Software Requirements Specification

for

Stock Management System

Version 1.0 approved

Prepared by Team DevSquad -

E-mox Manufacturing PVT (LTD)

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1. Introduction

1.1 Purpose

The primary objective of this SRS document is to furnish a comprehensive overview of our software product, including its parameters and objectives. This document describes the project's target audience and its user interface, hardware, and software requirements. It reflects how our client, team, and audience view the product and its functionality. Nonetheless, it helps any designer and developer to assist in the software delivery lifecycle (SDLC) processes.

1.2 Document Conventions

- Font: Calibri, Size: 12
- Headings: Bold, Size: 18
- Subheadings: Bold, Size: 14
- Nested Subheadings: Bold, Size: 12
- Text Alignment: Justified

1.3 Intended Audience and Reading Suggestions

This document is designed for the convenience of various stakeholders, including developers, project managers, marketing staff, users, testers, and documentation writers. Each section is structured to provide relevant information to different reader types. The suggested reading sequence begins with the overview sections and progresses through the parts most pertinent to each reader type.

1.4 Project Scope

The purpose of this project is to provide a comprehensive software solution for the organization "E-mox," aiming to significantly improve stock management and production processes. The scope encompasses the development, implementation, and integration of a user-friendly software system designed to enhance overall workflow efficiency.

1.4.1 Objectives

The project's primary objectives include:

- **Streamlined Stock Management:**
  - Implementing features that facilitate efficient tracking, organization, and management of stock inventory.
- **Enhanced Production Efficiency:**

    - Introducing functionalities to optimize production processes, reduce lead times, and minimize bottlenecks.
- **Workflow Improvement:**
    - Designing an intuitive user interface to enhance user experience and promote seamless interaction with the software.

1.4.2 Inclusions

The project will include the following:

- **Software Development:**
    - Designing and developing a robust software solution tailored to the specific needs of "E-mox."
- **User Training:**
    - Providing training sessions for employees to ensure effective utilization of the new software.
- **Implementation:**
    - Integrating the software into the existing infrastructure, ensuring compatibility and minimal disruption.

1.4.3 Exclusions

The project will not include:

- **Hardware Procurement:**
    - Procurement of new hardware devices or equipment.
- **Network Infrastructure Changes:**
    - Significant modifications to the existing network infrastructure.

1.4.4 Constraints

The project must be completed within the stipulated time frame and budget. Any modifications or enhancements beyond the agreed-upon scope will be considered as additional requirements and may impact the project timeline and cost.

1.4.5 Assumptions

It is assumed that the organization's employees will actively participate in the training sessions and adopt the new software efficiently. Additionally, any third-party integrations will be compatible with the chosen software solution.

This comprehensive project scope statement outlines the objectives, inclusions, exclusions, constraints, and assumptions, providing a clear understanding of the project's boundaries and expectations. Feel free to customize it further based on your specific project details.

1.5 References

Company's official websites:

- Emox Manufacturing Lanka Pvt Ltd.

StarUML was used to create the ER diagram and the UseCase Diagram

2. Overall Description

2.1 Product Perspective

(Currently, E-mox Manufacturing Private Limited faces significant challenges in stock management due to errors in its manual system, specifically using Excel sheets. Recognizing the inefficiencies and time-consuming nature of this process, the company has sought a solution to automate and streamline its stock management. In response to this need, we have developed a comprehensive Stock Management System to address these issues. The adoption of this software is expected to significantly enhance operational efficiency and contribute to the overall growth of E-mox Company.)

2.2 Product Features

The product's features are specifically designed to address the issues with E-mox manufacturing private limited current system. By automating most of the related processes, This stock management system can be implemented easily. This includes,

- In the current system, the raw materials for this e-mox company come from India. There, the materials come in two parts, namely raw material s and packing material s. Here, a feature that is achieved through our software is how the received material enters the warehouse, how much material is received and how much material is left in the warehouse, how much is needed.

- And with this system, they can automatically get data on how much they need to send to manufacturing. There they can make this stock management system more efficient

- User Management — Create, modify, and delete user accounts.

- SKU Management-Add, edit, and delete product details, assign unique identifiers (SKU) to products.

- Security-Secure user authentication, Role-based access control.

