

Project Cost Management of Whole Process Based on BIM

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Abstract: In the construction project management, the level of project cost management has a great impact, not only the owner pays great attention to the investment control, but also the quality of project cost management will affect the profit level of other participants. With the increasing complexity of modern construction projects, higher requirements are put forward for project cost management. From the perspective of modern information technology BIM application, this paper discusses the advantages of BIM technology in the whole process of cost management of Engineering projects.

1. Introduction

Modern construction projects are becoming more and more complex, which puts forward higher requirements for cost management and construction management. With the development of information technology, BIM technology comes into being with the needs of construction, which brings new challenges and opportunities to the construction industry in the new era.

2. Project Cost Management in the Whole Process

Cost of construction refers to the total cost of a project. The whole process of project cost management is to control the cost of investment decision-making, pre-design, construction and completion of the project in order to maximize the benefits of the project. With the development of modern information technology, it is particularly important to explore the application of information technology in the whole process of cost management and improve the efficiency and depth of management.

3. BIM Technology

BIM is the abbreviation of Building Information Modeling, which is the result of the combination of digitalization, information technology and construction field. Through the information data of construction projects, a three-dimensional model is established to simulate the real building scene. The BIM technology can integrate the information of the whole process of the construction project. At the same time, the participants of the project can update the data dynamically in real time. In the digital modeling, engineering design, construction, completion acceptance and daily management, the BIM building information model can collect, collate and analyze the data in time for the whole project. Objective To provide support for implementation.

BIM technology has the following characteristics: (1) visualization. Compared with the traditional planar drawings, the use of BIM technology can make the project three-dimensional, especially for some special and complex projects. The visualization function will greatly improve the efficiency of the project construction. (2) Synergy. The construction of a project will synthesize the strength of all parties, such as construction units, construction units, design units and supervision units, etc. Communication and coordination among different subjects is very important. The terminal network platform of BIM can achieve collaborative work among different participants and greatly improve communication efficiency. (3) Simulability. The three-dimensional model of BIM can make the construction content of the project clearer. Combining time and cost, BIM5D can express the sequence and progress of construction more intuitively, and it can also reflect the use of

funds. This advanced detailed simulation is beyond the reach of human beings. (4) Optimality. Based on the simulation of BIM, in the process of construction, the effect of different construction schemes can be compared in BIM model, and the optimal scheme can be found. In addition, it can also simulate the construction effect of some important construction procedures and optimize the selected construction scheme.

