SMART INDIA HACKATHON 2025

TITLE PAGE

- **Problem Statement ID -** SIH25083
- **Problem Statement Title-** Digital Health Record Management System for migrant workers in Kerala aligned with sustainable development goals.
- **Theme-** HealthTech
- **PS Category-** Software
- **Team ID-** PCU55
- **Team Name (Registered on portal)-** SWASTHYA

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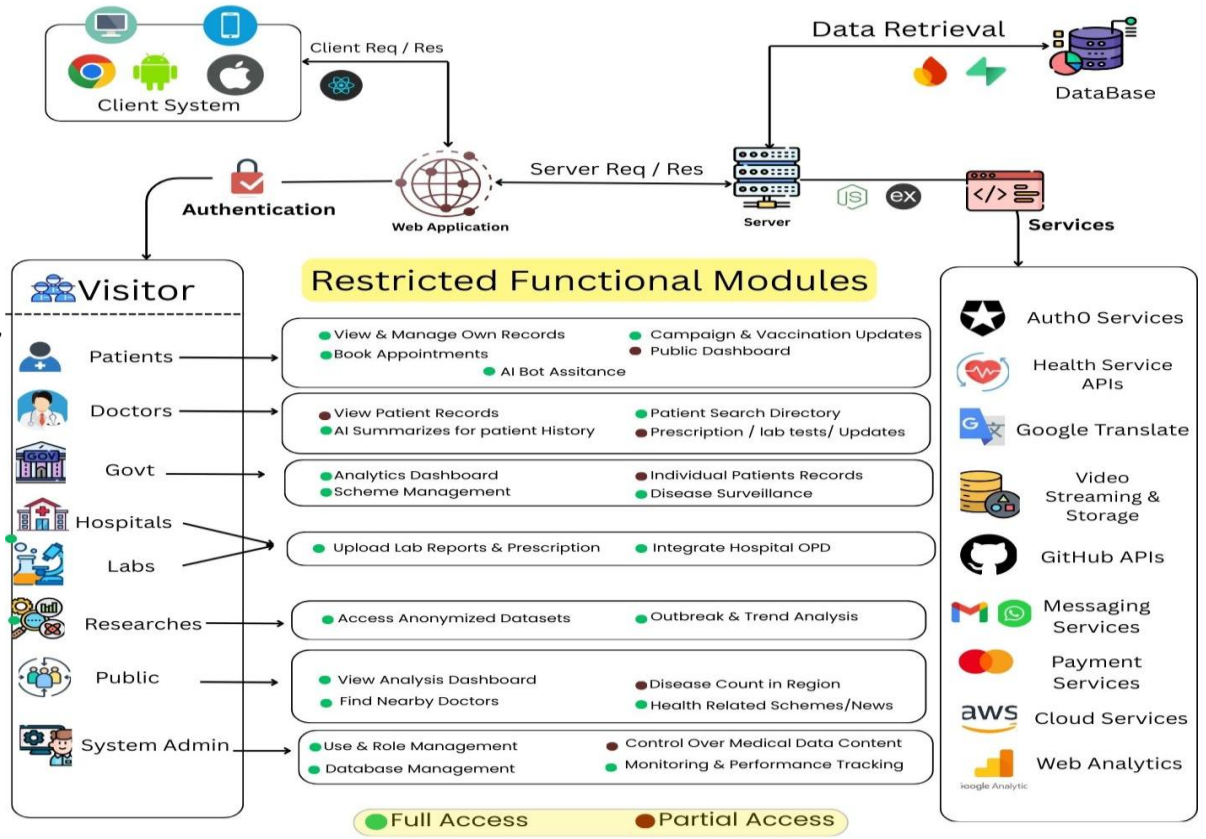
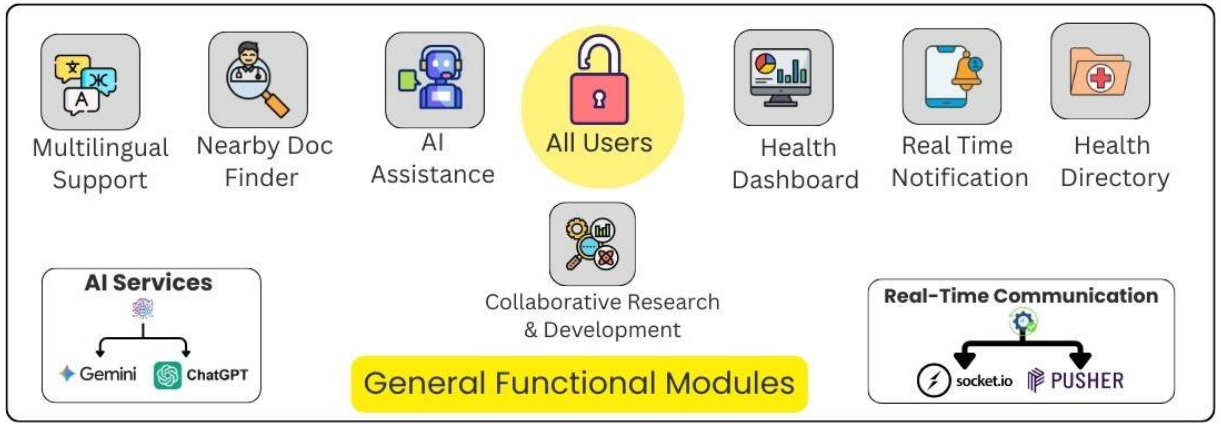
❖ Proposed Solution

