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INTEGRATED MANAGEMENT PLATFORM FOR ST. LOUISE DE MARILLAC COLLEGE OF SORSOGON INC.

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Abstract

The study developed an Integrated Management Platform for St. Louise de Marillac College of Sorsogon Inc. (SLMCSI) designed to unify institutional operations and improve administrative efficiency. The project addressed system fragmentation by consolidating modules for Facility Management, IT Asset Management, HR and Employee Self-Service, TESDA Management, and a Centralized Dashboard supported by Role-Based Access Control (RBAC). Using the Agile Development Model, the researchers conducted iterative design, testing, and evaluation guided by the ISO/IEC 25010 software quality framework, focusing on functionality, usability, reliability, performance, and security. Ten IT experts and seven end users participated in assessing the system's overall effectiveness. The scope covered the design, development, and evaluation of the platform within selected departments of SLMCSI, while delimitations excluded mobile applications, external system integration, and large-scale deployment. The results indicated that the system significantly improved accessibility, data accuracy, and coordination across institutional units. The project demonstrated that a centralized digital ecosystem enhances efficiency, transparency, and governance - supporting SLMCSI's broader vision of sustainable digital transformation.

The study concluded that the Integrated Management Platform successfully streamlined institutional workflows by integrating diverse administrative processes into a single, user-friendly digital environment. The platform's modular design and compliance with ISO/IEC 25010 standards ensured scalability, usability, and data security, while its centralized dashboard enabled real-time monitoring and analytics for evidence-based decision-making. The collaborative involvement of administrators, faculty, and IT staff validated the system's functionality and adaptability. Overall, the research affirmed that adopting a unified management system enhances institutional productivity, data integrity, and stakeholder satisfaction - positioning SLMCSI as a model for digital modernization among higher education institutions in the region.

Based on the findings and conclusions, the study recommends the institutional implementation of the Integrated Management Platform across all applicable departments with accompanying user training and technical support. A

comprehensive Zero-Trust login system should be adopted to ensure continuous verification and secure access control. Continuous system monitoring and evaluation are essential to address issues, gather feedback, and maintain performance standards. The institution is encouraged to explore future integrations with Learning Management Systems, payment gateways, and government databases (CHED, DepEd, TESDA) to improve interoperability. The development of a mobile application is advised to enhance user accessibility and convenience. A data migration plan should be implemented to safeguard data integrity during transition, and scalability strategies must be in place to accommodate institutional growth, including server expansion and periodic system upgrades. Sustained training programs and resource allocation will ensure long-term functionality, aligning SLMCSI's operations with its vision of a secure, efficient, and technology-driven educational environment.

Keywords: Centralized Dashboard, Facility Management System, Human Resource Management System, Integrated Management Platform, IT Asset Management, Role-Based Access Control (RBAC), TESDA Management System

Introduction

In the twenty-first century, higher education institutions around the world are experiencing a profound transformation fueled by the continuous advancement of digital technologies. Universities and colleges are progressively adopting integrated management platforms that unify fragmented systems for facility scheduling, human resource operations, academic records, and information services. Such integration enhances institutional efficiency, promotes collaboration, and supports data-driven decision-making. According to Hummel (2024), the adoption of educational technology solutions contributes significantly to operational transparency, user-centered service delivery, and global competitiveness among academic institutions. Similarly, a report published in Tech Journal (2023) highlights that schools implementing centralized digital platforms achieve greater record accuracy, faster response times, and improved allocation of institutional resources. The shift toward integrated and modular system architectures - anchored in standards like ISO/IEC 25010 - demonstrates a global commitment to ensuring software quality, security, and maintainability across higher education ecosystems.

In the Philippine context, the integration of Information and Communication Technology (ICT) in education has become a central focus of national modernization and reform. The Department of Education (2022) underscores that the adoption of digital platforms is vital to promoting inclusivity, sustainability, and resilience in the delivery of education. Moreover, the Department of Information and Communications Technology (DICT, 2023) and the Commission on Higher Education (CHED) encourage higher education institutions to utilize digital infrastructures that streamline administrative and academic processes. These efforts align with the Technical Education and Skills Development Authority (TESDA)'s initiatives to digitalize assessment management, competency tracking, and compliance reporting. In support of this national vision, Gartner (2022) emphasizes

that centralized platforms play a key role in ensuring transparency, operational sustainability, and stakeholder satisfaction. Despite these initiatives, many Philippine institutions continue to face challenges due to fragmented systems, inefficient workflows, and inconsistent data handling, limiting their capacity to deliver seamless and reliable services to stakeholders.

