



A Salesforce-Driven Healthcare Information and Automation Platform Enhancing Efficiency, Accuracy, and Collaboration in Modern Healthcare Ecosystems

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Peer Review Information	Abstract
<i>Submission: 05 Nov 2025</i> <i>Revision: 25 Nov 2025</i> <i>Acceptance: 17 Dec 2025</i> Keywords <i>Salesforce, Healthcare Automation, Cloud-Based System, Patient Data Management, Workflow Efficiency, Electronic Health Records (EHR), Apex Programming.</i>	The rapid digital transformation of the healthcare industry has highlighted the need for systems that can manage patient information efficiently, reduce manual effort, and improve overall care quality. Many healthcare institutions still depend on manual record-keeping and disconnected systems, which often cause data loss, communication gaps, and delays in patient treatment. To bridge this gap, this study introduces CareHub, a Salesforce-based healthcare management and automation platform designed to streamline hospital operations and enhance patient care. <i>CareHub</i> integrates different aspects of healthcare—such as patient profiles, appointments, care plans, medications, lab results, and insurance details—into one unified, cloud- driven environment. The system makes use of Salesforce’s declarative tools, including <i>Flows</i> and <i>Process Builder</i>, along with programmatic components like <i>Apex Triggers</i> and <i>Apex Classes</i> to automate routine hospital workflows. For instance, it can automatically notify doctors about abnormal lab reports, send reminders to patients who miss appointments, and verify insurance coverage before treatment approval. Through these features, <i>CareHub</i> minimizes administrative workload, improves accuracy in patient data management, and ensures timely medical intervention. The platform demonstrates how Salesforce can be customized beyond traditional business applications to create a secure, scalable, and patient-focused healthcare ecosystem. By integrating automation with real- time communication, <i>CareHub</i> represents a significant step toward achieving smarter, data- driven, and more connected healthcare services.

Introduction

Healthcare has always been one of the most critical and data-driven sectors, yet many hospitals and clinics continue to rely on manual processes for managing patient information, scheduling appointments, and tracking medical history. These traditional systems are often time-consuming, prone to human errors, and

lack coordination between healthcare professionals. As the number of patients increases and chronic diseases such as diabetes and diabetic retinopathy become more common, the demand for accurate, real-time, and automated healthcare management systems has grown stronger than ever.

To address these challenges, modern healthcare

systems are increasingly adopting cloud-based platforms that provide scalability, accessibility, and data integration. Among these technologies, Salesforce has emerged as a powerful tool for developing customized solutions that go beyond its traditional customer relationship management (CRM) purpose. With its flexibility, built-in automation tools, and secure cloud infrastructure, Salesforce can be effectively adapted to manage complex healthcare workflows and patient interactions.

This research presents **CareHub**, a Salesforce-based healthcare management system designed to automate hospital operations and improve patient care coordination. The system integrates all major components of healthcare—patient records, appointments, medications, lab results, and insurance details—into a single unified platform. By utilizing Salesforce’s declarative tools such as *Flows*, *Validation Rules*, and *Process Builder*, along with programmatic components like *Apex Triggers* and *Apex Classes*, **CareHub** ensures that critical updates, alerts, and reminders are handled automatically and accurately.

Through automation and real-time data synchronization, **CareHub** helps reduce administrative workload, minimizes errors, and enhances collaboration among doctors, nurses, and other care team members. The proposed system not only improves operational efficiency but also ensures that patients receive timely communication, accurate treatment plans, and transparent insurance validation. Overall, **CareHub** demonstrates how Salesforce can be leveraged as a cloud-based healthcare platform to create a smarter, safer, and more patient-centric healthcare environment.

Literature Survey

The growing adoption of cloud computing, artificial intelligence, and automation in healthcare has paved the way for smarter and more efficient patient management systems. Many studies and surveys have examined how technology can improve healthcare delivery by reducing manual errors, enhancing communication, and ensuring timely access to medical information. The reviewed literature provides a strong foundation for understanding the technical and operational gaps that the proposed **CareHub** system aims to bridge.

