Software Requirements Specification (SRS) Document

Maritime Management Portal

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1. Introduction

1.1 Purpose

This document outlines the Software Requirements Specification (SRS) for the Maritime Management Portal. The purpose of this document is to describe the system's functionality, features, user interactions, and non-functional attributes to ensure the successful development and deployment of the software.

1.2 Scope

The Maritime Management Portal is designed to streamline the operations and communications between ships, management company employees, ship owners, crew members, and officers. The system will provide real-time updates on ship status, cargo management, estimated time of arrival (ETA), contract management, and readiness applications. This document details the requirements and functionalities that the software must meet to fulfill the needs of these user groups.

1.3 Overview

The Maritime Management Portal will be a web-based application accessible to multiple user roles. It will serve as a centralized platform for managing maritime operations, enhancing communication, and improving operational efficiency. This SRS document describes the necessary features, functional and non-functional requirements, and user interface design to achieve these objectives.

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2. General Description

2.1 Functions

The primary functions of the Maritime Management Portal include:

- **Real-time Ship Tracking**: Monitor the current status and location of ships.
- **Cargo Management**: Manage and update cargo information during voyages.
- **ETA Notifications**: Provide estimated time of arrival (ETA) updates to relevant stakeholders.
- **Contract Management**: Handle contract details and notify users of upcoming expirations.
- **Readiness Applications**: Allow crew members and officers to apply for readiness status online.

2.2 User Community

The intended users of the Maritime Management Portal include:

- **Ship Owners**: Access detailed reports on ship status and cargo.

- **Management Company Employees**: Oversee daily operations, contract management, and ship tracking.
- **Crew Members and Officers**: Apply for readiness and manage personal records.
- **Ship Captains**: Update voyage details and communicate with the management team.

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3. Functional Requirements

3.1 Possible Outcomes

The system must perform the following actions:

- **Ship Status Updates**: Automatically update the status and location of ships in real-time.
- **Cargo Management**: Enable users to input and update cargo details, such as weight, type, and destination.
- **ETA Notifications**: Calculate and send ETA notifications based on ship speed and weather conditions.
- **Contract Notifications**: Alert management about contract renewals or expirations.

3.2 Ranked Order

1. **Real-time Ship Tracking**
2. **Cargo Management**
3. **ETA Notifications**
4. **Contract Management**
5. **Readiness Applications**

3.3 Input-Output Relationship

- **Input**: User inputs such as cargo details, ship status updates, and readiness applications.
- **Output**: Generated reports, real-time ship status, ETA notifications, and contract alerts.

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4. User Interface Requirements

4.1 Software Interfaces

The portal will interface with the following systems:

- **GPS and AIS Systems**: For real-time ship tracking and location updates.
- **Weather API**: To calculate accurate ETA by integrating weather data.
- **Email and SMS Gateways**: To send notifications and alerts to users.

4.2 Examples

- **Dashboard**: A unified view displaying ship status, cargo details, and recent notifications.
- **Forms**: Web forms for contract management, cargo entry, and readiness applications.

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5. Performance Requirements

5.1 Response Time

- **Real-Time Updates**: The system must update ship status and location within 5 seconds of receiving new data.
- **Notification Delivery**: ETA notifications and alerts should be sent within 1 minute of calculation.

5.2 Throughput

- **Concurrent Users**: The system should support up to 500 concurrent users without performance degradation.
- **Data Handling**: Ability to process and manage data from up to 100 ships simultaneously.

5.3 Scalability

- **Horizontal Scaling**: The system should be capable of horizontal scaling to accommodate increasing numbers of users and ships.

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6. Non-Functional Attributes

6.1 Usability

- **User-Friendly Interface**: The portal should be intuitive and easy to navigate for users with varying levels of technical expertise.

6.2 Reliability

- **99.9% Uptime**: The system should guarantee a minimum uptime of 99.9% to ensure continuous availability.

6.3 Security

- **Access Control**: Role-based access control must be implemented to ensure that users only have access to the functionalities relevant to their roles.
- **Data Encryption**: All data transmissions should be encrypted using SSL/TLS protocols.