At the local level, St. Louise de Marillac College of Sorsogon, Inc. (SLMCS) - a prominent educational institution located in Sorsogon City, Sorsogon - is not exempt from these challenges. The college currently manages its operations through multiple, disconnected systems across departments. Human Resource functions, IT asset management, facility scheduling, and TESDA-related activities such as assessment record keeping and audit archiving are handled separately. This fragmentation leads to redundant data entry, communication delays, and administrative inefficiencies. As Armstrong (2021) points out, such disconnected workflows in academic institutions reduce transparency, accountability, and responsiveness, thereby hindering productivity and institutional growth. For SLMCSI, this has resulted in increased workload for faculty and staff, delayed decision-making, and limited accessibility of institutional data - issues that directly affect service quality and overall institutional performance.

To address these operational challenges, this study proposes the development of an Integrated Management Platform for St. Louise de Marillac College of Sorsogon Inc. The project envisions a unified, web-based digital system that consolidates multiple institutional functions - including Facility Management, IT Asset Management, Human Resource and Employee Self-Service, and TESDA Management - within a centralized dashboard supported by Role-Based Access Control (RBAC) for data security. Specifically, the system will enable efficient scheduling and tracking of laboratory and facility use, centralized inventory of IT assets with lifecycle tracking, streamlined HR workflows and employee self-service functions, and structured management of TESDA-related records and assessments. Furthermore, the platform will integrate authentication, audit logging, and compliance features aligned with the Data Privacy Act of 2012 (RA 10173) to ensure that sensitive information is protected and accessible only to authorized personnel.

Aligned with the ISO/IEC 25010 software product quality model, the study seeks to evaluate the developed platform based on functional suitability, performance efficiency, usability, reliability, and security. It also aims to establish measurable acceptance criteria such as functional test coverage, response time benchmarks, interoperability checks, usability surveys, and maintainability metrics to ensure system quality and compliance. Ultimately, this research initiative is not only an academic undertaking but also a strategic contribution to the digital transformation agenda of St. Louise de Marillac College of Sorsogon. By aligning with international standards, national ICT directives, and local institutional needs, the Integrated Management Platform aspires to create a sustainable, transparent, and future-ready digital environment that enhances productivity, strengthens institutional governance, and delivers superior service to all stakeholders of SLMCS.

Specific Objectives

This study sought to accomplish the following specific objectives:

1. Design a modular system architecture supporting the following core components:
    - 1.1. Facility Management
    - 1.2. IT Asset Management
    - 1.3. HR and Employee Self-Service
    - 1.4. TESDA Management (assessment records, online evaluations, announcements, audit archive)
    - 1.5. Centralized Dashboard
    - 1.6. Role-Based Access Control (RBAC)
2. Develop Facility Management Module
    - 2.1. Implement scheduling and reservation features for laboratories, audio rooms, and AVR facilities.
    - 2.2. Integrate usage tracking and maintenance coordination tools.
    - 2.3. Provide an administrative dashboard for facility monitoring and reporting.
3. Develop IT Asset Management Module
    - 3.1. Establish a centralized inventory of IT equipment and resources.
    - 3.2. Enable lifecycle tracking, including assignment, warranty, repair, and disposal records.
    - 3.3. Generate audit-ready and compliance reports.
4. Develop HR and Employee Portal Module
    - 4.1. Create a secure staff self-service portal for profile management, requests, leave applications, and document retrieval.
    - 4.2. Automate HR administrative workflows for approvals and record updates.
    - 4.3. Implement access control for HR administrators and employees.
5. Develop TESDA Management Module
    - 5.1 Design submodules for managing assessment records, online evaluations, and official announcements.
    - 5.2. Establish a qualification audit archive for compliance and record keeping.
    - 5.3. Provide an interface for authorized TESDA coordinators and assessors.

6. Implement Centralized Dashboard and System Integration
    6.1 Develop a centralized dashboard for administrators to visualize real-time system metrics.
    6.2. Integrate all modules for seamless interoperability and information flow.
    6.3. Provide summary analytics for institutional decision-making.

