**Software Requirements Specification for Healthcare Provider Digital Outreach Platform**

**1. Introduction**

**1.1 Purpose**

The primary purpose of this application is to enhance the digital reach of small to medium-sized healthcare providers to their patients. By offering a cost-effective, multi-tenant cloud-hosted solution, the app aims to help these providers overcome the barrier of high expenses associated with establishing their own digital presence, thereby improving their market share through enhanced outreach and customer satisfaction.

**1.2 Scope**

The scope of this project includes the development and deployment of a multi-tenant SAAS healthcare application with distinct functionalities for patients, healthcare providers (staff), and doctors. The application will focus on out-patient services initially, providing a framework for future expansion.

• Patients can register and create their medical profile.

• Patients can book in-patient or virtual appointments.

• Patients can pay for appointments online through multiple channels.

• Patients can upload their past medical history.

• Patients can download prescriptions.

• Patients can book follow-up visits to a doctor.

• Healthcare providers (staff) can manage their services list.

• Healthcare providers (staff) can onboard healthcare practitioners.

• Healthcare providers (staff) can remove practitioners.

• Healthcare providers (staff) can manage appointments.

• Healthcare providers (staff) can upload prescriptions and medical history for patients.

• Healthcare providers (staff) can generate management reports (financial, operational, customer).

• Doctors can view their appointments.

• Doctors can update patient medical history.

• Doctors can change appointment status.

• Doctors can create patient prescriptions.

• Doctors can generate a printout of the prescription for the patient.

• The app will be hosted on a multi-tenant SAAS platform.

• Data of each service provider will be kept secure and distinct.

• Patient medical records (EHR) will reside in the client facility, not on the app's multi-tenant cloud.

• The app will fetch, insert, and update EHR data from client facilities.

• Authentication processes will comply with HIPAA and GDPR.

• Patient registration is fully automated.

• Healthcare staff user accounts are created by a system admin.

• Doctor login accounts are created by healthcare staff during onboarding.

• Only a patient can create an appointment.

• Patients cannot delete appointments.

• Patients can reschedule appointments before 24 hours.

• Doctors can modify appointments but cannot delete them.

• Appointments can only be deleted by healthcare staff.

• Patients can only view prescriptions.

• Doctors and healthcare staff can create and modify prescriptions.

• Management reports can be generated by healthcare staff only.

• Patients will be given an option of an AI driven symptom checker.

• The AI chatbot will analyze patient symptoms and suggest possible causes and the type of doctor to consult.

Integration with third party suppliers such as ambulance operators, pharmacist, and medical tourists are out of scope of this app presently. Currently this app doesnt support the IPD journey of patients. Since this is a multi-tenant SAAS environment, this app would not follow an aggregator model. Hence, each patient will be linked to a single healthcare provider app.

**1.3 Definitions, Acronyms, and Abbreviations**

• SAAS: Software-as-a-Service

• EHR: Electronic Health Record

• HIPAA: Health Insurance Portability and Accountability Act

• GDPR: General Data Protection Regulation

• Tenant: Refers to a single instance/organization (a healthcare provider) within the multi-tenant application.

• IPD: In-Patient Department (Journeys related to hospitalization).

• Out-patient: Services provided to patients who are not hospitalized.

• BRD: Business Requirements Document

**1.4 References**

No external references were provided.

**1.5 Overview**

This application is designed as a multi-tenant Software-as-a-Service (SAAS) platform specifically for small to medium-sized healthcare providers. It offers intuitive and user-friendly journeys for patients, enabling them to manage their healthcare consultations efficiently with minimal clicks. Key features include appointment booking and management (initial focus on out-patient services), return visit scheduling, rescheduling, access to digital prescriptions, and teleconsultations. The platform ensures data separation per tenant and interacts with external EHR systems without storing primary EHR data in the cloud. The architecture is designed for extensibility. Authentication adheres to HIPAA and GDPR. The document proceeds to detail the overall description of the product, user characteristics, constraints, assumptions, dependencies, and specific functional and non-functional requirements.

**2. Overall Description**

**2.1 Product Perspective**

The Healthcare Provider Digital Outreach Platform is a self-contained, multi-tenant SAAS application. It is not an aggregator model; each patient is linked to a single healthcare provider tenant. The system acts as an interface and management tool for digital patient interactions, sitting alongside and interacting with existing client-side Electronic Health Record (EHR) systems. It relies on external payment gateways for online transactions and cloud infrastructure for hosting.

