B.S. Abdur Rahman Crescent Institute of Science & Technology
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Project Report by The Team

# WELLNESS WIZARDS

## *Product Category Creation for Healthcare Kiosks in India*

Submitted by

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# ACKNOWLEDGEMENT

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Thank you all for making this project a success.

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# ABSTRACT

The Smart Health App and Kiosk project provides a digital healthcare solution designed to improve patient experience by addressing common issues and increasing access to medical services. This system combines a user-friendly mobile app with a self-service physical kiosk, creating a smooth and personalized healthcare journey. User convenience and strong security are central to its design. Patients go through an easy registration process to receive a unique patient identification number. This ID acts as a key for all their medical data, securely storing their entire medical history, including past visits, prescriptions, vital signs, and diagnostic reports. This information is essential for ongoing care and effective health management.

Using this unique ID, Face ID authentication is a key feature. It allows quick, touchless kiosk check-ins that significantly reduce patient wait times and promote a cleaner environment. The mobile app supports multiple languages (English, Hindi, Tamil, Bengali, Marathi, Telugu, Kannada, Malayalam), making content accessible in the user's preferred language. This helps eliminate communication barriers. Patients can easily book appointments, with a real-time calendar preventing the selection of unavailable dates. It guides them to open slots and reduces frustration. A unique digital QR code speeds up kiosk check-in. At the kiosk, authentication through Face ID, fingerprint, or patient ID leads to automated vital sign capture and seamless teleconsultations, all connected to their centralized medical record. After a consultation, patients can instantly access digital summaries and prescriptions using their unique ID. Secure digital payment options are also included. Built with HTML, CSS, JavaScript, and Python Flask, this project aims to provide more connected, streamlined, and patient-centered healthcare.

# INTRODUCTION

In today's global healthcare landscape, the need for systems that are effective, efficient, universally accessible, and personalized has become increasingly urgent. As populations grow and medical advancements speed up, traditional healthcare infrastructures often struggle to keep up with rising demands and changing patient expectations. Common issues, like long wait times in clinics, complicated manual registration, and scattered medical records across different systems, lead to a poor patient experience and create heavy administrative burdens for providers. Additionally, in a world that is connected yet diverse in language, communication barriers can hinder accurate diagnosis and treatment. This highlights the need for solutions that are truly inclusive and focused on users.

The Smart Health App and Kiosk project is designed as a response to these challenges. It combines innovative design and technology to change how patients interact with medical services. By smoothly integrating an easy-to-use mobile app with a self-service kiosk, this project aims to create a comprehensive healthcare journey that is fluid, efficient, and personalized. This approach is not just about digitizing current processes; it aims to build a connected ecosystem where every step, from patient onboarding and secure identification to managing appointments, collecting vital signs, and online consultations, is streamlined for convenience and effectiveness. Our vision is to give individuals more control over their health management while easing operational challenges for healthcare institutions. With the introduction of advanced features, the Smart Health App and Kiosk is set to raise the standard for healthcare accessibility, security, and overall quality, creating a reality where quality care is consistently provided to everyone.

# PROBLEM STATEMENT JUSTIFICATION

We selected the **Product Category Creation for Healthcare Kiosks in India** problem statement because it focuses on improving healthcare access for all, especially in rural and semi-urban areas. With the rise of digital health initiatives like **ABHA** and the success of facial recognition systems like **Digi Yatra**, we saw a great opportunity to bring these technologies into healthcare. Our aim was to make hospital visits faster, easier, and more secure by using **face ID login**, **ABHA-based record access**, and **multilingual support**, so that patients from different backgrounds can use the system comfortably.

There is a pressing need for **self-service health kiosks** that **reduce waiting times, streamline patient verification**, and **support language diversity**. Many hospitals struggle with **staff shortages, long queues**, and **manual processes**, especially during **peak hours**. A **smart kiosk** can act as a **frontline assistant**, helping **digitize routine workflows** while improving **patient convenience.**

Our solution supports features like **Teleconsultation**, **Vitals Capture**, **UPI payments**, and **Report downloads**, making it a complete digital health platform. It reduces the burden on hospitals by allowing patients to consult doctors remotely and helps people find, register, and check in for appointments using a kiosk or mobile system. This aligns well with Intel's idea of using smart devices to improve healthcare delivery, and our prototype shows how such a system can work in real-life settings.

# FEATURES OFFERED IN OUR SOLUTION

Our project, " **Product Category Creation for Healthcare Kiosks in India** " is designed using HTML, CSS, JavaScript, Python, and Flask to create a user-friendly platform that simplifies healthcare access. The system supports secure registration and face-based login for personalized health services. The platform

connects patients with doctors through online appointment booking and also enables check-in at smart kiosks using facial recognition. Users can view prescriptions, pay consultation fees using UPI, and download health reports easily.

To enhance accessibility, the system provides Multilingual Support, and allows patients to capture vital health data. This improves the overall healthcare experience by making it more digital, inclusive, and efficient.

**The key features include:**

- Multilingual Support
- Unique Patient Identification Number
- User Registration and Authentication
- Appointment Management
- Teleconsultation

# FEATURE MAPPING

| Feature | Mapping |
|---|---|
| User Registration & Login (App) | Allow new users to create accounts using name, mobile number, and Aadhaar. Existing users can log in, with the Face ID or Patient ID. |
| Face ID Registration & Authentication (App & Kiosk) | Enables secure biometric enrolment via webcam or upload in app. Allows for rapid, touchless login and check-in at kiosk. |
| Unique Patient Identification Number | Generates a unique ID upon registration that links all medical history, including visits, prescriptions, vitals, and reports. So prediagnostics process get easier. |
| Fingerprint Scan (Kiosk) | Provides an alternative biometric login option at kiosk for quick access. |

| | |
|---|---|
| Patient ID Entry (Kiosk) | Offers a manual login fallback option at kiosk for quick access. |
| Multi-Language Support (App & Kiosk) | Allows dynamic language switching for all user interface labels and messages across 8 Indian languages: English, Hindi, Tamil, Bengali, Marathi, Telugu, Kannada, and Malayalam. |
| Appointment Booking (App) | Enables users to select departments, doctors, and consultation types (in-person or teleconsultation). |
| Intelligent Date & Time Selection (App) | Provides a calendar interface that clearly marks unavailable dates, reducing booking errors and user frustration. |
| Appointment Confirmation & QR Code Generation (App) | Displays confirmed appointment details and creates a unique QR code for easy kiosk synchronization and check-in. |
| Automated Vitals Capture (Kiosk) | Simulates automated measurements of height, weight, temperature, blood pressure, heart rate, and BMI, linking data to the patient's ID for efficiency. |
| Teleconsultation (Kiosk) | Allows for live video & audio consultations with remote doctors. Adds results to patient record. |
| Digital Consultation Summary & Prescription (Kiosk & App) | Instantly shows and provides diagnosis, medication, and follow-up in both kiosk and app. |
| Secure Digital Payment (Kiosk) | Manages consultation fee payments using UPI QR scanning for a cashless experience. |
| Health Report Management (App) | Let's patients view and download their consultation reports and prescriptions as PDFs for digital access. |

# FRONTEND LANGUAGES USED

- **HTML (HyperText Markup Language)**

  Builds the structure of the web pages, like forms, buttons, and sections for registration, appointment booking, face registration, and teleconsultation.

- **CSS (Cascading Style Sheets)**

  Makes the web pages look nice and easy to use by controlling colours, fonts, spacing, and layout so it works well on all devices.

- **JavaScript**

  Adds interactivity by checking form inputs, switching pages smoothly, changing language text, and letting users take photos with their webcam for face recognition.

# BACKEND LANGUAGES USED

- **Python Flask**

  Runs the server that handles requests from the frontend, such as registering faces, recognizing users, and providing language data. It connects the website to the face recognition system.

- **OpenCV**

  A computer vision tool that detects faces in images and matches them to registered faces using a special algorithm, enabling secure face-based login.

- **Flask-CORS**

  Allows the frontend and backend to communicate safely even if they run on different servers or ports, preventing browser security blocks.

# SOFTWARE USED

- **Flask + Python 3.10+**

  Flask is a lightweight Python web framework used to build the backend server of your prototype. It handles API requests from the frontend, such as registering and recognizing faces, and serving multilingual data. Python 3.10+ ensures compatibility with the latest language features and libraries.

- **VS Code**

  Visual Studio Code is the code editor used for developing the prototype. It provides features like syntax highlighting, debugging, and extensions that make writing Python, HTML, CSS, and JavaScript easier and more efficient.

- **OpenCV**

  OpenCV is the open-source computer vision library used in the backend to detect and recognize faces. It applies algorithms like Haar cascades for face detection and LBPH for face recognition, enabling biometric authentication within the system.