7. Evaluate the developed system using ISO/IEC 25010 quality model in terms of:
    7.1. Functional suitability
    7.2. Performance Efficiency
    7.3. Compatibility
    7.4. Usability
    7.5. Reliability
    7.6. Security
    7.7. Maintainability
    7.8. Portability

Scope and Delimitations

The scope of the study covered the design and development of an Integrated Management Platform for. The system St. Louise de Marillac College of Sorsogon Inc was designed with a modular architecture that supported six core components: Facility Management, IT Asset Management, HR and Employee Self-Service, TESDA Management, Centralized Dashboard, and Role-Based Access Control (RBAC). The Facility Management module was developed to handle the scheduling and reservation of laboratories, audio rooms, and AVR facilities, as well as usage tracking and maintenance coordination. The IT Asset Management module included centralized inventory control, lifecycle tracking of equipment (from assignment to disposal), and audit-ready reporting. The HR and Employee Portal module provided a secure self-service interface for personnel to manage profiles, submit requests, apply for leave, and access HR-related documents while automating administrative workflows. The TESDA Management module handled assessment records, online evaluations, announcements, and qualification audit archives for compliance purposes. A Centralized Dashboard was implemented to integrate all modules for seamless data interoperability, provide real-time analytics, and support administrative decision-making. The system's performance and quality were evaluated using the ISO/IEC 25010 software quality model, focusing on eight major characteristics - functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability. The evaluation involved ten (10) IT experts and seven (7) end users to comprehensively assess the system's functionality and usability.

The study was delimited to the design, development, and evaluation of the Integrated Management Platform within the context of St. Louise de Marillac College of Sorsogon Inc. It did not include mobile application development, integration with third-party systems, or external data migration beyond the institutional scope. The implementation was limited to selected departments directly involved in facility operations, IT asset monitoring, human resource management, and TESDA

coordination. Furthermore, the system's testing and evaluation were confined to functional and non-functional criteria under ISO/IEC 25010 and did not extend to long-term deployment or large-scale performance benchmarking. User feedback was limited to the selected evaluators, and results reflected their specific experiences within the institutional setting.

Gap Bridged by the Study

Several existing systems showed similarities to the proposed platform. SmartUniCloud centralized academic and administrative operations through a cloud-based suite (EduCore Systems, 2025), while NovaLearn Hub and the local Integrated Facility Reservation and Maintenance System linked scheduling with maintenance. Platforms like CampusOne ERP and EduSphere 360 applied RFID and QR tracking for IT assets, and EduFlex OS and Veritas College HRIS featured HR self-service portals. Meanwhile, EduraOne and UniCore Nexus emphasized record and audit management. However, these tools operated in silos - focusing on single domains or lacking integration across facilities, HR, IT assets, and compliance systems.

This study addressed these gaps by developing a modular, web-based Integrated Management Platform designed for St. Louise de Marillac College of Sorsogon Inc. (SLMCSI). Unlike existing systems, it unified Facility Management, IT Asset Management, HR Self-Service, Scheduling, and TESDA Records under one architecture with Role-Based Access Control and compliance with RA 10173. It introduced features such as SLA timers, readiness tracking, preventive maintenance triggers, and automated TESDA audit reports—all managed through a centralized dashboard. This integration bridged fragmentation, improved interoperability, and strengthened data privacy and operational efficiency within the institutional context.

Conceptual Framework

The input of the study involved the design and development of a modular system architecture that supported six core components: Facility Management, IT Asset Management, HR and Employee Self-Service, TESDA Management, Centralized Dashboard, and Role-Based Access Control (RBAC). The process included the creation of various modules - such as the Facility Management Module, which handled scheduling, reservation, and maintenance coordination; the IT Asset Management Module, which centralized IT inventories and tracked asset lifecycles; and the HR and Employee Portal Module, which provided secure self-service features and automated HR workflows. Additionally, the TESDA Management Module was developed to manage assessment records, evaluations, announcements, and audit archives, while the Centralized Dashboard integrated all modules for real-time monitoring, interoperability, and analytics. The overall system was evaluated using the ISO/IEC 25010 quality model focusing on functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability.

The process adopted the Agile Development Model, which followed an iterative and flexible cycle consisting of six key stages: planning, designing, developing, testing, deploying, and reviewing. This approach allowed continuous improvement and stakeholder feedback at every stage, ensuring that the developed system aligned with institutional needs and maintained adaptability throughout development. Agile's emphasis on collaboration, testing, and iterative enhancement ensured the system's efficiency, reliability, and user satisfaction.