- **Complete Patient-Doctor Association Platform** - Web and mobile ecosystem **linking patients and doctors** flawlessly, while tracking regional outbreaks and issuing early alerts.
- **Smart Centralized Record System** - Doctors access **complete histories** for safe prescriptions, while updates sync to the dashboard, powering **real-time analysis** and **outbreak surveillance**.
- **Blockchain-Secured Health Records** – Ensures **locked, safe, and secure** access to prescriptions, reports, and updates.
- **AI-Powered Support** - Patient-side **chatbot for app related queries and symptoms check**; doctor-facing **bot summarizes medical history** for quick understanding.
- **AI/ML Outbreak Prediction** – Machine learning models predict disease explosion in regions/states using real-time health record data.
- **3 A's Model: Access - Assess - Advice**
  Access: Patients securely access and manage their digital health records anytime.
  Assess: Doctors assess medical history, current symptoms, and risks with accuracy.
  Advice: Personalized consultation, treatment, and protective methods are shared.
- **Two-Key Security Mechanism** - Dual consent required: **patient approval and doctor validation**, assuring accountability and traceability of record access.
- **Public & Government Dashboard** - **Real-time analytics** for disease surveillance, vaccination drives, campaigns, and **public awareness** with open access to collective stats.





Other Features:

- **Unique Digital health Id**
- **Multilingual & visual Interface**
- **Offline functionality with auto sync**
- **Telemedicine Integration**
- **Nearby doctor finder**

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TECHNICAL APPROACH

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❖ Technology Stack

Frontend : React JS, React Native, Redux, Next JS, Tailwind CSS, Framer-Motion, jQuery.

