**Requirement Document**

**Project Name: ISWL**

**Domain: Inventory / Supply Chain / Warehousing / Logistics**

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**1. Introduction**

**1.1 Purpose**

The purpose of this document is to outline the high-level and low-level requirements for developing a system in the [Inventory / Supply Chain / Warehousing / Logistics] domain.

**1.2 Scope**

The scope of this document covers the functional and non-functional requirements for the [system name], including the processes related to inventory management, supply chain operations, warehouse management, and logistics functions.

**1.3 Definitions and Acronyms**

* **WMS**: Warehouse Management System
* **SCM**: Supply Chain Management
* **ERP**: Enterprise Resource Planning
* **OMS**: Order Management System
* **SKU**: Stock Keeping Unit

**2. High-Level Requirements (HLRs)**

**2.1 System Overview**

The system will provide end-to-end management of [Inventory/Supply Chain/Warehousing/Logistics] operations, facilitating better tracking, resource utilization, order processing, and supply chain visibility.

**2.2 Functional High-Level Requirements**

**2.2.1 Inventory Management**

* The system must allow users to create, edit, and delete items from the inventory.
* The system should track stock levels in real-time.
* Automatic reorder alerts should be triggered when stock falls below a defined threshold.
* The system must manage SKU generation and tracking for all inventory items.

**2.2.2 Supply Chain Management**

* The system should support multi-vendor management for procurement.
* Order tracking across the supply chain should be visible from suppliers to customers.
* Integration with transportation and logistics providers for seamless shipping updates.
* Support for Just-In-Time (JIT) inventory processes.

**2.2.3 Warehouse Management**

* The system must support barcode/QR code scanning for item identification.
* Users should be able to manage inbound and outbound shipments.
* Storage locations should be mapped for optimized picking routes.
* Real-time tracking of inventory across multiple warehouses.

**2.2.4 Logistics Management**

* The system should manage transportation scheduling and routing.
* The system should integrate with 3PL providers for better tracking and management of shipping.
* Automated generation of shipping labels and invoices.

**2.3 Non-Functional High-Level Requirements**

* The system should be accessible 24/7 with an uptime of 99.9%.
* The system should be scalable to handle a growing volume of inventory and orders.
* All user actions should be logged for auditing and compliance purposes.
* The system should maintain data security and comply with data protection regulations (e.g., GDPR, HIPAA).

**3. Low-Level Requirements (LLRs)**

**3.1 Functional Low-Level Requirements**

**3.1.1 Inventory Management**

* **LLR 1**: SKU generation algorithm will use a combination of category codes and unique item IDs.
* **LLR 2**: Stock levels should be updated every time an item is sold, returned, or restocked, with detailed logs.
* **LLR 3**: The reorder alert system should check stock levels every hour and send alerts via email or SMS.

**3.1.2 Supply Chain Management**

* **LLR 1**: Vendor management screens will have CRUD functionality for vendor profiles.
* **LLR 2**: The system will poll supply chain status updates from third-party APIs every 15 minutes.
* **LLR 3**: JIT inventory processes will automatically create purchase orders when minimum stock levels are breached.

**3.1.3 Warehouse Management**

* **LLR 1**: The barcode/QR code scanning module should be compatible with industry-standard scanners.
* **LLR 2**: Inbound shipments will be logged against the associated purchase orders and verified by staff.
* **LLR 3**: Outbound shipments will auto-generate picking slips based on FIFO (First-In-First-Out) picking logic.

**3.1.4 Logistics Management**

* **LLR 1**: Route optimization will use a distance matrix API to calculate the most efficient delivery routes.
* **LLR 2**: The system will interface with major shipping providers (e.g., FedEx, UPS) for real-time tracking updates.
* **LLR 3**: A document generation module will handle shipping labels and packing lists, exporting them in PDF format.

**3.2 Non-Functional Low-Level Requirements**

**3.2.1 Performance**

* **LLR 1**: The system should handle up to 10,000 concurrent users with a response time under 2 seconds.

**3.2.2 Security**

* **LLR 1**: User authentication should be implemented using OAuth 2.0.
* **LLR 2**: All sensitive data (e.g., inventory quantities, shipment statuses) must be encrypted in transit and at rest.

**3.2.3 Scalability**

* **LLR 1**: The system should be designed with a microservices architecture to allow horizontal scaling.

**3.2.4 Availability**

* **LLR 1**: The system should support automatic failover to a secondary data center in the event of an outage.

**3.2.5 Usability**

* **LLR 1**: The user interface should follow standard accessibility guidelines (WCAG 2.1) and provide keyboard navigation support.

**4. Conclusion**

This document outlines the high-level and low-level requirements for the development of the [Inventory / Supply Chain / Warehousing / Logistics] system. These requirements will be used to guide the design, development, and deployment phases to ensure a successful implementation that meets business needs.