Medical Inventory Management

Project Design Phase

Solution Architecture

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Team ID	NM2025TMID04716
Project Name	Medical Inventory Management System

Solution Architecture:

Goals of the Architecture

- To design an automated, cloud-based system that efficiently manages medical inventory operations.
- To maintain accurate data flow between suppliers, products, purchase orders, and inventory transactions.
- To reduce manual errors through automation and enforce data validation using Salesforce tools.
- To ensure seamless integration and scalability for future healthcare requirements.

Key Components

- Supplier Object: Stores all supplier-related information such as name, contact details, and address.
- Product Object: Maintains details about medicines and medical equipment including quantity, price, and expiry date.
- Purchase Order Object: Manages purchase orders and their associated suppliers.
- Order Item Object: Links products with purchase orders to track ordered quantities and pricing.
- Inventory Transaction Object: Records all incoming and outgoing product transactions to ensure accurate stock levels.

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- Automation Tools: Salesforce Flows, Validation Rules, and Apex Triggers for system automation.
- Reports and Dashboards: Provide visual summaries and analytics for efficient decision-making.

Development Phases

1. Object Creation: Define and configure custom objects such as Supplier, Product, Purchase Order, and Order Item.
2. Relationship Setup: Establish master-detail and lookup relationships among the objects for data connectivity.
3. Automation Implementation: Create Flows and Apex Triggers for tasks such as automatic total cost calculation and expiry alerts.
4. Validation Rules: Enforce data integrity by restricting invalid entries (e.g., invalid delivery dates, duplicate supplier names).
5. Testing and Verification: Conduct unit and system testing to ensure data accuracy and performance consistency.
6. Dashboard and Reports: Build visual reports to summarize supplier performance, purchase details, and product availability.

Solution Architecture Description

The Medical Inventory Management System architecture is designed to automate and streamline the inventory management process in hospitals and healthcare institutions.
Built entirely on the Salesforce platform, this architecture leverages custom objects, automation tools, and relational data structures to manage suppliers, products, and stock transactions efficiently.

Data flows seamlessly across different modules — suppliers are linked to purchase orders, products are connected to order items, and inventory transactions reflect real-time stock updates. The architecture incorporates validation rules and business logic to ensure that only accurate and verified data is stored in the system.

The system's automation is achieved using Salesforce Flows and Apex Triggers, which handle key operations such as updating stock levels, calculating total order costs, and sending alerts for near-expiry products.

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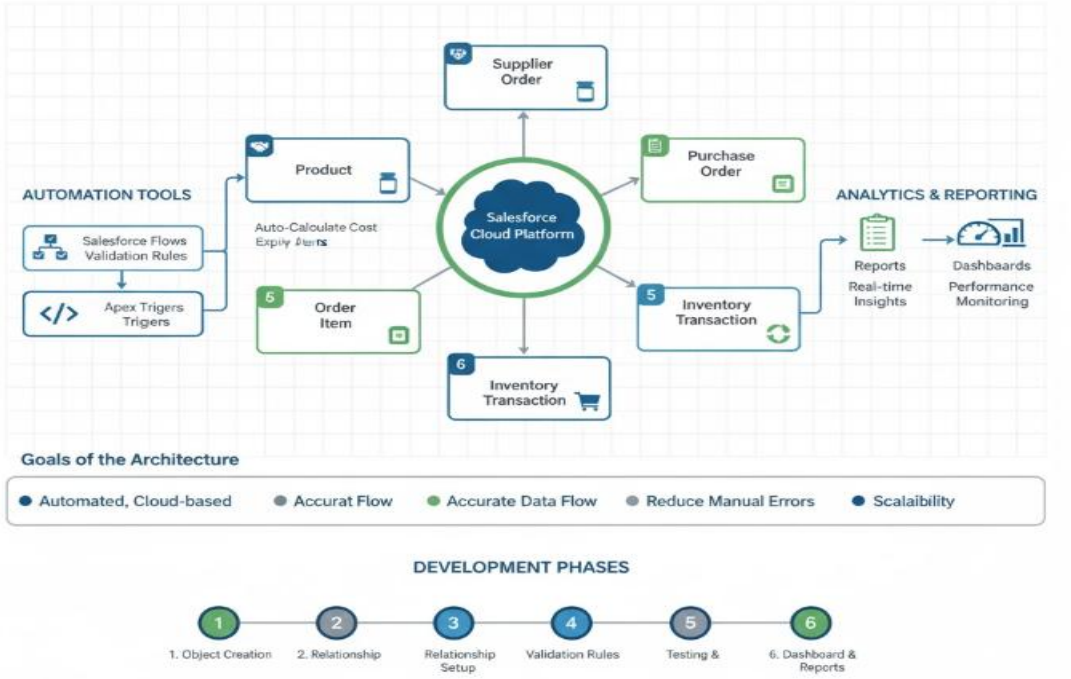
Dashboards and reports provide actionable insights, helping management monitor supplier performance and ensure timely procurement.

Overall, the architecture ensures data consistency, operational efficiency, and reliability across all modules, making the inventory management process faster, safer, and more transparent.

Example – Solution Architecture Flow

1. Supplier Module: Creates and maintains supplier information.
2. Product Module: Stores product details, pricing, and expiry information.
3. Purchase Order Module: Generates and manages orders based on supplier inputs.
4. Order Item Module: Tracks quantities and total costs linked to purchase orders.
5. Inventory Transaction Module: Updates product stock based on purchase receipts or consumption.
6. Reporting Module: Visualizes data through Salesforce dashboards for performance analysis.



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Outcome

The Solution Architecture of the Medical Inventory Management System successfully integrates all essential functions of inventory control into a single Salesforce application. It improves efficiency by automating manual processes, enhances data reliability, and provides real-time analytics for better decision-making. This architecture forms the technological backbone of the project, ensuring that hospitals and pharmacies can manage their medical supplies with accuracy, speed, and confidence.