**2.2 Product Functions**

The system provides core functionalities centered around digital interaction for healthcare services, primarily focusing on out-patient journeys initially. These include:

• Patient self-registration and profile management.

• Appointment booking (in-patient and virtual), rescheduling, and follow-up scheduling.

• Online payment processing for appointments.

• Management of patient medical history documents (uploading, viewing).

• Access to digital prescriptions (viewing/downloading for patients, creation/modification for staff/doctors).

• AI-driven symptom checking for patients.

• Teleconsultation capabilities.

• Healthcare provider staff management of services, practitioners, and appointments.

• Healthcare provider staff reporting capabilities.

• Doctor management of their appointments and patient records/prescriptions.

• Interaction with external EHR systems for patient record updates.

**2.3 User Characteristics**

The system supports four primary user roles:

• Patient:
Typical end-user seeking healthcare services.
Expected to have basic digital literacy for using web/mobile applications.
Permissions: Self-registration, profile management, book appointments, pay, reschedule (limited), upload history, view/download prescriptions, use AI checker. Cannot delete appointments or modify prescriptions.

• Typical end-user seeking healthcare services.

• Expected to have basic digital literacy for using web/mobile applications.

• Permissions: Self-registration, profile management, book appointments, pay, reschedule (limited), upload history, view/download prescriptions, use AI checker. Cannot delete appointments or modify prescriptions.

• Healthcare Provider Staff:
Administrative or clinical staff at the provider facility managing operations.
Expected to be proficient in using administrative interfaces.
Permissions: Manage services, onboard/remove doctors, create doctor logins, manage all appointments (including deletion), upload patient history, create/modify prescriptions, generate reports. Account created by System Admin.

• Administrative or clinical staff at the provider facility managing operations.

• Expected to be proficient in using administrative interfaces.

• Permissions: Manage services, onboard/remove doctors, create doctor logins, manage all appointments (including deletion), upload patient history, create/modify prescriptions, generate reports. Account created by System Admin.

• Doctor (Healthcare Practitioner):
Medical professional providing consultation and treatment.
Expected to be proficient in using interfaces for viewing schedules, updating records, and writing prescriptions.
Permissions: View appointments, change appointment status (limited), update patient history (via system interaction with EHR), create/modify prescriptions, generate prescription printouts. Cannot delete appointments. Account created by Healthcare Staff.

• Medical professional providing consultation and treatment.

• Expected to be proficient in using interfaces for viewing schedules, updating records, and writing prescriptions.

• Permissions: View appointments, change appointment status (limited), update patient history (via system interaction with EHR), create/modify prescriptions, generate prescription printouts. Cannot delete appointments. Account created by Healthcare Staff.

• System Admin:
Administrator responsible for initial system setup and user management for healthcare provider staff.
Permissions: Create Healthcare Staff accounts. (Based on description, this role seems limited to initial setup/staff onboarding).

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• Permissions: Create Healthcare Staff accounts. (Based on description, this role seems limited to initial setup/staff onboarding).

**2.4 Constraints**

• Multi-tenancy: Strict data segregation between different healthcare provider tenants is mandatory.

• EHR Data Handling: The system shall not store the primary patient EHR data on the multi-tenant cloud platform. It must interact with external client-side EHR systems.

• Regulatory Compliance: The system must strictly adhere to relevant data protection laws, including HIPAA and GDPR, for all authentication, authorization, and data handling processes.

• Patient Linking: Each patient account must be linked to a single healthcare provider tenant.

• Initial Scope: Initially limited to out-patient service journeys.

**2.5 Assumptions**

This projects assumes that healthcare providers will allow interfacing this app with their EHR systems.

**2.6 Dependencies**

• External EHR Systems: Critical dependency. The application requires an interface/API to connect with diverse client-side EHR systems for patient record interactions (fetch, insert, update). The feasibility of this interfacing is an explicit assumption.

• Online Payment Gateways: Dependency on one or more external payment processing services to handle online payments for appointments.

• Regulatory Frameworks (HIPAA, GDPR): The system design and implementation must comply with these data protection laws, impacting security, privacy, consent mechanisms, and data handling practices.

