

# *Exploration on the Development Mode of Engineering Management Informatization in BIM Times*

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**Abstract:** In order to speed up the construction of project management informatization in China, we have investigated and studied the Internet-based information platform and characteristics of project management in Europe and the United States. The author creatively puts forward the overall goal, design principle and technical framework of engineering management informatization in China. And then this paper points out that the ideal path for integrating BIM GIS into CIM, which will support the construction of intelligent city. Through the research and judgment of government organization, construction main body and commercial platform R&D mode, we must seize the historical opportunity of informatization and promote the transformation and upgrade of enterprises. Only in this way, can we improve the level of government administration and promote the reform development of construction industry in our country.

## **1. Introduction**

Information technology has brought a rare opportunity. For example, binary code has replaced knots, patterns and text; the Internet has replaced messengers, telegrams, telephones; skyscrapers have replaced caves, cottages and tile houses. Information technology continues to promote human civilization and progress. Engineering management informatization is the innovation and transformation of traditional engineering management mode, which can improve the quality and efficiency of engineering management. So that the project value added. Engineering management informatization will certainly promote the reform and development in the field of engineering construction, it can be said to be the countryundefineds most important instrument. Since the beginning of the 21st century, China has introduced the above-mentioned software products. However, the utilization rate of construction standards and quality level of the engineering management team is only 20%, the actual effect is not satisfactory. At present, the informationization degree of the construction site is very low, mainly through the development or purchase software to meet the needs of construction project management. In the true sense of engineering management informatization, it is necessary to integrate all the resources related to the project, and then we should develop a unified engineering management and operation platform, so that all parties involved in the project can organically link up and work together. Only in this way, can we complete the project construction management task on-line. At the same time, only by creating accurate small data and engineering big data can we better serve the engineering

construction, engineering finance and government supervision. How to realize the engineering management informatization and the R & D mode are worth studying.

## **2. Characteristics of project management informatization**

### **2.1 Complexity**

#### **2.1.1 The complexity of engineering management**

The whole life cycle includes early decision, design and planning, construction, operation and maintenance management. The main contents include technology, quality, safety and environment, cost, planning, resources and procurement, site, organization, law and contract, information, etc. Participants include government departments, financial institutions, designers, builders, project management and technical consultants and suppliers, and facility management. Professional cooperation includes buildings, structures, water supply and drainage, hvac, fire protection, strong and weak current, intelligent, etc.

#### **2.1.2 The complexity of project management informatization**

Project management informatization is to infiltrate the information technology into the project management business activities, the main purpose is for improving the project management performance. Through the Internet, big data, cloud computing, artificial intelligence and other technologies, there are more complex, such as the establishment, using, control and decision-making of engineering management information platform.

### **2.2 Service**

Engineering management information platform provides information and consulting services. There will be providing information service for engineering management by taking advantage of the opportunity of informatization. It also provides engineering standard cases and consulting services to generate engineering knowledge through data mining.

### **2.3 Innovativeness**

So far, the internet-based engineering project management software products imported from abroad have not been successfully used in China. Individual large-scale projects with cost tens of millions dollars, have not been successful in cooperation with foreign famous enterprises. So, Chinese engineering management information products need innovation. Learn from the international advanced management concept, we should use the most advanced information technology to R&D independent combining with China national conditions.

### **2.4 Basic**

The data base of project management information platform not only supports engineering management informatization and consulting service, but also supports enterprise level project master control. It also support government regulation, including supervision and evaluation of project investment, determination of property tax base, development layout of industry, engineering science technology, management of strategic development research, technological innovation, technological transformation, transformation, the seamless connection between BIM and CIM, the precise supervision of engineering quality and safety, the management of engineering technology

and labor personnel, etc. It also supports engineering finance, including engineering quality and safety insurance assessment, engineering credit certification, engineering financing consulting, etc. So, the information platform of project management is a basic facility in the construction field.

### **3. Overall objectives**

Based on Internet and cloud computing technology, we can build engineering data resource database. Through the development and application of information technology in the construction field, we can build a collaborative work platform with project management as the core and engineering consulting services as the core. We need to focus on what is necessary for project management. At the same time, we need to complete the project construction management task online and automatically return the comprehensive completion file (model). At the same time, through collecting engineering data, we can create engineering precise small data and engineering big data. Through developing and utilizing engineering data resources, we can better serve the engineering construction, engineering finance and government supervision.

#### **3.1 Design discipline**

By using advanced information technology such as Internet, cloud computing, big data, artificial intelligence, etc., we can realize the informatization, intelligence and knowledge of engineering management.

#### **3.2 Ideal path**

Based on BIM technology, the project management is realized step by step. Combined with the completion model formed by GIS, CIM, we will complete the construction of smart city.

### **4. Exploration on R & D mode of project management informatization platform**

According to the characteristics and overall structure of the project management information platform, there may be three modes: government organization R & D, construction subject entrust R & D and professional organization commercialization R & D.

#### **4.1 Government organization R & D**

According to the characteristics of the engineering management information platform, especially the foundation, it is the construction of the overall infrastructure, involving a wide range of investment and a large amount of investment. At present, the relevant government departments attach great importance to information work, which have developed some information management systems separately. However, the disorderly development and repeated development of departments have formed the information islands. Without a complete information integration and sharing information platform, important basic data are seriously missing, such as investment supervision and evaluation, capital construction statistics, industry management, enterprise credit collection, credit collection by practitioners and project completion data. Data mainly rely on manual reporting, information management system has become a source of water, wood, resulting in a great waste of social resources. From this point of view, the government which organize the R & D project management information platform is originally an ideal choice. However, there are also various reasons, such as the government R & D implementation is constrained by the nature of investment, budget regulations and other constraints; leaders and core team members cannot be relatively stable;

it is difficult to continuously improve and expand the information system. As a result, the possibility and success rate of government R&D are not very good.

#### 4.2 Entrust R & D with subject

The construction main body dominates the project management informatization, which is the biggest beneficiary of the project management information. However, the construction main body pays more attention to the project progress and the investment benefit, but the management teamundefineds informatization consciousness is weak. Each participant in the project construction is not involved in the project, so it is difficult to make clear the information demand. The individual needs are many, and the possibility of popularization and application is small; but the development cost is expensive and the development cycle is long. So, the construction of the R&D engineering information platform is difficult to succeed.

#### 4.3 Commercial R & D

With the scale, technical difficulty and complexity of engineering construction, it is necessary to innovate the concept of project management, the integration of information technology and engineering management, and so on. The engineering management informatization has become the trend of the times. The experience of engineering management informatization in Europe and America tells us that the engineering management informatization must be specialized, integrated and networked, so it is feasible to be commercialized by professional organizations.

### 5. Conclusions

Informatization is the engine to promote human civilization and progress. An integrated platform based on the Internet is the only way to realize the engineering management informatization. We should concentrate on the efforts of the whole society a. we should develop and implement the project management information platform quickly and sustainably. We should firmly seize the historical opportunities of information technology, play a platform role, constantly improve the quality of life, promote the transformation and upgrading of enterprises, and improve the administrative capacity of the government. Only in this way, can we promote the reform and development of construction project management in China.

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