2.3 Operating Environment

This system is run in e-mox manufacturing private limited's warehouses IT department. Therefore, this is not a customer facing software.
Therefore,

1. Hardware Requirements

   There is a terminal in this it department @ e-mox manufacturing private limited's Stock Management System. It works in 7 physical machines. The following are the minimum and recommended hardware requirements:

   Recommended Hardware Requirements:

   - Processor: Quad-core processor, 2.5 GHz or equivalent
   - RAM: 8 GB or higher
   - Storage: 100 GB available disk space or higher
   - Display: 1920×1080 resolution

2. Software Requirements

   The e-mox manufacturing private limited's Stock Management System is designed to run on the following operating systems and software platforms:

   Operating System:

   - Microsoft Windows 10 or later
   - macOS 10.12 or later
   - Linux (Ubuntu 18.04 LTS or equivalent)

   Database Management System:

   - MySQL 8.0 or later
   - Microsoft SQL Server 2016 or later
   - PostgreSQL 10 or later

   Web Browser:

   - Google Chrome (latest version)

3. Network Requirements

The e-mox manufacturing private limited's Stock Management System requires a stable network connection for both local and remote access. The system is designed to operate in the following network environments:

- Local Area Network (LAN): 100 Mbps or higher recommended
- Internet Connection: Broadband connection for remote access

2.4 Implementation Constraints

•Security Standards and Implementation:

◦ The implementation will include security features; however, it is noted that due to project constraints, adherence to comprehensive secure coding standards may be limited.

•Timeframe:

◦ The system must be implemented within constrained time scope.

2.5 Design Constraints

• Front-End Detailing:

◦ Given the constrained time scope, the emphasis will be primarily on developing robust backend functionality. As a result, providing an exhaustive level of detail on the frontend may be challenging within the given time-frame.

• Back-End Detailing:

◦ Given the constrained time scope, We are going to make the backend through the spring boot framework.

•Specific programming language detailing:

◦ We are going to do it through java as the programming language

•Database system detailing:

◦ We are going to do it through MySQL as the database.

2.6 Assumptions and Dependencies

1. Hardware and Software Dependencies :
    ◦ Specify any hardware or software requirement for optimal system performance.
    ◦ Example : Dependency on the SpringBoot framework for backend optimization.

2. Security Assumption :
    ◦ Document assumptions related to system security.
    ◦ Example : Assumptions that the implemented security features will be effective within project constraints.

3. Constraints :
    ◦ Clear outline any constraints that may impact the development or usage of the system.
    ◦ Example : Constraint on providing exhaustive frontend detailing due to time constraints.

03 System Analysis and Design

3.1 Benefits of the Proposed System

Engaging in this project offers a myriad of advantages compared to the conventional manual system previously employed by businesses. By adopting our system, organizations stand to streamline their operations, saving valuable time and optimizing workforce efficiency. The implementation of our software facilitates a reduction in the need for excessive manpower, leading to increased cost-effectiveness. Additionally, the mobile version of the software empowers users to seamlessly manage stock materials, allowing for swift and efficient data entry directly from their mobile devices.

3.2 Target audience

The primary target audience for our stock management system includes stock managers and the employees working under their supervision.

3.3 Requirement gathering

3.3.1 Meetings and interviews

In our initial meeting, we visited their office to get a firsthand look at how the business operates. During these sessions, we assessed their day-to-day activities and future plans. The second meeting, held on Zoom, allowed us to delve deeper into their stock management practices, understanding the materials they handle and the challenges they encounter with their current processes. In the third meeting, conducted at their office, we presented our plan to the store manager and received valuable input. Their insightful suggestions influenced the incorporation of features, ensuring our system aligns seamlessly with their specific needs.

3.3.2 Surveying from people

No survey was conducted for this project, as it was deemed unnecessary for our specific goals and objectives.

3.3.3 Observation

While checking things out, we noticed a few challenges in how they handle stuff. In the first meeting, understanding exactly what they stock and how their business runs was a bit tricky, but we got some useful info. For example, they talked about storing PM and RM, which we later figured out stands for Packaging Material and Raw Materials. Also, they explained how raw materials connect to making products, which we got in the final meeting.

