

DESIGN AND IMPLEMENTATION OF SHIP ENGINEERING PROJECT MANAGEMENT SYSTEM

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ABSTRACT

This paper demonstrates how to use the SQL Server database for data organization and system development for the project management process of ship engineering companies.

- By considering system requirements from the bottom up, and considering data requirements from the top down, a general model containing ship product data is developed.
- It solves the problems of cluttered project information, difficult information integration, and chaotic process management.
- It will aim in improving management efficiency and reducing management costs.

Introduction

The system is designed and implemented in combination with the actual situation of ship engineering, and the importance, necessity and feasibility of the ship engineering project management system are discussed in detail.

- Abandon paper office to save company costs and reduce waste of human resources.
- Categorize and organize the information reasonably and scientifically.
- The project can analyze the report and grasp key information at any time.
- The database management of the ship engineering project allows the staff on the entire project process to know the project progress clearly and understand their work needs in time.

SHIP ENGINEERING PROJECT BUSINESS MODEL

Through the construction of a ship engineering project management system, safety, stability, and ease of use are increased, and the ability to digitally store and share information is realized.



Figur 1. Business model of ship engineering project

DEMAND ANALYSIS OF SHIP ENGINEERING PROJECTS

A. Features of ship engineering projects

With the economic globalization, the current ship market competition is very fierce, in order to improve competitiveness. The quality of the project management by the project manager directly affects employees' work efficiency, company efficiency, and corporate reputation.

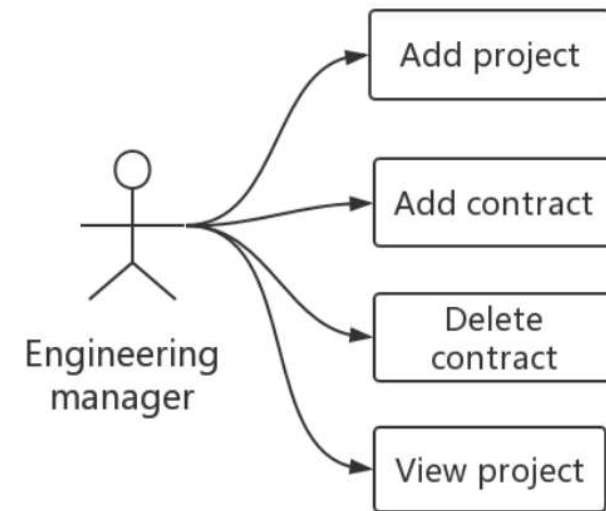
The characteristics of shipbuilding projects involve :

- many manufacturers,
- long project cycles,
- large overall scale,
- complicated links and overlapping conditions,
- and large project funds.

B. Functional requirements analysis of ship engineering project system

Ship engineering management is mainly divided into three parts:

1. engineering business,
2. engineering settlement, and
3. engineering subcontracting.



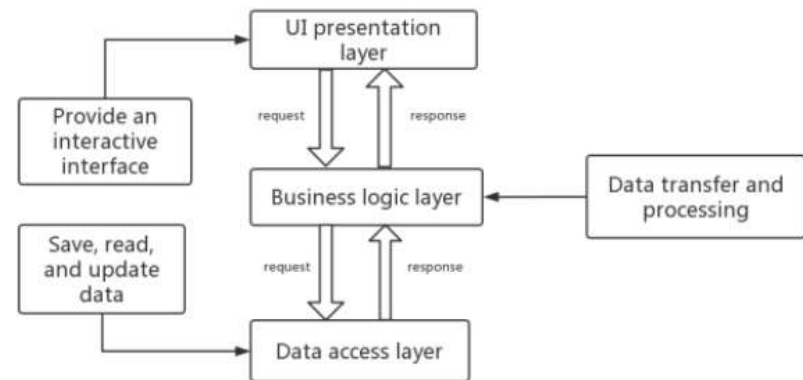
Figur 2. Project management use case diagram

DESIGN OF SHIP ENGINEERING PROJECT MANAGEMENT SYSTEM

A detailed design diagram to guide the developer to complete the system construction is made in this phase.

The system uses the current mature and stable three-tier architecture technology which is divided into:

- presentation layer,
- business logic layer, and
- data access layer.

