**REQUIREMENT ANALYSIS**

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| --- | --- |
| **Date** | 19-06-2025 |
| **Team ID** | LTVIP2025TMID28927 |
| **Project Name** | Medical Inventory Management |
| **Maximum Marks** |  |

**CUSTOMER JOURNEY MAP**

This journey map outlines the end-to-end experience of internal users (Inventory Managers, Procurement Officers) interacting with the Medical Inventory Management CRM. It highlights how system interactions automate critical processes, reduce error rates, and enhance operational transparency.

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| Step | User Action (Detailed Scenario & Intent) | System Interaction (CRM Role & Data Capture) |
| 1 | Receives low-stock alert or performs inventory check The inventory manager begins the day by reviewing inventory levels. They need to identify products nearing expiry or below the minimum stock level. | Dashboard component displays low-stock/expiry alerts The system uses Roll-Up Summary fields and validation rules to flag inventory items that meet reorder or expiry conditions. Dashboards present this data visually using bar charts, lists, and gauges to guide the user’s action. |
| 2 | Initiates new purchase order The procurement officer decides to replenish stock and begins drafting a purchase order. | New Purchase\_Order\_\_c record created The CRM captures fields like Supplier, Order\_Date\_\_c, Expected\_Delivery\_Date\_\_c, and auto-generates a Purchase Order ID. Lookup fields connect this order to the Supplier\_\_c object. |
| 3 | Adds line items to order The user enters each item to be ordered, including quantity and unit cost. | Related Order\_Item\_\_c records created Each item is logged as a child of the Purchase Order via Master-Detail. Fields include Product (via lookup), Quantity\_Ordered, and Unit\_Price. An Apex Trigger calculates Amount\_\_c = Quantity \* Unit\_Price. |
| 4 | Submits purchase order and awaits delivery After saving the purchase order, the user expects confirmation and proceeds to monitor delivery. | Flow or Email Alert sends confirmation A Flow automatically triggers upon order submission to notify suppliers or internal teams. Meanwhile, the system tracks Order\_Status\_\_c and Expected\_Delivery\_Date\_\_c. |
| 5 | Updates delivery status and logs receipt The goods arrive and the delivery status is updated. The intent is to acknowledge delivery and ensure quantity received matches ordered. | Actual\_Delivery\_Date\_\_c auto-calculated A Record-Triggered Flow auto-fills Actual\_Delivery\_Date\_\_c as Order\_Date + 3. User updates Quantity\_Received on Order\_Item\_\_c. Inventory\_Transaction\_\_c is created with Transaction\_Type = ‘Receipt’. |
| 6 | Inventory auto-updated Inventory levels must reflect the newly received stock to maintain real-time accuracy. | Current\_Stock\_Level\_\_c on Product updated via Flow Upon delivery confirmation, an after-save Flow or Trigger increments Product’s Current\_Stock\_Level\_\_c. |
| 7 | Views reports and dashboard summaries Admins and managers view summarized data for performance tracking, budgeting, and reordering insights. | Reports and Dashboards display KPIs Reports like “Purchase Orders by Supplier” and “Complete Purchase Details” feed into dashboards showing metrics like Total Order Cost, Supplier Performance, and Inventory Value. |

This journey ensures seamless automation and accurate data flow between users and the system, eliminating manual errors, ensuring compliance, and improving procurement efficiency.

**DATA FLOW DIAGRAM (DFD)**

**Level 0 DFD – Context Diagram**

Description:  
This Level 0 DFD (also known as the Context Diagram) represents the entire Medical Inventory Management CRM as a single unified process. It highlights the interactions between external entities (users) and the CRM system and the major data inputs and outputs.

**External Entities:**

* Inventory Manager
* Procurement Officer
* Supplier

**Process:**

* CRM for Medical Inventory Management (Single System)

**Data Flows:**

* Inventory Manager reviews stock, updates inventory records
* Procurement Officer creates purchase orders and logs deliveries
* Supplier provides goods and delivery confirmations
* CRM system processes, stores, and reports inventory and procurement data
* Automated notifications and reports are generated and emailed

**Visual Representation (Conceptual):**

[Inventory Manager]  
│  
▼  
[Procurement Officer] ────▶ (CRM for Medical Inventory Management) ────▶ [Supplier]  
│ │  
▼ ▼  
[Email Notifications / Reports] [Updated Inventory & Orders]

**Level 1 DFD – Detailed System Flow**

**Description**:  
The Level 1 DFD breaks the CRM system into its major internal processes, objects (data stores), and the data flow between them.

