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## Study of Designing Organizational Model for Project by the Theory of Integrated Management

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**Abstract:** The favorable organization can not only enhance work efficiency of the construction team, but also be favor for achievement of resolved target and coordinate the intrinsic and external relation of construction. The traditional organizational modal often adopts the type of function, matrix and project department. They have such status as much management hierarchy, more complex return circuit and multiple-start leader for the members. The integrated management is the new trend for engineering management. Applying the thinking of integrated management, the oblate and flexible organization structure is discussed in this study which is suit for modern informational society developing at top speed.

**Key words:** Integrated management, virtual organization, organizational design

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### INTRODUCTION

It is system engineering for construction project which is more complex with the scale expanding and referred related major increasing. In order to guarantee the established goal of the complex system to realize favorably, the thinking of project management emerges at a historic moment. And it forms a subject system more complete and becomes a branch of management science and engineering which is an interdisciplinary subject between natural science and society science. Engineering management is a technical method which is use to plan, estimate and control and achieves the perfect result according to time, budget and norm. During the implementation of construction project, there are so much work as coordinating, connecting and organizing. So an excellent organization can not only enhance the efficiency of project team and optimize the allocation of resources, but also favor to resolve project goal and coordinate the intrinsic and external relation. According to the thinking of the integrated management, a new organizational structure-virtual network organization is set up in this study.

### THE INTEGRATED MANAGEMENT OF ENGINEERING PROJECT

The main content of project management is including scope management, time management, cost management,

quality management, human resource management, communication management, risk management, purchase management and integrated management (Song and Li, 2012). Applying system theory, information theory and cybernetics and set up based on information technology, integrated management is aim at system optimization which think synthetically the relationship in the complete period of project and dynamic influence. The integrated organization is that all the participants forming an alliance manage and integrate organically such as management goal, organization and method, applying the thinking of integrated management. The aim is to make it sure that all the part of engineering project will coordinate organically.

### INTEGRATED MANAGEMENT OF ORGANIZATION DESIGN

**The partners of engineering project whose interest are related:** The main partners include owner, consulting institute, design unit, Supervision enterprise, contractor, subcontractor, supplying unit, bidding agent institute, municipal and governmental department. It becomes a complicated virtual organization relationship made up by contractual relation, instruction relation and coordinating relation between every participant and the owners which centers on the owners (Fig. 1). During the implementation, there are so much information produced and needed and so many participants and also long route of transmitting information among all the participants.

