

Research on Obstacles to Development of BIM in China and Its Strategy

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Abstract. In recent years, Building Information Modeling has been more and more used in China building industry. In the process of BIM implementation, several obstacles appeared, resulting in a phenomenon that a great number of design institutes are still using two-dimension design tool. This research intends to identify the obstacles and challenges faced by industry practitioners in the domestic and proposes some strategy to promote development.

Keywords: BIM, Obstacle, Strategy.

1. Introduction

As the high and new technology and the rapid development of multiple computers used in construction industry, both government and industry practitioners realize an irreversible trend of changing gradually from traditional two-dimensional representation of building product and fragmented contributions from the stakeholders to three-dimensional product model and streamlined lifecycle management in the near future. In this case, building information modeling is the first born in the United States, then spread to other countries, including China. In recent years, industry practitioners get rapid acceptance of construction industry in China. Such as Shanghai Tower and Shanghai Hongqiao Railway Station [1].

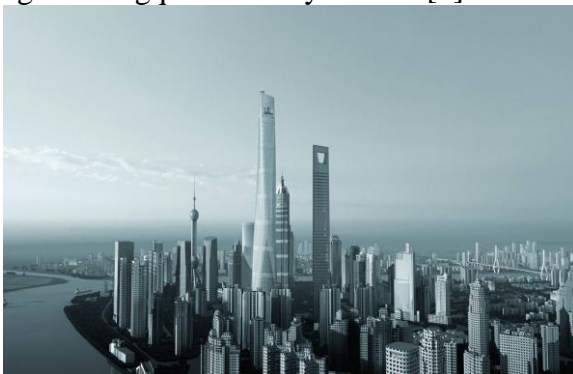


Fig.1. Domestic BIM projects

However, there have been several obstacles hampering the implementation of BIM in China, which caused the phenomenon that industry practitioners promote BIM in word, but not many industry practitioners actually use BIM. Thus, BIM is not popular in China, despite engineers know its obvious advantages. This research intends to identify the obstacles and challenges faced by industry practitioners in the domestic, and present an overview on the current implementation and study of BIM in China. In order to achieve the successful and extensive application of BIM, this research proposes some strategy to promote development, from which China's building industry will benefits a lot and gear itself to the international conventions.

2. The obstacles to development of BIM in China

BIM is the process of generating and managing a building information model through the use of three-dimensional, intelligent design information [2]. Undoubtedly, It has led the Building information technology to a higher level, which will bring the construction industry great technological progress and economic benefits. What's more, the implementation of BIM among

building industry practitioners helps to improve communication and collaboration during the different stages of the building lifecycle: from planning, design, construction, to the operation, maintenance and demolition.

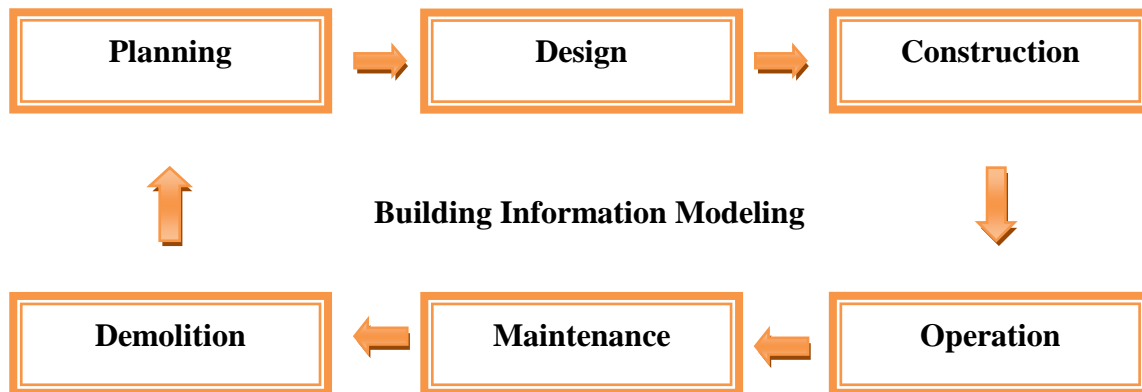


Fig.2. BIM implementation in the different stages

In recent years, China building industry has made great efforts to introduce and promote BIM. However, many difficulties and challenges are confronted and need to be conquered during the implementation. First of all, it's not be easy for the designers to accept the three-dimensional model design, maybe they need a longer time to accept BIM. Besides, many differences existence between import software products and our country's standard, which is another big challenge. For example, BIM couldn't automatically transfer the three-dimensional model to the two-dimensional design drawings, conforming to the standards of our country. What's more, BIM is not in accordance with our specifications for structural design and calculations [3]. These resistances hamper the use of BIM in China, resulting in a phenomenon that a great number of design institutes are still using two-dimension design tool when designing the building, only occasionally Building a not very accurate three-dimensional model if they really need. Therefore, it's urgent for us to eliminate the barrier for the BIM adoption in Chinese building industry.

3. Current study and implementation of BIM in China

In some developed countries, the research of BIM and its implementation started such early that they left us far behind. What's more, the technology of BIM in these countries has been already applied in design stage, construction stage, maintenance and management stage. And their supporting software are also becoming more and more mature. Although BIM is relatively new to China, the emergence of BIM is catalyzing a revolution to the building industry of China, in which all stakeholders in the industry are involved. Their conventional operation styles are needed to be converted to keep pace with the development of BIM. This is opportunities as well as challenges for BIM implementation.

