



# SYSTEM IMPLEMENTATION AND TRAINING PLAN

Patient Management System – Health Care Industry

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BSIT 4-1

# IMPLEMENTATION PLAN



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# Implementation Plan

**Project Title:** SynCore

**Project Manager:** Garcia, Mariel Kaye M.

## 1. Components to be Implemented:

Component Name	Description of Function	Source
<b>SynCore: Logistic Management System</b>	A centralized platform designed to streamline logistics and inventory processes in healthcare facilities, facilitating efficient inventory tracking, order requisitions, and integration with financial and patient management systems.	Developed In House
<b>Modules</b>		
<b>(Signatories): Requisition List - Approve &amp; Reject</b>	A module that enables signatories to view and manage requisition requests, with functionality to approve or reject orders for better supply chain control.	Developed In House
<b>(Signatories): Inventory - Viewing Only</b>	Allows signatories restricted, view-only access to inventory levels to assist in informed decision-making without the ability to edit inventory data.	Developed In House
<b>(Signatories): Dashboard - Analytics</b>	Provides signatories with a dashboard for visual analytics, showing key performance metrics and inventory insights.	Developed In House
<b>(Admin): User Management</b>	Module for managing user access, roles, and permissions within the system, ensuring secure and appropriate system access for various user roles.	Developed In House
<b>(Admin): Inventory - Editing</b>	Allows admins to manage inventory data, including updating stock levels, adding new items, and archiving obsolete items.	Developed In House
<b>(Admin): Dashboard - Analytics</b>	Provides admins with access to detailed analytics, supporting data-driven decisions regarding stock levels, requisitions, and order processing.	Developed In House
<b>(Admin): Return Management</b>	Manages returned items, documenting reasons and condition of returned stock, facilitating inventory adjustments and accountability.	Developed In House
<b>(Admin): Purchase Order Creation</b>	Allows admins to generate purchase orders automatically based on inventory needs, minimizing manual effort and optimizing stock levels.	Developed In House
<b>(Admin): Supplier Management</b>	Records supplier information and the items they supply, maintaining a catalog of available products.	Developed In House
<b>(Pharmacist): Point of Sale</b>	Module supporting sales transactions, specifically for pharmacists, enabling efficient and accurate processing of medication sales and inventory updates in real-time.	Developed In House
<b>Authentication - Microservice</b>	Manages user authentication to ensure secure access, facilitating user login processes and managing session data.	Developed In House

