

# Software Requirements Specification (SRS)

## 1. Introduction

### 1.1 Purpose

This section will develop a Software Requirements Specification (SRS) for a health tech application that will:

- In-app and in-person appointment scheduling
- Upload prescriptions for home delivery
- Disease notification through geo-capabilities
- Blood donation option
- Doctors and users health community
- Doctors can blog about any and everything

This SRS is for anyone related to or affected by the development of the application. Developers, testers, and end users will have information on functional and non-functional requirements to better facilitate communication and technological access to health.

### 1.2 Scope

**The application will be used in the areas of:**

An integrated web and mobile application that aggregates diverse healthcare service providers. Key functionalities include but are not limited to consult appointment booking for doctors, prescription uploading, and community affiliation. Application created per medical standards (HIPAA) for privacy and safety. Supports up to 10,000 concurrent users (more with scaling).

### 1.3 Definitions, Acronyms, and Abbreviations

- **Consult Appointment Booking (online):** Doctor teleconsultation is booked through the application.
- **Consult Appointment Booking (offline):** Face-to-face appointment booked through the application.
- **Prescription Upload:** Upload of prescriptions to allow medication requests.
- **Home Delivery:** Drugs bought are brought to the patient's home.

- **Disease Alerts:** Users receive disease/pollution alerts based on geographical occurrence or frequency.
- **Blood Donation System:** Facilitates finding blood donation NGOs or agencies to get blood donors.
- **Doctor Community:** Community of doctors.
- **User Community:** Community of users.
- **Doctor Blogging:** Allows users access to blogs written by doctors.
- **HIPAA:** Health regulatory compliance (Health Insurance Portability and Accountability Act).

**International standards and regulations linked are:**

Digital Health WHO Recommendations, Community design software, Stacked Overflow (for citation purposes), Health information privacy standards/regulations (HIPAA governed, etc.).

## **2. Elaborate Project Proposal**

### **2.1. Rationale/Background for Project**

This project intends to solve the following issues plaguing the world of health/future of health:

- Accessing appointments/booking a physician is not easy
- Difficult access for medications
- Not enough educated awareness of what's going on in healthcare/community issues or the health of our world
- Poor communication between the professional and the patient

The system is an isolated unit. It has everything from hardware and software to make it a solid operating system; even the doctors that interface with the application in a non-static way are part of the system. Eventually, the product will interface with:

- Patients needing appointments and prescriptions, and health alerts
- Doctors needing tele-consultations and alerts, and blogging
- Pharmacists needing to respond to drug inquiries and drug deliveries
- NGOs and donors wanting to help with blood donation opportunities

### **2.3 Features of the Product**

- 1) **Appointment Scheduling**
  - a) Book, change, or cancel healthcare appointments via the web or in person.
- 2) **Prescription Ordering and At-Home Delivery**

- a) Upload prescriptions, pay for medication, and receive tracking for at-home delivery.
- 3) **Location-Based Notifications**
  - a) Notify users of outbreaks or pollution in their vicinity.
- 4) **Blood Bank**
  - a) Connects blood donors, blood donor facilities, and patients requiring transfusion.
- 5) **Message Boards/Forums**
  - a) Dedicated message boards for practitioners and patients relative to health issues.
- 6) **Doctor's Blogs**
  - a) Doctors can publish articles and blogs for users to peruse.

## 2.4 User Classes and Characteristics

- **Patients:** The main end users, ranging from novice to expert technology users.
- **Doctors:** Practitioners in the medical field with various IT skills; need to provide feedback and create outputs.
- **Pharmacies:** Merchants who stock and distribute drugs.
- **NGOs / Donors:** Fund and manage blood donation initiatives.
- **Administrators:** Expected to run the application, create user accounts, connect with government agencies.

## 2.5 Operating Environment

- **Hardware:** Mobile phones (iOS, Android), desktops/laptops.
- **Software:**
  - Frontend - React
  - Backend - Spring Boot
  - Database - PostgreSQL
  - Cloud - AWS/Azure

## 2.6 User Interface Constraints

- **Network:** Users must be connected to the internet to use all features. If they schedule something while not connected, they may have limited access to connectivity features.

## 2.7 Design and Implementation Constraints

- **Healthcare Compliance:** Application must be HIPAA compliant or regulation compliant based on local requirements.
- **Response Time:** Application must load and respond to a user in approximately 2 seconds.
- **Not for a Future Change:** Application must support 10,000 users in active, concurrent statuses simultaneously with an ability for growth in the future.
- **Localization:** Application must be multilingual based on user's location/language defaults or set preferences.