• Cloud Infrastructure Provider: The underlying cloud service provider (e.g., AWS, Azure, GCP) is a fundamental dependency for hosting, scalability, and data storage (for non-EHR data).

• AI Symptom Checker Service: Dependency on the technology/service providing the AI chatbot functionality, whether integrated or an external API.

**3. Specific Requirements**

**3.1 Functional Requirements**

**3.2 Non-Functional Requirements**

• Cost-Effectiveness:
The system shall be a cost-effective solution for small to medium-sized healthcare providers.

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• Usability & Efficiency:
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• Security & Privacy:
The system shall ensure secure separation of data between different healthcare provider tenants.
The system shall maintain patient data security and privacy in compliance with applicable regulations (HIPAA, GDPR).
The system's authentication and authorization processes shall strictly adhere to relevant data protection laws, including HIPAA and GDPR.
The system shall implement role-based access controls for Patients, Healthcare Staff, and Doctors.

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• The system's authentication and authorization processes shall strictly adhere to relevant data protection laws, including HIPAA and GDPR.

• The system shall implement role-based access controls for Patients, Healthcare Staff, and Doctors.

• Extensibility & Maintainability:
The system architecture shall facilitate the faster addition of new services and stakeholder journeys.

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**3.3 Technical Requirements, Architecture, and Design Constraints**

• Platform Type:
The system shall be a multi-tenant Software-as-a-Service (SAAS) platform.

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• Hosting:
The system shall be cloud-hosted.

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• Architecture & Data Segregation:
The system architecture shall provide distinct application instances for each healthcare provider tenant.
Application-specific data (e.g., users, appointments, configurations) shall be stored within the multi-tenant cloud environment, securely segregated by tenant.
The system shall not store the primary patient medical records (EHR) on the multi-tenant cloud platform; EHR data shall reside within the client facility's systems.
The system architecture shall be extensible.
The system shall enforce that each patient account is linked to a single healthcare provider tenant.
The system shall utilize unique identifiers (e.g., Tenant ID, User ID, Appointment ID) for managing entities.

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• The system architecture shall be extensible.

• The system shall enforce that each patient account is linked to a single healthcare provider tenant.

• The system shall utilize unique identifiers (e.g., Tenant ID, User ID, Appointment ID) for managing entities.

• Integrations:
The system shall integrate with external client-side EHR systems via specified interfaces/APIs.
The system shall integrate with one or more external online payment gateways.
The system shall rely on a cloud infrastructure provider for hosting and underlying services.
The system shall integrate with or include an AI service for symptom checking.

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**4. Data Model (Conceptual)**

(This section provides a high-level overview of the main conceptual entities and their relationships as inferred from the requirements. A detailed logical or physical model would be separate).

• Tenant/Healthcare Provider: Central entity, manages services, doctors, staff. Has many Patients, Doctors, Staff, Services.

• Patient: Belongs to one Tenant. Has many Appointments, Prescriptions (view). Stores profile, links/references to external EHR.

• Doctor: Belongs to one Tenant. Provides many Services. Has many Appointments (provider), Prescriptions (creator).

• Healthcare Staff: Belongs to one Tenant. Manages Tenant configurations, users, appointments, reports.

• Appointment: Belongs to a Tenant, links Patient, Doctor, Service. Has status, type (in-patient/virtual), time, payment status.

• Service: Belongs to a Tenant. Provided by certain Doctors.

• Medical History/EHR Reference: Associated with a Patient. Pointers/summaries/uploaded docs referencing/containing external EHR data.

• Prescription: Associated with an Appointment, Patient, Doctor, Tenant. Contains treatment details.

• Payment Transaction: Associated with an Appointment, Patient. Records payment details.

**5. Conclusion**

This Software Requirements Specification outlines the requirements for the Healthcare Provider Digital Outreach Platform, a multi-tenant SAAS application aimed at improving the digital presence and patient engagement for small to medium-sized healthcare providers. By focusing on core out-patient functionalities, ensuring data security and regulatory compliance, and providing intuitive user interfaces, the platform is designed to be a cost-effective solution to enhance outreach, streamline patient interactions, and ultimately contribute to the growth and efficiency of healthcare providers.

**6. Appendices**

No appendices are included in this document.