**Step-by-Step Breakdown:**

1. Product Inventory Monitoring
   * Inventory Manager checks current stock and expiry status
   * CRM checks Product object: Current\_Stock\_Level\_\_c, Expiry\_Date\_\_c
   * If threshold crossed, flags item via dashboard or alert
2. Purchase Order Creation
   * Procurement Officer creates new Purchase\_Order\_\_c record
   * Lookup: Linked to Supplier\_\_c
   * Details captured: Order\_Date\_\_c, Expected\_Delivery\_Date\_\_c, etc.
3. Order Item Entry
   * Order\_Item\_\_c records are created as children of Purchase Order
   * Includes fields: Product\_ID\_\_c (Lookup), Quantity\_Ordered, Unit\_Price
   * Apex Trigger auto-calculates Amount\_\_c = Quantity \* Unit Price
4. Delivery & Receipt Update
   * When products are received, Actual\_Delivery\_Date\_\_c is updated via Flow
   * Quantity\_Received field updated in each Order Item
   * Inventory\_Transaction\_\_c created to log stock movement (Transaction\_Type = 'Receipt')
5. Stock Update
   * A Trigger or Flow updates Product object
   * Current\_Stock\_Level\_\_c incremented by Quantity\_Received
6. Reporting & Notifications
   * Reports: Purchase Orders by Supplier, Inventory Expiry Summary
   * Flows send email alerts to notify procurement teams or suppliers of received orders or overdue deliveries

**Key CRM Objects in Level 1 DFD:**

* Product (Product\_\_c)
* Supplier (Supplier\_\_c)
* Purchase Order (Purchase\_Order\_\_c)
* Order Item (Order\_Item\_\_c)
* Inventory Transaction (Inventory\_Transaction\_\_c)

**System Automations:**

* Apex Trigger for Total Order Cost
* Record-Triggered Flows for Delivery Date Update & Email Alerts
* Validation Rules for Expected Delivery Limits and Stock Reorder Flags
* Certainly! Here's the Level 1 – Detailed DFD table for your Medical Inventory Management project, structured to match the same format used in the Jewel Management CRM:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Step | Process | Input | Output | Data Store |
| 1 | Create Product Record | Product details (name, unit, expiry, etc.) | Product\_\_c record | Product\_\_c |
| 2 | Create Supplier Profile | Supplier info (name, contact, license) | Supplier\_\_c record | Supplier\_\_c |
| 3 | Create Purchase Order | Selected Supplier + Order details | Purchase\_Order\_\_c record | Purchase\_Order\_\_c |
| 4 | Add Order Items | Product + Quantity + Unit Price | Order\_Item\_\_c records (linked to PO) | Order\_Item\_\_c |
| 5 | Auto-calculate Total Amount | Quantity & Price from each item | Total\_Amount\_\_c on Purchase Order updated | Purchase\_Order\_\_c |
| 6 | Update Delivery Status | Delivery confirmation | Actual\_Delivery\_Date\_\_c + Quantity\_Received | Purchase\_Order\_\_c, Order\_Item\_\_c |
| 7 | Auto-update Stock Level | Quantity Received | Updated Current\_Stock\_Level\_\_c in Product | Product\_\_c |
| 8 | Send Email Notification | Purchase Order + Delivery Status | Email sent to Procurement/Inventory Manager | Email Log / Notification |

**SOLUTION REQUIREMENTS**

**Functional Requirements:**

* Ability to create Product records (Product\_\_c): The system must allow for detailed creation and classification of all medical items, including medicines, equipment, consumables, etc.
* Ability to register and manage Supplier records (Supplier\_\_c): The system must support adding new suppliers with necessary contact, license, and business details.
* Create and track Purchase Orders: The CRM must enable the procurement team to generate Purchase Orders, track their status, and link them to specific suppliers and items.
* Auto-update Current Stock Level based on Quantity Received (Flow/Trigger): Automation must exist to update Product\_\_c’sCurrent\_Stock\_Level\_\_c field whenever items are received via Order\_Item\_\_c.
* Send delivery notifications to inventory managers (Flow): A record-triggered Flow should be implemented to notify relevant users upon delivery status change or item receipt.
* Generate reports and dashboards: The system must support reporting features for procurement costs, supplier performance, order timelines, stock levels, and product expiry.
* Validate Expected Delivery Date ≤ 7 days from Order Date (Validation Rule): A validation rule must ensure delivery expectations are realistic and within compliance.
* The following are the functional requirements of the proposed solution.

**Functional Requirements Table:**

|  |  |  |
| --- | --- | --- |
| FR No. | Functional Requirement (Epic) | Sub Requirement (Story / Sub-Task) |
| FR-1 | User Registration | - Create internal user accounts (Admin, Manager) - Assign profiles (Inventory Manager, Purchase Officer) |
| FR-2 | Supplier Management | - Create Supplier\_\_c records - Store licensing, contact, and address info |
| FR-3 | Medical Inventory Tracking | - Create Product\_\_c records - Include fields: Min Stock Level, Expiry Date, Unit Price |
| FR-4 | Purchase Order Management | - Create Purchase\_Order\_\_c records - Track delivery and order statuses |
| FR-5 | Order Line Item Tracking | - Add Order\_Item\_\_c under Purchase Orders - Auto-calculate Amount\_\_c = Quantity \* Unit Price |
| FR-6 | Inventory Update Automation | - Trigger Flow on delivery confirmation - Update Current\_Stock\_Level\_\_c on Product\_\_c |
| FR-7 | Notifications & Email Communication | - Notify stakeholders when delivery is confirmed - Use Flow + Email Template |
| FR-8 | Validation Rules | - Expected\_Delivery\_Date\_\_c must be ≤ 7 days from Order\_Date\_\_c - Quantity Received ≤ Quantity Ordered |
| FR-9 | Role-Based Access | - Define access for Inventory Manager, Procurement Officer, Admin - Set permissions using Permission Sets |
| FR-10 | Reporting & Dashboards | - Generate reports: Low Stock, Order Cost, Supplier Performance - Create dashboards to visualize KPIs |

