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Research on Information Supervision System of City Infrastructure Construction Project

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Abstract: In order to solve the existing project management information chain, decentralized management, low efficiency problems. This paper put forward ideological based on the main line information technology means and multi-dimensional integration principle. And the paper comprehensively consider a kind of integrated management mode for various factors related with the project from the decision-making stage to put to use in all phases.

Introductions

In recent years, with the rapid expansion of business scale construction projects continues to increase, so that project management is faced with many new issues. However, the subsidiary of Group is not a unified computer network and application platform and a unified database standards, to the construction of information collection, collation, analysis have brought a lot of inconvenience, project management, there were many managerial blind spots. Some companies managed projects are often a problem, the owners letter, the company knows the basic situation of their projects and progress, making the Group's construction management tend to form the passive management of the situation, but also to bring some reputation negative impact. Therefore, for each sub, branch offices, project department of information technology work, unified deployment, unified design is very urgent, it is necessary to establish a unified information management systems engineering and project the underlying database, to resolve the problems, improve the scientific level of project management.

Domestic and foreign experts and scholars have realized the information technology , integrated project management approach means and the necessity of combining and each carry out different angles and targeted research . These studies varying degrees, to improve the level of project management , prevention and resist risks and promote the project engineering management of information technology has played a certain role in the process . Nevertheless, in the integration of information technology project management research on the road , there are still a lot of vacancies. Many studies have pointed to information technology is only applied to the field of project management , the proposed information management theory, and not fundamentally select the appropriate technical means of information processing management objects ; For integrated management research more just one of the construction project management objectives such as cost, quality , etc. management of integrated , multi-project did not achieve multi-objective integrated construction information management ; extensive, integrated management information platform will integrate even if the initial realization of ideas and information management tools collection , has not considered because of environmental factors or conditions change impact on decision-making and project management tools for the new requirements. Therefore, this paper analyzes and addresses three key issues: key management objects , integrated construction information management , intelligent decision and dynamic management .

Task classification of engineering project management

Project Management gives the intuitive concept of the project is to be managed . But this is not quite complete and accurate. Project management includes two aspects of the substantive meaning. First, it is a management approach that project managers to accomplish specific goals and tasks to achieve the project 's economic and social benefits , full use of various resources , on the whole process of scientific and effective project planning, organization , coordination and control and other management activities . Second, it is a science . Ie project management activities for the study. Explore the project organization and management theory and method . As a discipline, it is analytic , decision making, management as one of the set of organizational processes and methods .

The total construction project management goal is to make investments in construction projects , schedule, quality plans to achieve the goal as expected , for a limited period of time, a limited resource (capital, labor , equipment, materials, etc.) conditions, to the extent possible fast progress , the costs as low as possible , to meet the construction project features, quality requirements, the successful completion of project tasks. Professional goals (functionality, quality , production capacity , etc.) , duration and cost targets (cost, investment) goals, together constitute the objectives of project management system . Shown in Figure 1 .

Fig 1 Project Management Objective System

Project management objective is achieved through project management. To achieve the objectives of project management system of quality, schedule, cost targets, we must carry out the entire process of project management aspects. Project management job content can be divided from a different perspective, representation are not the same. In accordance with the project management tasks, project management, the main job content can be expressed in Figure 2.

Fig 2 Project Management

The overall framework of an integrated management information system

Overall design philosophy of construction project for IMIS(Integrated Management Information System) is to make full use of scientific information technology, to take reasonable means of information, with information on the flow of management information systems starting. Which not only to achieve the management objectives of the three projects that quality, schedule, cost, as the core of the whole process from the decision to operate the integrated management, but also from a global point of view the project information sharing, coordination and optimization. Firstly, integrated management information function module frame design, shown in Figure 3.