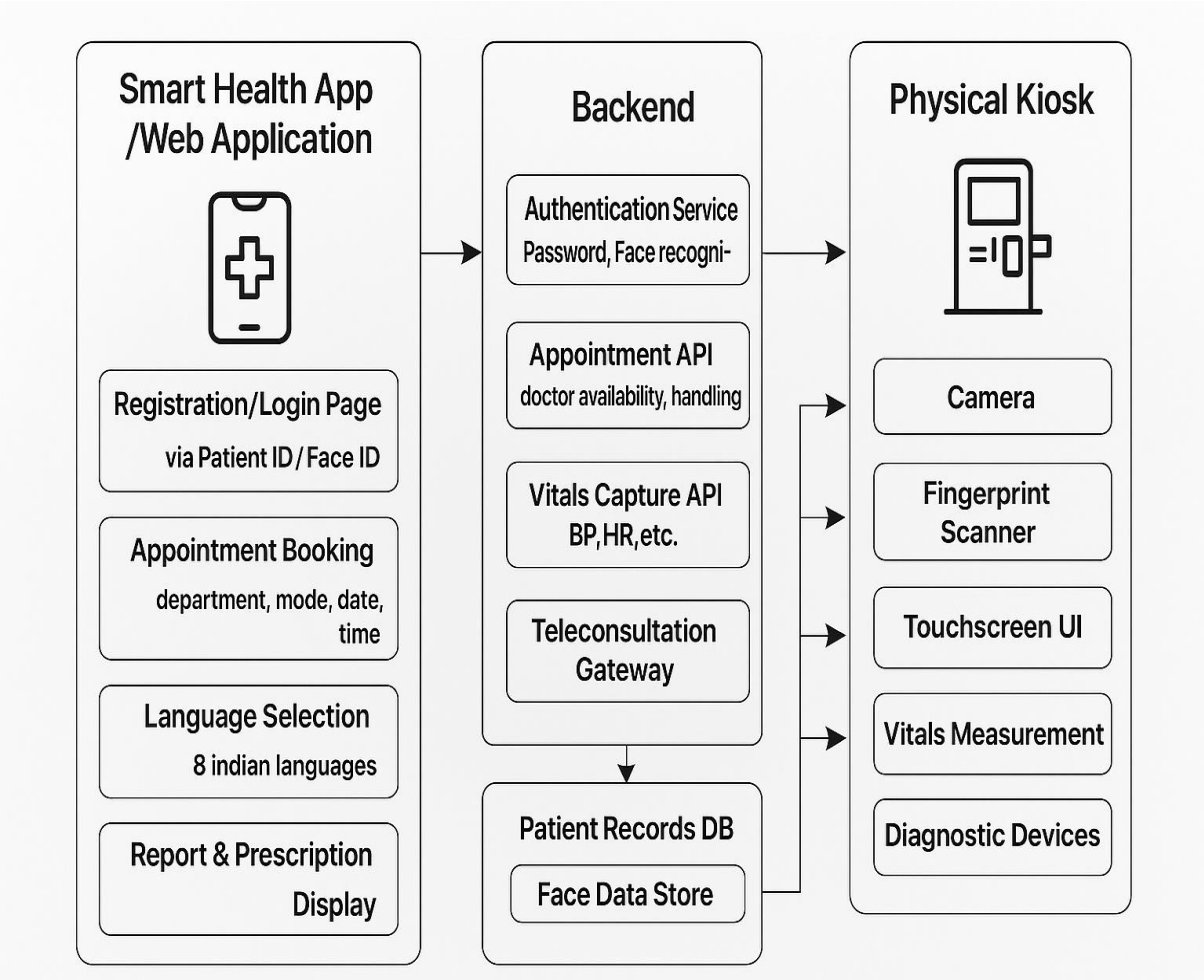
- **Google Chrome**

  Chrome is used to test and interact with the web interface during development. It provides developer tools to inspect elements, debug JavaScript, and monitor network requests to the backend APIs.

- **Postman**

  Postman is a tool for testing backend APIs independently of the frontend. It allows you to send HTTP requests to Flask endpoints (like face registration or recognition) and verify responses, which helps in debugging and validating backend functionality.

# ARCHITECTURE DIAGRAM




The **architecture diagram** shows a Smart Health system that combines a **mobile/web application, backend services, and a physical kiosk**. The **app** allows patients to **register, book appointments,** use **multiple languages**, and access **prescriptions**. The **backend** manages **authentication, schedules appointments**, captures **vitals**, and facilitates **teleconsultation** through specific **APIs**. **Patient data** is securely stored in a **central database**. The **physical kiosk** is equipped with a **camera, fingerprint scanner, touchscreen,** and **automated diagnostic devices** to measure **vital signs** like **blood pressure, height,** and **weight**. All captured data is linked to the patient's **unique ID** and **synchronized in real-time** to provide **efficient, accurate**, and **contactless healthcare** for both **in-person** and **remote use**.

# PROCESS FLOW

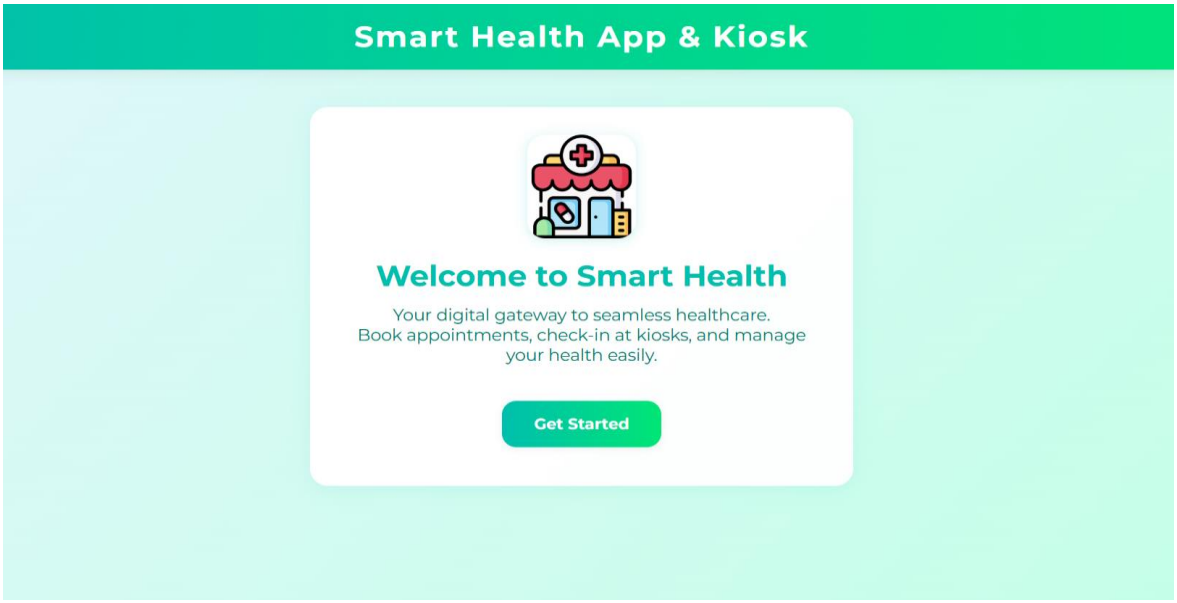



**Figure 1.1**

The figure 1.1 shows the Welcome Page of the website. Introduces the Smart Health system and provides navigation options for users to start booking appointments, check-in at kiosks, or access health services.

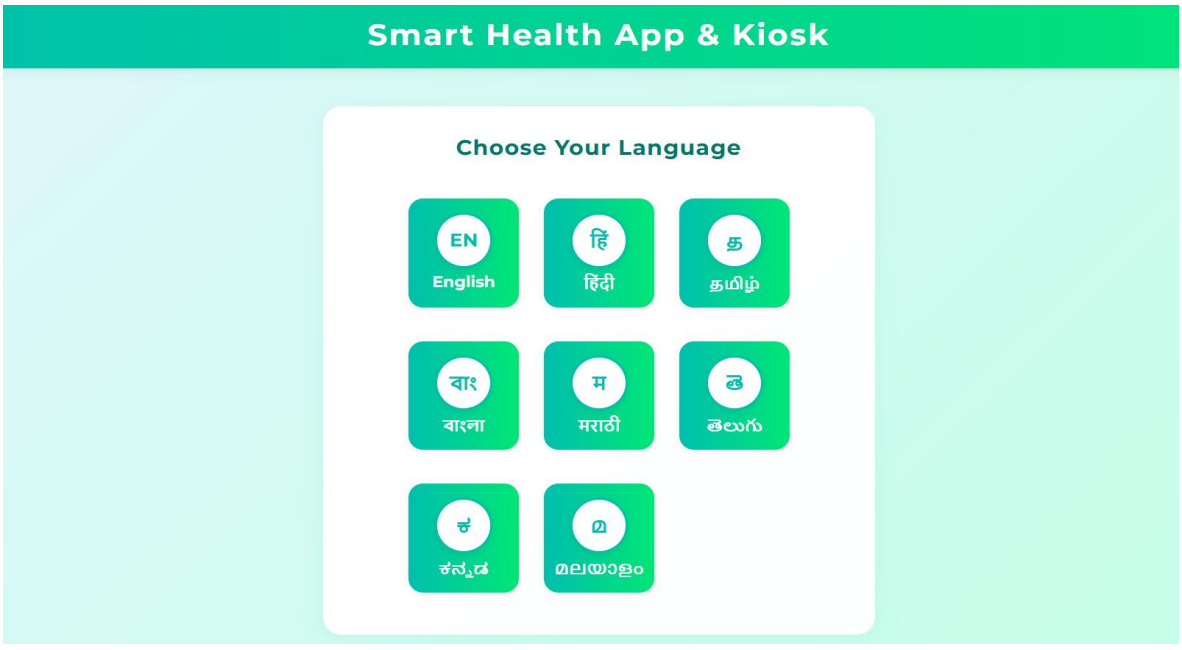



**Figure 1.2**

The figure 1.2 shows the Language Selection Page. Let's users choose their preferred language in English, Tamil, Hindi, and five other Indian languages (total of 8 languages). so the interface text and instructions appear in that language.