They made it clear that they wanted our system to be easy to use on their mobile phones. And they really stressed the need for an alert that tells them when their Raw Materials are about to expire. These observations guided us in making sure our stock management system fits their needs and is simple to use.

3.4 requirement Identification

3.4.1 User stories

User stories may be categorized as either formal or informal descriptions of software functionality, presented from the viewpoint of the end-user. The software parameters are delineated based on

the individual requirements of each user. In the field of software engineering, the process of gathering user requirements and classifying them into functional and non-functional categories serves as an assessment of the potential worth of novel software.

ID	User Story
US-1	I am writing to express my need for a web page dedicated to stock management. Currently, I use Excel for stock tracking, and the process is time-consuming, especially when checking received materials and issued items. The inefficiency in planning procurement has become a significant challenge, prompting me to seek a more streamlined solution. I believe a dedicated software solution would greatly improve our stock management, saving time and enhancing overall efficiency. I kindly request your assistance in developing a user-friendly web page that can efficiently handle stock tracking, making it easier for us to monitor received materials and issued items. Furthermore, I look forward to discussing this further and exploring how we can collaborate to create a solution that optimally meets our stock management requirements. Store Executive, Inesh Fernando Emox Manufacturing Lanka Pvt. Ltd

3.5 **System functionalities and non-functionalities**

3.5.1 Functional Requirements

- Product Management:
  - Add new products to the inventory.
  - Update product details (e.g., name, description, price).
  - Delete or deactivate products.

- Categorize products for easy navigation.

- User Interface
  - Intuitive and user-friendly interface.
  - Navigation menus for easy access to features.
  - Search functionality for products and orders.
- Stock Tracking
  - Monitor real-time stock levels.
  - Receive and record new stock.
  - Track stock movements (e.g., sales, returns, transfers).
  - Set up low-stock alerts.

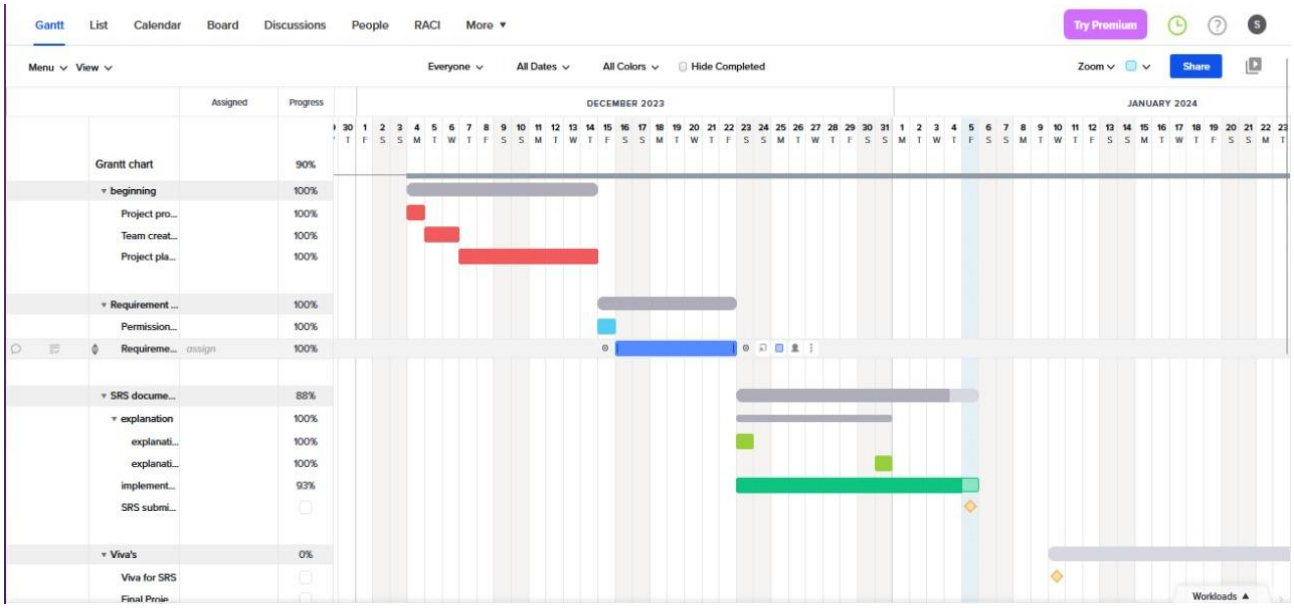
- Reporting and Analytics:
  - Generate reports on stock levels, sales, and other key metrics.
  - Provide analytics for informed decision-making.