A study published in 2024 on Cloud-Based Healthcare Information Systems for Patient Management emphasized the role of cloud platforms in improving scalability, data accessibility, and security in hospitals. The research concluded that centralizing patient records in the cloud minimizes duplication and

improves collaboration among healthcare professionals [1]. Similarly, a 2023 paper on Salesforce Applications in Healthcare and Care Coordination discussed how Salesforce Health Cloud connects patients, doctors, and insurance systems to improve care delivery and billing accuracy [2]. These studies highlight the relevance of Salesforce as a powerful and adaptable platform for healthcare innovation.

In 2022, research on Electronic Health Records (EHR) for Chronic Disease Management showed that integrating EHR systems reduces medical errors and supports continuous monitoring of long-term illnesses such as diabetes [3]. Another study from 2021 on Workflow Automation in Healthcare Systems found that automated notifications, reminders, and data validation rules significantly reduce missed appointments and delays in treatment [4]. The concepts from these studies directly align with **CareHub**’s automation goals using Salesforce Flows and Apex Triggers.

A 2020 study on Insurance and Billing Integration in Digital Health Platforms emphasized the importance of linking patient accounts with insurance details to ensure transparency and minimize billing disputes [5]. Likewise, a 2019 paper on Collaborative Care Models in Digital Healthcare found that enabling multiple healthcare professionals to access shared patient data improves teamwork and overall treatment outcomes [6].

Recent survey papers have provided deeper insights into the broader technological trends shaping digital healthcare. Taimoor and Rehman

[7] conducted a comprehensive survey on AI and IoT-based Personalized Healthcare Services, focusing on how intelligent systems can deliver customized care and real-time patient monitoring. Shaik et al. [8] reviewed Multimodal Information Fusion for Smart Healthcare, mapping the journey from raw medical data to actionable insights, highlighting the role of data integration and analytics. Abdellatif et al. [9] presented a detailed study on Reinforcement Learning for Intelligent Healthcare Systems, explaining how adaptive algorithms can optimize treatment recommendations and resource management. [10] conducted a survey on Automation in Clinical Information Systems, outlining the growing impact of artificial intelligence in automating hospital workflows and improving diagnostic accuracy. Additionally, author’s [11] explored Healthcare Workflow Analysis, emphasizing that process automation and workflow redesign are key to improving the efficiency of medical services. These studies

collectively establish that cloud computing, automation, and AI are at the forefront of healthcare innovation. However, very few systems combine these technologies into one integrated, practical platform. The proposed *CareHub* system addresses this gap by utilizing Salesforce's cloud-based architecture, automation tools, and integration capabilities to deliver a unified, intelligent, and patient-centered healthcare solution.

Problem Statement

The healthcare industry is evolving rapidly, yet many hospitals and clinics continue to face major challenges in managing patient data, coordinating care teams, and ensuring timely medical intervention. Most healthcare institutions still rely on manual record-keeping systems or isolated digital tools that fail to communicate with each other. This often results in data redundancy, human errors, and delayed decision-making. In critical cases, such inefficiencies can directly impact the quality of patient care and lead to poor health outcomes. Chronic diseases such as diabetes and diabetic retinopathy require continuous monitoring, regular follow-ups, and accurate record maintenance. However, without an integrated system, it becomes difficult for healthcare providers to track patients' medical histories, test results, and ongoing treatments in real time. Additionally, the absence of workflow automation means that essential tasks such as appointment reminders, lab result updates, and insurance verifications are still handled manually, consuming valuable time and resources. There is a pressing need for a unified healthcare management platform that can automate day-to-day operations, centralize patient information, and enable real-time communication between doctors, nurses, and patients. The proposed system, *CareHub*, is designed to address these challenges by using Salesforce's cloud infrastructure to integrate all core healthcare processes—ranging from patient management and appointment scheduling to insurance validation and data security—under one intelligent, automated platform.