**Non-Functional Requirements:**

* System responsiveness and low latency: Ensure system operations like loading inventory, submitting orders, and generating reports are completed within seconds.
* Enforce user access control (Profiles & Permission Sets): Security protocols must restrict access to only relevant data based on user roles.
* Maintain real-time inventory accuracy: The system must reflect up-to-date stock information for safe procurement decisions.
* Enable secure and traceable communication: All automated emails and internal communications must log status and ensure delivery.
* Field history tracking for accountability: Key objects like Product, Purchase Order, and Order Item should have field history tracking enabled.

**Non-Functional Requirements Table:**

|  |  |  |
| --- | --- | --- |
| NFR No. | Non-Functional Requirement | Description |
| NFR-1 | Usability | The interface must be intuitive and easy to use for non-technical medical staff and procurement officers. |
| NFR-2 | Security | Use profiles and permission sets to protect sensitive stock and supplier data. |
| NFR-3 | Reliability | The system must operate without functional errors during high-volume periods. |
| NFR-4 | Performance | Reports, dashboards, and Flows must respond with minimal delays. |
| NFR-5 | Availability | System should remain available during working hours across departments with minimal downtime. |
| NFR-6 | Scalability | System should support growing supplier networks, product catalogs, and departmental usage. |
| NFR-7 | Maintainability | Admins must be able to modify flows, validation rules, and triggers as policies evolve. |
| NFR-8 | Auditability | Enable Field History Tracking on Purchase\_Order\_\_c and Product\_\_c to monitor changes for compliance. |

**TECHNOLOGY STACK**  
The Medical Inventory Management CRM is developed using Salesforce’s low-code and pro-code tools, enabling quick deployment while supporting complex automation and data modeling. It focuses on tracking stock levels, streamlining supplier interactions, and automating purchase workflows.

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| **Category** | **Tools/Technologies Used** | **Explanation** |
| Platform | Salesforce Lightning | The application is developed on Salesforce Lightning Experience to offer a clean, responsive UI optimized for inventory workflows and medical procurement users. |
| Automation | Record-Triggered Flows, Workflow Rules | Flows automate processes such as updating stock after delivery and sending delivery confirmation emails. Workflow Rules can be used for field updates on status change. |
| Scripting | Apex Triggers | Triggers automate backend logic, e.g., updating Product\_\_c’sCurrent\_Stock\_Level\_\_c when Quantity\_Received is entered in Order\_Item\_\_c. |
| Data Modeling | Custom Objects: Product\_\_c, Supplier\_\_c, Purchase\_Order\_\_c, Order\_Item\_\_c, Inventory\_Transaction\_\_c | Custom objects represent core inventory entities. Relationships (Master-Detail or Lookup) enforce data linkage between Products, Orders, and Suppliers. |
| Validation & Rules | Validation Rules, Formula Fields | Validation Rules ensure data accuracy, e.g., Expected\_Delivery\_Date\_\_c cannot exceed 7 days from Order\_Date\_\_c. Formula fields calculate total cost, tax, etc. |
| Communication | Email Alerts, Email Templates, Flows | Flows are configured to send automatic email notifications to procurement teams on order creation or delivery confirmation using custom templates. |
| Reporting & Insights | Reports, Dashboards | Reports such as “Purchase Orders by Supplier” or “Low Stock Products” are combined in Dashboards to track KPIs like order cost, supplier performance, and inventory levels. |
| Access Control | Profiles, Permission Sets | Different user roles such as Inventory Manager, Procurement Officer, and Admin are configured with Profiles and Permission Sets for role-based access to modules and records. |

**Why This Stack Was Chosen:**

* Salesforce Lightning accelerates development while maintaining scalability and a user-friendly experience.
* Apex enables automation of complex business logic, such as auto-updating stock levels or handling order rollups.
* Flows and Email Alerts reduce manual effort and ensure timely communication between departments.
* Reports and Dashboards help teams make data-driven decisions by offering real-time operational visibility.
* Validation Rules and Formula Fields improve data integrity and automate calculations critical to procurement processes.

**Sample Tools Used in Development:**

* Object Manager – for defining custom fields, relationships, and object structures like Product\_\_c and Supplier\_\_c.
* Flow Builder – for creating automations like delivery notifications and stock updates.
* Developer Console – for developing and testing Apex Triggers (e.g., auto-calculation of inventory levels).
* Email Template Builder – for designing standardized communication templates for delivery or order confirmations.
* Report Builder – for generating procurement and inventory performance reports.
* Setup Menu (Profiles/Permission Sets) – for applying access restrictions based on roles (e.g., Inventory Manager vs. Admin).