Application of BIM Technology in the Whole Process Engineering Consulting Management

Chunyao Deng

Hulunbuir college, Hulunbuir City, Inner Mongolia Autonomous Region, China 021008

Abstract: Since the implementation of the reform and opening policy, the full support of engineering construction projects has promoted the rapid development of China's national economy. Among them, engineering consulting management is more and more widely used in engineering projects and economic life. This article first summarizes the importance of the entire process engineering consulting integrated management research. The author analyzes the advantages and significance of the integrated management research of the whole process engineering consulting in China, and further puts forward the application countermeasures of the whole process engineering consulting service in construction projects.

1 Introduction

With the extensive use of full-process engineering consulting services in the construction industry, the unique advantages and importance of BIM technology have been continuously highlighted in the planning and construction of construction projects. However, there are still many problems to be solved in the specific application of BIM technology in engineering projects. Therefore, we not only need to promote the scientific and precise information processing technology, but also need to optimize the construction performance and economic benefits with a more scientific and efficient project management model.

2 The Importance of Research on the Whole Process Engineering Consulting Management Model

2.1. Coordinate the Specific Management and Implementation Process of Construction Projects

The whole process engineering consulting management is an integrated management mode that is becoming more and more popular at this stage. This model is now in an important period of its emerging development, and there are many unavoidable problems in practical application. In order to effectively and scientifically solve the problems in the integrated management of project engineering in the whole process of engineering consulting, we must give full play to the utility of BIM technology and effectively optimize the information management capabilities of the entire construction project. Objectively speaking, the demand for infrastructure construction in China is expanding with the

development of the economy, and the gradual expansion of the scale of construction projects makes the traditional construction project management mode seem backward. Because the traditional construction project management model cannot fully and timely meet the needs of construction project specific management and actual construction, we must rely on BIM technology to complete the optimization and upgrading of the construction industry. At this stage, BIM technology has attracted a large number of professionals and construction technicians in the construction industry. Due to the high level of attention of engineering design and management personnel to BIM technology, BIM technology embodies more and more excellent risk prevention and control capabilities and information concentration capabilities in the entire process of engineering consulting. According to years of development experience and practical research in the construction industry, only the introduction of BIM technology in a complete and comprehensive form in the whole process of engineering consulting can generate a lasting impetus for the economic development of the construction industry and even the entire society in a true sense.

The most prominent feature and advantage of BIM technology is the high efficiency of its information processing. The information processing of construction projects has a very direct and obvious impact on the progress of the entire project. By optimizing the whole-process engineering consulting management model and applying high-quality data collection to the planning and construction of the project, it can clearly show the overall layout and technical level of the construction project. In addition, this can also improve the actual construction capacity with complete and accurate data information and design schemes, thereby achieving more construction performance and project

economic benefits.

2.2. Improve the Efficiency of Building Construction Data Concentration and Information Management

BIM information processing technology plays an extremely important role in the overall operation of construction projects. Integrating BIM information processing technology into the whole process of engineering consulting management can improve the quality and efficiency of construction projects, which is not only reflected in the engineering structure, but also in the content of the project. Specifically, the management issues and measures of each stage of the construction project's pre-planning, actual construction, project risk prevention and control, and completion acceptance require the BIM information integration platform to function. As an important technical support throughout construction projects, BIM technology provides a more complete and timely database for the integration and processing of engineering information. After each construction project is completed and put into use, it will become an infrastructure for social citizens to settle down. As a result, in its construction, we must fully improve the quality and safety of the project through modern and scientific technical means. BIM technology promotes systematic processing and optimized selection of data information in the whole process of engineering consulting management. Its specialized technical means and management model can save a lot of time and resources, and improve efficiency to a large extent, and therefore reduce the economic cost of the project.

Table: Level of accuracy for various modes

Pattern Type	Major	Accuracy Class	Remarks
Construction Mode	Architecture Major	LOD350	Accuracy grades refer to uniform standards for application of architectural models.
	Structure Major	LOD350	
Installation Mode	HVAC, Water Supply and Drainage, Electrical Professional	LOD350	

Standardized and professional full-process engineering consulting management can fully integrate reality and comprehensively consider various factors in the actual implementation of construction projects to optimize and adjust the overall construction plan. In addition, it can also try to avoid construction risks and management crises caused by various unfavorable factors in reality. In this process, BIM information processing technology is required to be highly accurate and comprehensive. Simultaneously, the design of the architectural project must pay attention to the humanization of use. This also essentially focuses on the social benefits brought by construction projects. Obviously, in the era of globalization, BIM technology urgently needs to be incorporated into the path of deep

integration of engineering consulting management throughout the entire process. Rapidly improving the application level of BIM technology on the premise of ensuring the stable operation of the entire process engineering consulting management is conducive to improving the data information system of construction projects and improving the comprehensive competitiveness of the project. This is also a development problem that must be studied in depth in the entire process of engineering consulting management at this stage.

3 Prospects of Application Development of Whole Process Engineering Consulting Management

3.1. Promote the Environmentally Friendly and Efficient Development of Construction Projects

BIM technology can fully demonstrate its environmental protection and convenience in the whole process of engineering consulting management. Specifically, BIM technology can help construction projects save human and material resources in engineering practice operations, and scientifically and reasonably shorten the construction period to the greatest extent. Meanwhile, it not only reduces the investment of a lot of capital costs, but also reduces unnecessary waste, which means that the economic benefits of the project increase. Moreover, this process conforms to the construction concept of resource conservation, but also conforms to the purpose and principles of sustainable development. In addition, the whole-process engineering consulting management model combined with BIM technology, compared with the previous traditional management model, has demonstrated its systematic and intelligent characteristics of processing data and information in engineering construction. This also highlights the obvious environmental protection, which is conducive to promoting the construction of a resource-saving and environment-friendly society.

