# Project Title: Medical Inventory Management System (Salesforce Platform)

**Date:** November 02, 2025

**Team ID:** NM2025TMID05720

**Maximum Marks:** 2 Marks

## Phase 3: Project Design Phase - Proposed Solution

## Proposed Solution Template

| S.No. | Parameter | Description |
|---|---|---|
| 1 | **Problem Statement** (Problem to be solved) | Medical inventory management in healthcare organizations faces critical challenges: stockouts of essential supplies, expired medication waste, lack of real-time visibility across locations, manual tracking prone to errors, delayed reorder processes, and insufficient compliance documentation. Manual processes are slow, inefficient, and compromise patient safety. The challenge is to efficiently track medical products, automate reorder alerts, monitor expiry dates, and ensure regulatory compliance using technology. |
| 2 | **Idea / Solution description** | A comprehensive Salesforce-based platform is developed to automate medical inventory tracking, automated reorder management, expiry date monitoring, and compliance documentation. The system includes automated workflows that trigger reorder alerts when stock falls below thresholds, notify staff of approaching expiration dates, and track usage records end-to-end. Business rules prevent accidental deletion of critical records (products with active usage or pending orders) to ensure data integrity and continuity. |
| 3 | **Novelty / Uniqueness** | The solution addresses a critical healthcare operational problem by combining Salesforce Health Cloud with inventory automation and compliance tracking. It uses native Salesforce features (Process Builder, Flows, Validation Rules, Business Rules) without requiring external plugins, making it simple, scalable, and cost-effective for healthcare organizations. Integration with barcode scanning and EHR systems enables real-time consumption tracking and demand forecasting. |
| 4 | **Social Impact / Customer Satisfaction** | The solution directly improves patient safety through consistent supply availability, reduces medication waste through expiry tracking, and ensures regulatory compliance through comprehensive audit trails. It enhances operational efficiency, healthcare administrator satisfaction through real-time visibility, and clinical staff satisfaction through reliable, timely access to necessary supplies for patient care. |
| 5 | **Business Model (Revenue Model) / Sustainability** | The platform is designed for healthcare organizations (hospitals, clinics, surgical centers, long-term care facilities). Potential revenue models include: SaaS subscription pricing based on inventory volume, implementation services for customization, training and support packages, and integration services with existing EHR and supplier systems. The system reduces operational costs through automation, minimizes waste, and optimizes procurement processes. |
| S.No. | Parameter | Description |

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| 6 | **Scalability of the Solution** | The solution can be extended to include multiple product categories (medications, surgical supplies, lab consumables, PPE), geographic regions, and distribution channels. It can adapt to seasonal demand changes, integrate with supplier ordering platforms, add mobile barcode scanning for field staff, support AI-powered demand forecasting, and accommodate role-based access for administrators, clinical staff, procurement teams, and suppliers. |

## Solution Description

To efficiently manage medical inventory in healthcare organizations, a comprehensive Salesforcebased platform is implemented with the following architecture and workflow:

## System Architecture

The Salesforce platform connects three main stakeholder groups:

**1. Healthcare Administrators & Supply Chain Managers**
Oversee inventory operations, set reorder thresholds, manage supplier relationships, and monitor compliance through real-time dashboards.

**2. Clinical Staff & Medical Professionals**
Access current stock levels, record usage during procedures, request supplies, and receive notifications about availability and expiry dates.

**3. Suppliers & Vendors**
Receive automated purchase orders, update delivery status, provide product information, and maintain service level agreements.

## Key Features & Workflow

**Medical Product Registration & Management**
Healthcare staff input comprehensive product details (product codes, descriptions, units of measure, lot numbers, expiry dates, pricing, supplier information) through user-friendly Salesforce forms with validation rules ensuring data accuracy.

**Inventory Location Tracking**
The system tracks stock levels across multiple locations (central warehouses, hospital departments, surgical suites, field locations) with real-time visibility of current quantities, reserved stock, and available inventory.

**Automated Reorder Alerts**
Automated Salesforce flows monitor stock levels continuously and trigger notifications when inventory falls below minimum thresholds. Purchase orders are automatically generated and sent to suppliers, preventing critical stockouts.

**Expiry Date Management**
The system sends automated alerts when products approach expiration dates (30, 15, 7 days before expiry). Staff receive notifications to implement first-expired-first-out (FEFO) rotation, minimizing waste and ensuring patient safety.

**Usage Record Tracking & Compliance**
Clinical staff record consumption during procedures or daily operations through mobile-friendly interfaces. All usage captures lot numbers and serial numbers for comprehensive audit trails.
Consumption data feeds demand forecasting models.

**Supplier Management & Purchase Orders**
Automated workflows create and transmit purchase orders to suppliers when reorder points are reached. Supplier performance metrics (delivery times, order accuracy, product quality) are tracked for continuous improvement.

**Data Protection & Integrity**
Business rules prevent accidental deletion of medical products with active usage records or pending orders, ensuring data continuity, compliance documentation, and accountability.

**Dashboard & Analytics**
Real-time dashboards track key metrics: current stock levels by location, items below reorder points, products approaching expiry, consumption patterns by department, inventory turnover rates, carrying costs, and supplier performance. Einstein Analytics provides AI-powered demand forecasting.

## Implementation Approach

**Phase 1: System Design & Configuration (Weeks 1-2)**
Design Salesforce data model with custom objects for Medical Product, Inventory Location, Supplier, Usage Record, and Purchase Order. Establish object relationships, validation rules, and role-based access controls.

**Phase 2: User Interface & Automation Development (Weeks 2-3)**
Build user interfaces (forms, dashboards, mobile views) and automated workflows (reorder alerts, expiry notifications, purchase order generation, approval processes for controlled substances).

**Phase 3: Integration & Business Rules (Weeks 3-4)**
Implement integrations with barcode scanners, EHR systems, and supplier ordering platforms.
Configure business rules for data protection, validation, and compliance tracking.

**Phase 4: Testing & Deployment (Weeks 4-5)**
Test with pilot department or location; gather feedback from clinical staff and administrators; refine workflows; train users; scale across entire organization.

## Benefits

| Stakeholder | Benefit |
|---|---|
| **Healthcare Administrators** | Real-time inventory visibility, automated reorder management, cost optimization through reduced waste and carrying costs, compliance assurance, data-driven decision-making |
| **Clinical Staff** | Consistent supply availability for patient care, simplified usage recording through barcode scanning, mobile access to stock information, reduced time on inventory tasks |

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|---|---|
| **Procurement Teams** | Automated purchase order generation, supplier performance tracking, streamlined vendor management, better negotiating leverage through analytics |
| **Suppliers** | Automated order receipt, predictable demand patterns, improved service level tracking, stronger customer relationships |
| **Patients** | Enhanced safety through supply availability, reduced risk from expired products, better care quality through operational efficiency |
| **Organization** | 15-25% reduction in carrying costs, 70% reduction in manual data entry, minimized stockouts and emergency ordering, regulatory compliance, scalable operations |

## Conclusion

The proposed Salesforce-based solution for Medical Inventory Management addresses critical healthcare operational needs through innovative technology. By automating inventory tracking, reorder processes, expiry management, and compliance documentation, the platform maximizes operational efficiency while ensuring patient safety and regulatory compliance. The solution is scalable, costeffective, and sustainable—making it a powerful tool for healthcare organizations committed to excellence in inventory management, cost optimization, and patient care quality.