Research on the Important Role of BIM in the Whole Process Cost Management of Construction Project

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Abstract: With the rapid development of national economy, the market economy system has become more and more perfect. Therefore, the traditional energy consumption and high construction cost construction project will be more and more strictly controlled, which will greatly affect the whole process cost management of the project. However, BIM can minimize the loss of project cost. Firstly, this paper analyzes the technical characteristics of BIM. Then, this paper proposes the important role of Bim in the whole process cost management.

1. Introduction

BIM is the abbreviation of building information model, which is a data model with complete building information simulated by 3D digital technology. Through the data model, the building staff can draw the building model. Through BIM software, designers can make data, pictures and words three-dimensional, which integrates all functions and performance of construction project management, especially the whole process cost management. The aim of BIM software development is to share information better. Through IDM, IFC and so on, BIM can connect all parameters of each stage of the construction project, which will better complete the efficient transmission of information. In each construction stage, BIM can provide data extraction, storage, communication, debugging, analysis and sharing functions, which can provide a reliable basis for the whole process cost management. Through BIM, we can complete the whole process cost management at a lower cost, which will strictly control the cost control of construction and construction.

2. Technical Characteristics of BIM

BIM is a comprehensive building application management software, which has many characteristics, mainly as shown in Figure 1.

2.1 Visualization Characteristics

BIM is a technology of building three-dimensional model, which realizes the correlation of building components. BIM contains geometric information, component attribute information, etc., which has visualization function. Similarly, according to the attribute information of components, through BIM, we can visualize the attributes of components, which can be used to show the renderings. Through BIM, we can communicate and exchange in different stages of the project under the visualization state, which can realize the visualization of the whole construction process. As shown in Figure 2.

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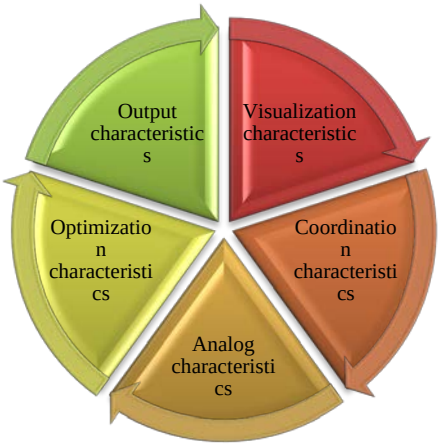

Figure 1: Technical characteristics of BIM

Figure2: The visual characteristic of BIM

2.2 Coordination characteristics

The construction project needs the participation of different subjects, which needs to coordinate the different roles of each subject. Therefore, information coordination is very important for the smooth implementation of construction projects. Through BIM information coordination, we can reduce the loss of information transmission, which will avoid the information conflict, information loss, information error and other phenomena. Through BIM Technology, we can integrate different professional information of each engineering project, which will fully understand the overall engineering project. The coordination of BIMS is shown in Figure 3.

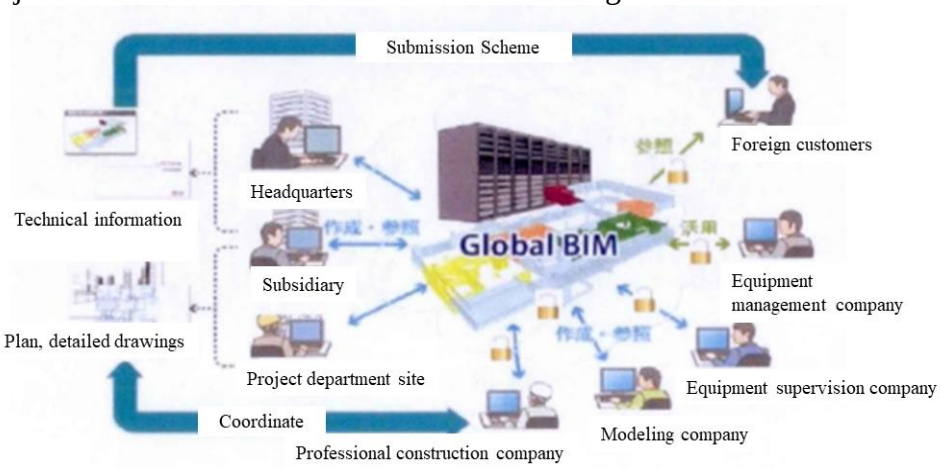

Figure 3: Typical drawing for the coordinated characteristic of BIM

2.3 Analog characteristics

Based on BIM, we can cooperate with relevant software to simulate the project performance, such as sunshine, energy consumption, construction, etc. By relating the schedule, we can form a 4D model to simulate the construction progress, which will be an important evidence for us to adjust the construction progress. Through BIM, we can also simulate the disaster handling methods in the operation and maintenance process of the project, such as fire evacuation, earthquake escape, etc. The performance simulation is shown in Figure 4.