## Implementation Plan

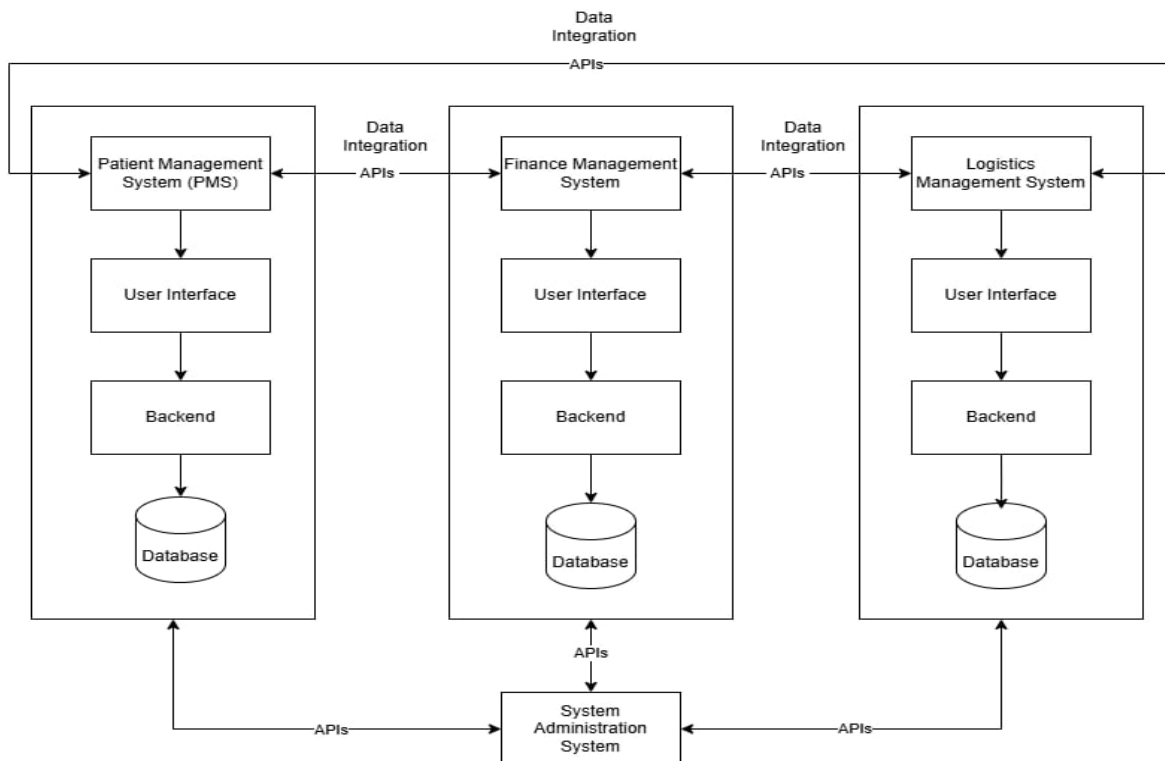
<b>Data Validation - Microservice</b>	Provides data validation services to maintain data accuracy and integrity across various modules and processes within the system.	Developed In House
<b>Configuration - Microservice</b>	Offers customizable configurations for adapting system settings and workflows to meet specific operational requirements within healthcare logistics.	Developed In House
<b>Notification - Microservice</b>	Handles real-time notifications to alert users on critical updates, such as stock shortages, order approvals, or rejections, ensuring timely awareness of system activities.	Developed In House
<b>Logging - Microservice</b>	Manages and records system logs to maintain an audit trail for user actions and system events, supporting security and accountability.	Developed In House
<b>PostgreSQL</b>	A free and open-source relational database management system emphasizing extensibility and SQL compliance. This will serve as a database of ResearchCop.	Off the Shelf

## 2. Development Approach:

The chosen development model for this system is Agile, promoting flexibility and responsiveness to client requirements. This approach enables the development team to continuously align with client needs, as long as they fall within the project's technical capabilities. The Agile framework supports iterative progress, with regular updates provided to clients for feedback and validation of functionalities. Once the system is fully deployed, User Acceptance Testing (UAT) is conducted to verify that the system meets the client's requirements and functions as expected in a live environment. UAT allows for comprehensive monitoring of system performance and user satisfaction, ensuring that any final adjustments can be made for a smooth, reliable experience.

## 3. Integration Approach:

The integration approach involves connecting the Patient Management System (PMS), the core system in the healthcare ecosystem, with both the Finance Management System (FMS) and the Logistics Management System (LMS). This integration aims to streamline operations and data exchange across departments, ensuring efficient management of patient services, financial records, and supply chains. The integration process will adhere to a systematic approach, identifying critical dependencies and establishing secure API connections to facilitate data flow between systems. To validate the integration, comprehensive testing will be conducted, incorporating both manual and automated testing methods to ensure reliability and accuracy in data synchronization. A visual diagram, as seen below, illustrates the primary integration points and data flow paths, providing a clear overview of how the PMS connects with the FMS and LMS.



The diagram illustrates an integrated healthcare system architecture, where each system, including the Patient Management System (PMS), Finance Management System (FMS), and Logistics Management System (LMS), consists of a User Interface, Backend, and Database with APIs enabling seamless data exchange. The PMS serves as the core system, connecting with the FMS to share essential data such as employee schedules, room allocations, patient information, and records of services rendered, which supports accurate billing, revenue tracking, and financial reporting. This integration ensures that the FMS has up-to-date information for financial management and timely invoicing. Meanwhile, the PMS integrates with the LMS to manage pharmaceutical supplies required for patient care. When specific medications or supplies are prescribed, the PMS communicates with the LMS to track inventory and coordinate supply deliveries, optimizing stock levels and ensuring the availability of necessary items in hospital departments. The System Administration System serves as a centralized API management layer, facilitating secure and efficient communication across all systems. Together, these integrations streamline operations, improve data accuracy, and enhance overall patient care management across departments, supporting a well-coordinated healthcare environment.

