# Software Requirements Specification (SRS)

## Inventory and Operations Management System (IOMS)

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### Document Control

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### Document Approval

| Role | Name | Signature | Date |
|---|---|---|---|
| Project Manager | | | |
| Technical Lead | | | |
| Business Analyst | | | |

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## 1. Introduction

### 1.1 Purpose

This Software Requirements Specification (SRS) document provides a comprehensive description of the Inventory and Operations Management System (IOMS). It details the system's functionality, interfaces, performance requirements, design constraints, and quality attributes.

### 1.2 Project Scope

The IOMS will serve as an enterprise-level solution for managing multi-location retail operations, warehouse logistics, and manufacturing processes. The system aims to optimize inventory management, streamline operations, and provide data-driven insights for decision-making.

#### 1.2.1 In Scope

- Comprehensive inventory management across all facility types
- End-to-end production workflow management
- Multi-location sales tracking and analysis
- Inter-facility stock transfer management
- Advanced reporting and analytics
- User and role management
- Integration with existing business systems
- Mobile application support
- Real-time notifications and alerts

#### 1.2.2 Out of Scope

- E-commerce platform integration (future phase)
- Customer relationship management
- Human resource management
- Financial accounting
- Third-party logistics integration
- International operations support

### 1.3 Intended Audience

This document is intended for: * Project stakeholders and sponsors * Development team members * Quality assurance team * System administrators * Training personnel * Maintenance and support staff

### 1.4 Definitions and Acronyms

#### 1.4.1 Definitions

| Term | Definition |
|---|---|
| Stock Keeping Unit (SKU) | Unique identifier assigned to each distinct product and its variants |
| Bill of Materials (BOM) | Comprehensive list of raw materials, components, and quantities needed to manufacture a product |
| Point of Sale (POS) | System component handling retail transactions |
| Work Order | Document detailing production instructions and requirements |

| Term | Definition |
|---|---|
| Safety Stock | Minimum inventory level maintained to prevent stockouts |
| Pick List | Document listing items to be retrieved from warehouse inventory |

#### 1.4.2 Acronyms

| Acronym | Definition |
|---|---|
| IOMS | Inventory and Operations Management System |
| API | Application Programming Interface |
| RBAC | Role-Based Access Control |
| SLA | Service Level Agreement |
| KPI | Key Performance Indicator |
| UI/UX | User Interface/User Experience |

### 1.5 References

1. IEEE 830-1998 Standard for Software Requirements Specifications
2. ISO 9001:2015 Quality Management Systems Requirements
3. Industry best practices for inventory management systems
4. Organization's internal IT security policies
5. Applicable data protection regulations

## 2. Overall Description

### 2.1 Product Perspective

**2.1.1 System Context** The IOMS will operate as a centralized system accessible through web browsers and mobile applications. It will interface with:

- Existing enterprise systems
- Barcode scanners and RFID readers
- Label printers
- Mobile devices
- External backup systems

**2.1.2 System Architecture** [System Architecture Diagram]

The system will follow a multi-tier architecture: * Presentation Layer (Web/Mobile interfaces) * Application Layer (Business Logic) * Data Layer (Database and Storage) * Integration Layer (APIs and Interfaces)

### 2.2 Product Functions

#### 2.2.1 Core Functions

1. **Inventory Management**
   - Real-time inventory tracking
   - Multi-location stock management
   - Automated reorder point calculation
   - Batch and expiry date tracking
   - Inventory reconciliation tools
2. **Production Management**
   - Work order creation and tracking
   - Raw material requirement planning
   - Production schedule optimization
   - Quality control checkpoints
   - Machine utilization tracking
3. **Warehouse Operations**
   - Receiving and putaway management
   - Pick, pack, and ship operations
   - Storage location optimization
   - Cross-docking support
   - Stock transfer management
4. **Sales Operations**
   - POS integration
   - Sales order processing
   - Returns management
   - Pricing and promotion handling
   - Customer order tracking
5. **Reporting and Analytics**
   - Customizable dashboards
   - Standard report templates
   - Advanced analytics
   - Export capabilities
   - Automated report scheduling