2.4 Optimization characteristics

After design, construction and operation, the construction project will continue to improve and optimize. BIM gathers the information of each stage, which forms a comprehensive database information. Therefore, through Bim and supporting optimization tools, we can realize the

optimization of large and complex projects, which will easily achieve the reasonable optimization of projects. The optimization of the project is shown in Figure 5.

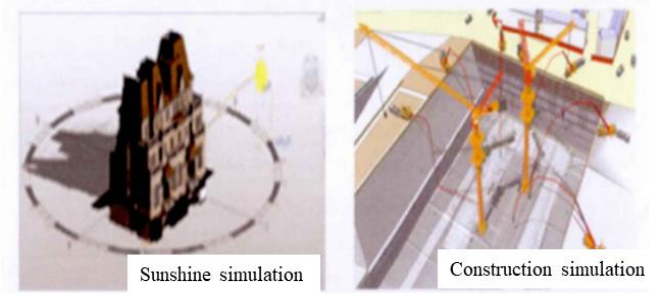

Figure 4: The analog characteristics of BIM

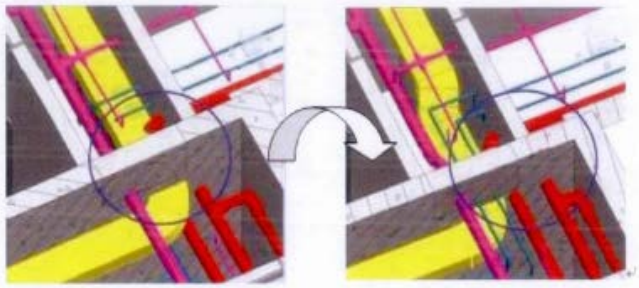

Figure5: The optimizable characteristic of BIM

2.5 Output characteristics

The construction project is constructed according to two-dimensional construction drawings, which needs to transform various information into 2D construction drawings. However, BIM can complete the conversion between 2D and 3D drawings. This kind of exportability reduces the workload of drawing construction drawings in the later stage. We can reduce the cost management of the whole process by outputting various information related to the project, such as Bill of quantities, equipment and material list, etc.

3. The Important Role of BIM in the Whole Process Cost Management

3.1 Improve the efficiency of information transmission

The whole process cost management contains a lot of data engineering information, such as change visa, dynamic cost information, raw material price, etc., which increases the pressure of information collection. Therefore, a large number of data information seriously affects the efficiency of information transmission. However, based on BIM information management, we can effectively process all kinds of building information through intelligent model, which will effectively manage all kinds of information of cost management in the whole process, such as component information, project information, cost information, etc. Through BIM, we can effectively connect all kinds of engineering information in a certain way, which improves the efficiency of information transmission. At the same time, through the combination of Bim and computer, we can promote the smooth transmission of all information.

3.2 Improve the efficiency of cost management in different stages

BIM can effectively combine a variety of software, which forms a powerful processing platform. Through data parameterization, we can carry out cost management in different stages of the whole process, which will greatly improve the work convenience and the effectiveness of cost management. Through BIM, we can analyze different components comprehensively, which will enhance the applicability of various design elements. Through BIM, we can promote cost engineers to complete cost calculation in different stages in the shortest time. Based on the high integration of BIM platform, we can acquire and process information in different stages in real time, which will greatly improve the efficiency of information processing and the accuracy of engineering calculation.

3.3 Strengthen the cost management coordination of different participants

In the whole process cost management, we will meet various problems, which will seriously affect the quality of the whole process cost management. Therefore, through the features of BIM such as visualization and information mutual use, we can strengthen the coordination among all

participants in the whole process of cost management, which will deal with the problems in the project construction in time. Through efficient management coordination, BIM can improve the quality of project cost management, which enhances the authenticity and effectiveness of information. Through BIM, we can manage cost information visually, which can enhance the coordination of cost management in different stages of the project.

Conclusions

BIM can bring different value to each stage of construction project cost management, which will improve the cost management efficiency of each stage. Through BIM platform, we can provide all kinds of information of construction engineering system. From the perspective of the whole process of project construction, we can establish a dynamic relationship between cost management and cost management. By reasonably arranging and adjusting the objectives of each stage, we can realize the cost management of the whole process of project construction based on BIM, which will improve the investment efficiency of construction projects.

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