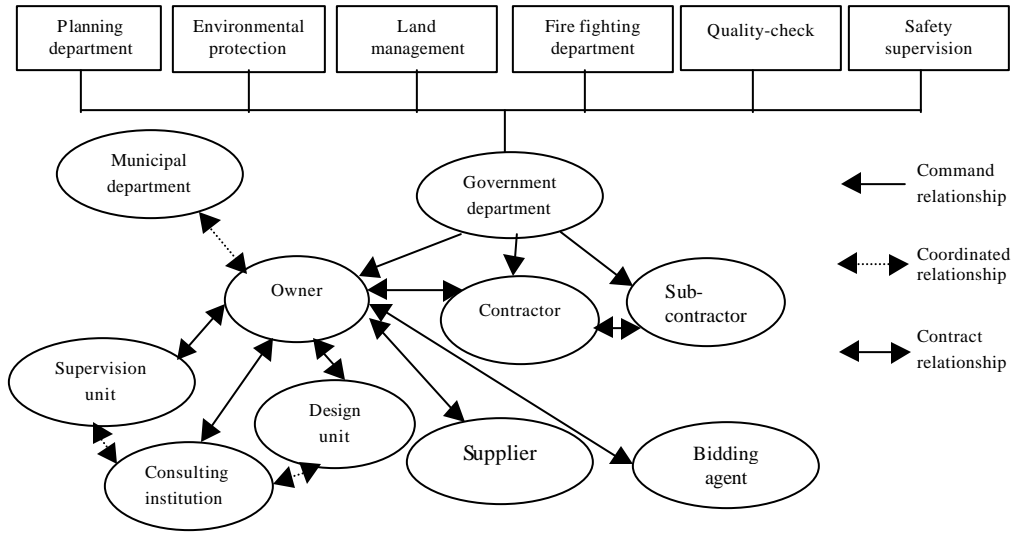


Fig. 1: The relations of every participant in project

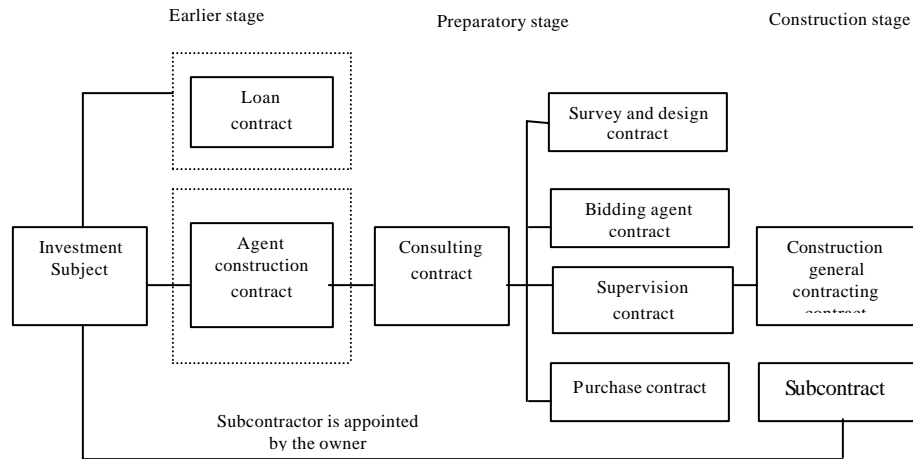


Fig. 2: The flow chart of project contract management

(Yang and Song, 2012). For example, the change of construction unit in work progress needs consultant and supervising engineer to feed back to the owner and the supplier can't obtain request of design institute directly which makes work progress and coordination difficult. It will happen that the investment is increasing, the progress is delayed and the quality can't be guaranteed. So it is very necessary that the thinking of integrated management is utilized when designing the structure of organization.

**The integrated management when designing the structure of organization:** Contract management: It is the

core of the integrated management for contract management in construction project. Through the complex contract relation, all the participants and sub-item are made up organically to become reasonable hierarchical structure of system management which makes the whole system give play to the overall best. Any goal of project management is that the general goal will be realized which is quality control, schedule control and cost control. (Chen and Zhao, 2011). So engineering project is divided so much unit independent and easy to control to define the scope of work, at the same time the unit are define by contract (Fig. 2). Relying on contract system, a higher efficient management team is organized by all the units