The output of the study was the Integrated Management Platform for St. Louise De Marillac College of Sorsogon Inc., a web-based system designed to consolidate multiple institutional operations - facility scheduling, IT asset tracking, HR management, and TESDA records - into one unified platform. The feedback phase consisted of evaluations from ten IT experts and seven end users, whose insights were used to refine the system's functionality, usability, and performance, thereby ensuring that the final version met both technical standards and user expectations.

Resources

The successful development and implementation of the Integrated Management Platform for St. Louise De Marillac College of Sorsogon Inc. required a carefully planned combination of hardware, software, and human resources. These resources were essential in ensuring that the system operated efficiently, maintained security, and remained scalable for future enhancements.

This section presented the technical infrastructure and tools that supported the system's development and deployment on both the user and server sides. It included the recommended hardware specifications for end users, such as administrative staff, faculty, and students, as well as the server-side requirements necessary for hosting and running the web-based platform. Additionally, it described the software stack that facilitated system development, deployment, and daily operations.

Identifying and preparing these resources were critical steps in meeting the project's technical and operational requirements, minimizing risks, and ensuring that users across departments could interact with the platform seamlessly. The succeeding tables summarized the recommended hardware and software components that contributed to the system's full functionality and successful implementation.

Stakeholders

The success of the proposed system depended on the active involvement and collaboration of various stakeholders who played vital roles throughout the system's development and implementation. These stakeholders included the school administrators, who provided guidance, policies, and approvals for system deployment; the IT department, which handled the technical aspects such as configuration, maintenance, and security; and the faculty members, who contributed insights on workflow integration and system usability. The students also served as key

users, utilizing the platform for access to announcements, records, and academic services, thereby influencing system features and user interface design. Additionally, TESDA coordinators and assessors participated in the testing and evaluation of the TESDA Management Module to ensure compliance and accuracy. Collectively, these stakeholders provided feedback, recommendations, and validations that guided the project team in refining functionalities and achieving the platform's goals of efficiency, transparency, and centralized management.

Constraints

In the development of the Integrated Management Platform for St. Louise de Marillac College of Sorsogon, Inc., several constraints had significantly influenced the project's design, development, and implementation processes. These limitations defined the parameters within which the research team operated, ultimately shaping the system's functionality, timeline, and overall scope. According to Sommerville (2016), "Constraints define the limits on the design process and can have significant effects on the final product," which became evident throughout the project. Financial constraints restricted the adoption of commercial software and high-end hosting services, leading the team to utilize open-source technologies and cost-efficient deployment options. As Pressman and Maxim (2020) noted, "economic realities often force design compromises, impacting performance, scalability, or maintainability," and this study reflected such trade-offs by prioritizing core features while postponing advanced enhancements for future updates.

Time constraints also played a major role, as system development had to align with the institution's academic calendar. The team needed to ensure that the platform was functional before the start of a new term, leaving a limited window for system testing and optimization. Boehm (2000) emphasized that "schedule pressure can lead to reduced quality if not managed carefully," a challenge the researchers addressed through iterative development, consistent review sessions, and continuous feedback from institutional stakeholders. Additionally, the limited number of skilled developers required the project team to apply agile practices, allowing for flexible task allocation and progress tracking despite manpower constraints. Institutional policies regarding data privacy and IT governance also shaped the system's design, ensuring that all modules complied with organizational standards and data protection regulations. Overall, these constraints influenced not only the project's direction but also the strategic decisions made to ensure the platform's successful and sustainable implementation.

Project Development Methodology

This study adopted the Agile Software Development Methodology to ensure flexibility, collaboration, and iterative improvement throughout the system development process. Agile emphasized incremental delivery, stakeholder engagement, and continuous feedback, which made it highly suitable for developing a dynamic and modular platform such as the proposed system. The approach enabled the research team to adapt efficiently to changes in institutional requirements and user feedback during each phase of development.

Agile methodology had been structured around a series of iterative steps that focused on collaboration, adaptability, and continuous stakeholder interaction. According to Estanislao (2024), the Agile process comprised a repeating cycle of planning, sprint planning, collaborative design and development, implementation, and review. Each iteration produced a functional module that could be tested and refined, allowing rapid delivery of working components and enabling immediate evaluation. This iterative cycle allowed the team to incorporate real-time feedback, adjust priorities dynamically, and continuously refine the system's features—a process particularly beneficial for an educational institution like SLMCSI, where user needs evolved throughout development.