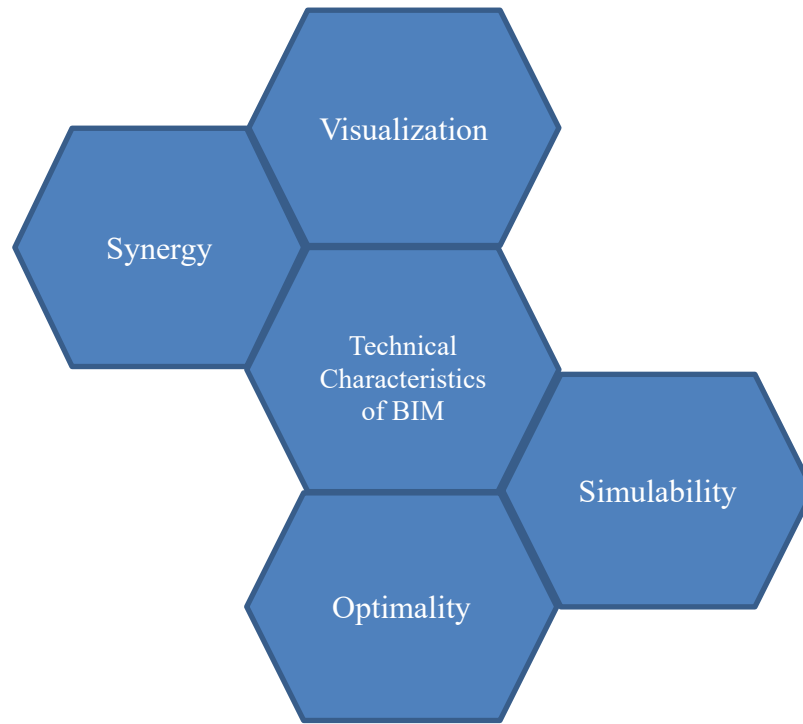


Figure 1 Characteristics of BIM Technology

4. BIM application in each stage of cost management

4.1 BIM Application in Decision-making Stage

The main task of project investment decision-making stage is to analyze and compare several alternatives, estimate project investment, carry out project financial evaluation, so as to select more reasonable projects in terms of technology and economic benefits, and realize cost control in the early stage. The traditional cost management in the decision-making stage is mainly based on the cost and experience data of completed similar projects to obtain the estimated amount of construction investment, and carry out financial evaluation options. The application of BIM technology can significantly improve the efficiency and quality of this process, and make the cost management in decision-making stage more scientific. BIM technology has powerful data storage capacity, which can store data information of completed projects for a long time. For investment estimation of proposed projects, it can directly provide data estimation reference and improve the scientific and rational decision-making. At the same time, the visualization of BIM model can help owners to strengthen project control through model analysis and simulation even when there are many uncertainties in the early stage.

4.2 BIM Application in Design Bidding Stage

The traditional cost control in the design stage is mainly through the design drawings to carry out the quota design. Designers of different majors have separate tasks and inefficient communication between designers and cost personnel, which may easily lead to conflicts between different majors such as structural, civil and equipment installation drawings, and designers pay more attention to design thinking and ignore cost at the design stage, while cost personnel do not because of the

design professionalism. Due to insufficient and ineffective communication, the design overruns the budget estimates and drawings have many problems, resulting in drawings alteration and repetitive construction in the construction stage. The application of BIM technology can effectively solve the above problems. Firstly, the three-dimensional model of BIM can integrate the information of different specialties and simulate the real buildings, so that the conflicts among different specialties can be quickly and accurately checked out, and then the drawings can be further modified and perfected, which can effectively avoid the change problems in the construction process, and improve the construction progress, reduce investment and enhance. Construction quality can play a great role in promoting. In addition, BIM model can also quickly obtain engineering information and engineering data to estimate investment, and realize the level-by-level quota design. According to the engineering data, the project cost can be calculated in real time and optimized according to the results.

Cost management in the bidding stage is mainly embodied in the tenderer's compilation of tender control price, the preparation of tender base, and the tenderer's compilation of tender quotation. The reasonableness of these prices depends largely on the accuracy of the bill of quantities. BIM building model can quickly derive the calculation results, so that bidders and bidders can get the corresponding prices according to the same standard, avoid the miscalculation of the bill of quantities, improve the accuracy and standardization of the bidding documents, and greatly improve the bidding and bidding. Link efficiency.

4.3 BIM Application in Construction Stage

The construction stage is the process of putting engineering project design into practice. The cost management in this stage is mainly reflected in the determination, payment, change of price and claim determination. On the premise of ensuring the completion of the project on schedule, the cost control is within the target range. BIM technology can efficiently deal with the problems related to time and cost. BIM terminal can achieve multi-party collaborative office, whether it is the construction unit, construction unit or supervision unit can change the project information data through the network platform. At the same time, the dynamic change of funds will be updated in real time after the change of BIM module. All parties can grasp the dynamic change in time, so as to enable the construction of the project. The clearing process is more transparent and the clearing efficiency is improved.

4.4 BIM Application in Acceptance Stage of Completion

The cost management of the completion acceptance stage is mainly through the collation and summary of a large number of engineering data for the final settlement. Because of the complexity of Engineering projects, there are often many problems in engineering data, such as the inaccuracy of checking the change of Engineering quantity, the confusion of changing visas on site and the loss of Engineering data, which lead to economic disputes between the construction unit and the construction unit, and at the same time, the cost information of the whole project can not be obtained. Good accumulation. The application of BIM technology will make these problems history. Because in the previous model construction, BIM building information model has integrated all kinds of engineering information data, which can be stored for a long time without losing the phenomenon of manual processing. At the same time, BIM model can check in time to avoid disputes in the calculation of engineering quantity and payment link.

5. Conclusion

Summing up the above, it is not difficult to see that the application of BIM technology greatly improves the efficiency of the whole process cost management. Based on its visualization, collaboration, simulation and optimization characteristics, it can accurately and quickly update, collate and extract data. As a cost manager, it must comply with the needs of the times and be fully handled. Grasp the relevant knowledge of BIM technology, fully understand the advantages of BIM technology in all aspects of the whole process of cost management, and constantly improve the cost

management system of engineering projects in China.

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