



MIST

Technology for
Advancement

Military Institute of Science and Technology

SOFTWARE ENGINEERING SESSIONAL

SUBJECT CODE: CSE-320

REQUIREMENT ENGINEERING DOCUMENT

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Group 7

Requirement Engineering Document: On-Demand Healthcare Platform

1 Feasibility Study

Project Name: On-Demand Healthcare Platform for Bangladesh

Client: *ParentsCare Ltd.*

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Objective:

The primary objective of this project is to launch a reliable scalable on-demand healthcare platform in Bangladesh through mobile apps for users and providers. This platform will tackle accessibility barriers through features explicitly designed to:

- **Search & book services:** Allowing users to easily locate and book nearby healthcare services (caregivers, ambulances) using location-based or filtered search.
- **Enable Direct Communication:** Providing a secure, real-time in-app messaging & notification system, facilitating clear and efficient coordination between users and providers.
- **Customer assistance:** Enabling the users to get proper service through our custom-trained ML models on the data set of medicine and healthcare.
- **Medicine info & reminders** Allowing users to scan their prescription to view the medicine name & info, and set medicine reminders.
- **Service tracking:** Offer real-time tracking of service providers (e.g., ambulance arrival) and real-time notifications about the caregiver's service.

1.1 Feasibility Areas

1.1.1 Technical Feasibility

- **Technology Stack:**
 - **Frontend:** Flutter (for cross-platform mobile apps), Flutter-web (for Admin Dashboard).
 - **Backend:** Node.js (for scalability and speed), Python (for data analysis/ML integration).
 - **Database:** PostgreSQL (for relational data management), potentially MongoDB (for unstructured data like user feedback).
 - **Cloud Platform:** AWS (Amazon Web Services) or Google Cloud Platform (GCP) for hosting, scalability, and infrastructure.
 - **API Gateway:** RESTful APIs using a framework like Express.js.

- **Infrastructure:** The project requires robust server infrastructure, including:
 - Load balancers to handle user traffic.
 - Secure storage for sensitive patient data.
 - Redundant servers for high availability and business continuity.
 - We will leverage cloud service providers for the scalability and resilience of this infrastructure.
- **Mobile Device Compatibility:** The user app will be compatible with both Android and iOS devices.
- **GPS Capabilities:** Integration with GPS for ambulance booking and nearby service provider discovery.
- **Payment Integration:** Secure integration with mobile wallets (bKash, Nagad, etc.) and credit/debit card gateways.
- **SMS Gateway:** Implementation of an SMS gateway for notifications, alerts, and OTP verification.
- **Technical Expertise:** The project team possesses, or can acquire, the required technical skills for platform development, maintenance, and security.

1.1.2 Economic Feasibility

- **Estimated Cost Breakdown:**
 - **Development:** 20,000\$ (Software Development, UI/UX Design, Project Management).
 - **Infrastructure:** 5,000\$ (Server costs, database storage, cloud services).
 - **Marketing:** 15,000\$ (Digital campaigns, community engagement).
 - **Operations:** 30,000\$ (Salaries, support, operational software).
 - **Legal and Compliance:** 4,000\$ (Legal consultation, licensing).
 - **Contingency:** 2,000\$ (Unforeseen expenses).
 - **Total Estimated Cost:** 76,000\$ (Initial estimates).
- **Revenue Streams:** Subscription fees, commissions on bookings, partnerships, premium services (see details in the financial projections section below).
- **Long-Term Savings:** Reduced costs through efficient scheduling, optimized resource allocation, and streamlined communication. We will also analyze the potential economic impact on the community through the platform.
- **Cost-Benefit Analysis:** A comprehensive analysis will be conducted to compare the costs versus the benefits of the platform.

1.1.3 Operational Feasibility

- **Training Programs:** Training for platform staff, service providers (caregivers, ambulance drivers), and administrative personnel on how to use the system efficiently.
- **Usability:** User-friendly UI/UX for mobile apps and admin dashboard, designed to be easily accessible for all levels of tech literacy. This will include localized language support (Bangla).
- **Customer Support:** A multi-channel customer support system (email, phone, in-app chat) to address user queries and platform-related issues.
- **Service Provider Enrollment:** A clear, structured onboarding process for healthcare professionals to join the platform.
- **Scalability and Management:** Ability to scale the platform in terms of users, features, and geographic reach. This also includes the capacity to manage a high volume of concurrent requests and transactions.

1.1.4 Schedule Feasibility

- **Estimated Timeline:**
 - **Requirement Elicitation & Planning:** 3 weeks
 - **Design (UI/UX) & Prototyping:** 6 weeks
 - **Backend & API Development:** 12 weeks
 - **Frontend (User & Provider App) Development:** 10 weeks
 - **Admin Dashboard Development:** 8 weeks
 - **Integration and Testing:** 6 weeks
 - **Deployment & Training:** 4 weeks
 - **Total Estimated Time:** 49 weeks (approx. 12 months)
- **Project Management Tools:** We will use project management software for task allocation, progress tracking, and communication.
- **Phased Rollout:** Initial launch with limited features and service area followed by gradual expansion.

1.1.5 Regulatory Feasibility

- **Compliance:** The platform will adhere to all relevant health, data privacy, and telemedicine regulations in Bangladesh.
- **Licensing:** A thorough analysis of required licenses and permits for online healthcare service operation.
- **Legal Consultations:** Engagement of legal advisors to ensure compliance and mitigate risks.