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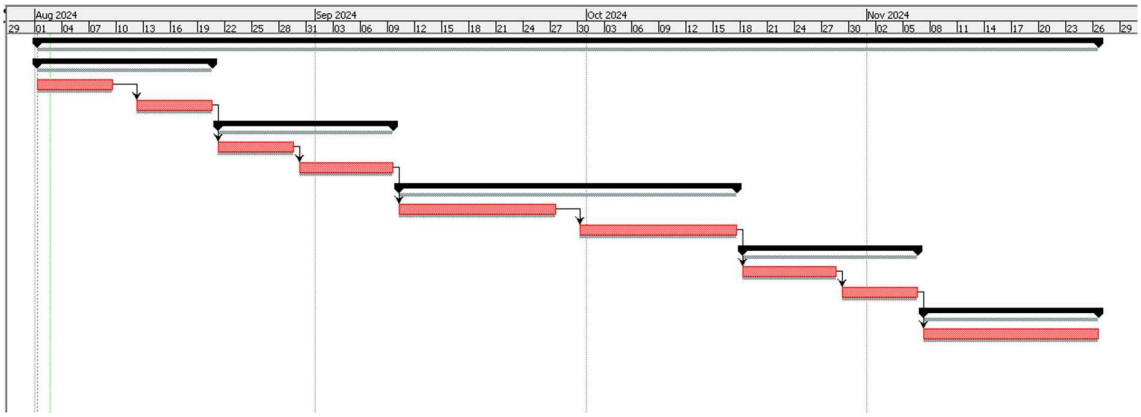
7. Schedule and Budget

7.1 Timeline

	Name	Duration	Start	Finish	Predecessors	Resource Names
1	**Summary**	84 days?	**8/1/24 8:00 AM**	**11/26/24 5:00 PM**		
2	**Planning and Analysis**	14 days?	**8/1/24 8:00 AM**	**8/20/24 5:00 PM**		
3	Project planning	7 days?	8/1/24 8:00 AM	8/9/24 5:00 PM		
4	Risk analysis	7 days?	8/12/24 8:00 AM	8/20/24 5:00 PM	3	
5	**Design**	14 days?	**8/21/24 8:00 AM**	**9/9/24 5:00 PM**		
6	System Design	7 days?	8/21/24 8:00 AM	8/29/24 5:00 PM	4	
7	Prototyping	7 days?	8/30/24 8:00 AM	9/9/24 5:00 PM	6	
8	**Development**	28 days?	**9/10/24 8:00 AM**	**10/17/24 5:00 PM**		
9	Core Funtionality Implementation	14 days?	9/10/24 8:00 AM	9/27/24 5:00 PM	7	
10	Incremental Feature Development	14 days?	9/30/24 8:00 AM	10/17/24 5:00 PM	9	
11	**Testing**	14 days?	**10/18/24 8:00 AM**	**11/6/24 5:00 PM**		
12	Integration testing	7 days?	10/18/24 8:00 AM	10/28/24 5:00 PM	10	
13	User Feedback collection	7 days?	10/29/24 8:00 AM	11/6/24 5:00 PM	12	
14	**Refinement and deployment**	14 days?	**11/7/24 8:00 AM**	**11/26/24 5:00 PM**		
15	Refinement and iteration	14 days?	11/7/24 8:00 AM	11/26/24 5:00 PM	13	



7.2 Cost Estimate

Using the Basic COCOMO formula:

- **Effort (Person-Months):**

  $\text{Effort} = 3.0 \times (\text{KLOC})^{1.12}$

  Given that the estimated size is 50 KLOC,
  $\text{Effort} = 3.0 \times (50)^{1.12}$

  $\text{Effort} \approx 169$ Person-Months

- **Development Time (Months):**

  $\text{Time} = 2.5 \times (\text{Effort})^{0.35}$
  $\text{Time} = 2.5 \times (169)^{0.35}$

  $\text{Time} \approx 14$ Months

- **People Required (Team Size):**
  $\text{People} = \text{Effort}/\text{Time}$
  $\text{People} = 169/14 = 14169$
  $\text{People} \approx 12$ Developers

- **Cost Per Person-Month:**
  Given cost per person-month: ₹150,000
- **Total Estimated Cost in INR:**
  Total Cost=169×₹150,000
  Total Cost=₹25,350,000

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8. Appendices

8.1 Supplementary Information

- **Related Documents**:
  - **System Design Document**: Provides detailed information on the architecture and design decisions made for the Maritime Management Portal.
  - **User Manual**: A guide for end-users on how to navigate and use the portal's features effectively.
  - **Test Plan**: Outlines the testing strategy, test cases, and procedures to ensure the software meets the specified requirements.
- **Technical Specifications**:
  - **Server Requirements**: Minimum hardware and software configurations required to host the portal.
  - **Database Specifications**: Details on the database system used, including schema, indexing, and backup procedures.
- **Regulatory Compliance**:
  - **Maritime Safety Regulations**: Ensuring that the portal complies with relevant maritime safety and communication regulations.
  - **Data Protection Laws**: Adherence to international data protection regulations (e.g., GDPR) to safeguard user information.

8.2 Glossary

- **ETA**: Estimated Time of Arrival
- **AIS**: Automatic Identification System
- **SSL/TLS**: Secure Sockets Layer / Transport Layer Security
- **GPS**: Global Positioning System