# Software Requirements Specification

For [Functional] The system should maintain Version 1.0

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## 1. Purpose  
  
This document specifies the requirements for a comprehensive Hospital Management System (HMS). The primary goal of the HMS is to streamline hospital operations, improve patient care, and enhance administrative efficiency. The business value lies in reduced operational costs, improved patient satisfaction, and better data-driven decision-making.  
  
## 2. Scope  
  
\* \*\*Included Features:\*\* Appointment management, schedule management, patient records management, online consultations, insurance integration, user management, e-prescribing, payment processing, automated notifications, reporting and analytics.  
\* \*\*System Boundaries:\*\* The system encompasses all aspects of patient care, administrative tasks, and financial operations within the hospital. It interacts with external insurance providers and e-prescribing platforms.  
\* \*\*Excluded Features:\*\* Inventory management of medical supplies, advanced medical imaging analysis, and integration with external research databases are explicitly excluded from the initial scope.  
  
## 3. Stakeholders  
  
\* \*\*Patients:\*\* Book appointments, access medical records, participate in online consultations. (Responsibility: Provide accurate information).  
\* \*\*Doctors:\*\* Manage schedules, conduct consultations, prescribe medications, access patient records. (Responsibility: Provide quality care and maintain accurate records).  
\* \*\*Administrators:\*\* Oversee hospital operations, manage user accounts, generate reports, configure system settings. (Responsibility: Ensure efficient and secure system operation).  
\* \*\*Insurance Providers:\*\* Verify insurance information, process claims. (Responsibility: Provide timely and accurate claim processing).  
  
## 4. Features  
  
\* \*\*Appointment Management:\*\* Allows patients to book, reschedule, and cancel appointments.  
\* \*\*Schedule Management:\*\* Enables doctors to manage their availability and appointment schedules.  
\* \*\*Patient Records Management:\*\* Securely stores and manages patient medical history, demographics, and other relevant information.  
\* \*\*Online Consultations:\*\* Facilitates virtual consultations between patients and doctors.  
\* \*\*Insurance Integration:\*\* Integrates with insurance providers for eligibility verification and claims processing.  
\* \*\*User Management:\*\* Provides secure user registration, login, and role-based access control.  
\* \*\*E-Prescribing:\*\* Enables doctors to electronically prescribe medications.  
\* \*\*Payment Processing:\*\* Securely processes patient payments for services rendered.  
\* \*\*Automated Notifications:\*\* Sends automated reminders and notifications to patients and doctors.  
\* \*\*Reporting and Analytics:\*\* Generates reports and provides analytics on key hospital metrics.  
  
## 5. Functional Requirements Section  
  
\* [FR-1]: Patients can book appointments. [High] (Source: F1)  
\* [FR-2]: Doctors can manage schedules. [High] (Source: F2)  
\* [FR-3]: Administrators can oversee hospital operations. [High] (Source: F3)  
\* [FR-4]: The system should maintain patient records. [High] (Source: F4)  
\* [FR-5]: The system should support online consultations. [High] (Source: F5)  
\* [FR-6]: The system should integrate with insurance providers. [Medium] (Source: F6)  
\* [FR-7]: The system should implement a robust user management system with registration, login, profile management, and RBAC based on user roles (patient, doctor, administrator). [High] (Source: F7)  
\* [FR-8]: The system should support video consultations with defined quality requirements, recording and screen sharing capabilities, a virtual waiting room, and HIPAA compliance. [High] (Source: F8)  
\* [FR-9]: The system should integrate with an e-prescribing platform and comply with relevant regulations. [Medium] (Source: F9)  
\* [FR-10]: The system should implement secure data storage and retrieval mechanisms, define access control policies, and adopt FHIR for interoperability. [High] (Source: F10)  
\* [FR-11]: The system should integrate with a secure payment gateway and ensure compliance with PCI DSS. [Medium] (Source: F11)  
\* [FR-12]: The system should implement an automated notification system for appointment reminders, medication refills, and other relevant events. [Medium] (Source: F12)  
\* [FR-13]: Patients can cancel appointments up to 24 hours before the scheduled time with no penalty. [Medium] (Source: F13)  
\* [FR-14]: Emergency appointments are accommodated by rescheduling existing appointments based on urgency. [High] (Source: F14)  
\* [FR-15]: The system should implement robust security measures, including data encryption, access control, audit trails, and regular security assessments. [High] (Source: F15)  
\* [FR-16]: The system should provide reporting and analytics features to track relevant metrics (e.g. patient demographics, appointment volumes, revenue) and generate customized reports. [Medium] (Source: F16)  
  
## 6. Non-Functional Requirements Section  
  
\* [NFR-1]: The system should load patient records in less than 1 second. [High]  
\* [NFR-2]: The system should be able to handle a 25% growth in the number of patients and doctors over the next 3 years. [Medium]  
\* [NFR-3]: The system should have less than 1 hour of downtime per month. [High]  
\* [NFR-4]: The system should have 99.5% uptime. [High]  
\* [NFR-5]: Patient data should be encrypted using RSA-2048 encryption. [High]  
  
## 7. Security Requirements Section  
  
\* [SR-1]: All patient data must be encrypted at rest and in transit. [High]  
\* [SR-2]: Access to patient records must be restricted based on user roles and permissions. [High]  
\* [SR-3]: The system must comply with all relevant data privacy regulations, including HIPAA. [High]  
\* [SR-4]: Regular security audits and vulnerability assessments must be conducted. [High]  
\* [SR-5]: The system must maintain audit trails of all user activity. [High]  
  
## 8. Constraints Section  
  
\* \*\*Technical Limitations:\*\* The system must be compatible with existing hospital infrastructure.  
\* \*\*Business Rules:\*\* Patients can only cancel appointments up to 24 hours before the scheduled time without penalty. Emergency cases require immediate attention and may necessitate rescheduling existing appointments.  
\* \*\*Regulatory Requirements:\*\* The system must comply with HIPAA, PCI DSS, and other relevant regulations. The system must adhere to FHIR standards for data interoperability.  
  
## 9. Priorities Section (MoSCoW)  
  
\* \*\*Must Have:\*\* Appointment booking, patient record management, user authentication, security, HIPAA compliance.  
\* \*\*Should Have:\*\* Online consultations, insurance integration, e-prescribing, automated notifications, reporting and analytics.  
\* \*\*Could Have:\*\* Advanced reporting features, integration with wearable devices.  
\* \*\*Won't Have:\*\* Inventory management of medical supplies, advanced medical imaging analysis.  
  
## 10. Additional Section  
  
The system should be designed with scalability in mind to accommodate future growth and evolving needs. Future considerations include integration with telehealth platforms and expansion of reporting capabilities. The system should be designed to be modular to allow for future expansion and integration with other systems.