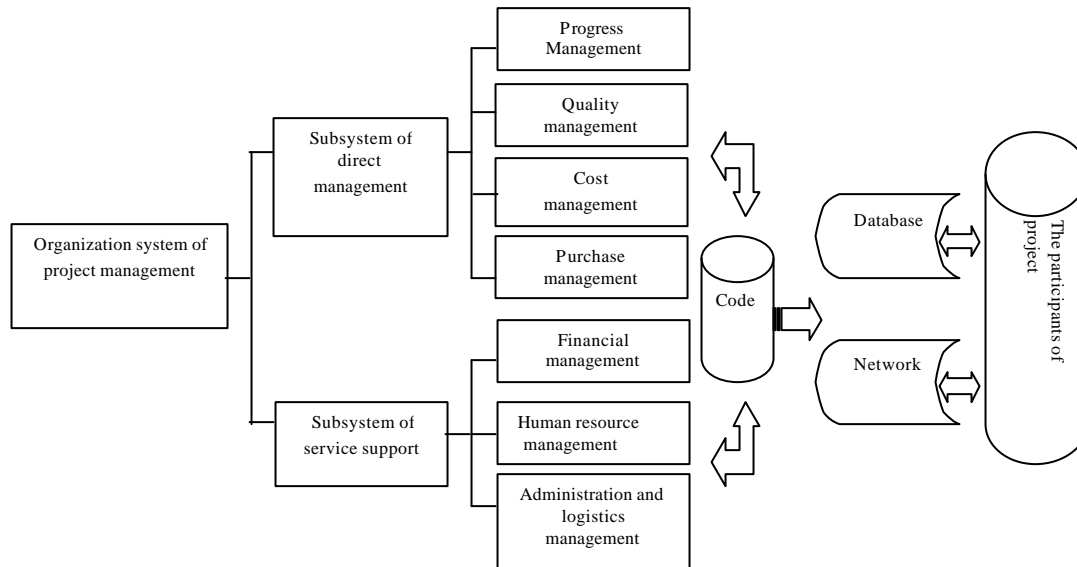


Fig. 3: The model of information integrated management

and the right and duty of the numbers are defined so that project is controlled and managed synthetically, according to work structure resolved. Through contract management which is the core, goal and whole progress and participant management are integrated, so that the wholeness of engineering system is enhanced highly. Beginning from the least project unit, not only the phrase is defined from bottom to top, but also the role and duty and goal resolved, so that the optimal allocation of the resource is realized.

**Information technology:** The application of information technology is the technology support of integrated management. The complexity of construction project causes that the engineering date can't be shared and the progress and quality of project can't be monitored actual time. A lot of dynamic date and information and figure and procedures manual are produced in project which needs information management system to realize the information integrating and sharing actual time and operation swapping (Ling, 2013). So it is important representation of integrated management that information management system is set up inside project and the information of interior business management. To building information platform which can service for integrated management of construction goal, according to work task the project is divided to many work units in order to code using to mark information. During the whole life cycle, the information is collected, stored, transferred, handled, renewed and maintained in order to make the project implement

smoothly. Through setting up data base and network connections and relying on modern communication technology to realize video monitoring and meeting outside project which can enhance to share information resource among all the participants and realize management goals to be integrated (Fig. 3).

**Communication technology:** Communication is necessary technology means for integrated management which is the progress to transfer and communicate information among people or organizations. In every stage of project construction period, all the related participants must not only communicate inside organization, but also communicate with related department in government and the enterprises and the residents efficiently, under the organization model established (Li, 2011) In order to ensure the efficiency of community, the best management class and range should be designed in organization structure. If management class is too much and the transfer chain of information is too long, the information is easy to be distortion and feeds back untimely. If management range is too big and the relationship coordinated is raised, the transferring circuit is easy to be inordinate and the harmony of organization is bad. During the information communication, the linguistic capacity and psychology level of the senders should be enhanced and that the time and accuracy of information transferring should be focused on, so that the aim of communication will fit the whole goals of project and the organization integrating will realize with efficient communication.