Proposed Approach

The proposed system, *CareHub*, aims to design an intelligent healthcare management solution using the Salesforce platform to simplify hospital operations, reduce manual effort, and improve patient outcomes. The approach focuses on bringing together all essential aspects of healthcare—patient information,

appointments, medications, laboratory results, and insurance details—into a unified, automated, and cloud-based platform. The development of *CareHub* begins with requirement analysis, where key challenges faced by hospitals and clinics are identified. Discussions with medical professionals help uncover issues such as inconsistent patient data, delayed follow-ups, and lack of coordination between healthcare teams. These observations form the basis for designing a system that directly addresses real-world healthcare problems. Once requirements are defined, object modeling is carried out to represent healthcare data in a structured way. Ten key Salesforce objects—Patient, Account, Care Plan, Care Team Member, Appointment, Health Insurance Policy, Medical Condition, Medication, Test/Activity, and Lab Test—are created to manage and interconnect every element of patient care. This model allows for a complete, 360-degree view of each patient's medical journey. The next stage involves customization and automation, achieved through a combination of Salesforce's declarative and programmatic tools. Declarative tools such as Flows, Validation Rules, and Process Builder handle simple automation tasks like appointment reminders, data validation, and record updates. For more complex logic, Apex Triggers and Apex Classes are implemented. For example, when a lab test result indicates a severe condition, the system automatically updates the patient's medical record and notifies the assigned care team. Similarly, if a patient misses multiple appointments, *CareHub* automatically schedules a follow-up plan and sends reminders to both the patient and doctor. The system's integration capability is another crucial component of the proposed approach. *CareHub* connects seamlessly with external Electronic Health Record (EHR) systems, insurance databases, and communication APIs such as SMS and email services. This ensures real-time data exchange and enhances coordination between medical departments, laboratories, and administrative units. Finally, the evaluation phase assesses the system's effectiveness by measuring key parameters such as accuracy of patient data, reduction in administrative workload, speed of information flow, and overall patient satisfaction. The results are expected to demonstrate that *CareHub* significantly improves healthcare efficiency, promotes teamwork, and enhances patient experience through timely communication and automation. In summary, the proposed approach leverages Salesforce's robust cloud infrastructure and automation capabilities to

build a healthcare system that is not only efficient and secure but also patient-centric. By integrating data, automating workflows, and connecting care teams, CareHub provides a practical solution to the challenges faced by modern healthcare organizations.

Methodology

The methodology adopted for developing CareHub follows a systematic and structured approach to ensure that every stage of the system's design and implementation contributes to creating an efficient, secure, and patient-centered healthcare platform. The process begins with requirement gathering, where insights are collected from healthcare professionals to identify challenges such as inefficient data handling, delayed lab results, and poor coordination between care teams. These requirements help define the scope of the system and guide the overall development process.

The next stage is object modeling, where the healthcare data structure is defined using Salesforce objects such as Patient, Account, Care Plan, Appointment, Medication, and Lab Test. This model ensures that all information is interlinked and easily accessible, providing a complete 360-degree view of each patient's journey. Following this, the customization and automation phase focuses on building intelligent workflows using Salesforce tools. Declarative tools like Flows, Process Builder, and Validation Rules handle simple tasks such as reminders and field validations, while programmatic tools like Apex Triggers and Apex Classes manage complex logic—for example, automatically updating medical conditions when lab results are abnormal or creating follow-up plans after missed appointments.

Once the internal workflows are established, the system undergoes integration with external platforms such as Electronic Health Record (EHR) systems, insurance verification databases, and communication APIs for sending alerts and reminders via SMS or email. This integration ensures seamless information exchange and enhances real-time coordination among different hospital departments. The final stage, evaluation, involves testing the performance, reliability, and accuracy of the system. Key metrics such as reduced manual workload, improved record accuracy, and increased patient satisfaction are measured to determine the system's effectiveness.

