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COLLABORATIVE MANAGEMENT SYSTEM DESIGN FOR CROSS-ENTERPRISE PROJECT PLAN

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ABSTRACT

The cross-enterprise project plan is the core of project management across the enterprise to guide, organization, implementation and control of cross-enterprise project operation, and avoid waste of resources, improve the efficiency of the method. Adapt to the need of the shipbuilding enterprise project management, this paper analyses the characteristics of cross-enterprise project plan management, put forward across the enterprise collaborative management system architecture, project plan to adapt to the distributed collaborative product development and production requirements. At the same time, the function design of the collaborative management system of cross-enterprise project plan was carried out by using the J2EE software platform, and the functional design scheme of each subsystem was given. The system can improve the management efficiency of the production of cross-enterprise project, reduce the management cost and update the management concept.

1. INTRODUCTION

Cross-enterprise project management is the management of the whole life cycle with the project as the core and the Work Breakdown Structure of the project task. Once the project goal is completed or suspended, the cooperation organization is dissolved. Across the enterprise project management is the ultimate goal of effective support and management under the form of multiple enterprise collaboration process, the total project life cycle to develop collaborative projects effectively, and of each unit in the project to the collaborative enterprise resource optimization scheduling, on the whole project schedule implement effective monitoring, through the whole life cycle of project risk management to reduce the overall risk of the project, to ensure production short cycle, high efficiency, high quality [1].

At present, the research about across the enterprise project management at home and abroad are mainly about across the enterprise project management organization work platform technology research, such as the workflow, multi-agent technology, information management system, security strategy and so on the direction of the research; The other part is the research on the concept system of cross-enterprise project management. In project management, there are mainly two research trends: one is for all aspects of the traditional project management concept of longitudinal more in-depth research, make it more suitable for the operation of modern enterprise; Another is to put the project management and the combination of network environment, to adapt to the demand in today's information society enterprise collaborative project management, the concept of project management from a single enterprise internal extension to the world across the enterprise organization [2].

For this purpose, this paper focuses on the characteristics of cross-enterprise projects and focuses on the application background of ship making enterprises and designs a cross-enterprise project plan coordinated management system [3]. The system USES the J2EE architecture and USES the JAVA language to develop in the Eclipse environment. Including cross-platform characteristics of JAVA language determines the software have the ability to run correctly on heterogeneous platforms, architecture used in the JavaBeans software component technology, the relative independence of software component, call each other without conflict relationship meet the needs of the system reusable, reconfigurable. Through its implementation of cross-enterprise project plan collaborative management system, further improve the cross-enterprise project management system, and promote the application field of cross-enterprise project management software.

2. CROSS-ENTERPRISE PROJECT MANAGEMENT REQUIREMENTS

For manufacturing industry across the enterprise project mainly exist in the research and development of large, complex products manufacturing process, such as shipbuilding, aerospace, automotive and other industries, generally includes feasibility, overall scheme design, technical design, trial production and batch production, such as multiple stages, need completed by several units, a multidisciplinary team [4]. The collaborative management system for cross-enterprise projects requires the following basic functions:

(1) Project plan management: for the customized WBS structure, the system provides convenient and intuitive arrangement and adjustment for the time, progress and personnel arrangement of each task. Planning management is the core of cross-enterprise project management, and the system should realize multi-level plan management.

(2) Tracking, plans to modify project plan: in the project, the task of head according to was responsible for the actual progress of the task is not submit regular progress situation, change the state of an object in the system, for the superior supervision, head of the view.

(3) Project workflow management: the system should instantiate the workflow according to the defined workflow template, and implement the start, pause and restore operation of the workflow. And monitor the actual state of the workflow.

(4) Project document management: the system should provide the document classification management function, the document can be classified according to the project, can realize the document's rights management and network transmission and other functions.

(5) Project cost management: for the characteristics of model project management, the system should provide cost management function, estimate statistics, cost accounting and management of project cost.