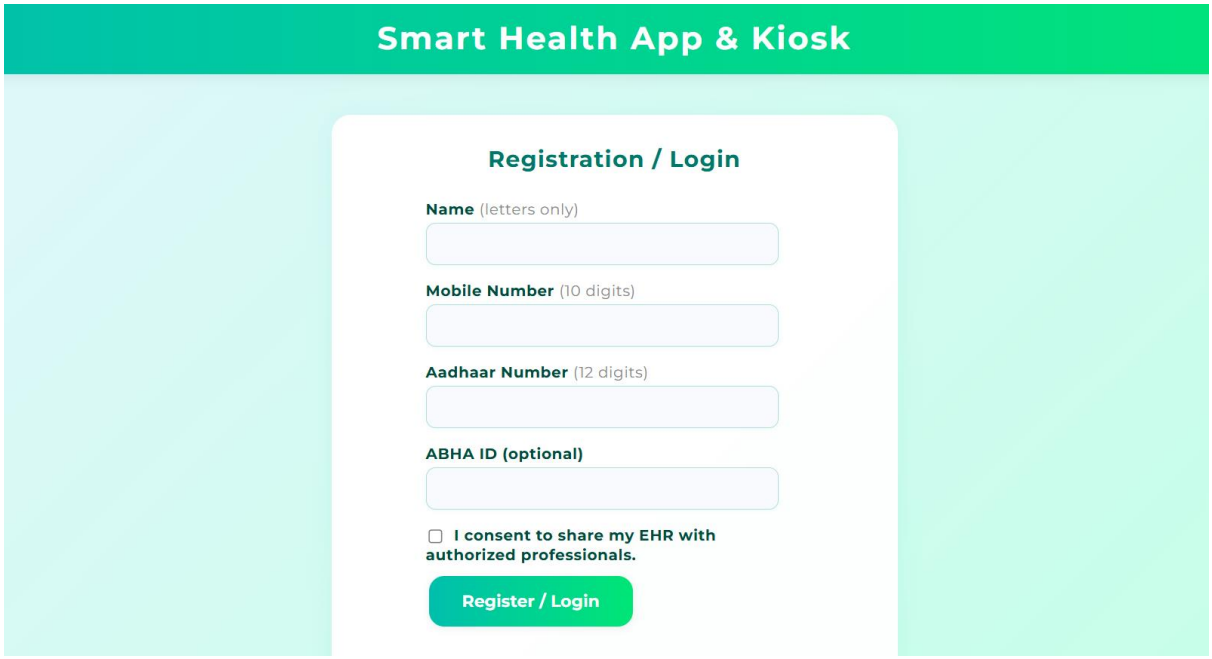



**Figure 1.3**

The figure 1.3 shows the Registration/Login Page. Allows new users to sign up by entering personal details or existing users to log in to their accounts for accessing services.

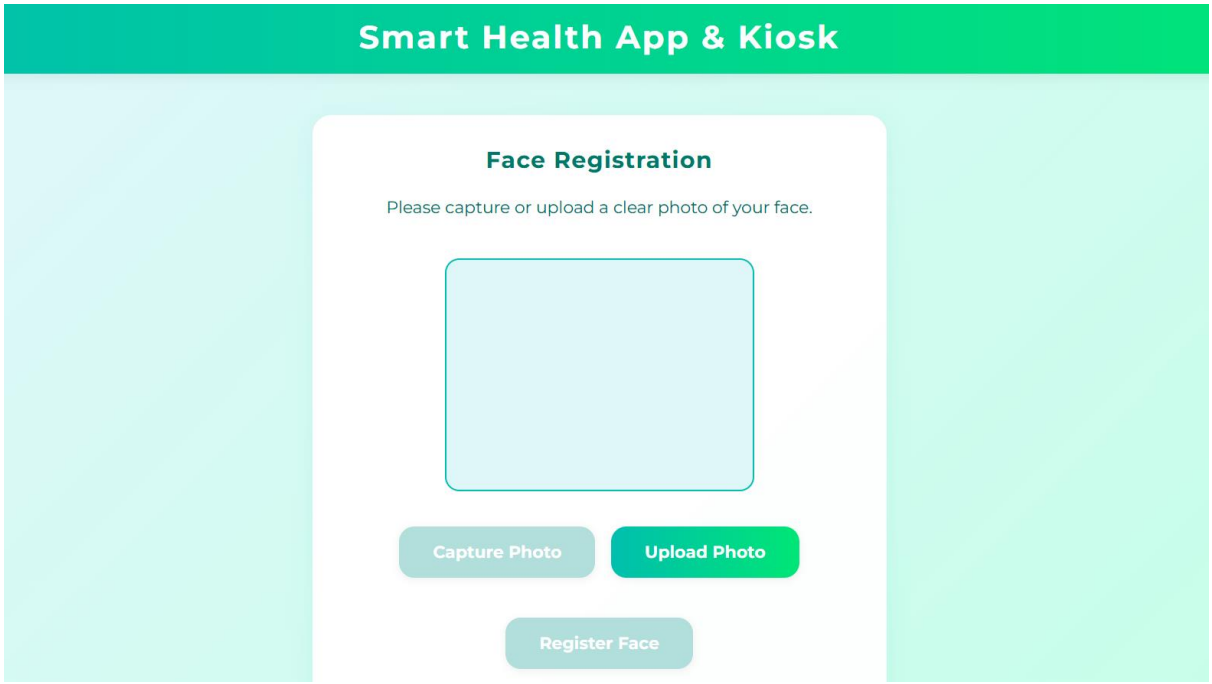



**Figure 1.4**

The figure 1.4 shows the Face Registration Page. Enables users to register their face by capturing a live photo or uploading an image, which is then used for biometric authentication in future logins or kiosk check-ins.

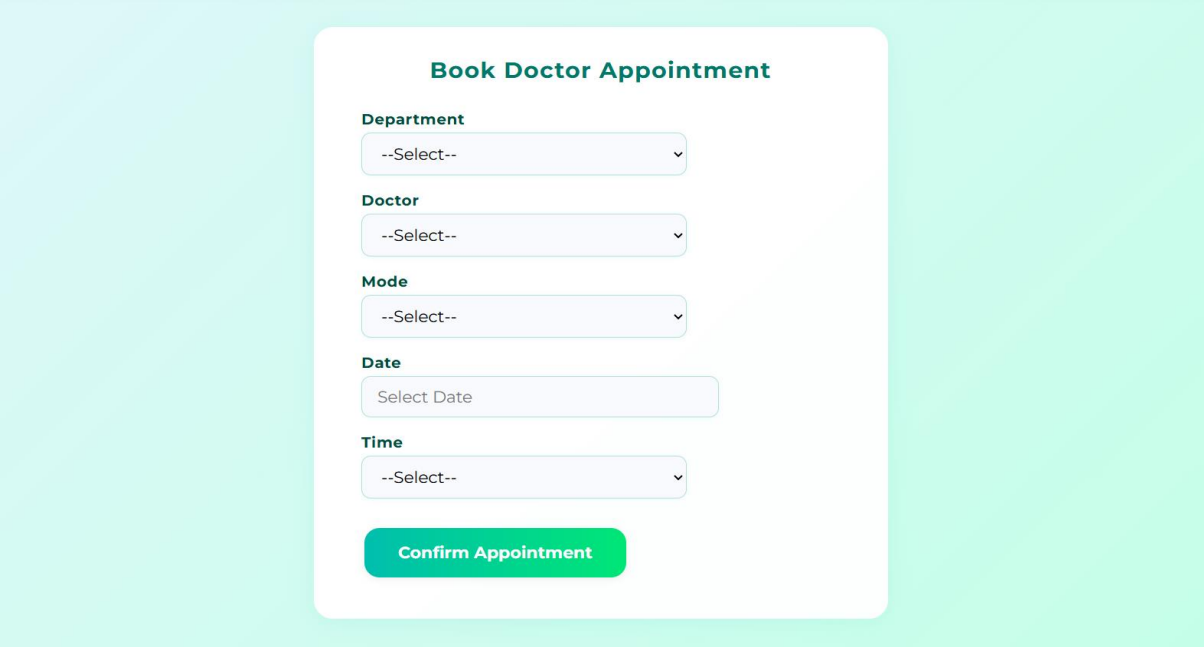



**Figure 1.5**

The figure 1.5 shows the Book Doctor Appointment Page. Users select the medical department, consultation mode (in-person or teleconsultation), date, and time to schedule an appointment with a doctor.

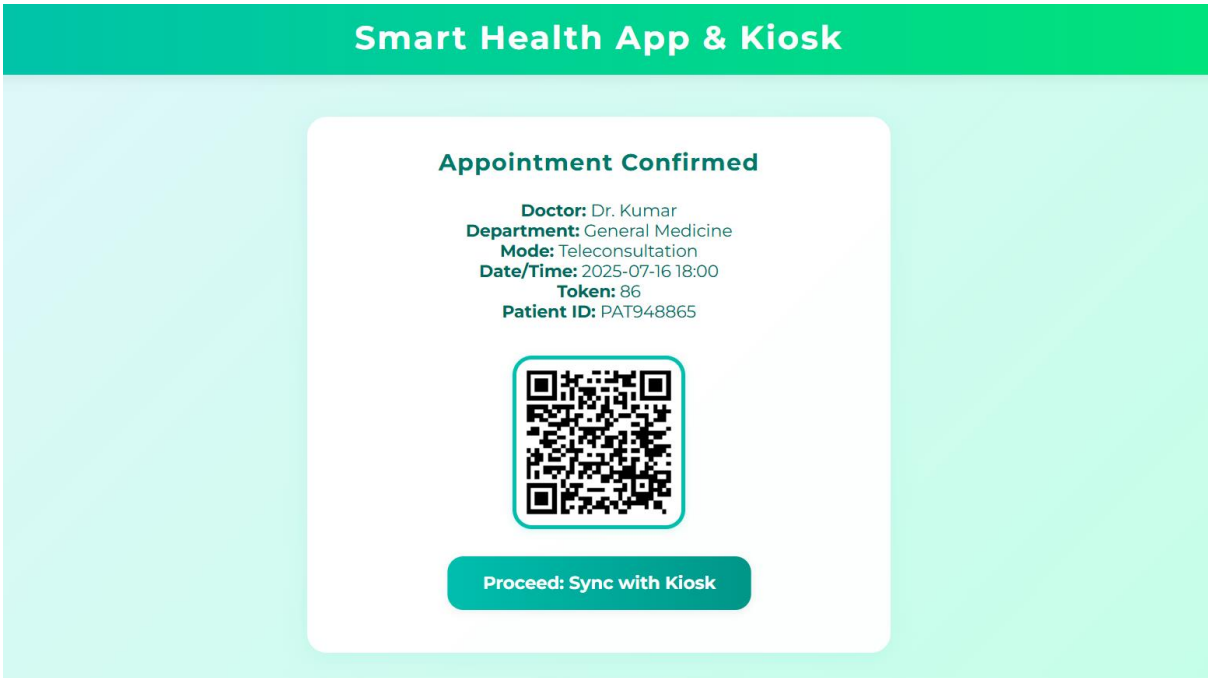



**Figure 1.6**

The figure 1.6 shows the Appointment Confirmation Page. Shows the details of the booked appointment including date, time, and a token number that the patient will use at the kiosk.