### 2.3 User Classes and Characteristics

#### 2.3.1 User Categories

| User Type | Access Level | Responsibilities |
|---|---|---|
| System Administrator | Full system access | System configuration, user management, security settings |
| Regional Manager | Multi-location access | Regional performance monitoring, resource allocation |

| User Type | Access Level | Responsibilities |
|---|---|---|
| Store Manager | Store-level access | Store operations, local inventory, sales management |
| Warehouse Manager | Warehouse-level access | Warehouse operations, stock transfers, inventory control |
| Production Supervisor | Factory-level access | Production planning, resource management, quality control |
| Sales Staff | Limited POS access | Sales transactions, basic inventory checks |
| Inventory Clerk | Limited inventory access | Stock counting, receiving, shipping |

### 2.4 Operating Environment

**2.4.1 Hardware Requirements** **Server Requirements:** * Processor: Intel Xeon or equivalent, minimum 8 cores * RAM: 32GB minimum * Storage: 1TB SSD minimum * Network: Gigabit Ethernet

**Client Requirements:** * Modern web browser (Chrome, Firefox, Safari, Edge) * Minimum 4GB RAM * 1280x720 screen resolution * Stable internet connection (minimum 2 Mbps)

**2.4.2 Software Requirements** **Server Software:** * Operating System: Ubuntu 22.04 LTS or Windows Server 2022 * Web Server: Nginx or Apache * Database: PostgreSQL 15+ * Application Server: Node.js 18+ or Python 3.10+ * Redis for caching

**Client Software:** * Modern web browser (last 2 versions) * PDF viewer * Mobile OS: iOS 14+ or Android 10+

## 3. System Requirements

### 3.1 Functional Requirements

#### 3.1.1 User Management

| ID | Requirement | Priority |
|---|---|---|
| FR-UM-01 | System shall support creation, modification, and deactivation of user accounts | High |
| FR-UM-02 | System shall implement role-based access control | High |
| FR-UM-03 | System shall maintain audit logs of user actions | High |

| ID | Requirement | Priority |
|---|---|---|
| FR-UM-04 | System shall support password policies and multi-factor authentication | High |
| FR-UM-05 | System shall allow user profile customization | Medium |

[Continue with detailed requirements for each module...]

## 4. External Interface Requirements

### 4.1 User Interfaces

#### 4.1.1 Web Interface

- Responsive design supporting multiple screen sizes
- Consistent navigation structure
- Keyboard shortcuts for common operations
- Support for multiple languages
- Accessibility compliance (WCAG 2.1)

#### 4.1.2 Mobile Interface

- Native mobile applications for iOS and Android
- Offline capability for essential functions
- Push notifications
- Barcode scanning capability
- Touch-optimized interface

### 4.2 Hardware Interfaces

- Support for standard barcode scanners (USB and Bluetooth)
- Compatible with thermal label printers
- RFID reader integration
- Support for weighing scales
- Compatible with standard POS hardware

[Continue with detailed specifications for all sections...]

## 5. Quality Attributes

### 5.1 Performance Requirements

| ID | Requirement | Target | Threshold |
|---|---|---|---|
| PF-01 | Page load time | $< 2$ seconds | $< 4$ seconds |
| PF-02 | Transaction processing time | $< 1$ second | $< 3$ seconds |

| ID | Requirement | Target | Threshold |
|---|---|---|---|
| PF-03 | Report generation time | $< 5$ seconds | $< 10$ seconds |
| PF-04 | Concurrent users | 500 | 200 |
| PF-05 | Database query response time | $< 0.5$ seconds | $< 2$ seconds |

[Document continues with all remaining sections...]

## 6. Security Requirements

### 6.1 Authentication and Authorization

- Multi-factor authentication support
- Single sign-on integration
- Password complexity requirements
- Session management
- Access control lists

[Continue with detailed security specifications...]

## 7. Technical Requirements

### 7.1 Development Requirements

- Version control system (Git)
- Continuous Integration/Continuous Deployment (CI/CD)
- Code review process
- Testing frameworks
- Documentation standards

[Continue with technical specifications...]

## 8. System Models

### 8.1 Data Flow Diagrams

[Include detailed data flow diagrams]

### 8.2 Entity Relationship Diagrams

[Include detailed ER diagrams]

### 8.3 Use Case Diagrams

[Include detailed use case diagrams]

## 9. Appendices

### 9.1 Analysis Models

[Include relevant analysis models]

### 9.2 Data Dictionary

[Include comprehensive data dictionary]

### 9.3 Business Rules

[Document all business rules]

### 9.4 Issues List

[Track open issues and decisions]