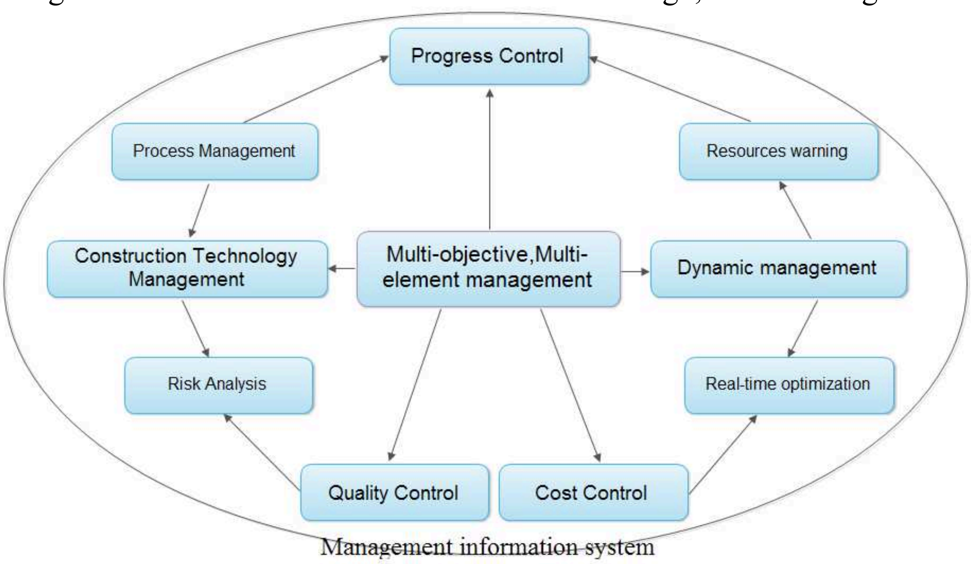

Fig 3 The overall framework of IMIS

Overall framework is put forward three previously unresolved basic questions:

1.How to implement information for key management target;

2.How to process management and event means to achieve the goal of the construction project of multi-multi-factor integrated management;

3.How to achieve when conditions change or limit the construction technology decision-making and dynamic control.

Through the above general design of framework for IMIS, we mainly consider the following aspects of goal or function:

1) Project Integrated Management. Through process management engine, the establishment of project management integrated multi-directional management, namely: the whole process of construction project integration management, construction project management and integrated multi-element construction project integration management base on knowledge integrated systems;

2) Multi-objective integrated management . Formed to project management objectives for clues construction project technical , cost, quality , security and other objectives integrated management model ;

3) information technology and standardization. Through the project breakdown structure WBS, information coding rules to establish standardized information classification system , the completion of construction technology library , libraries, and process information repository and templating ;

4) Construction technology decision-making and dynamic control . By way of process management and events to complete construction work level intelligent management. Using information technology to engineering, construction process , construction methods , resources, and related database technology, supporting project management personnel for scientific decision-making , effectively anticipate and control risks ; same time, select the appropriate mathematical algorithms and optimization tools to achieve the project management process real-time dynamic control .

Database Design

Database technology information design process is divided into four steps , namely, information collection, information processing and processing, information storage and maintenance and use of information .

• The collection of information. The types of information associated with the project, tangible such as resource information, management job information, materials, information, track reports, etc. ; intangible items such as technology, construction technology, experience, etc. to collect aggregated .

• Information processing and handling. Adopt a unified project breakdown structure WBS, the appropriate classification of information systems and information technology encoding information collected systematic, standardized processing and handling. As the labor, materials, machinery grouped together to the repository , the construction work carried out three or four decomposition , the formation of the construction process as the basic unit of management chain. After standardization and specification project management information, the computer must be able to recognize and operate a multi-project , multi-stakeholder , multi- information exchange between the elements .

• Information stored. The processed information into knowledge-based integrated systems industry databases; combined with the network of computer technology, the establishment of a database management system that allows these databases just more than enough for ordinary electronic document storage and access, but can be directly related software calculation and analysis, providing data.

• Maintenance and use of information . In addition to the established database query and must have storage capabilities must also have the late management and maintenance functions.