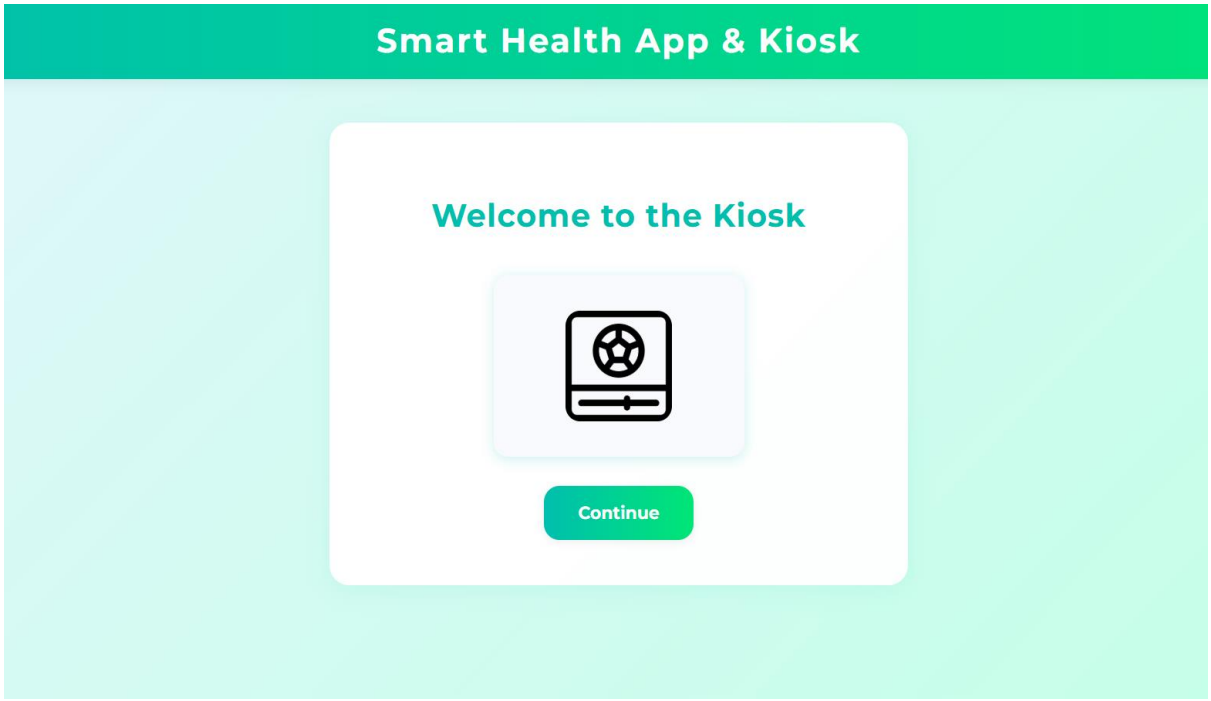



**Figure 1.7**

The figure 1.7 shows the Kiosk Welcome Page. Greets patients arriving at the kiosk and prompts them to select their language for kiosk interactions.

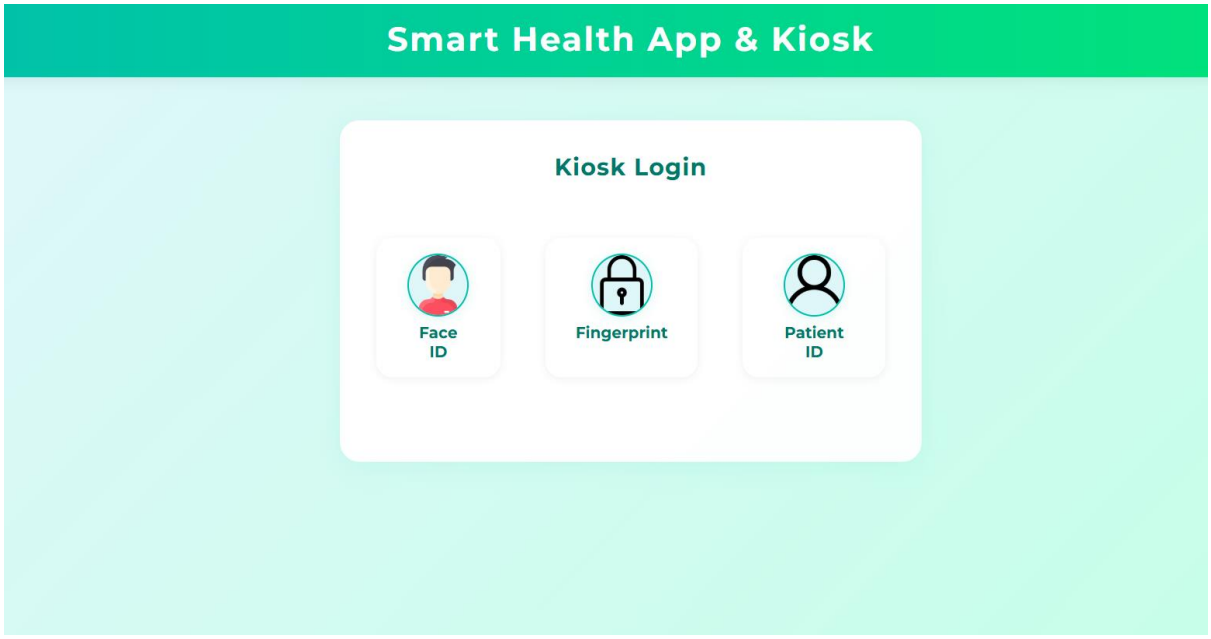



**Figure 1.8**

The figure 1.8 shows the Kiosk Login Page. Provides multiple authentication options—face recognition, fingerprint scan, or patient ID entry—to verify the patient's identity.

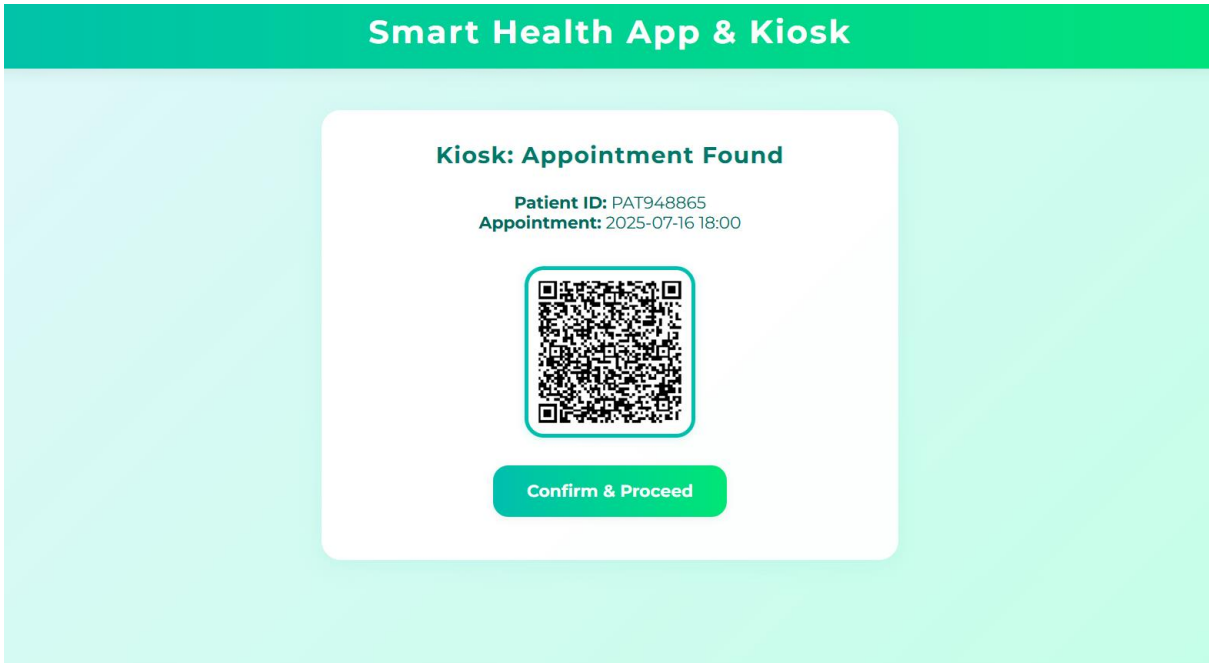



**Figure 1.9**

The figure 1.9 shows the Kiosk Appointment Found Page. Confirms that the patient's appointment has been retrieved successfully for check-in.

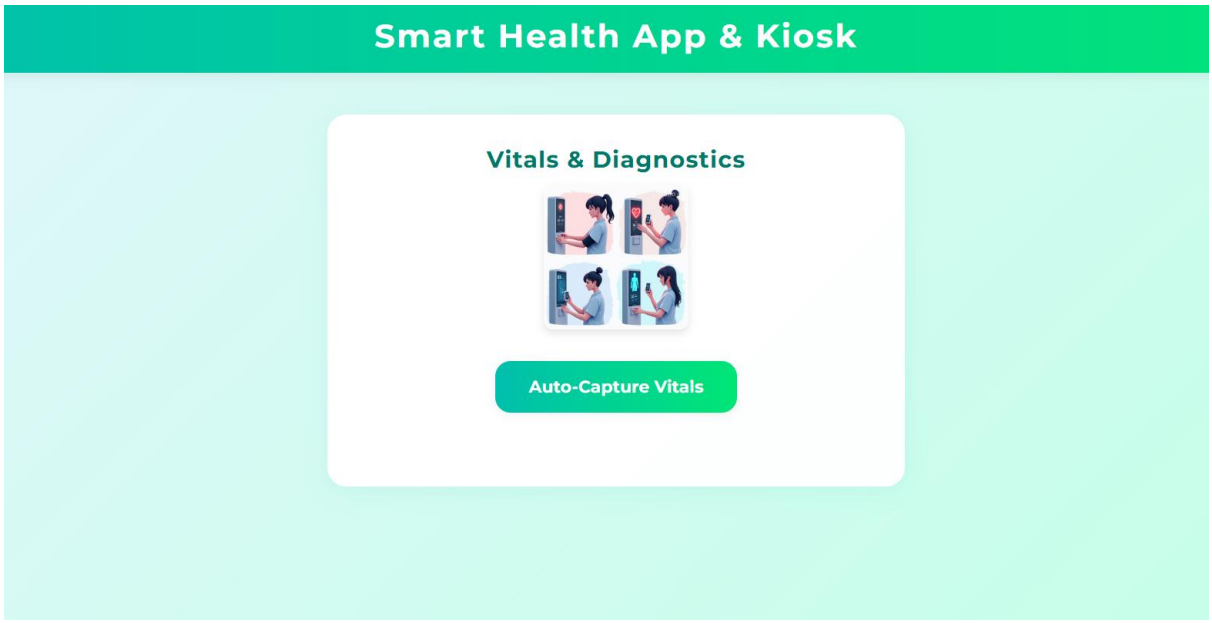



**Figure 1.10**

The figure 1.10 shows the Vitals & Diagnostics Page. Collects and displays vital health parameters like blood pressure, heart rate, temperature, weight, and BMI, either manually or via connected devices.

