Project Design Phase

Proposed Solution

Date	31 October 2025
Team ID	NM2025TMID06633
Project Name	Medical Inventory Management
Maximum Marks	2 Marks

Solution Description

The proposed solution for Medical Inventory Management aims to address inefficiencies in how hospitals handle, monitor, and replenish medical stock. Hospitals frequently face issues such as manual record errors, overstocking, expired medicines, and shortages of essential supplies — all of which impact patient safety and operational costs.

This system integrates RFID and barcode scanning technologies with real-time data analytics to automate stock monitoring, ensure timely restocking, and provide instant alerts for low or expiring items. The inclusion of Artificial Intelligence (AI) and Internet of Things (IoT) enables analysis of consumption patterns and forecasting of future demand.

Through predictive analysis, healthcare organizations can plan procurement efficiently, reduce waste, and optimize costs. Centralizing inventory data across departments enhances transparency, communication, and decision-making for hospital management.

The system also ensures compliance with healthcare regulations and enhances traceability from procurement to dispensing. Automated reports and analytics dashboards help administrators review trends, audit performance, and identify potential risks in supply management.

Problem–Solution Fit Template Details

S.No	Parameter	Description
1	Problem Statement	Hospitals face tracking and shortage issues in inventory.
2	Idea / Solution	Implement automated RFID and barcode tracking system.
3	Uniqueness	Integrates AI, IoT, and cloud for smart inventory control.
4	Social Impact	Ensures timely medical supply and improves patient safety.
5	Business Model	Operates on SaaS subscription with analytics.
6	Scalability	Adaptable to large hospital networks and distributors.

Content Description

The Medical Inventory Management project offers an intelligent and automated approach to hospital inventory handling. By combining RFID, AI analytics, and cloud-based monitoring, it streamlines workflows and enhances efficiency.

This solution not only tracks and manages stock levels but also prevents financial losses due to expired or wasted supplies. By enabling predictive insights, real-time monitoring, and automation, it contributes to sustainable healthcare operations and supports data-driven decision-making for better patient care.

Conclusion

The proposed Medical Inventory Management System provides a comprehensive and automated solution to overcome the recurring challenges faced by healthcare institutions in managing medical supplies. By integrating RFID, AI, and IoT technologies, the system ensures accuracy, real-time tracking, and predictive stock management.

It minimizes manual intervention, reduces errors, and improves overall operational efficiency. Moreover, the solution enhances traceability, supports data-driven decisions, and promotes sustainable healthcare management through reduced waste and optimized procurement. Ultimately, this digital approach leads to improved patient safety, timely medical supply, and cost-effective hospital operations.