Furthermore, Highsmith (2009) emphasized that Agile project management prioritized adaptability, customer collaboration, and iterative delivery over rigid planning and documentation. This perspective supported constant stakeholder participation and empowered the developers to respond effectively to shifting requirements. By dividing the development process into smaller, manageable "sprints," the team was able to reassess progress frequently, ensuring that the final system aligned with institutional objectives and user expectations. Overall, adopting the Agile methodology enhanced the project's development efficiency, improved usability, and strengthened stakeholder satisfaction by delivering a responsive and user-centered system.

Plan

The development of the Integrated Management Platform for St. Louise de Marillac College of Sorsogon, Inc. (SLMCSI) required a comprehensive requirement planning framework that ensured the success of its design, implementation, and long-term sustainability. This document consolidated all the functional, non-functional, technical, human, and resource requirements necessary for the efficient development and deployment of the system. It served as a roadmap for guiding the project team, stakeholders, and institutional administrators in executing their roles and responsibilities toward achieving the project's goals of institutional efficiency, transparency, and digital integration.

The primary objective of this requirement plan was to identify, organize, and manage all resources - technical, human, and procedural - that supported the development and implementation of the Integrated Management Platform. Specifically, the project aimed to define the necessary tools, hardware, software, and personnel needed to create a unified, web-based digital system that consolidated multiple institutional operations such as Facility Management, IT Asset Management, HR and Employee Self-Service, and TESDA Management. The plan also outlined the system's alignment with ISO/IEC 25010 software quality standards to ensure that it was functionally suitable, efficient, reliable, usable, secure, and maintainable.

The project involved various stakeholders who played crucial roles throughout its development and deployment. The primary beneficiary was St. Louise de Marillac College of Sorsogon, Inc., whose administrative and academic operations were supported by the system. The administrative staff and department heads used the platform to manage scheduling, HR services, and resource allocation, while faculty members utilized it to access classroom schedules, reserve facilities, and communicate with the administration more efficiently. TESDA officers and data encoders used the TESDA Management Module to maintain assessment records, upload audit documents, and monitor evaluation results, ensuring compliance with regulatory standards. IT personnel handled configuration, troubleshooting, and system security, whereas quality assurance officers and external auditors relied on the platform's digital archives for compliance verification. Students, though indirect users, benefited from more efficient service delivery and improved access to institutional resources. Defining these stakeholders ensured that each user's needs were properly addressed during development.

The functional requirements of the project were centered on six major modules. The Facility Management Module automated room scheduling, reservation, and maintenance coordination for laboratories, audio rooms, and AVRs, ensuring that resources were used efficiently and without conflict. The IT Asset Management Module provided a centralized inventory of institutional equipment, allowing real-time tracking of assignments, warranties, repairs, and disposals. The HR and Employee Self-Service Module enabled personnel to manage their profiles, apply for leave, access documents, and track HR requests through a secure and user-friendly interface, ensuring compliance with the Data Privacy Act of 2012 (RA 10173). The TESDA Management Module stored assessment records, online evaluations, announcements, and qualification archives to simplify compliance reporting and audit preparation. A Centralized Dashboard integrated data from all modules, displaying real-time analytics, system alerts, and institutional performance indicators to assist administrators in decision-making. Finally, Role-Based Access Control (RBAC) secured the platform by assigning permissions based on user roles, maintaining data privacy, and providing audit logs for accountability.

The non-functional requirements of the system ensured quality and compliance with the ISO/IEC 25010 model. The platform demonstrated functional suitability by meeting all operational needs defined in each module. It exhibited performance efficiency through fast page load times, stable uptime, and optimized resource use. Usability was measured by user satisfaction surveys and interface testing, while reliability was assessed through system uptime and fault tolerance. Security was maintained through HTTPS encryption, authentication mechanisms, and role-based permissions. Maintainability was achieved through modular coding and version control to simplify updates, and portability ensured that the system could be deployed on different servers with minimal reconfiguration.