This section discusses BIM implementation in China for different perspective practices: In order to shorten the gap with foreign countries, Chinese government has done a lot of efforts in recent years. Such as: facilitating BIM project teams in reality execution, exchange experience in application, as well as carry out research and training. Apart from attention given by the government, there is great enthusiasm for BIM research and application from many institutes and societies in China. East China Architectural Design & Research Institute is one of these institutes. Its aims are to promote the application of BIM technology, to facilitate knowledge sharing with in the industry, and to up hold and advance the standard of competence for the profession. In 2010, the designing of the project of "The Cultural Center of Shanghai World Expo" offered by this institute Won first prize in BIM design competition ,which called "the Innovation cup" [4]. The involvement of institutes and societies like East China Architectural Design & Research Institute will play an active role in promoting the application of BIM technology in China. Some big Chinese consultants especially like architecture

firms have already applied BIM technology in their projects for many years to capture more international market share. They have taken BIM as their competition advantages.

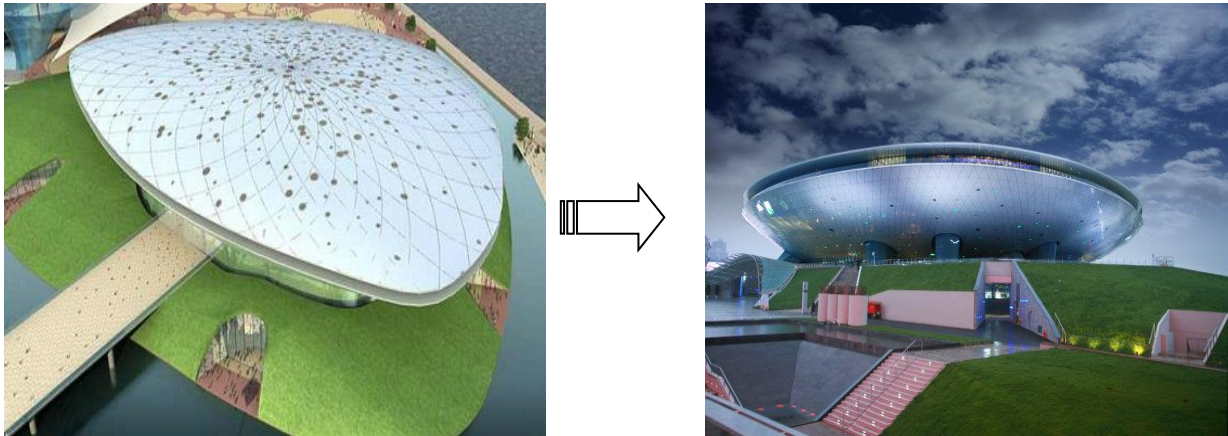


Fig.3. The Cultural Center of Shanghai World Expo”

On the contrary, the situation of using BIM technology by Chinese contractors is not optimistic. For the perspective of many domestic educators, BIM is only about the design of buildings but not a lifecycle methodology for buildings so that there are very few schools having made useful research and trials in BIM application. Several Chinese universities set up the example, such as Tsinghua University [5].

Except for the applications in building design, BIM is also applied in research of “Green Building” and the study of “The engineering project cost accounting”, as the latest research in China [6].

In a word, the promotion and development of BIM in China need different perspectives' practices. And China's building industry and related agencies have been doing their best to achieve the localization of BIM.

4. Strategy

BIM technology in China is rare, although it has been used in a number of big projects, such as the project of Olympic Games Olympic Village. It's not hard for Chinese engineers to master BIM technology, but it's very difficult to achieve BIM in China's building industry chain.

Different with American building industry, Chinese building industry tend to pay attention to quantities rather than quality. Therefore, Chinese engineer should clearly understand that the status quo. China should not promote BIM by simply learning from BIM implementation in American, because project cycle in the United States is longer, and amount of projects is less, which these allow the United States engineer pay more attention to the quality of the construction projects. This makes the differences between the using of BIM in China and America.

To eliminate this barrier of BIM applications in China construction industry, we should take some measures as follows:

Firstly, the government and owners should play a leading role of BIM implementation, interoperability needs to be improved with BIM software. BIM implementation of the same standards and guidelines should be established early in the local industry. In addition, the government should support the universities and scientific research personnel to develop BIM software, and encourage more professionals to learn BIM software.

Secondly, some companies are especially like architecture companies should actively use BIM to their projects, following the international trend. And construction enterprises should take the BIM technology as their competitive advantage, because the BIM technology not only provides the work efficiency of the engineer, but also increases the customer satisfaction. At the same time, business owners should hire more employees with BIM Technology. Enterprises should try to master the core technology as soon as possible, so that they can seek a competitive advantage in the peer.

Finally, we have to find the balance between three-dimensional model and two-dimensional design, using BIM technology to replace the existing two-dimensional design gradually. After all, the development of BIM Technology in China will take a long time.

5. Conclusions

Compared with the traditional tools, BIM technology has obvious advantages, which is gradually being applied to the construction projects in China. According to the application of BIM technology in China, we can find some development obstacles. In order to achieve the successful and extensive application of BIM in China's building industry, it is suggested that the government and owners should play a leading role of BIM implementation. And all the Construction professionals should have the concept of BIM.

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