## 4. Implementation Strategy:

### I. Implementation Environment and Facilities:

#### Software Requirements:

##### Web Application Software:

- Device Compatibility: Windows Operating System

##### Database Management System (DBMS):

- PostgreSQL Database
- PGAdmin 4 - A free and open-source relational database management system emphasizing extensibility and SQL compliance.

##### Server-side Scripting Languages:

- Python Flask (Integrated with Apache 2.4)
- Node.js - A cross-platform, open-source server environment for running JavaScript applications.

##### Web Server:

- Apache 2.4 (Configured for PostgreSQL Connection Support)

##### Client-side Technologies:

- HTML, CSS, JavaScript, PHP
- Cross-Browser Compatibility: Edge, Chrome, Firefox

##### Version Control System:

- Git with Repository hosted by GitHub

##### Development Tools:

- VS Code for Coding - A source-code editor with features like debugging, syntax highlighting, and Git integration.
- PGAdmin 4 for Database - A free and open-source relational database management system emphasizing extensibility and SQL compliance.
- Node.js - A cross-platform, open-source server environment for running JavaScript applications.
- Git System Software - A distributed version control system for tracking changes in computer files.
- GitHub Desktop - A desktop application for using Git and GitHub repositories with a graphical interface

## II. Hardware Requirements:

### Server Infrastructure:

- Virtual Server
- CPU: 2 Cores or Higher
- RAM: At least 4GB
- Storage: 50 GB Database Server:

### Database Server:

- Virtual Server with the same Server Infrastructure specification or better
- Main Database in PostgreSQL Server

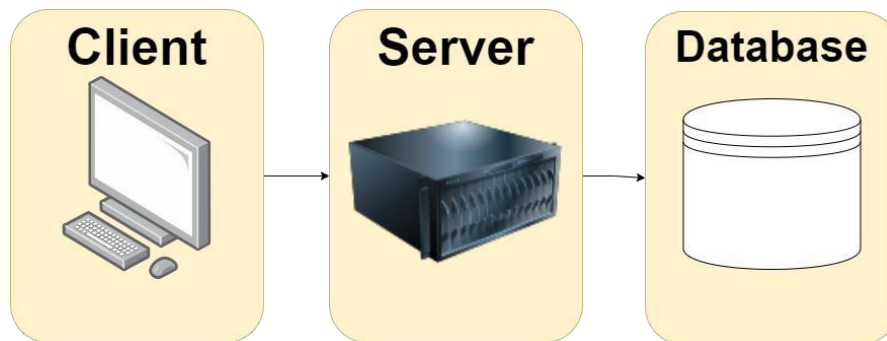
### Networking Equipment:

- Routers with sufficient bandwidth for data loading, uploading, and browsing in the Web Applications

## III. Network Requirements:

### Network Topology:

- Three-Tier Architecture defined as Software, Server, and Database



### Firewall Configuration:

- Allow incoming traffic on ports 80 (HTTP) and 443 (HTTPS)
- Restrict SSH access to specific IP addresses

### Security Protocols:

- Use industry-standard encryption algorithms
- Implement Authorization and Authentication

### Monitoring and Logging:

- On-render

### Backup and Recovery:

- Daily Backups for the Database
- Daily Data Checkup before operations

## IV. Methods and Tools:

### Methods:

- Agile Development Approach

### Tools:

- Selenium for and Automated Testing
- Bugbug.io



### V. Deliverables for the User Community:

Training:

- User training sessions on ResearchCop v1.0.0 and associated tools.

### VI. Identification of Deployment Sites:

- Deployment will be executed at: Render  
Site : [https://hospital-logistics-14.onrender.com/admin\\_dashboard](https://hospital-logistics-14.onrender.com/admin_dashboard)