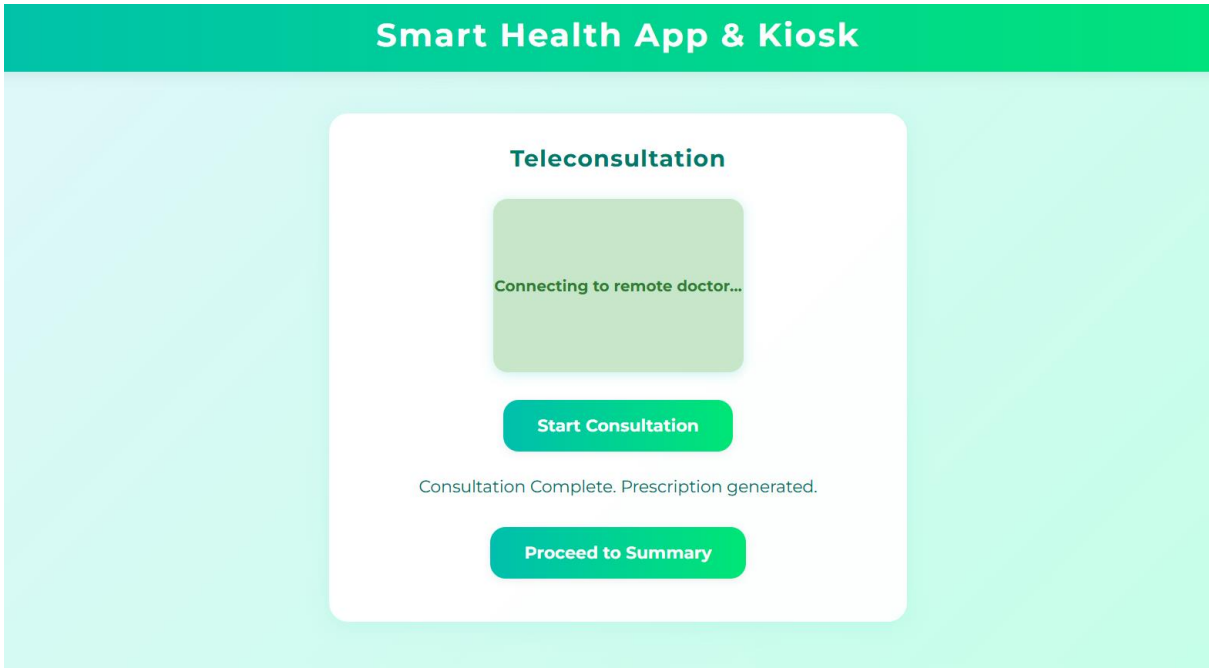



**Figure 1.11**

The figure 1.11 shows the Teleconsultation Page. Connects the patient to a remote consultation doctor for a live video consultation.

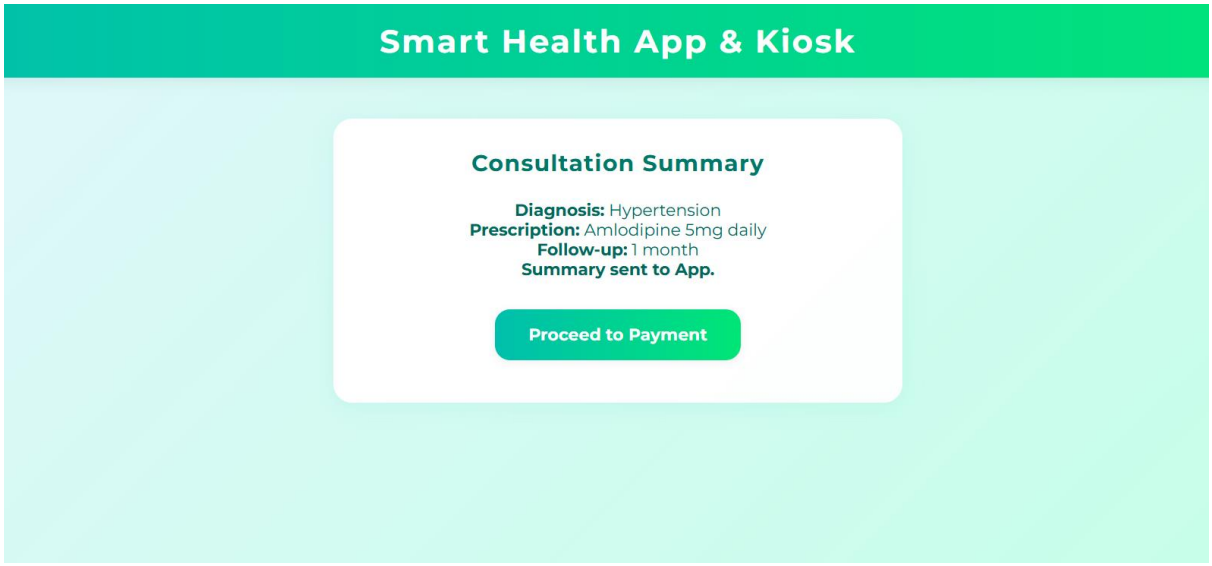



**Figure 1.12**

The figure 1.12 shows the Consultation Summary Page. Displays the doctor's diagnosis, prescribed medications, and follow-up instructions after the consultation. And the Consultation Summary is also sended to the health app for future reference.

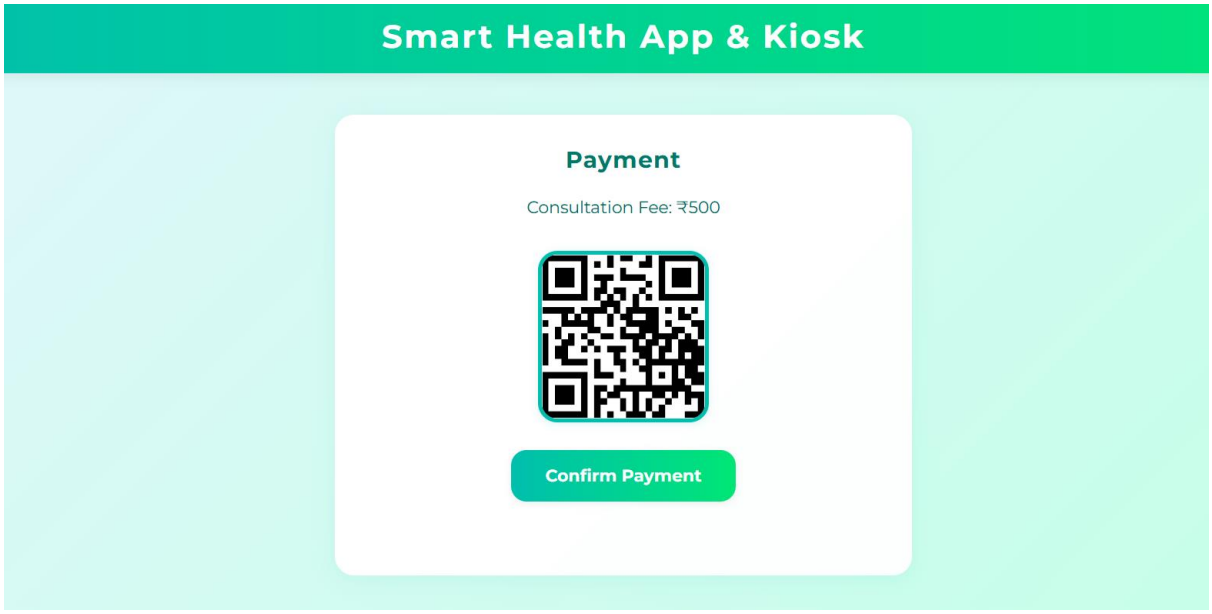



**Figure 1.13**

The figure 1.13 shows the Payment Page. Shows the consultation fee and allows the patient to make payment, confirming successful transaction with a receipt.