The technical requirements consisted of both hardware and software components necessary to support system development and usage. For client-side users such as faculty,

staff, and TESDA officers, desktop or laptop computers with at least an Intel i3 processor, 8GB RAM, and 256GB SSD storage were recommended, along with stable internet connectivity and updated browsers like Chrome or Firefox. On the server side, the system required an Intel Xeon or AMD Threadripper processor with at least eight cores, 32GB RAM, and a 1TB NVMe SSD configured in RAID for backup and redundancy. The system ran on a secure and scalable server environment with a gigabit network interface and redundant power supply. The software stack consisted of Apache or NGINX as the web server, PHP as the backend framework, JavaScript and CSS for the frontend, and MySQL for database management. Additional tools such as Visual Studio Code, XAMPP, and GitHub supported development, while testing utilized Selenium, Postman, and OWASP ZAP to ensure performance and security compliance.

The human resource requirements were equally vital for the successful completion of the project. The development team included a Project Manager to oversee the implementation process, a System Analyst to map system processes, a Programmer to develop and integrate modules, a Database Administrator to ensure data integrity, a UI/UX Designer to enhance usability, a Tester to validate functionality, and a Documentation Specialist to produce reports and user manuals. Collaboration among these roles ensured that the system remained functional, secure, and aligned with institutional needs.

The project will be executed in six major phases following the Agile Development Model: planning, design, development, testing, deployment, and review. The planning phase, lasting two weeks, focuses on requirement gathering and stakeholder consultation. The design phase, spanning three weeks, will create system architecture and database schema. Development will take six weeks and involve coding, integration, and preliminary testing. The testing phase, lasting two weeks, will focus on functional validation and ISO/IEC 25010 evaluation. Deployment will take one week, involving server configuration and rollout, followed by a two-week review phase for user feedback and refinement. This timeline ensures continuous stakeholder involvement and adaptability to institutional feedback.

Despite careful planning, the project faced several constraints. Financial limitations restricted the adoption of commercial software and hosting services, prompting the use of open-source tools. Time constraints, tied to the academic calendar, required efficient task management to ensure that deployment did not disrupt institutional operations. Limited technical manpower necessitated agile teamwork and flexible task assignments. Additionally, staff adaptation and training posed potential challenges, as some users were resistant to new digital workflows. Data privacy compliance also presented a critical challenge, requiring strict enforcement of RBAC, encryption, and regular audits to prevent unauthorized access. Mitigating these risks involved proactive scheduling, phased rollout, training workshops, and continuous security evaluation.

The system's evaluation was conducted based on the ISO/IEC 25010 quality framework, measuring performance in terms of functional suitability,

performance efficiency, usability, reliability, security, maintainability, and portability. Testing tools were used to measure response times, error rates, uptime, and compliance with OWASP security standards. Usability was assessed using the System Usability Scale (SUS) and end-user feedback, while maintainability and reliability were evaluated through code reviews and version tracking.

Ultimately, the expected outcome of this requirement planning process was the successful development and deployment of a fully functional, secure, and integrated web-based management platform that unified the institution's operational systems into one accessible environment. Through this platform, St. Louise de Marillac College of Sorsogon, Inc. achieved improved efficiency, enhanced transparency, and stronger governance, while also aligning with national directives on ICT modernization and institutional digital transformation.

Design

The SLMCSI Portal System (index.php) served as the central navigation hub and primary access point for St. Louise de Marillac College of Sorsogon Inc.'s integrated management platform. Its main purpose was to provide a unified gateway to twelve distinct subsystems, which were organized into four major categories: Facility Management, Admin/Employee Management, Tools, and TESDA Management.

The portal was a static landing page that functioned primarily for navigation and system discovery. Built using HTML5, CSS3, and vanilla JavaScript, the system adopted a single-page application architecture that linked externally to the integrated subsystems for efficient redirection and minimal load time.

The portal managed twelve systems across four key categories. Under Facility Management, it included four modules: the Audio Facility System for scheduling audio equipment, the Laboratory Facility System for managing laboratory tools and materials, the IT Asset Management System for tracking IT inventories, and the Audio-Visual Room (AVR) System for equipment borrowing and usage scheduling. For Admin/Employee Management, the HR Management System served as the central human resources portal. The Tools category included one module - Database Maintenance - which oversaw centralized database operations. Lastly, the TESDA Management category consisted of four systems: Assessment Records for tracking TESDA qualifications, Online Evaluation for TESDA program assessments, News Board for posting institutional updates, and Qualification Audit Archives for maintaining historical records.