## 2.8 Assumptions and Dependencies

- Users will have internet access when they require access to online features.
- Integrations with 3rd parties (payment processing, find-me/location services) will have reliable APIs.
- The system will need to connect to external pharmacy systems to check for drug availability and costs.
- The system will need access to geo-location services on user devices for alerts.

# 3. System Requirements

## 3.1 Functional Requirements

### Appointment Features

- **FR-1:** Users will be able to schedule, cancel and reschedule (virtual/in-person) appointments.
- **FR-2:** Physicians will be able to view and change availability calendar.
- **FR-3:** The system will send SMS/email reminders for scheduled appointments.

### Prescription and Delivery Module

- **FR-4:** Physicians will be able to provide digital prescriptions during virtual appointments.
- **FR-5:** Users will be able to exit drug stores with prescriptions to obtain drugs from approved pharmacies.
- **FR-6:** Users will be able to track their order with estimated time of delivery.

### Geo-Fencing

- **FR-7:** Users will be alerted if there is a disease outbreak/pollution in their area.
- **FR-8:** Users can choose to receive alerts or not.

### Blood Donation Module

- **FR-9:** Users will be able to find blood donors/NGO/Organizations by location and blood type.
- **FR-10:** Blood donors will have the ability to set up a profile with availability and details on how to reach them.

### **Community Discussion Forum**

- **FR-11:** Users will be able to create new threads and respond to others regarding any health concerns they may have.
- **FR-12:** Doctors will have a separate forum in which they can respond with their professional opinion and expertise.

### **Doctor Blogging**

- **FR-13:** Physicians must have the ability to write and create blogs.
- **FR-14:** Users must have the ability to read blogs and comment on them.

## **3.2 External Interface Requirements**

- **Payment Gateway:** Third-party services will be required to facilitate payment for appointments or medicine requests.
- **Geo-Location Services:** External calls will be made to geo-locational APIs like Google Maps, location libraries, etc., for alerts about specific diseases.
- **Video Conferencing:** Optional APIs will be called upon like Zoom, WebRTC for telehealth.

## **3.3 Performance Requirements**

- **PR-1:** The system shall respond to a user request to make an appointment/forum post with acknowledgment within 2 seconds under average load.
- **PR-2:** The system shall support 10,000 concurrent user sessions with a performance goal of 99.9% uptime.

## **3.4 Logical Database Requirements**

- **DR-1:** User profile (patient, doctor, donor, etc.), prescriptions, and appointments required for the database; must be in a PostgreSQL environment.
- **DR-2:** User sensitive data must be encrypted at rest and in motion.

## **3.5 Non-Functional Requirements**

### 1) **Reliability**

- a) **NFR-1:** The system shall maintain 99.9% uptime and incorporate failover mechanisms.

### 2) **Availability**

- a) **NFR-2:** The application shall remain accessible 24/7, except during scheduled maintenance.

### 3) **Scalability**

- a) **NFR-3:** The system architecture shall allow scaling to support more than 10,000 concurrent users as demand grows.

### 4) **Security**

- a) **NFR-4:** The system shall use secure protocols (HTTPS/TLS) and implement role-based access control.
- b) **NFR-5:** Must comply with HIPAA (or equivalent) for handling patient data.

### 5) **Maintainability**

- a) **NFR-6:** The system shall follow a modular architecture, allowing for component-level updates and minimal service interruption.

### 6) **Portability**

- a) **NFR-7:** The system shall be accessible via major operating systems (iOS, Android, Windows, macOS).

## 3.6 Control Description

- **Role-Based Access Control (RBAC):** Differentiates access levels for patients, doctors, administrators, pharmacies, and NGOs.
- **Data Versioning and Audit Trail:** The system logs all critical actions (appointment changes, prescription uploads, etc.) for traceability.

## 4. Other Requirements

### 4.1 Site Adaptation Requirements

- **Geo-location:** Provide disease alerts tailored to the user's current or selected location.
- **Local Pharmacy Integration:** Collaborate with local pharmacies for medicine availability and delivery logistics.

### 4.2 Environment Characteristics

- **Hardware:** Must function efficiently on devices with 4GB RAM or higher.

- **Peripherals:** (Optional) Barcode scanners for validating paper prescriptions.

### 4.3 Maintenance and Support

- **Scheduled Maintenance:** Performed during off-peak hours, with prior user notifications.
- **Customer Support:** Provide channels (chat, email) for troubleshooting user issues.

### 4.4 Appendix / Glossary

- **HIPAA:** U.S. legislation that provides data privacy and security provisions for safeguarding medical information.
- **Failover:** The automatic switching to a redundant or standby system upon the failure of a primary system.

## 5. Approval and Revision History

Version	Date	Description
1.0	2025-01-15	Initial draft of SRS
1.1	TBD	Revisions/Updates