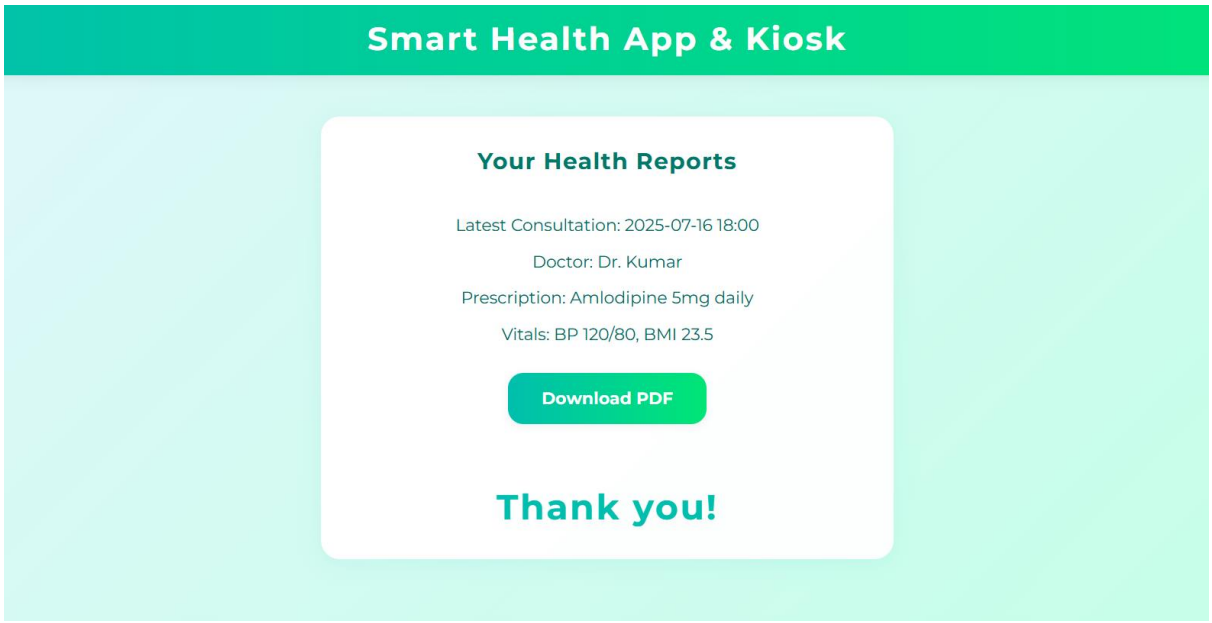
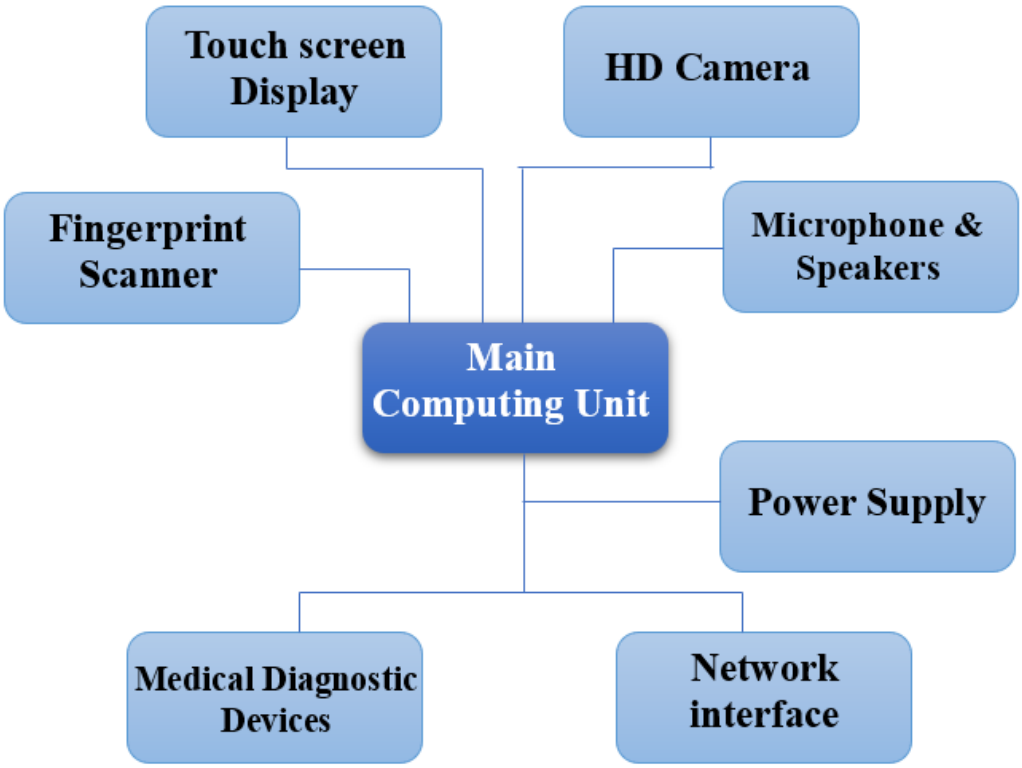



**Figure 1.14**

The figure 1.14 shows the Health Reports Page. Let's patients view and download their consultation reports and prescriptions as PDF documents in health app and it can be saved digitally in patient ID for future reference.

# HARDWARE REQUIREMENTS




## 1. Core System (Processor, RAM, Storage)

| Component | Details |
|---|---|
| CPU | Intel Atom / Core i3 (or ARM-based low-power SoC) – selected for low cost and power efficiency, capable of running Python Flask backend and OpenCV face recognition. |
| RAM | 4–8 GB DDR4 – 4 GB is sufficient for basic operation; 8 GB allows smooth performance during simultaneous video streaming, data sync, and sensor processing. |
| Storage | 64–128 GB SSD – Fast boot, local caching of patient data, and temporary file handling. SSD improves durability and access speed compared to HDD. |

## 2. Display & Input Devices

| Device | Role |
|---|---|
| Touchscreen (17”–22”) | Allows users to interact with the kiosk UI—language selection, ID input, instructions, report viewing. |
| Camera (1080p HD) | Used for face registration and recognition. Should support low-light and wide-angle capture for consistent performance. |
| Fingerprint Scanner | Offers an alternative secure biometric authentication method. |
| QR/Barcode Scanner | Scans appointment or ABHA QR codes for quick check-in. |
| Microphone & Speakers | Enables voice communication during teleconsultation and delivers system prompts. Should include noise cancellation for clarity. |

## 3. Connectivity & Power

| Feature | Description |
|---|---|
| Wi-Fi/Ethernet | Supports real-time syncing of data with cloud/EHR systems, secure ABHA record access, video consultations. |
| Power Supply | Energy-efficient industrial PSU. Backup via UPS or battery for 2–4 hours to ensure service continuity in rural areas. |

## 4. Enclosure and Portability

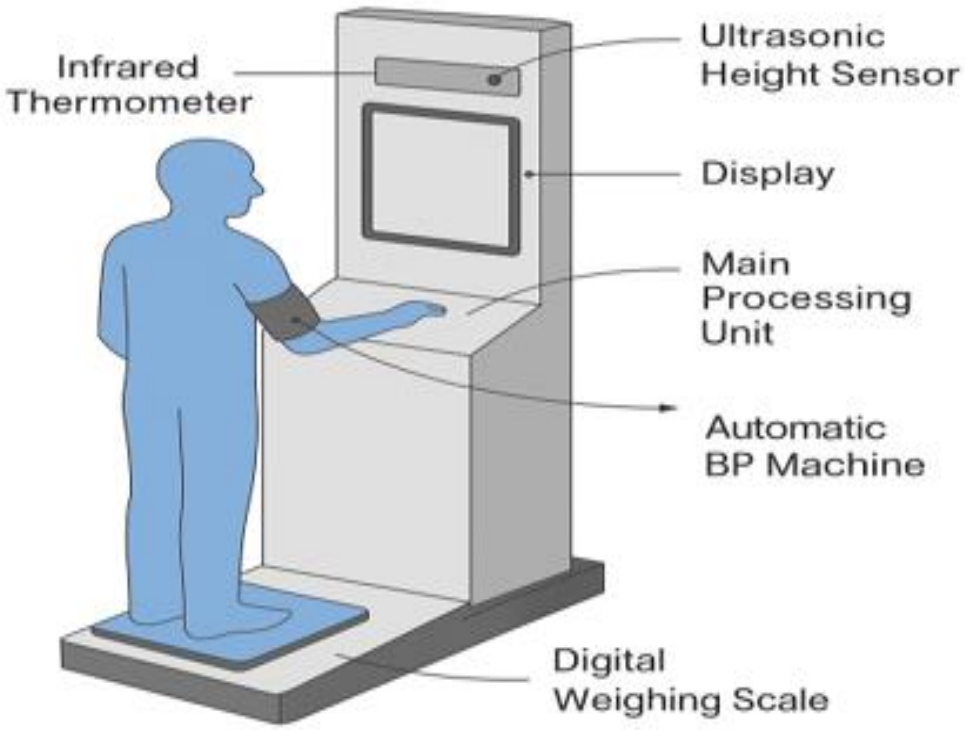
- Modular design with rugged casing.
- Easily Sanitizable outer shell.
- Can be wall-mounted or semi-portable.
- Fits both indoor OPDs and mobile clinics.

# 5. Vital Diagnostic Sensors (Integrated or Plug-and-Play)

These are essential for capturing patient vitals without human assistance.

| Vital Sign | Device |
|---|---|
| Blood Pressure | Digital automatic cuff-type BP monitor |
| Temperature | Non-contact infrared thermometer |
| Height | Ultrasonic height sensor |
| Weight | Digital weighing scale |
| BMI | Calculated automatically from height & weight |

Advanced add-ons (optional): Pulse oximeter, Glucose meter, ECG pads, SpO2 sensor, Vision/hearing test modules.



# COMPARISON WITH EXISTING SOLUTION

| Feature | Our Prototype | Clinics on Cloud | Yolo Health | XIPHIAS |
|---|---|---|---|---|
| **CPU** | Atom/Core i3 | i3/i5 | i5/i7 | Atom/i3 |
| **Vitals** | BP, Temp, Height, Weight | BP, ECG, Sugar, SpO2 | 70+ tests via IoT kits | BP, Temp, BMI, (Optional ECG) |
| **Security** | Face ID, Fingerprint, ABHA | HIPAA/GDPR + ABHA | AI + Intel IoT + cloud sync | Blockchain + access control |
| **Teleconsultation** | App + Kiosk video call | Camera, mic, speaker | AI-integrated camera | Mic/camera with login portal |
| **Power** | Small UPS/Battery | 2–3 hrs portable battery | Fixed power supply | Fixed + UPS |
| **Form Factor** | Modular, scalable | Suitcase-type portable unit | Fixed installation | Fixed/wall-mounted |
| **Target Areas** | PHCs, rural clinics, OPDs | Camps, mobile units | Railways, urban PHCs | Corporates, hospitals |

Most existing kiosks are **expensive**, **bulky**, and lack **battery backup**, making them unfit for rural use. They rely on **high-end CPUs** and **complex diagnostic kits**, increasing cost without essential benefits. **Limited language support** and no **offline functionality** make them hard to use in local settings. Their design is not suited for **low-resource environments** or **non-English-speaking users**.