## 5. Conversion Strategy:

The conversion strategy for the Syncore application aims to ensure a smooth migration of data into the new system. This process involves evaluating various data sources, with a primary focus on Excel sheets that hold operational and patient-related information. By employing data mapping and validation tools, the strategy facilitates the effective extraction and transformation of data for integration into the database. The approach includes techniques such as Incremental Migration (where new data is continuously added to the digital system) and Scanning and Data Entry (which involves digitizing bulk documents and entering data into the database either manually or semi-automatically), helping to minimize disruptions and validate data accuracy. To address potential issues like data inconsistency, thorough validation checks are conducted during the import process. Additionally, there is consideration for incorporating functionality that allows the app to read photos of hardcopy documents, although this feature is not currently a priority. A data management plan is also established, focusing on appropriate data retention and disposal practices, categorizing data by its importance, and ensuring compliance with legal requirements. For data backup, a strategy is in place that includes regular backups to prevent data loss, utilizing both cloud storage and physical backup solutions. Extensive documentation and training materials are created to assist users throughout the migration process. Continuous evaluations will help to make necessary adjustments based on user feedback and performance assessments. Ongoing monitoring is implemented to maintain the effectiveness of the Syncore application in fulfilling the needs of the hospital environment.

## 6. Deployment Strategy:

The deployment of Syncore follows a systematic approach to ensure the seamless transition of the system into its operational environment. Deployment begins with detailed planning, including identifying the specific departments and user groups where Syncore will be implemented. The necessary resources, such as hardware, software configurations, and training schedules, are allocated in advance to ensure readiness. The technical setup involves configuring the server infrastructure, integrating modules, and verifying the database. Network configurations will also be optimized to support system performance and ensure security. Relevant data, such as inventory records and user information, will be transferred into Syncore. A validation process will follow to ensure data accuracy and integrity post-migration, minimizing errors during system use. Rigorous testing, will be conducted after deployment to verify that the system meets operational requirements. Deployment will follow a phased approach, starting with selected departments or user groups. Feedback from the initial rollout will guide adjustments before expanding to other areas. After the system is live, continuous monitoring will be conducted to track its performance and identify any issues. Feedback from users during this phase will inform further refinements, ensuring Syncore meets all operational expectations.

# TRAINING PLAN



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# Training Plan

## 1. Introduction

The healthcare industry depends on efficient logistics and inventory management systems to ensure the availability of critical medical supplies, equipment, and pharmaceuticals. Effective resource management, tracking, and distribution are essential to maintain the high standards of patient care required in healthcare. Recognizing these needs, the Logistics Management System (LMS) has been developed to streamline complex logistics processes specific to healthcare, covering inventory control, requisition management, purchasing, and integration with other core modules like finance and patient management (Smith & Jones, 2021; Williams, 2023). The LMS system reduces the need for manual data entry and minimizes errors through automation, making logistics management more accurate, efficient, and responsive. This system will ensure that healthcare facilities can efficiently handle logistics tasks that impact daily operations, ultimately improving overall service quality and resource availability.

### 1.1 Overview

This capstone project, Logistics Management System (LMS), addresses critical logistics challenges in healthcare by providing a centralized, automated solution designed to support efficient handling of medical supplies. By implementing modern software approaches like Agile Scrum, microservices architecture, and DevOps, this project seeks to reduce operational costs, improve workflow efficiency, and enhance productivity within healthcare institutions (Doe, 2022).

The LMS is designed to seamlessly integrate essential logistics tasks with the financial and patient management systems, ensuring a comprehensive approach to inventory management. Training for this system will cover various user roles, enabling staff across departments to effectively manage inventory, requisitions, purchasing, and returns. This training plan will ensure that end-users are well-equipped to leverage LMS's features and workflows, ultimately contributing to better patient care and operational efficiency.

## 2. Training Approach

### 2.1 Training Needs

Personnel to be Trained	Current Skill Level	Required Competencies	Training Needed	Timeframe Needed
Signatories	Basic familiarity with digital tools; limited experience with inventory or requisition systems	Approving and rejecting requisition requests, viewing inventory levels, accessing analytics dashboards	Initial training sessions covering requisition management, inventory viewing, and dashboard navigation	1-2 weeks; should be completed before system is live

Personnel to be Trained	Current Skill Level	Required Competencies	Training Needed	Timeframe Needed
Admin Nurse	Moderate digital proficiency, knowledge of healthcare inventory systems	Managing user roles and permissions, editing inventory data, generating purchase orders, managing returns, and supplier information	Comprehensive training on inventory management, purchase order creation, supplier management, and data editing	2-3 weeks; should be conducted before full system integration
Pharmacist	Proficient in pharmacy operations and familiar with point-of-sale systems	Processing sales transactions, managing real-time inventory updates, and handling return processes	Training on point-of-sale functionality, real-time inventory tracking, and return management	1-2 weeks; aligned with system deployment to ensure readiness