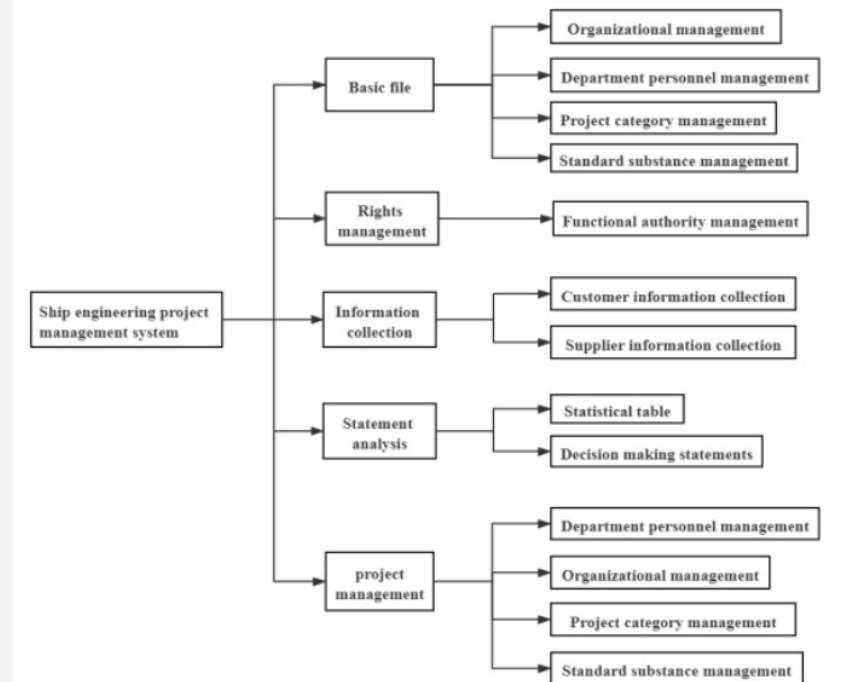


Figur 3. Software architecture of ship engineering project management system

By analyzing and summarizing the status quo of the enterprise, the function of the ship engineering project management system is designed.

The research of this project covers the following:

- Perform analysis during the preparation phase of the ship engineering project management system.
- Carry out a detailed requirements analysis, mainly focusing on the current situation of the enterprise.
- Establish a plan in the system of the ship engineering project management system.



The system's database physical structure is designed through a data dictionary, reflecting the length, type, and data results of each table field. The purpose is to explain the data items of each table.

TABLE I. USER TABLE

Key	Type	Allow empty	primary/foreign key
UserId	Int	N	Primary key
UserName1	Varchar	Y	--
PassWord	Varchar	Y	--
UserName2	Varchar	Y	--
Gender	Varchar	Y	--
Role	Varchar	Y	Foreign key
Department	Varchar	Y	--
ContactInfo	Varchar	Y	--
Company	Varchar	Y	--
Remark	Varchar	Y	--

TABLE II. PROJECT TABLE

Key	Type	Allow empty	primary/foreign key
ProjectId	Int	N	Primary key
ProjectName	Varchar	Y	--
BusinessCharger	Varchar	Y	Foreign key
CreateTime	Datetime	Y	--
StartTime	Datetime	Y	--
EndTime	Datetime	Y	--
ProjectCost	Float	Y	--
ProjectSchedule	Varchar	Y	--
ConstructionCom	Varchar	Y	--
DesignCom	Varchar	Y	--

TABLE III. Contract table

Key	Type	Allow empty	primary/foreign key
ContractId	Int	N	Primary key
ProjectId	Int	Y	foreign key
Money	Float	Y	--
SignDate	Datetime	Y	--
PartyA	Varchar	Y	--
PartyB	Varchar	Y	--
Remark	Varchar	Y	--

CONCLUSION

This article generally researches and discusses how to establish a ship engineering project plan management mode in a shipbuilding company. In the shipbuilding company's organization of shipbuilding project construction planning management, it must also combine the specific situation of the company and the engineering projects it undertakes and accordingly make specific adjustments and arrangements.

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 - https://en.wikipedia.org/wiki/Marine_engineering
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Strategy for implementation

Creating a relational database for the system

- Creating the user, project and contract tables
 - Creating a few more useful tables
 - Project team table
 - Departments table
 - Adding a few more attributes to the tables given in the paper
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