

Complex Project Management Research Based on BIM Technology

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Abstract—now BIM technology itself is still in the initial stage, is not as deep and wide as the developed into practical application, BIM technology and project management on engineering practical application difficulties, application processes, application models and other research has not attracted enough attention of China's construction industry, has little targeted research in the literature. this paper According to how the owners of construction projects based on BIM technology life cycle project management research on this issue.

Index Terms—BIM, urban complexes, project management

I. INTRODUCTION

The traditional project management model will be carried out with the introduction of BIM technology innovations, BIM technology can deliver on the units involved on the same platform for data sharing and information sharing, making project management easier and effective. "Twelve-Five" proposed in the plan "comprehensively improve the industry level, focus on building core business of enterprise management Informationization construction and special applications of information technologies", So, BIM technology and project management is the inevitable trend of development.

II. ADVANTAGES OF PROJECT MANAGEMENT BASED ON BIM TECHNOLOGY

Owner management mode based on BIM technology has the following advantages: owners based on BIM technology, project management and control, improve owner life cycle of construction project ; BIM data model ensures that project, 4D construction simulation technology to proactively identify problems that may occur during the construction phase of construction implement fine management, modify the schedule in advance, allocate resources, develop responses; based on BIM technology can optimize scheduling and construction plan, and visually identify problems and find appropriate solutions quickly, and then used to guide the construction of the next step. BIM technology not only makes the building a base model "visualization", it can be modified at any time; BIM technology can implement virtual reality, assets, space management, building systems analysis techniques such as content,

provide for ease of operation and maintenance stages of application technology and data dual support; BIM technology electrical maintenance conditions, and so on.

Overall, BIM technology will enable the project to shorten the duration, reduce pollution and improve efficiency, so as to significantly improve the level of management, improve management efficiency. Building owners, owners built that BIM technology as the carrier of the project life-cycle management, as reflected in:

A. Three dimensional rendering, publicity show

Three dimensional rendering animations, to give people a sense of realism and intuitive visual effects. Built BIM model improves the accuracy and efficiency, giving owners more intuitive awareness, increase hit chance.

B. The BIM technology

The BIM technology can provide data information to support project management, in order to improve the efficiency of building management. BIM technology can automatically calculate the quantity, which is a more traditional software functions, in this case, domestic applications are very much.

C. Precise plans and reduce waste

Fine management of the construction enterprise is difficult to achieve and its root cause is difficult to achieve fine management of construction enterprise project data, not fast, accurate access to support resources for planning, leading to a prevalence of experience. BIM technology can limit the harvest, cost control, providing technical support.

III. OWNERS USING BIM APPLICATION IN THE PROJECT LIFE-CYCLE

A. Planning stage and design stage

In the early planning stages of the project to establish a conceptual model, and by modeling the environment, includes construction of surrounding roads, building and planning (structure), landscape and so on, The item in the conceptual model into the surrounding environment. By BIM appearance of the buildings using GIS, spatial orientation, building relations with the surrounding environment and landscape planning, site analysis,

architectural layout, site planning and traffic organization, provided critical information.

The goal of the project for Samsung LEED green building, at the design stage through BIM modeling and wind, sound, heat, sunlight and other environmental analysis and energy consumption calculation, project selection and optimization for design provides strong technical support.

B. Construction preparation and construction

By using the Visual simulation of BIM models feature, reported by the Visual analysis of the construction organization plan, schedule, convenient and effective analysis of the construction programme and the schedule is reasonable. Drawing fully three dimensional visualization, problems of the drawings are labeled in the model, can be examined in the model view, triage, analyzing and recommending solutions. Intuitive, collaborative design, efficient professional shows in a three dimensional way and opened in the same model, design problems for clear, professional to quickly resolve the collision will not affect the site.

The project pipeline complex integrated systems, according to design drawings before construction use of BIM technology for pipe network collisions and reserve holes location check, avoid problems were identified in the course of construction, caused unnecessary waste of materials, manpower, to save time, save investment purposes. BIM model introduction schedule 4D Visual models can be generated and can be adjusted according to the actual conditions on the schedule, instruct the construction process and the Organization of labour and material preparatory work.

C. Final acceptance and transfer phase

Project completion and prior to completion of the BIM model and perfect information, supplements, and real transfer of projects at the same time, for owners later operation and maintenance management to provide a complete, intuitive and comprehensive, scientific visualization files.

D. Operation and maintenance phase

Owners using BIM technology can facilitate effective operations management: you can make Visual maintenance plan, based on model for disaster emergency simulation, you can quickly provide duct electrical asset information, statistics features, and so on.

IV. EFFECT ANALYSIS OF OWNER'S PROJECT MANAGEMENT BASED ON BIM TECHNOLOGY

Due to construction projects with a personalized, lacking features such as replication case, therefore, BIM in quantitative analysis of value of the implementation process is difficult, in practical projects, BIM, through qualitative analysis, recognized by the vast majority of users in many aspects, especially the owners and management of the construction project. Qualitative analysis is summed up in the following three aspects: 1, Visual features, enhance the efficiency of project

management and control; 2, project coordination and cooperation, 3, improve the quality of customer service.

A. Information technology brings efficiency

BIM modeling process, formed a valuable engine data, engineering data including quantities, equipment list equipment space, and associated with other master data, project data. BIM engineering data is consolidated and timely, it also simplifies the process of data extraction and reporting, engineering economy, project provides a fast response and reflect the possibilities. BIM in three-dimensional way, the professional design and construction plan result in a model, effective breakthrough in engineering work in the communication barriers between the various professional interface, reflecting every change and influence of visas to other professional, can effectively reduce the number of visas and change.

Integrated BIM program, to achieve a better allocation of human and equipment resources, information, and how you can provide remote management

B. Visualization bring Visual efficiency

BIM construction plan to be professional in a model plan to avoid traditional bar chart, Gantt charts in different professional preparation of blind spots, and improve the overall accuracy of construction plans 30070. By tracking construction progress and model adjustments, making actual progress consistent with the plan rate perfect. Construction plan for real guidance on project implementation and management.

BIM uniform professional, may define the interface between the professional and professional wrangling in the reduced project, construction project more professional interface between Fuzzy is a long-standing problem. Regular work based on BIM models, has greatly enhanced the efficiency of related meetings.

C. Improve the quality of customer service

BIM technology is essentially an information technology for construction projects, through each item of information and wisdom for the future city construction provide building information are essential elements in the construction of the city of wisdom.

Excellent BIM implementation for future operations to provide the lowest static data, and Internet "+" concepts on a wide range of innovation services.

V. CONCLUSION

Based on the above data, we can find more value as the project front-end BIM can reflect. BIM has little direct impact on the construction stage, and we may not be able to overwrite the BIM implementation costs, it is also at this stage General Contracting as well as other professional contractors do not want to take the initiative to implement BIM reasons. However, for owners and management unit, the BIM effects far outweigh the cost of BIM implementation. Because of this, BIM implementation at this stage by the owner is the best mode to BIM content contained within the EPC

implementation contract, and separate costs, managed by the general contractor is responsible for the implementation of BIM by owners management unit assessment and pay the associated costs of implementation.

ACKNOWLEDGMENTS

The authors acknowledge the Teaching reform project of Hebei GEO University: 2016J02

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