1.1.6 Feasibility Conclusion

The On-Demand Healthcare Platform is deemed feasible across technical, economic, operational, schedule, and regulatory perspectives. However, success hinges on a solid execution strategy, ongoing adaptation, and a continued focus on user experience and platform security.

2 Requirement Elicitation

2.1 Techniques Used

- **Stakeholder Interviews:** In-depth interviews with key stakeholders (healthcare providers, potential users, administrators, health authorities).
- **Surveys and Questionnaires:** Targeted surveys to collect user preferences, pain points, and needs.
- **Focus Group Sessions:** Facilitated group discussions to gather feedback and insights from a diverse group of stakeholders.
- **Document Analysis:** Review of existing healthcare regulations, guidelines, and service delivery models.
- **Brainstorming Sessions:** Collaborative sessions with the development team and stakeholders to generate ideas and requirements.
- **Competitive Analysis:** Studying existing on-demand healthcare platforms to identify best practices and areas of innovation.

2.2 Stakeholders

1. **Users/Patients:** Individuals seeking healthcare services (e.g., caregivers, ambulance booking).
2. **Service Providers:** Healthcare professionals offering services via the platform (e.g., nurses, caregivers, ambulance drivers).
3. **Administrators:** Platform managers responsible for user management, system configuration, and reporting.
4. **Healthcare Organizations:** Hospitals, clinics, and other entities that may partner with the platform.
5. **Regulatory Bodies:** Government agencies and health authorities overseeing healthcare delivery.
6. **Investors/Funders:** Entities providing funding for platform development and operations.

2.3 Functional Requirements

2.3.1 User App

- **Service Booking:** Secure and reliable booking of caregivers, ambulance services, and other healthcare services.
- **Location-Based Search:** Find service providers within the user's vicinity.
- **User Profiles:** Creation and management of user profiles, including medical history (optionally).
- **Payment Integration:** Secure payment processing with digital wallets and cards.
- **Real-Time Tracking:** Track booked service providers (e.g., ambulance arrival).
- **In-App Messaging:** Secure chat functionality for users and service providers.
- **Service History:** View past bookings and service requests.
- **Rating & Reviews:** Ability to rate and leave reviews for services.
- **Notification System:** Push notifications for updates, reminders, and critical alerts.

2.3.2 Service Provider App

- **Request Management:** Accepting/Rejecting booking requests and updating availability.
- **Service Updates:** Updating service progress, location, and estimated arrival time.
- **Profile Management:** Managing service provider profiles (skills, qualifications, certificates).
- **Navigation Assistance:** Integration with maps for efficient navigation.
- **In-App Messaging:** Secure chat with users.
- **Earnings Tracking:** Monitoring payments and earnings.
- **Availability Management:** Setting and updating work schedule.
- **Verification Process:** Uploading documents for service provider verification.

2.3.3 Admin Dashboard

- **User Management:** Monitoring user activity and account status.
- **Service Provider Management:** Verifying credentials and managing profiles.
- **Booking Management:** Oversight of all bookings, including cancellations.
- **Activity Monitoring:** Tracking user activity, service usage, and platform performance.
- **Reporting and Analytics:** Generating reports on usage patterns, service delivery, and revenue.

- **System Configuration:** Managing platform settings, pricing, and user access levels.
- **Payment Management:** Overseeing payment processing and payouts to service providers.
- **Content Management:** Updating platform content, FAQs, and support information.

2.4 Non-Functional Requirements

2.4.1 Performance

- **Response Time:** Fast response times for user requests and platform operations.
- **Scalability:** Ability to handle a growing user base and service volume.
- **System Uptime:** High availability and minimal downtime (99.9% uptime).

2.4.2 Security

- **Data Encryption:** Encryption of all sensitive data during transmission and storage.
- **Authentication and Authorization:** Multi-factor authentication, secure login, role-based access control.
- **Secure API Endpoints:** Security protocols to protect API access and prevent unauthorized use.

2.4.3 Usability

- **Intuitive Interface:** Easy-to-use interface for all user types, regardless of technical skills.
- **Accessibility:** Accessible for users with disabilities, including localized language options.
- **Clear Navigation:** Simple and intuitive navigation through the app.

2.4.4 Reliability

- **Data Integrity:** Ensuring data consistency and reliability.
- **Error Handling:** Robust error handling and recovery mechanisms.

2.4.5 Maintainability

- **Modular Design:** Design for easy maintenance, updates, and feature expansion.
- **Code Quality:** Adherence to coding standards for maintainability.

2.5 Tools Used

- **Interviews:** Structured interviews with healthcare professionals and potential users.
- **Online Surveys:** Surveys using Google Forms to collect user data and feedback.
- **Whiteboard Sessions:** Collaborative brainstorming and requirements gathering using a whiteboard.
- **Project Management Software:** Jira, and Trello for planning and tracking requirements.
- **UI/UX Prototyping Tools:** Figma for creating interactive prototypes.

2.6 Elicitation Outcome

A comprehensive and well-documented set of functional and non-functional requirements that aligns with stakeholders' needs and platform objectives, setting a strong foundation for the subsequent stages of development. This documentation will be continuously reviewed and updated as needed during the development process.