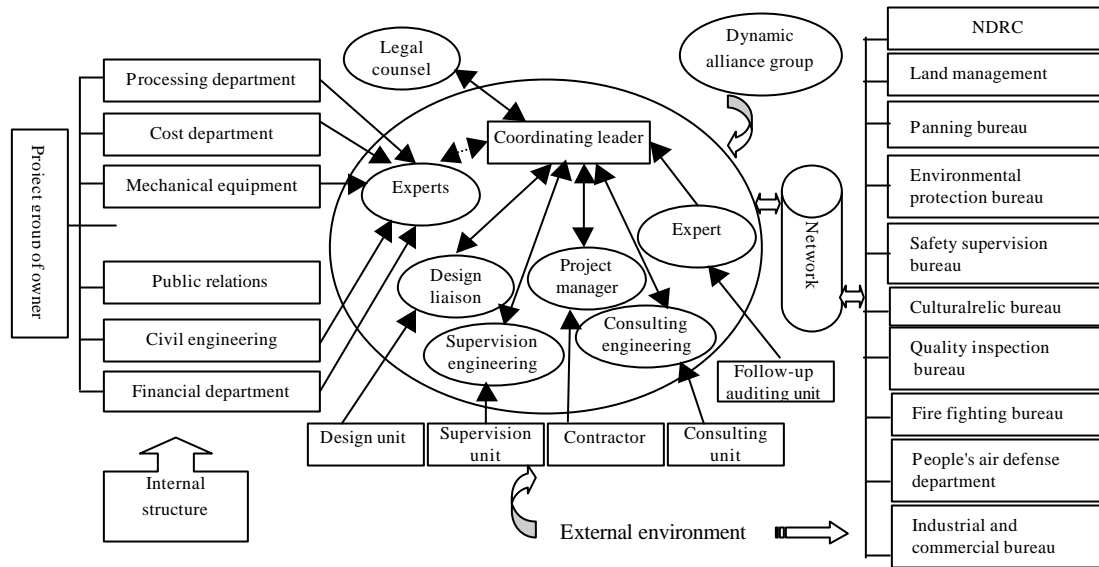


Fig. 4: The organization modal of integrated management for construction

**THE DESIGN MODEL OF INTEGRATED ORGANIZATION-DYNAMIC ALLIANCE**

**Dynamic alliance group:** The thinking of dynamic alliance sets up virtual organization theory. With the modernization and the development of information technology, the type of organization transfers from such perpendicular ones as function, matrix and project to oblate ones and from fixed ones to flexible ones and the boundary of organization management are foggy more and more. The virtual organization is the extemporaneous network organization united by all the participants of project with information technology. It can integrate society resource and realize the best outside project and create the value of society efficiently. The Dynamic alliance group is the core of virtual organization (Fig. 4). According to the properties of project and different stage, the members of dynamic alliance group can join and leave at any time when finishing the task. So in dynamic alliance group, there should be a core person to control and lead the group who is the coordinator of project. The members are made up by the leaders or experts of all the participants.

**The characteristics of dynamic alliance group:** The contract is the key to keep stability of dynamic alliance group: The members of dynamic alliance group are restrained by strict contract. Howere the contractual relationship is intermittent, because the participants of project always changes dynamically. With the project carrying out, the participants are increased or decreased

constantly and the contractual relation is existent and vanished. The contractual relationship defines cooperation and interest among the members under the law, at same time it is an efficient means to evade risk. The collaboration of dynamic alliance group may share knowledge and wisdom of every participant, integrate and distribute the resource in the whole life period so that we can reduce cost and enhance the level of construction and create the efficiency of high added value.

**IMS is the technical support for dynamic alliance group to operate:** The dynamic alliance group integrates the resource advatadge of differet enterprise into a system. In order to ensure information, technology, management and talents of the members in organization to integrate, IMS can supply favorable technology support. When the dynamic alliance group is operating, the data base is builded. So information shared of the group and stable operation of the organization is ensured, with network technology.

**Communication and cooperation is the favorable guarantee of success for dynamic alliance group:** The members of dynamic alliance group service for their interest, but their collective goal is to satisfy the owner's request. To realize the common goal smoothly, every member must avoid thinking alone and persist in the idea of goal orientation (Liu, 2012). Good communication and cooperation can remedy the difference and defect of unclear information and cognitive level by person

among the stages which may enhance the core competitive power and ensure the dynamic alliance group to operate efficiently.

### **CONCLUSIONS**

Construction project management is a very complex system, so integrated management of project goal needs a support system. Reasonable project organization structure is strong guarantee. Based on the model of integrated management, a dynamic, stretch, flat virtual organization is set up who is dynamic alliance group. The members of dynamic alliance group have own special skill or knowledge, they have strong dependency with each other. Every participant can join in the construction project by dynamic alliance group and express their wishes and share the others' experience and wisdom. Through the operation of integrated dynamic alliance group, the stages of project will connect favorably. All the engineering materials of every stage will be shared which is good to realize the goal and the overall optimization of project.

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