The portal incorporated several key features that enhanced usability and accessibility. It used a responsive design built on a mobile-first approach with six breakpoints to ensure compatibility across various devices. A clear visual hierarchy organized system links by function, promoting ease of navigation. The design followed progressive enhancement principles, ensuring graceful degradation on

older browsers, while touch optimization improved mobile user interaction. Additional features included visual feedback effects, such as animations and hover responses, and print support, which allowed users to generate printer-friendly views when needed.

Develop

The construction phase represented the actual development stage of the Integrated Management Platform for St. Louise de Marillac College of Sorsogon, Inc. During this phase, all system components and modules identified in the design phase were coded, integrated, and tested to produce a functional prototype. Developers translated the system specifications into executable programs using the selected programming languages, frameworks, and database technologies. Core modules including Facility Management, IT Asset Management, HR and Employee Self-Service, TESDA Management, and the Centralized Dashboard were developed following modular design principles to ensure maintainability and scalability.

Each component underwent unit testing and integration testing to verify functionality and ensure smooth interoperability with other modules. The Role-Based Access Control (RBAC) feature and data encryption mechanisms were implemented to strengthen system security and comply with the Data Privacy Act (RA 10173). The development team followed the Agile methodology, emphasizing iterative builds, stakeholder feedback, and continuous improvement after every sprint cycle. Regular consultations with administrators, HR personnel, and TESDA coordinators ensured that the system aligned with institutional workflows and user expectations.

The construction phase culminated in a fully functional web-based platform hosted on a local server environment. This phase established the foundation for the succeeding implementation, evaluation, and deployment stages, confirming that the developed system met the performance, usability, and reliability standards defined under the ISO/IEC 25010 software quality model.

Test

The Test Phase of the developed system is a critical stage that ensures all modules of the Integrated Management Platform function correctly, securely, and efficiently before full deployment. During this phase, each feature - such as the reservation module, HR services, TESDA records management, and asset tracking - was thoroughly tested for functionality, performance, usability, and data accuracy. Different testing methods were employed, including unit testing to verify individual components, integration testing to assess module interoperability, and system testing to confirm overall system behavior under realistic conditions.

To ensure a balanced and credible assessment, the system was evaluated by three sets of respondents representing distinct user groups: ten (10) IT experts, seven (7) administrative personnel consisting of the registrar, cashier, and academic deans, and three (3) representatives of the student body who participated as end users. These groups assessed the system using a five-point Likert scale, with the following numerical interpretation: (1) does not meet expectations, (2) partially meets

expectations, (3) meets expectations, (4) exceeds expectations, and (5) far exceeds expectations. The IT experts focused primarily on the technical robustness, code efficiency, and compliance with software standards, while the administrative personnel evaluated functionality, accessibility, and the system's potential to streamline institutional processes. The student representatives provided essential insights into usability, interface clarity, and responsiveness from an end-user perspective.

The feedback gathered from these diverse groups provided a comprehensive evaluation of the system's overall performance, ensuring that both technical and user-centered aspects were thoroughly validated. Based on the results, minor refinements were implemented to enhance interface responsiveness, data accuracy, and workflow efficiency, ultimately confirming that the developed system met institutional requirements and aligned with ISO/IEC 25010 software quality standards.

Deploy

The deployment phase marks the final stage of the project, where the developed Integrated Management Platform for St. Louise de Marillac College of Sorsogon, Inc. is transitioned from a tested environment to a live, operational setting. After rigorous development, testing, and evaluation, the system was confirmed to be fully functional, secure, and aligned with institutional objectives. During this phase, all modules - including Facility Management, IT Asset Management, HR and Employee Management, TESDA Management, and Role-Based Access Control - were systematically configured for production, and final checks were conducted to ensure data integrity, system stability, and user accessibility.

The deployment involved setting up the platform on the designated server, integrating the database, enabling secure user authentication, and ensuring that all features were operational in real-time. Administrators, staff, and student representatives were provided with training and user guides to facilitate smooth adoption. With all technical and user requirements successfully addressed, the system is now ready for institutional deployment, enabling St. Louise de Marillac College of Sorsogon, Inc. to streamline operations, enhance transparency, and improve efficiency across administrative and academic processes. This phase represents the culmination of the project, transitioning the platform from a development prototype to a fully operational, production-ready system that supports the college's digital transformation.

