level, prefabricated buildings have achieved high efficiency, high quality and low pollution in the construction process.

2.3. Combination of environmental protection theory
In the old building mode, the construction process will generate a lot of noise, dust and various garbage. These things will seriously affect the environment of the construction site. On the contrary, prefabricated buildings can adopt unique construction characteristics to reduce energy consumption and reduce engineering noise and construction waste. In contrast, the latter is more in line with my country's sustainable development strategy.
3. Research on BIM skills supported by computer

3.1. The basic conceptual outline of BIM

In fact, BIM technology refers to the simulation resource form of building information modeling techniques. It mainly uses the production of computer three-dimensional models for pre-construction before construction work\[3\]. This will enable construction work to produce more efficient and high-quality results during the construction process. If you look at the transformation of BIM skills according to academic thinking, it can cover all the contents of architecture, organization and management. It can be said to be the sum of all information for the entire life cycle of a project. However, under the current situation of informatization, its definition is gradually undergoing qualitative changes.

| Table 1. Introduction to the shared approach of prefabricated buildings and analysis of related requirements |
|---------------------------------------------------------------|
| Shared approach                                               | Main requirements                        |
| Integrated database                                           | Variety of architectural styles          |
| Engineering Information Management                             | Information sharing between enterprises  |
| Model communication platform                                   | Fast transfer of models                   |

3.2. Optimization and improvement of BIM technology

After the emergence of BIM technology, people gradually use it to predict the modern construction industry. However, in the process, people gradually discovered many of its shortcomings. In order to make up for its shortcomings, people will continue to optimize and improve it accordingly. For example, a three-dimensional BIM model can be automatically reduced to two-dimensional graphics through a computer system. This can help builders to more easily grasp the construction conditions of the building (see Table 1).

3.3. The significance of the implementation of BIM skills

If BIM has created the prosperity of the modern construction industry, we might as well say that the early weakness of the modern construction industry has created the formation of BIM. Everything has two sides. In absolute fields, BIM techniques may not be applicable to other industries. However, it can play its own unique light in the construction industry. Therefore, we can also say that the significance of the implementation of BIM techniques is epoch-making.

4. Research on BIM-based prefabricated building information sharing approach under computer environment

4.1. The establishment of a unique integrated database

The difference between prefabricated construction projects and traditional construction methods is a phenomenon caused by the diversification of architectural style information\[4\]. Therefore, we must figure out the main meaning of this information, so that we can better improve and innovate the architectural style. Then the establishment of a computer-based integrated database is naturally necessary. On the other hand, it can also exist as a source of information sharing.

4.2. Information management of engineering construction based on integrated platform

We know that BIM technology can mainly support the implementation of technology in the prefabricated construction industry. The general direction of the construction industry is engineering construction. Then the establishment of an information management platform for engineering construction is naturally a basic way for BIM techniques to share information. We can store all the information of different companies on the integrated platform, and the sharing of information will have long since helped each other among companies.
4.3 Establishment of an information communication platform based on 3D software or 2D software
According to the above description, we know that the basis of BIM technology is the establishment of computer three-dimensional models or the depiction of two-dimensional drawings[5]. In the process of information sharing, these two forms of information will naturally be transmitted from the source to the receiver. Then we can also directly establish a transfer platform for basic drawings or graphics.

5. Security measures for BIM-based prefabricated building information sharing in a computer environment

5.1. The importance of information security
In our lives, all kinds of information emerge in an endless stream, and each type of information has its specific value. In the description of this article, BIM technology information will have various data about buildings in the construction industry. Then its safety must be permanently guaranteed.

5.2. Security measures for information sharing
In the process of information sharing, the establishment of standards for security measures is very necessary. For example, the encryption of information files and the killing of anti-virus software. In short, no matter what form of security measures, it is enough to ensure that the information can safely reach the designated location.

6. Conclusion
According to the above description, we know that the application of BIM technology in the construction of prefabricated buildings will greatly improve the design efficiency and construction level of the building[6]. However, the sharing of its information is also a difficult problem that should be taken seriously. How to improve the communication and sharing and cooperation of information in the construction industry requires further exploration by technical personnel in the process of construction. However, it seems that this kind of inquiry must be inseparable from the support of computer technology.

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