- Notifications
  - Automated notifications for low stock, order status, etc.

3.5.2 Non-functional Requirements

- Login History
- Dark Mode Interface
- Data information, change history
- Security
  - Ensure data encryption for sensitive information.
- Performance Metrics
  - Define metrics for monitoring system performance.
  - Regularly review and optimize system performance.

3.6 **Project scope/Gantt Chart**



3.7 Development system requirement

3.7.1 System software requirement

- The system shall be developed using a web-based framework (React and Springboot).
- Database management shall be handled using a relational database system (MySQL).

Software Development Tools

- Use a web development framework (React and Springboot) for rapid development.
- Employ version control systems (Git) for source code management.
- Choose an integrated development environment (IDE) for coding and debugging.

3.7.2 System hardware requirement

Hardware requirements are usually determined during the system design phase. However, I can provide a general guideline for the hardware requirements of a Stock Management System. Keep in mind that these are broad recommendations, and the actual requirements may vary based on the specific features and scale of your system.

Web Server:

- Dual-core processor or higher
- 8 GB RAM or more
- Sufficient storage space for application files and logs

Database Server:

- Multi-core processor (number of cores depends on the expected load)
- 16 GB RAM or more
- Adequate storage for the database (consider SSD for performance)
- RAID configuration for daa redundancy and reliability

Network Infrastructure:

- Gigabit Ethernet for fast data transfer
- Redundant network interfaces for failover support
- Adequate bandwidth based on expected concurrent users and data transfer needs

User Workstations:

- Standard desktop or laptop computers
- i3 10gen processor or higher
- 4 GB RAM or more
- Modern web browser (Chrome, Firefox, Safari)
- Minimum screen resolution of 1280x800 pixels

Mobile Devices (if supported):Compatibility with popular mobile browsers (Chrome, Safari)

- Responsive design for various screen sizes
-
- Appropriate resources to run the mobile application smoothly

Firewalls and Security Appliances:

- Deploy firewalls to protect the server from unauthorized access
- Intrusion detection/prevention systems for monitoring and responding to security threats

Climate Control:

- Ensure the server room is equipped with air conditioning to maintain optimal temperature
- Adequate ventilation to prevent overheating