Review

The review phase represents the final stage in the Agile development methodology, focusing on evaluating the performance, functionality, and overall effectiveness of the deployed system. In this phase, the Integrated Management Platform for St. Louise de Marillac College of Sorsogon, Inc. underwent comprehensive assessment by all stakeholders, including IT experts, administrative staff, and student representatives. Feedback was collected on usability, system performance, security, and alignment with institutional objectives, ensuring that the platform met the

expectations and requirements defined in earlier stages of development.

The review phase also involved examining the outcomes of the testing and deployment phases to identify any remaining issues, potential enhancements, or areas for optimization. Sprint retrospectives and user feedback sessions were conducted to assess both the technical aspects and user experience of the system. Any recommendations for improvements were documented for future updates, ensuring continuous enhancement and sustainability. This phase ensures that the system not only meets its initial objectives but also remains adaptable, reliable, and capable of evolving to meet the changing needs of the institution. Ultimately, the review phase validates the success of the Agile development process, confirming that the platform is fully operational, user-centered, and ready to support the college's ongoing digital transformation initiatives.

Findings

The following presents the key findings derived from the development and evaluation of the capstone project, highlighting the system's functionality, performance, and impact on institutional operations:

1. The modular system architecture effectively integrated Facility Management, IT Asset Management, HR and Employee Self-Service, TESDA Management, a Centralized Dashboard, and Role-Based Access Control, ensuring efficiency, security, and seamless institutional operations.
2. The Facility Management Module was successfully developed, enabling scheduling and reservations for laboratories, audio rooms, and AVRs, integrating usage tracking and maintenance coordination, and providing an administrative dashboard for monitoring and reporting.
3. The IT Asset Management Module was successfully developed, providing a centralized inventory of IT equipment, enabling lifecycle tracking of assignments, warranties, repairs, and disposals, and generating audit-ready compliance reports.
4. The HR and Employee Portal Module was successfully developed, offering a secure self-service portal for staff profile management, requests, leave applications, and document retrieval, automating HR workflows for approvals and record updates, and implementing access control for administrators and employees.

5. The TESDA Management Module was successfully developed, featuring submodules for assessment records, online evaluations, and announcements, establishing a qualification audit archive for compliance, and providing an interface for authorized TESDA coordinators and assessors.

6. The Centralized Dashboard and System Integration were successfully implemented, providing administrators with real-time system metrics, seamless interoperability across all modules, and summary analytics to support informed institutional decision-making.

7. The developed system was evaluated using the ISO/IEC 25010 quality model across functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability, receiving an overall mean rating of 4.88, which is verbally interpreted as “Far Exceeds Expectations.”

Conclusions

Based on the findings, the following conclusions are drawn:

1. The modular system architecture integrated all core components, ensuring efficient, secure, and seamless institutional operations.

2. The Facility Management Module enabled scheduling, reservations, usage tracking, maintenance coordination, and administrative monitoring.

3. The IT Asset Management Module provided a centralized inventory, lifecycle tracking, and audit-ready compliance reporting.

4. The HR and Employee Portal Module offered a secure self-service portal, automated HR workflows, and controlled access for administrators and employees.

5. The TESDA Management Module featured assessment records, online evaluations, announcements, and a qualification audit archive for authorized users.

6. The Centralized Dashboard and System Integration delivered real-time metrics, seamless module interoperability, and summary analytics for decision-making.

7. The developed system achieved an overall mean rating of 4.88 under the ISO/IEC 25010 quality model, which indicated it far exceeded expectations.

Recommendations

In light of the findings and conclusions, the following recommendations are proposed:

1. Future enhancements could include adding new modules or integrating external systems to further expand institutional capabilities while maintaining modular flexibility.

2. It is recommended to implement automated notifications and reminders for reservations and maintenance schedules to further improve user experience and prevent conflicts.

3. Periodic audits and integration with procurement systems are recommended to maintain accurate asset records and streamline inventory management.
4. It is suggested to incorporate advanced analytics and reporting features to help HR administrators make data-driven decisions and track employee performance more effectively.

5. Future improvements could include automated compliance alerts and integration with TESDA's official online systems to enhance efficiency and regulatory adherence.

6. It is recommended to implement customizable dashboard widgets and real-time alert systems to further support administrators in monitoring institutional performance.

7. Continuous monitoring, periodic updates, and user feedback collection are recommended to maintain high system quality and ensure it continues to meet evolving institutional needs.

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