(6) Project calendar management: through this function to control project progress and performance evaluation. The task manager submits task status changes to the system through the work calendar.

3. SYSTEM ARCHITECTURE

Production of large complex products usually requires multiple companies to collaborate in production and development. These enterprises may be distributed in different regions, and each enterprise has its own unique product development process and various heterogeneous information systems [5]. For large complex production process in the organization and coordination, planning, coordination, resource synergy and collaboration, this paper proposes a distributed across the enterprise project management system architecture, to meet the whole process of multilevel and distributed across the enterprise project management requirements, as shown in figure 1. According to the structural level of the project product development, production and assembly process, the relationship between the system at different stages of the project and the plan of the parts at different levels is established. According to the distributed structure of the management process, the characteristics of cross-enterprise and cross-region are established, and the information transfer mechanism of task planning, tracking and revision is established to establish a multi-level project management system [6].

Figure1: Overall structure chart of the collaborative management system of cross-enterprise project plan

4. COLLABORATIVE MANAGEMENT SYSTEM DESIGN FOR CROSS-ENTERPRISE PROJECT PLAN

4.1. System Function Design

Cross-enterprise collaborative project plan management system main function modules including collaborative planning management module, collaboration, project schedule management module, the collaboration program change management module, plan conflict detection, conflict resolution module. In addition, the document management module in the system auxiliary function module provides archiving, querying and other management functions of legal documents such as order/contract in collaboration. Message management provides information interaction, information management and other functions in the collaborative process; The cooperative enterprise information management provides the basic information of the cooperative enterprise and the information of the product transactions, deleting, changing and checking functions; Basic data management provides the basic data that the system needs to increase, delete, change, check function. These functions are partly to support for the system to run correctly and reasonably [7, 8].

4.2. System Software Design

The core module program diagram of the system software is shown in figure 2. The program class diagram shows the implementation classes of the core module and its attributes, functions, and the invocation relationships between the implementation classes and functions, which implement the business requirements for the system. Which WbsBillCf WBS decomposition list, says NetPla said network plan, said RESCurren resource capacity statistics are available, and different time periods LargePla said schedules, ItemPla said project plan, ItemRequire said project requirements, Conflict Detect said conflict detection, ItemSuppl said project support.

Figure 2: Core module program diagram of the system

4.3. System Test Case

In this paper, we select the project conflict detection subsystem in the collaborative management system of cross-enterprise project plan to test the rationality and feasibility of the system design. Coordination center according to the received assembly enterprises demand plan submitted by the equipment and key equipment supply plan which submitted by collaborative enterprise based on supply and demand time plan collaboration conflict detection, according to the different types of test results for different treatment. The results of the planned collaborative conflict detection are shown in figure 3.

JCJGBM	SBBM	JGLX	ZDPLZ	CTYSJH	CCBS	SSRW	SSXM	
JCJG001	ZJ001	YQGHJH	9	WU	%	ZJDZ	SBW0902120	JRJHCTXJJM
JCJG002	ZJ002	ZCGH	0	WU	%	ZJDZ	SBW0902120	WU
JCJG003	ZJ003	TZGH	5	WU	%	ZJDZ	SBW0902120	JRTZGHCLJMM

Figure 3: Plan conflict detection interface

5. CONCLUSIONS

Cross-enterprise collaborative project plan management is a new operation mode of enterprise organization, the collaboration between enterprises is in the plan of the establishment, execution, control and change timely interaction, in the whole process of negotiation to reach a consensus, this will more fully play the role of cross-enterprise project plan in project management, and ultimately reached with the best resource optimal allocation scheme for cross-enterprise project operation, so as to achieve win-win purpose. This article for cross-enterprise collaborative project plan, problems existing in the process of implementation of its system design were studied, gives the design scheme of cross-enterprise collaborative project plan management system, based on the J2EE technology and realizes the system. The system can improve the management efficiency of complex product production projects, reduce the cost of management, improve product quality and update management concepts.

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