### 2.2 Prerequisites

Personnels	Prerequisites	Strategy
Signatories	Basic computer literacy, understanding of approval processes	<ul style="list-style-type: none"> <li>Conduct an initial assessment to gauge digital proficiency and familiarity with requisition approval processes.</li> <li>Provide introductory materials on inventory viewing and requisition approval before hands-on training sessions.</li> <li>Assess existing knowledge of inventory systems and order management.</li> <li>Develop a targeted learning path to cover areas such as supplier management and purchase order creation</li> <li>Review current proficiency in pharmacy POS and inventory practices.</li> <li>Provide refresher materials on inventory tracking and return processing to align with LMS functionality.</li> </ul>
Admin Nurse	Familiarity with healthcare inventory management and workflows	
Pharmacist	Basic knowledge in point-of-sale operations	



### 2.3 Methods & Tools

#### Training Methods:

##### 1. Training Manual:

The training manual for Syncore serves as a comprehensive guide, detailing all system functionalities. It includes step-by-step instructions, screenshots, and troubleshooting tips to help users navigate each module effectively. The manual will be provided to all personnel in both digital and print formats, ensuring accessibility for quick reference and consistent guidance across user roles.

##### 2. Hands-On Sessions:

Hands-on sessions give users practical experience with *Syncore*. These sessions will simulate real-world scenarios relevant to each role, such as approving requisitions, managing inventory, or performing point-of-sale transactions, enabling users to directly apply their training. Trainers will facilitate these sessions to ensure users are confident with each process and can address any questions as they arise.

##### 3. Peer Training and Mentoring:

Peer training or mentoring within *Syncore* involves experienced users guiding newer users through system functionalities. This collaborative approach allows knowledge sharing and promotes a supportive learning environment. Each department will assign mentors to assist colleagues, share best practices, and provide insights on using *Syncore* efficiently in daily operations.

##### 4. Consultation:

Consultation sessions are available for users requiring additional support or individualized guidance. Scheduled with trainers or Syncore experts, these one-on-one sessions address specific challenges, advanced functionalities, or troubleshooting needs. This personalized support ensures that all users achieve full proficiency and confidence in using Syncore.

#### Tools Needed:

The Syncore training program includes workstations configured specifically with the Syncore system to facilitate hands-on training. Additionally, training materials such as manuals, documentation, and multimedia resources will be provided to support participants throughout the learning process. To create a productive and immersive training environment, access to facilities such as a dedicated classroom or training space will be arranged. These resources collectively contribute to an effective and comprehensive training experience, allowing users to interact with the Syncore system, refer to relevant information, and practice key skills in a structured and supportive setting.

## 2.4 Roles & Responsibilities

Name	Role	Responsibility
Alma C. Fernandez	Project Adviser	<ul style="list-style-type: none"> <li>Guide training plan content</li> <li>Approve training materials</li> <li>Represent the project to stakeholders during training</li> </ul>
Garcia, Mariel Kaye Malones	Project Manager and Document Analyst	<ul style="list-style-type: none"> <li>Schedule and oversee training sessions</li> <li>Document training activities and feedback</li> <li>Ensure alignment with project goals</li> </ul>
Ko, Maverick B.	Front-End Developer	<ul style="list-style-type: none"> <li>Train users on system interface</li> <li>Provide interface support during sessions</li> <li>Implement UI feedback from training</li> </ul>
Sangreo, Sergius Paulo B.	Back-End Developer	<ul style="list-style-type: none"> <li>Support training on system functionalities</li> <li>Address technical questions</li> <li>Implement performance feedback from training</li> </ul>
Letegio, Rene Q.	Quality Assurance and Business Analyst	<ul style="list-style-type: none"> <li>Create post-training evaluations</li> <li>Analyze feedback for improvements</li> <li>Ensure training quality meets standards</li> </ul>
Others	Signatories, Nurses, Pharmacist	<ul style="list-style-type: none"> <li>Attend training sessions</li> <li>Engage in hands-on and peer mentoring</li> <li>Provide feedback on training effectiveness</li> </ul>

## 2.5 Training Development Schedule

Task	Task Description	Begin Date	End Date	Milestones
Syncore Overview and Navigation	Develop training modules introducing users to Syncore's interface, features, and navigation.	November 25	November 26	Users proficiently navigate Syncore and utilize its key features.
User Roles and Permissions	Create instructional content explaining user roles (Signatories, Admin Nurse, Pharmacist) and permissions.	November 27	November 29	Users understand their roles and permissions for secure system operations.

