Project Design Phase
Solution Architecture

Date	01 Nov 2025
Team ID	NM2025TMID02455
Project Name	Medical Inventory Management
Maximum Marks	4 Marks

Solution Architecture:

Goals of the Architecture:

1. **Ensure Real-Time Data Accuracy**
2. **Improve System Reliability and Availability**
3. **Enhance Security and Data Protection**

 Enable Scalability

Key Components:

1. **User Authentication & Authorization**
2. **Inventory Management Module**
3. **Expiry & Low-Stock Alert System**
4. **Purchase & Supplier Management**

Development Phases:

1. Requirement Analysis Phase
2. Feasibility Study & Planning Phase
3. System Design Phase
4. Development / Implementation Phase
5. Testing Phase

Solution Architecture Description:

The solution architecture for the Medical Inventory Management System is designed using a modular and layered approach to ensure scalability, security, and efficient performance. The architecture consists of three primary layers: **User Interface Layer**, **Application/Business Logic Layer**, and **Database/Data Storage Layer**. The User Interface layer enables authorized users such as administrators, pharmacists, and staff to interact with the system through dashboards and forms. The Business Logic layer processes user requests, manages inventory rules, handles

expiry and low-stock alerts, and ensures smooth workflow across modules. The Database Layer maintains centralized storage of stock details, supplier information, user access records, and transaction logs. All interactions between layers follow secure communication protocols with role-based access control to protect sensitive medical inventory data. The architecture supports integration with external healthcare systems and allows easy software upgrades, ultimately providing accurate, real-time inventory visibility and enhancing operational efficiency in healthcare organizations.

Example - Solution Architecture Diagram:

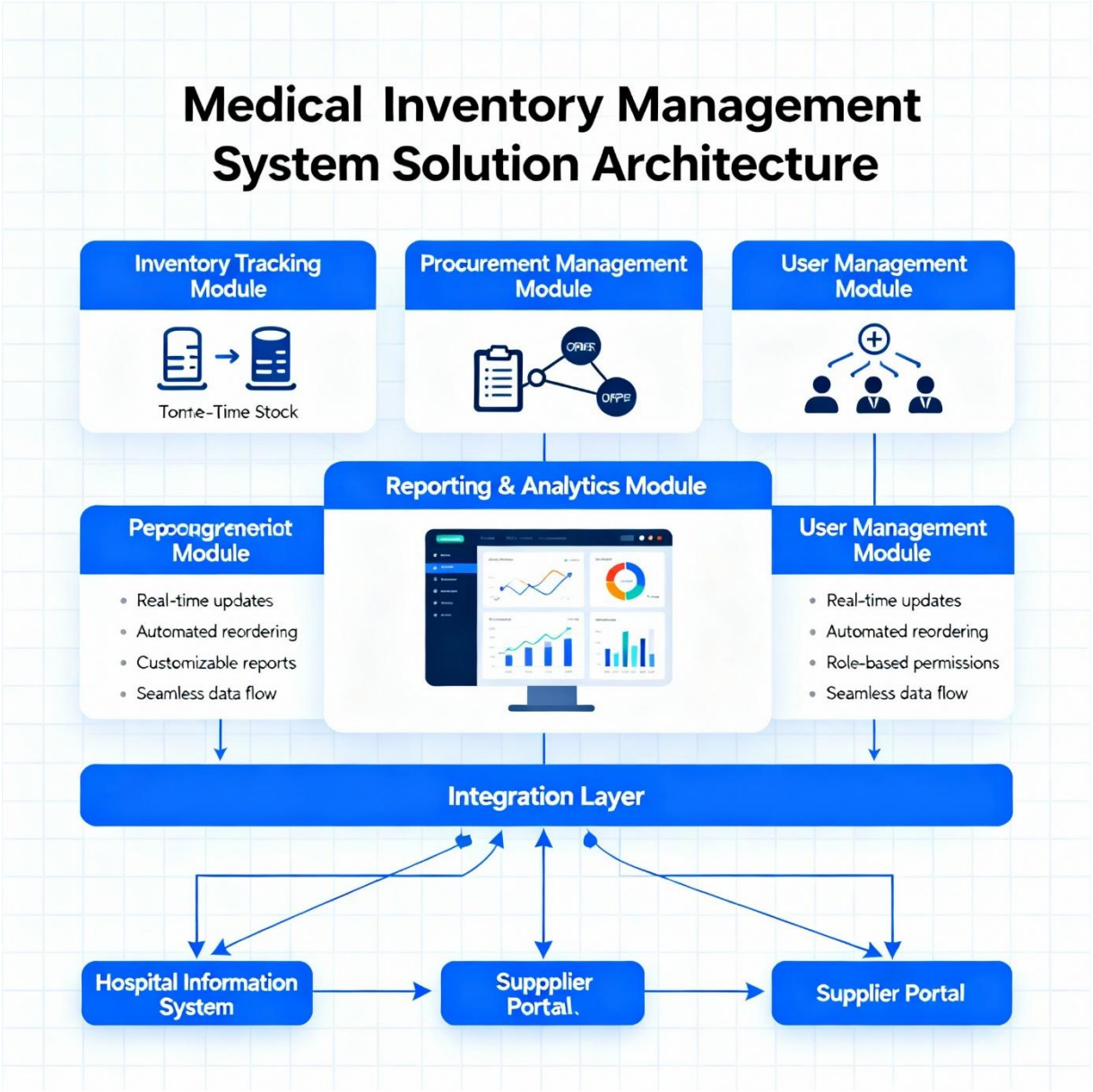

Figure 1: Architecture and data flow of the Medical Inventory Management

Reference: https://www.perplexity.ai/search/give-a-architecture-for-medica-OR5QizsVQWuVtGSUdsZtJQ