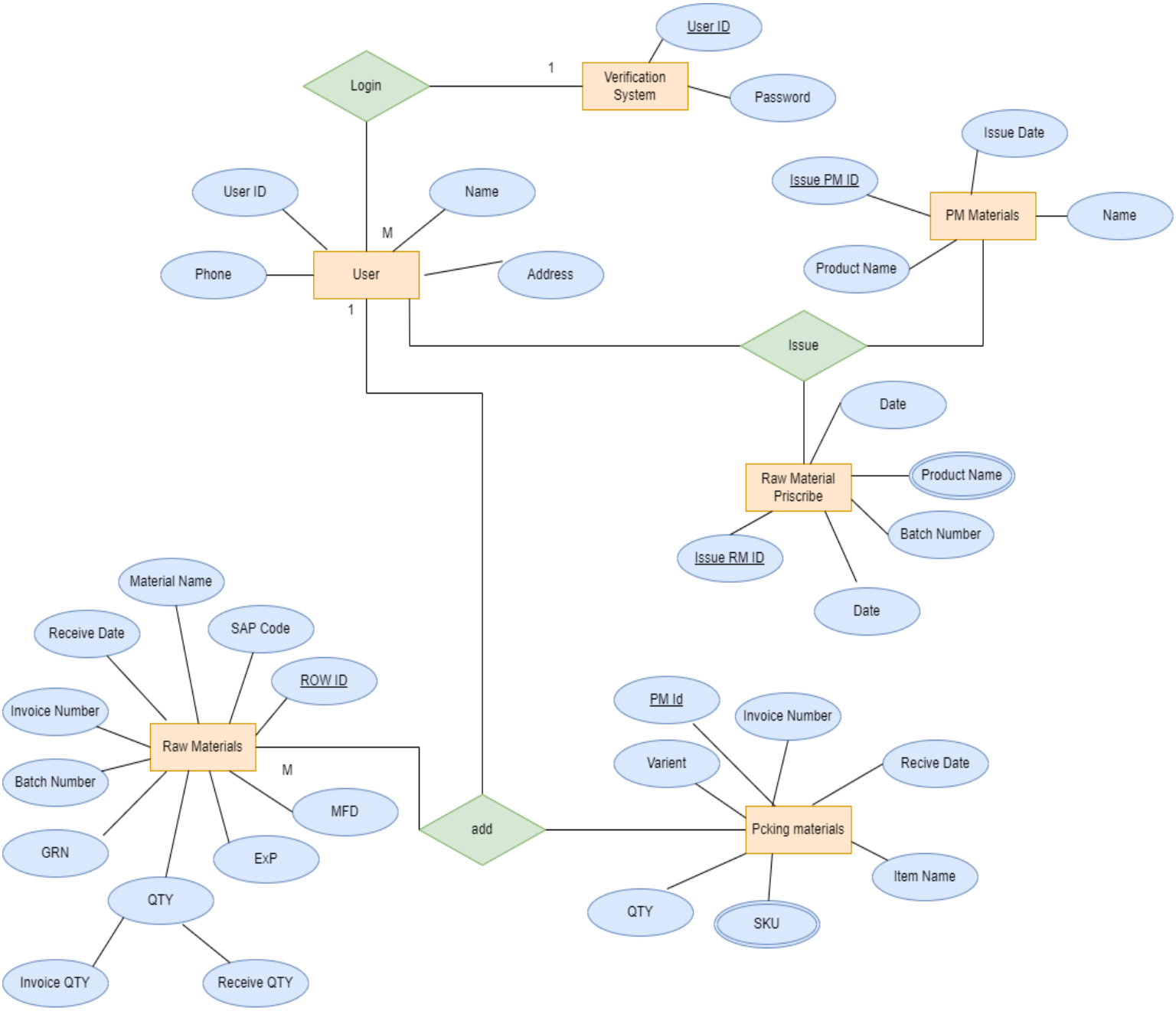
Power Supply:

- Uninterruptible Power Supply (UPS) for continuous operation during power outages
- Backup power generators for extended outages

3.8 System design

3.8.1 Use case diagram and descriptions

3.8.2 Entity Relationship Diagram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Item Name
QTY
SKU

4. Other Nonfunctional Requirements

4.1 Performance Requirements

4.1.1 Response Time:

- The system should provide a response time of less than 2 seconds for routine queries and transactions.
- The maximum response time for critical transactions, such as stock updates and order processing, should not exceed 5 seconds.

4.1.2 Data Management

- Regular automated backups of the database shall be performed to prevent data loss.

4.1.3 Legal Compliance:

- The system shall comply with relevant data protection and privacy regulations, such as GDPR.

4.3 Security Requirements

4.2 Safety Requirements

Data Encryption:

- User passwords and sensitive data shall be stored using strong encryption algorithms to ensure data security.

Access Control:

- Role-based access control shall be implemented, restricting access to specific features based on user roles (Admin, Manager, Clerk).

Data Security:

- The system must implement robust encryption mechanisms to secure sensitive data, including stock quantities, pricing information, and customer details.

- User authentication and authorization processes should be in place to ensure that only authorized personnel can access and modify critical stock data.

Physical Security*:*

- Physical access to servers hosting the stock management system should be restricted to authorized personnel only.
- Data centers or server rooms must be equipped with appropriate security measures, including surveillance, access controls, and environmental controls.

5. Other Requirements

Appendix A: Glossary

Stock Management System (SMS): The overarching term referring to the entire web application designed for the purpose of efficiently tracking, managing, and controlling stock or inventory.

SKU: Stock Keeping Unit. A unique identifier assigned to each distinct product or item in the inventory for tracking and management purposes.

API: Application Programming Interface. A set of rules and protocols that allows different software applications to communicate and interact with each other.

PM: Packing Materials

RM: Raw Materials

SAP: Systems, Applications, and Products in Data Processing