## Our Prototype Stands Out

The Smart Health Kiosk prototype has been designed with a strong focus on affordability, accessibility, and national health integration. It delivers key advantages over existing commercial kiosks through the following features:

**1.Optimized for Low-Resource Environments**

Designed with efficient power usage and built-in UPS/battery backup, ensuring continuous operation even during power cuts—ideal for rural and semi-urban deployments.

**2. Essential Vitals Automation**

Captures core vital signs (BP, Temperature, Height, Weight, BMI) automatically—providing quick diagnostics. Modular design allows easy upgrades for SpO2, Glucose, ECG, etc.

**3. ABHA Integration & NDHM Compatibility**

Securely links patient records to ABHA IDs, enabling consent-based EHR access. Fully aligned with India's National Digital Health Mission (NDHM) for seamless data flow.

**4. Cost-Effective & Modular**

Uses open-source tools like Python Flask and OpenCV, keeping development and deployment costs low. Components can be customized based on deployment needs.

**5. End-to-End OPD Simulation**

Handles patient check-in, vitals capture, teleconsultation, e-prescription, and digital payments—offering a smooth, paperless clinical workflow from entry to exit.

**6. Security & Privacy First**

Supports biometric authentication (Face ID, fingerprint), multilingual instructions, and encrypted health data transmission for enhanced patient trust and compliance.

# MARKET REQUIREMENT DOCUMENT AND PRODUCT REQUIREMENT DOCUMENT

## Market Requirements Document (MRD)

### 1. Product Vision

A modular, AI-powered health kiosk to automate vital capture, improve rural healthcare, and integrate securely with India's NDHM ecosystem.

### 2. User Personas

- Village Patients – Need fast, contactless check-ins and vitals
- Doctors/Nurses – Need quick, accurate health data
- Health Admins – Want to monitor service delivery
- Govt Stakeholders – Focus on affordability, ABHA compliance

### 3. Market Opportunity

- 65% of India's rural population lacks access to smart diagnostics
- NDHM and ABHA adoption are growing
- Telemedicine is rapidly expanding
- Manual check-ins are slow, insecure, and error-prone

### 4. Key Features Required

- Secure, fast login – Face ID / Fingerprint / Patient ID
- Multilingual usability – UI in 8 Indian languages
- Accurate vitals – BP, Temp, Height, Weight, BMI
- Doctor access – Teleconsultation module
- Paperless workflows – Digital reports & e-Prescriptions
- Financial access – UPI-based cashless payments
- Record sync – ABHA-linked cloud storage

### 5. Success Metrics

- 90% reduction in patient check-in time
- 75% adoption rate in deployed PHCs within 6 months
- 95% accuracy in biometric login
- 100% ABHA compliance and sync
- Patient satisfaction score > 4.5/5

### 6. Competitive Landscape

- Yolo Health – High cost, over-featured for PHCs
- Clinics on Cloud – Diagnostic-focused, limited ABHA integration
- Your Prototype – Affordable, modular, ABHA-integrated, rural-ready

### 7. Revenue & Pricing Strategy

- Fixed cost per kiosk (govt sales)
- SaaS model for private clinics
- CSR sponsorship for rural deployments

## Product Requirements Document (PRD)

### 1. Product Overview

The Smart Health Kiosk is a modular device designed for PHCs and rural clinics to enable digital health check-ins, biometric authentication, vitals capture, and teleconsultation, fully integrated with ABHA and NDHM.

### 2. Functional Requirements

- User Registration – Onboarding via Name, Aadhaar, and Mobile
- Biometric Login – Face ID (via webcam) and Fingerprint
- Language Support – 8 Indian languages, real-time switch
- Appointment Booking – Based on date, time, department

- QR Code Generation – For kiosk sync after booking
- Vitals Capture – BP, Temp, Weight, Height, BMI
- Teleconsultation – Video + audio call with remote doctor
- Report Generation – PDF of diagnosis and prescription
- Payment – UPI-based via QR scan

**3. Acceptance Criteria**

- Face ID – 95% match accuracy under normal lighting
- QR Code Sync – <5 seconds
- Language Toggle – Instant content switch
- Vitals Capture – ±5% accuracy vs. certified devices
- Video Call – 720p video, <1.5s lag on 1 Mbps

**4. Non-Functional Requirements**

- Uptime – 99% backend server availability
- Security – ABHA consent, HTTPS
- Offline Mode – Store data locally for 24 hrs
- Data Storage – SSD cache + cloud sync
- Compatibility – Linux/Windows, 4GB RAM

**5. Integration Points**

- ABHA APIs (login, records)
- NDHM Sandbox (EHR sync)
- OpenCV (face recognition)
- Flask backend
- UPI APIs (PhonePe, BharatQR)

**6. Dependencies**

- Webcam (Logitech C920 or similar)

- BP Monitor (Omron/BPL)
- Local/cloud backend
- Touchscreen kiosk
- WiFi + SIM backup

# Additional Strategic Elements

## 1. Data Privacy and Consent Flow (ABHA Compliance)

To ensure full ABHA compliance, the kiosk must implement a consent-based data access model. Patients must be informed and must explicitly consent before any data capture, transmission, or storage. Key components include:

- ABHA login with OTP or biometric verification
- Consent UI with language toggle before data sync
- Logs for access tracking and audit
- Secure encrypted data storage (locally and in cloud)
- Compliance with India's Digital Health Data Management Policy

## 2. Deployment Roadmap / Timeline

- **Month 1–2**: Finalize hardware & software architecture
- **Month 3**: Prototype fabrication and initial ABHA sandbox testing
- **Month 4–5**: Field pilot in 2 PHCs with feedback integration
- **Month 6**: Phase-1 deployment in 10+ rural PHCs
- **Month 7–9**: Expand to 50 PHCs, onboard new government stakeholders
- **Month 10–12**: Scale to 100+ PHCs; apply for government tenders, CSR grants

# GO-TO-MARKET (GTM) BLUEPRINT

## 1. Target Market Segments

- **Primary Health Centers (PHCs)** – Low-resource clinics in rural and semi-urban regions.
- **Government Hospitals** – District/Sub-district facilities needing digitization.
- **Mobile Medical Units (MMUs)** – Battery-powered kiosks for remote health camps.
- **Corporate Health Programs** – Employee wellness stations for preventive care.
- **Private Clinics/Nursing Homes** – Smart OPD upgrade with minimal staff.
- **Health Tech Startups** – Platform integration for teleconsultation and ABHA sync.

## 2. Positioning & Differentiators

| Key Area | Our Advantage |
|---|---|
| Cost | Low-cost modular build (vs. expensive 70+ test kiosks) |
| Design | Portable, sanitizable, accessible for all |
| Technology | Face ID login, automated vitals, ABHA sync |
| Rural Suitability | Multilingual UI, offline capability |
| Scalability | Upgradable hardware, plug-and-play modules |
| Security | Consent-based EHR access, biometric fallback |

## 3. Stakeholder Engagement Strategy

- **HW OEMs**: Suppliers of compute units, screens, sensors (e.g., Intel, Asus, BPL).
- **Independent Software Vendors (ISVs)**: Build, integrate and maintain app, face recognition, backend.
- **System Integrators (SIs)**: Deploy, install, service, and support the kiosk system.
- **Healthcare Providers**: End users such as hospitals and PHCs.
- **Govt Agencies**: NDHM, Ayushman Bharat, state health departments.
- **NGOs / CSR**: Health programs in remote or underserved communities.

## 4. Rollout Plan

- **Phase 1**: Prototype & Pilot – Deploy 5 units in PHCs across states. Collect feedback and refine.
- **Phase 2**: Public Health Integration – NDHM sandbox integration, 100+ kiosks under Ayushman Arogya Mandirs.
- **Phase 3**: National Scale – 1000+ kiosks via tenders, offer as SaaS to private clinics.

## 5. Revenue Streams

- **Outright Sale** – Fixed price per kiosk (govt procurement).
- **Kiosk-as-a-Service** – Monthly rental with support (private sector).
- **CSR Sponsorship** – Branded deployment in rural regions.
- **AMC** – Annual maintenance contracts for upgrades and service.

## 6. Marketing & Demand Generation

- Demo videos and use case walkthroughs for PHC and hospital admins.
- Pilot sites as reference installations for new clients.
- Presence at health expos (India Health, Smart Health Summit).
- Regional awareness drives at district health fairs.

- Partnerships with healthcare apps and NDHM officials.

## 7. Post-Launch Support & Feedback Loop

- In-app feedback system for patients and doctors.
- Usage analytics dashboard for admin insights.
- Quarterly updates and remote diagnostics.
- Training for PHC staff on kiosk handling.

## 8. User Feedback Insights

To validate our concept, we conducted a user survey and gathered responses from 32 participants in a short time. The goal was to assess user awareness, trust, and readiness for a smart health kiosk system.

HEALTHCARE KIOSK-PATIENT SURVEY(RESPONSES)

## Feedback Analysis

- 67.7% of users said they would like their health reports stored digitally, and over 64.5% were comfortable using face scanning for faster login.
- 71% found it helpful if a kiosk could measure vitals like BP or temperature before consultation, and 54.8% were open to using kiosks for teleconsultation.
- While 51.6% trust preliminary health reports from the kiosk, 35.5% preferred doctor approval—indicating the need for validation mechanisms.
- Surprisingly, 61.3% were unaware of ABHA IDs, highlighting a gap that our system can help bridge.
- Most users (90%) live within 5 km of a hospital, making local kiosk deployment feasible; however, 74% had never used telemedicine, showing room for awareness and adoption.

This feedback helped shape our feature set, onboarding strategy, and ABHA integration plan, ensuring our solution fits real-world expectations.