Dynamic management and resource optimization

During the project implementation, change factors and interference conditions. In the process of management has established the project, often due to objective or subjective reasons that management objectives or manner to take corresponding adjustment. Therefore, it is very important to design the dynamic management and optimization of resource integration management information system. Three reference target management, dynamic management platform design time optimization, cost optimization and resource optimization module in one. Dynamic adjustment means optimization algorithm and inference mechanism and project management theory is rich in conjunction with. Completed the Executive - control for dynamic control process to plan, project management plan in time comparison value and the actual value deviation, once found, immediately take measures to control or adjust the means. Design of dynamic control theory frame as shown in Figure 4

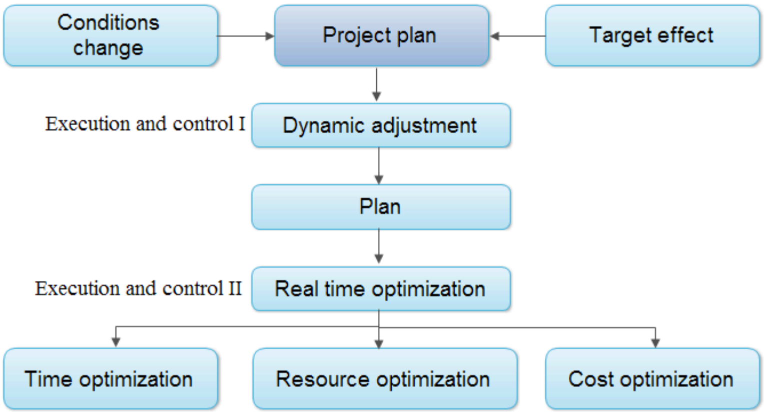

Fig 4 Dynamic management and resource optimization

The system structure and Implementation

Application of C/S model to design the friendly operation interface, in addition the process speed is also fast, can save a lot of memory, solves the construction information management of large amounts of data input problem. In addition, in the construction of account of the module, need a batch to create a large number of bridge substructure completion time records, through the C/S model directly with the database data exchange, fast operation, especially for the preservation of large files. Based on the above reasons, the system adopts the three layers structure based on C/S mode, as shown in figure 5.

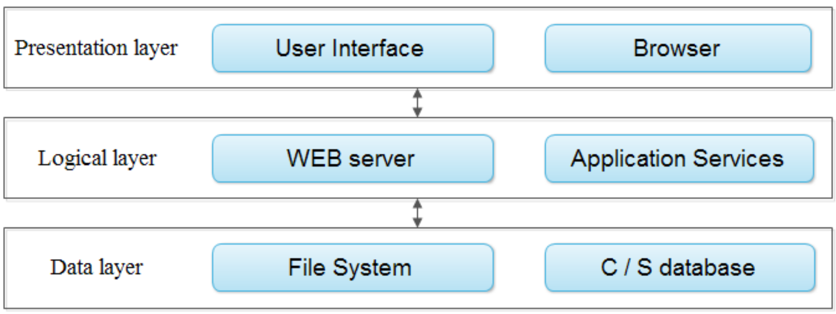

Fig 5 Schematic diagram of three layer structure

When the customer quantity massive increase, we adopt an intermediate layer, the client and database separated, customers only need to join in the middle layer, business logic and customer service interface is separated, and maintenance of software development are relatively independent, like the restaurant set be trained with regularity as the waiter, greatly reduce the pressure of network.

The business logic layer using standard language (Java language), with platform independent, the program can be easily transplanted. At the same time, we are using the standard data access interface, and database. When the business logic and the data to be processed increase, can be taken to increase the server to achieve very good performance.

Three layer structure of the middleware is also provide full protection function, i.e. either all commit or give it all, data with a high degree of integrity, the other three layer structure is a component based development model, middleware by some components or objects, each business logic corresponds to some components, and functional reorganization is very easy, greatly improved productivity. The three layer system structure can timely information are more likely than the current PC LAN, the two layer client / server or host / terminal application structure at low cost, provide better conditions.

Conclusions

Project construction management information system since its launch, in use process, the system's practicability, reliability, stability, easy to learn and recognized by the enterprises and experts. The social benefit, the system improves the level of project management, to promote the project quality control, progress, improve the corporate image, has won a good reputation of the society; in the economic benefits, this system greatly improves the work efficiency, so that the project management efficiency, high accuracy, low cost, reduce the number of management personnel, reduce the cost of project management. At the same time, the system provides a good information sharing and communication, reduce the information transmission, the obstacles caused by the management failures and mistakes in decision-making, a project to improve the overall economic benefits and work efficiency.

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