Overall, this methodology ensures that CareHub evolves from concept to a fully functional healthcare management system that leverages Salesforce's cloud infrastructure to deliver

automation, transparency, and better patient engagement.

Expected Result

The proposed CareHub system is expected to bring significant improvements in healthcare management by automating routine tasks, improving data accuracy, and strengthening coordination among healthcare professionals. By implementing automation through Salesforce tools such as Flows, Process Builder, and Apex Triggers, the system will greatly reduce the manual workload of hospital staff, allowing them to focus more on patient care rather than administrative duties. The centralized database will ensure that all patient information—including medical history, appointments, lab reports, and insurance details—is stored securely and can be accessed instantly from any department, promoting better communication and decision-making. Integration with external Electronic Health Record (EHR) systems and insurance platforms will further enhance efficiency by streamlining data exchange and claim validation. Real-time notifications and automated alerts will keep doctors, nurses, and patients updated about test results, treatment schedules, and follow-up appointments, ensuring timely medical interventions and minimizing missed diagnoses. As a result, hospitals are expected to see a noticeable improvement in operational speed, data consistency, and resource management, while patients will experience better transparency, faster responses, and overall satisfaction with healthcare services. In essence, CareHub is anticipated to create a more connected, reliable, and patient-focused healthcare environment by leveraging the automation and integration capabilities of Salesforce's cloud ecosystem.

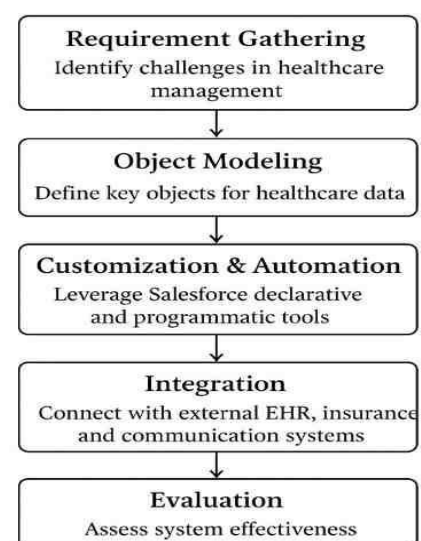


Figure 1. Flow of the Methodology

Conclusion

The proposed CareHub system presents an innovative step toward transforming traditional healthcare management into a smart, automated, and cloud-driven process. By leveraging Salesforce's powerful cloud infrastructure, declarative tools, and programmatic capabilities, CareHub successfully integrates the various aspects of healthcare operations into a unified digital platform. This system addresses the long-standing issues of fragmented patient data, delayed communication, and manual inefficiencies that continue to challenge healthcare providers. Through automation and intelligent workflows, CareHub enables healthcare professionals to focus more on patient care rather than administrative tasks. Features such as real-time lab result updates, appointment reminders, and insurance validations ensure that critical activities are performed accurately and without delay. The integration with external systems, including Electronic Health Records (EHR) and communication APIs, further enhances collaboration among doctors, nurses, and administrative staff, leading to improved coordination and more effective patient management. The expected results demonstrate that CareHub not only enhances operational efficiency but also contributes to better patient experiences by ensuring timely communication, transparency, and personalized care. Moreover, the system's scalable architecture allows it to adapt to different hospital sizes and healthcare needs, making it a flexible and sustainable solution for the future. In conclusion, CareHub proves that cloud-based automation through Salesforce can be a transformative approach to modern healthcare. By combining technology with compassion, it sets the foundation for smarter, data-driven, and patient-centric healthcare systems that prioritize both efficiency and human well-being. Future work can explore integrating artificial intelligence and predictive analytics into CareHub to support preventive healthcare and early diagnosis, further advancing the goal of intelligent healthcare delivery.

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