# MARKET SIZING & TAM

The Smart Health Kiosk addresses the growing demand for accessible, digital healthcare in India. Our market sizing uses public health infrastructure data and industry estimates to calculate the Total Addressable Market (TAM), Serviceable Available Market (SAM), and Serviceable Obtainable Market (SOM).

## 1. Target Sectors & Estimated Units

| Target Sector | Estimated Units | Source / Justification |
|---|---|---|
| Primary Health Centres (PHCs) | 30,000 | National Health Mission – Rural Health Statistics 2023 |
| Community Health Centres (CHCs) | 5,000 | NHM Annual Report 2023 |
| District/Sub-District Government Hospitals | 1,000 | NITI Aayog Health Index Reports |
| Mobile Medical Units (MMUs) | 1,500 | NHM state programs (Tamil Nadu, UP, Karnataka, etc.) |
| Private Clinics & Nursing Homes | 300,000 | IBEF Healthcare Sector Report 2023; FICCI Health Startup Landscape |
| Corporate Health Units & CSR Programs | 5,000 | NHRDN, Nasscom wellness initiatives |
| Diagnostic Labs/Chains (mid/large) | 15,000 | Redseer, Dr. Lal PathLabs, Thyrocare, Healthians coverage estimates |

## 2. Average Kiosk Cost Estimate

| Component | Estimated Cost |
|---|---|
| Compute Unit (Intel Atom/i3) + Peripherals | ₹30,000 |
| Touchscreen Display & Enclosure | ₹30,000 |
| Camera, Fingerprint, QR Scanner | ₹15,000 |
| Vital Sign Sensors (BP, Temp, Height, etc.) | ₹40,000 |
| Battery Backup / Power Supply | ₹10,000 |
| Microphone & Speakers | ₹5,000 |
| Software Licensing & Hosting | ₹20,000 |
| Enclosure + Portability Setup | ₹5,000 |
| **Total (per kiosk)** | ₹1,55,000 |

## 3. Estimate the Market Size Calculation

- **Total Addressable Market (TAM)**

If every potential site in India adopted the Smart Health Kiosk:

TAM = 357,500 units × ₹1,55,000 = ₹55,412.5 Crores

TAM in USD ≈ $6.71 Billion (at ₹82.5 per USD)

- **Serviceable Available Market (SAM)**

Subset of TAM we aim to reach in the next 3–5 years (targeting PHCs + 5% of private clinics):

SAM Units = 30,000 (PHCs) + 15,000 (5% of 3L clinics) = 45,000

SAM = 45,000 × ₹1,55,000 = ₹6,975 Crores

SAM in USD ≈ $845 Million

- **Serviceable Obtainable Market (SOM)**

Practical short-term goal — deployment of 1,000 units via pilots, tenders, and CSR programs:

SOM = 1,000 × ₹1,55,000 = ₹155 Crores

SOM in USD ≈ $18.8 Million

## 4. Summary Table

| Market Type | Units | Value (INR) |
|---|---|---|
| Total Addressable (TAM) | 357,500 | ₹55,412.5 Cr |
| Serviceable (SAM) | 45,000 | ₹6,975 Cr |
| Obtainable (SOM) | 1,000 | ₹155 Cr |

## 5.Market Trends

- **Digital Health Push**

India is promoting digital health through the Ayushman Bharat Digital Mission (ABDM), and our kiosk supports ABHA and NDHM standards.

- **Post-COVID Contactless Demand**

People now prefer contactless health check-ups — our kiosk offers touch-free vitals like BP, temperature, and oxygen level.

- **Government Focus on Rural Healthcare**

More funds are going to PHCs and CHCs. Our low-cost, multilingual kiosk is ideal for rural and Tier-2/3 areas.

- **Private Sector & CSR Support**

Hospitals, labs, and companies are investing in health tech. Our kiosk is a good fit for CSR programs and private clinics.

## 6. Competitive Advantage in Pricing

• Smart healthcare kiosks already exist in India and globally (e.g., YoloHealth ATM, 3Nethra, Health ATMs).

• These existing kiosks are usually priced at ₹3–5 lakhs, making them expensive for large-scale or rural deployment.

• Our kiosk offers a better alternative with:

- Lower cost (₹1.55 lakhs)
- Portable and modular design
- ABHA and NDHM integration
- Offline functionality (works in low-connectivity areas)

• These features make our solution:

- More suitable for government health centers and private clinics
- A better fit for CSR and telemedicine programs
- Easier to adopt in rural and underserved regions

## 7. Estimate Potential Revenue

Year 1 Revenue Projection

- Kiosk sale price per unit: ₹1,55,000
- Estimated sales in Year 1: 500 units
- Product Revenue:

500×₹1,55,000=₹7.75Crores500 \times ₹1,55,000 = ₹7.75 Crores

Additional Recurring Revenue

- AMC @ ₹10,000 per unit/year:

500×₹10,000=₹50Lakhs500 \times ₹10,000 = ₹50 Lakhs

- SaaS/Cloud Hosting @ ₹5,000 per unit/year:

500×₹5,000=₹25Lakhs500 \times ₹5,000 = ₹25 Lakhs

Total Revenue Potential (Year 1)

- Product Sales: ₹7.75 Crores
- AMC + SaaS: ₹75 Lakhs
- Total: ₹8.5 Crores

## 8. Summarize Financial Aspects

| Parameter | Value (INR) |
|---|---|
| **Selling Price (per kiosk)** | ₹1,55,000 |
| **Manufacturing Cost (per unit)** | ₹1,20,000 |
| **Profit Margin (per unit)** | ₹35,000 |

**Break-Even Analysis**

Assuming you need to recover ₹30 Lakhs in startup costs:

Break-even units = ₹30,00,000 / ₹35,000 ≈ 86 kiosks

Conclusion:

- Break-even at 86 kiosks sold
- After that, you earn ₹35,000 profit per kiosk
- Additional revenue from AMC and SaaS improves profitability further

The **Smart Health Kiosk** is a **cost-effective, modular**, and **ABHA-ready** solution tailored for India's **digital healthcare push**. With a massive **TAM of ₹53,625 Cr**, our focus on **PHCs and private clinics** (SAM: ₹6,750 Cr) and a near-term SOM of ₹150 Cr positions us for scalable growth. Backed by trends like **ABDM adoption, post-COVID contactless care**, and **CSR health investments**, our ₹1.55L kiosk is over **60% cheaper** than market alternatives. With a **₹35K profit margin** and break-even at just **86 units,** we offer both social impact and **strong profitability.**

# FUTURE ENHANCEMENT IN OUR PROTOTYPE

## Future Scope

1. **AI-Based Health Risk Prediction**

   In the future, the system can use artificial intelligence to study a patient's health data and predict possible risks like diabetes or high blood pressure. This will help in early detection and better preventive care.

2. **ABHA & EHR Integration**

   The kiosk and app can be connected with the national health system using the ABHA ID, so that patients' medical records are stored and shared safely across different hospitals and clinics. This will improve treatment quality and reduce repeated tests.

3. **IoT-Based Health Monitoring**

   Devices like blood pressure monitors, ECG, and sugar level checkers can be linked to the kiosk to automatically collect and record the patient's vitals in real time. This will make the system more efficient and accurate.

4. **Voice Support in Regional Languages**

   To make the system easier to use for senior citizens or people who don't read well, voice instructions in local languages can be added. This will help users follow steps without needing help from others.

5. **Personalized Health Tips & Wellness Dashboard**

   The app can show a special dashboard with daily health tips, reminders, and suggestions for diet or exercise based on the user's health data. This will encourage users to stay healthy and follow good habits.

# TEAM MEMBER'S CONTRIBUTION

The successful completion of the Smart Health Kiosk project was made possible through the well-coordinated efforts of our three-member team, with each member contributing to distinct yet interconnected areas of development.

## Front-End Development & Prototype Design:

**Kaviya R** designed the kiosk prototype layout and developed the user interface using HTML, CSS, and JavaScript. She worked on creating responsive and multilingual front-end screens for both the app and kiosk, ensuring the system is accessible and user-friendly across different devices and languages.

## Backend Development & System Architecture:

**Lokesh Kumar G** led the backend development using Python Flask and handled biometric integration through OpenCV. He was also responsible for designing the system architecture—mapping the flow between the mobile app, backend APIs, database, and kiosk hardware. His work ensured a secure, efficient, and scalable architecture that forms the backbone of the solution.

## Market Research & Target Segment Analysis:

**Aarthy G** focused on identifying real-world healthcare gaps and target user groups. She conducted competitive research on existing kiosks, defined rural and semi-urban use cases, and contributed to the Go-To-Market (GTM) strategy. Her insights helped align the solution with India's national digital health goals.

Together, these contributions shaped a practical, inclusive, and technology-driven healthcare solution ready for real-world deployment.

# VIDEO LINK

- Smart Health System Demo Video

# CONCLUSION

The *Smart Health App and Kiosk* project addresses critical gaps in India's healthcare system by providing a modular, scalable, and accessible solution for both urban and rural populations. By integrating facial recognition, multilingual support, automated vitals capture, and teleconsultation into a single platform, the prototype ensures a seamless and inclusive healthcare experience. Its design emphasizes affordability, ease of deployment, and compatibility with national health initiatives like ABHA and NDHM. Compared to existing solutions, the system offers superior flexibility, user-centric features, and enhanced data security through biometric authentication and encrypted record access.

This project not only showcases the practical implementation of Intel-powered smart kiosks but also lays the foundation for future innovations such as AI-based risk prediction, voice-enabled navigation, and real-time IoT health monitoring. Through strategic partnerships, phased rollouts, and a clear go-to-market blueprint, the system has strong potential for large-scale adoption in public health programs and private care setups. Ultimately, it envisions a future where quality healthcare is digitized, decentralized, and available to all—regardless of location or literacy.

# REFERENCES


- National Health Authority (NHA)
- World Health Organization (WHO)
- Ministry of Health and Family Welfare, Govt of India
- Intel India
- Clinics on Cloud.