Task	Task Description	Begin Date	End Date	Milestones
Requisition and Inventory Management	Develop materials for managing requisitions, stock updates, and inventory navigation.	December 30	December 02	Users effectively manage requisitions and inventory in Syncore.
Point of Sale and Return Management	Create training modules for handling sales and processing returns using Syncore.	December 02	December 05	Pharmacists confidently perform sales and return management tasks.
System Configuration for Admins	Develop content for Admins to customize Syncore settings and workflows.	December 06	December 10	Admins proficiently configure Syncore to meet operational needs.
Integration and Quality Check	Integrate all system and conduct thorough quality checks to ensure content consistency, accuracy, and adherence to design principles.	December 11	December 15	Users experience a seamless and coherent set of training materials with accurate content.
Training Program	Conduct training, gather feedback, and refine materials based on user experiences.	December 16	December 17	Users complete pilot training and provide actionable feedback.
Finalization of Training Materials	Refine and finalize all training materials based on pilot feedback for distribution to all end-users.	December 18	December 20	Users receive polished training materials ready for deployment.





### 3. Training Administration

#### 3.1 Training Evaluation

Evaluation of the Syncore training program will take place after the completion of all training sessions to ensure its effectiveness and identify areas for improvement. The evaluation process will involve gathering feedback from all concerned individuals, including Signatories, Admin Nurses, and Pharmacists, who participated in the training. Participants will be interviewed to gather in-depth insights into their learning experience, covering aspects such as the clarity of the training materials, the relevance of the content to their roles, and the effectiveness of the delivery methods. Surveys will also be distributed to collect structured feedback, focusing on specific aspects like system usability, training methods, and the adequacy of hands-on practice. The collected data will undergo thorough analysis to identify recurring patterns and themes. Areas where users faced challenges or expressed the need for further support will be prioritized. For instance, feedback on modules requiring more detailed explanations or additional hands-on exercises will guide adjustments to the training materials and sessions. This evaluation will also provide insights into how well the training program prepared participants for real-world application of the Syncore system. Specific metrics, such as the users' confidence in performing system tasks or their ability to navigate features independently, will be considered to measure training success. The findings from the evaluation will be documented. Any necessary updates or refinements to the training materials, schedule, or methods will be taken to consideration to enhance future sessions. By incorporating participant feedback into a continuous improvement cycle, the evaluation process ensures that the training program remains effective, user-centered, and aligned with the evolving needs of the organization and its personnel.

#### 3.2 Monitoring & Reporting

##### **Monitoring Register & Completion**

All concerned individuals are required to participate in the Syncore training sessions to ensure a comprehensive understanding of the system's functionalities. Attendance will be recorded during each session by the training team, noting the presence of participants and their engagement throughout the program. Trainers will maintain detailed attendance logs, which will include the names and roles of participants, along with their attendance status for each session. Observations during hands-on activities will also be documented to ensure participants actively engage with the training content. At the end of the training program, voluntary feedback will be gathered from participants through surveys or interviews. While providing feedback is optional, it serves as evidence of active participation and successful completion of the training. This feedback will also contribute to improving future training sessions and validating the program's overall effectiveness.

##### **Reporting Phase**

The feedback gathered from the Syncore training program will be thoroughly analyzed to identify strengths, areas for improvement, and overall effectiveness. The results of the analysis will be compiled into a comprehensive report. This report will include key findings, suggestions for improvement, and metrics indicating participant engagement and training outcomes. The finalized report will be presented to the adviser and shared with the company or clients as part of the project's deliverables. This ensures transparency, provides valuable insights for refining future training programs, and validates the success of the Syncore training initiative.