Otherwise, the effective use of BIM information model in the whole process of engineering consulting management can fully consider the protection of construction quality and safety. Personal information is also fully protected during the data integration process. The development and application of BIM technology must be on the right track in the whole process of engineering consulting management. Construction data is an important basic condition for competition in the early stage of the project and avoiding market risks. BIM technology must ensure the stability and accuracy of the database in order to provide a strong guarantee for economic benefits and project quality in highly volatile project operations. In the mean time, in the face of the increasingly highly market-oriented competitive environment of the construction industry, engineering projects must continuously improve their own awareness of risk prevention and control, and improve their comprehensive strength with excellent technology and

perfect construction plans. This will help prevent the project from being eliminated in the fierce market competition.

3.2. Continuously Optimize the Technical Level and Project Management

BIM information processing technology is different from the previous information processing mode, and its technical optimization and upgrading are reflected in its characteristics of simulation, intelligence and visibility. Many problems and complicated situations will inevitably appear in the actual process of project construction. If the project planning and construction personnel cannot understand the actual situation of the project in a timely and comprehensive manner, they cannot adjust the project design in time, which will lead to many objective restrictions on the project construction. The introduction of BIM technology in the whole process of engineering consulting management can efficiently complete scientific engineering planning work, ensure that the engineering design and construction drawings can correspond to the specific construction operations, and reach higher technical standards. At this stage, the application and development of BIM technology requires not only national and social policy support, industry support and public opinion support, but also the establishment of high standards of engineering management requirements within the construction industry. With the high quality of BIM information processing technology as the technical standard for development, it provides complete, timely and comprehensive engineering information database support for each stage of construction.

4 The Countermeasures for Optimizing the Application of Whole-process Engineering Consulting Services in Construction Projects

4.1. Improve the Application Level and Construction Level of BIM Technology in Engineering Construction

In order to improve the application effect of the whole-process engineering consulting management model in construction practice, BIM technology must be scientifically and reasonably introduced. At the same time, construction projects should focus on the introduction of professional management and technical talents. Only when BIM technology is combined with experienced and high-level designers and construction personnel, can it exert its own advantages and effects. In the current stage of construction engineering planning and construction, the importance of BIM technology is still not fully realized, and there is not enough practical experience to implement BIM technology. Because of this, in order to make BIM technology play its technical essence in the whole process of engineering consulting management and construction, and fully guarantee the

quality and safety of construction projects, we need to improve the professional quality and construction ability of construction personnel and engineering designers. In order to fundamentally guarantee the economic and social benefits of construction projects. Only by improving the professional quality and construction level of construction personnel can they fully improve their ability to deal with engineering risks and construction problems. Furthermore, since the application level of BIM information processing technology in many current whole-process engineering consulting, management and construction activities still cannot meet the actual needs of construction activities, we must reasonably coordinate the conflict of interest between the construction investor and the construction company to make the management internal the various types of relationships are optimally adjusted. Only in this way can we balance fairness and benefit, quality and efficiency in the process of economic cooperation.

BIM technology can complete high-quality information integration in the process of early planning, site survey, construction, and completion acceptance. Therefore, the staff of the entire project must be fully familiar with the whole-process engineering consulting management model, fully apply BIM information processing technology, and improve the shortcomings of information processing technology in terms of schedule arrangement, construction management, and construction performance. Otherwise, construction personnel must strictly abide by the relevant laws and regulations of construction projects, ensure the legality of project operations, and fully reflect the social benefits that construction projects should have as infrastructure construction.

4.2. Optimize and Upgrade the Economic Benefits of Construction Projects

BIM technology has the characteristics of visualization, efficiency and simulation in the application of the whole process engineering consulting management mode, which can provide more reliable guarantees for the quality and safety of construction, and on this basis, fully improve the construction efficiency to ensure the economy of the construction project benefit. In consequence, by improving the quality of BIM technology information processing technology, the overall project can be subject to scientific and comprehensive risk estimation and thus can be guaranteed to a large extent. After meeting the needs of shortening the construction period and saving costs, BIM technology can be applied to more engineering constructions to create more economic benefits. Competition is the source of vitality for the construction industry market. Promoting and perfecting BIM technology in the whole process engineering consulting management model in the industry can help engineering projects to establish a sufficient sense of competition.

Integrating engineering information with high utilization rate is one of the key parts of completing engineering system management. As a result, it is

necessary to innovate BIM technology in the whole process of engineering consulting management. Information integration with high-efficiency risk avoidance capabilities can avoid various potential safety risks in construction activities and operational risks of other projects. Besides, this also reduces the disconnection and dislocation of construction personnel, management work and actual project construction information, and further shortens the time for internal operation and management of the project, which also largely avoids the waste of production capacity and resources. As a consequence, the trend in the application of BIM technology in the whole process of engineering consulting management is the standardization, technical and high-quality management mode of the construction industry.

5 Conclusion

In summary, the whole-process engineering consulting management is more and more widely used in engineering projects and economic life. BIM technology is an information model technology with the greatest advantage of centralized and scientific processing of building information. A high-standard project management model should take BIM information processing technology as the development direction to provide complete, timely and comprehensive data information for each stage of construction. As a modern data-based tool, the BIM information integration platform is characterized by its high efficiency and high accuracy in receiving and processing information, and it meets the needs of shortening the construction period and saving costs under the speed of production. This also fully reflects the economic and social benefits that construction projects should have as infrastructure construction.

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