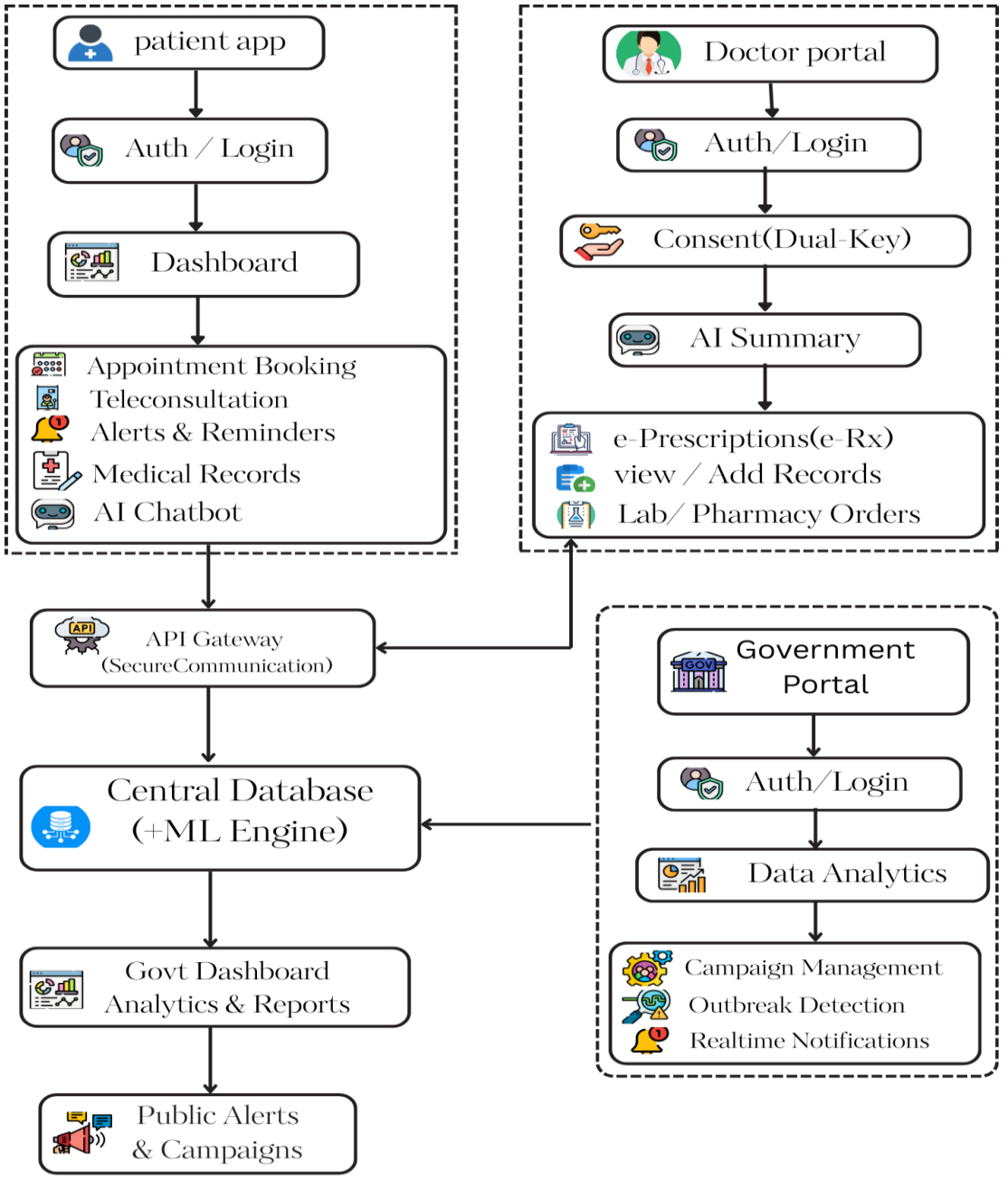
Backend : Node JS, Express JS, REST API, MongoDB, Supabase, Firebase, Socket IO, Solidity.

AI/ML : ChatGPT 5 Model, Gemini 2.5 Flash Model, TenserFlow or PyTorch for custom ML models.

API Services : GitHub, Auth0, Cloudinary, Gmail, Twilio, Razor Pay, Health related APIs (WHO, Ayushman Bharat, OpenFDA, etc.)

Cloud and Deployment : AWS, Docker, GitHub, GitBook, GCP.

Add-Ons : Redis, ElasticSearch, GraphQL, WebRTC, Postman, Jest.



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FEASIBILITY AND VIABILITY

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Feasibility:

1.Our approach Utilizes existing technologies (Web, Mobile, AI, Blockchain) to ensure efficency.
2.A Modular design allows phased and flexible implementation.
3 The Healthcare cloud market set to grow from $1.67 billion (2024) to $4.18 billion (2033), highlighting affordability and scalability.
4. Low initial investment is needed with cloud-based infrastructure.

Viability:

1.Multiple revenue streams: Partnerships, Paid teleconsultation, data-driven research.
2.Large potential user base: Millions of user across pan India.
3.Scalable: Can expand across the country providing premium accessibility.
4.Long term value: Facilitates continuous user registrations and engagement.

Challenges:

1. Ensuring data security and restricted access to patient profile.
2. Designing an interface that supports multilingual, is friendly for low literacy users, with offline interfaces.
3. Seamlessly integration of ABDM, UHI, hospitals, labs, and insurance systems.
4. Continuously evolving with AI, blockchain, and analytics to remain future-ready.

Solutions:

1.Using blockchain with dual consent keys that ensure security and prevent tampering of record .
2. A Multilingual AI chatbot, visuals, and offline sync to make it user friendly for all literacy levels.
3.Implementing flexible APIs for seamless integration with databases, hospitals, labs, and assurer.
4.Establishing a dedicated team for continuous platform updates and improvements.

Use Cases:

1.Migrant workers can carry and manage their health records digitally across states.
2.Patients can book govt hospital OPDs and teleconsultations via app.
3.Doctors can get access to complete histories for safe, informed prescriptions.
4.Govt dashboards for tracking outbreaks, vaccination drives, campaigns in real-time.

Business Potential:

1.Expands doctors reach into remote and underserved areas.
2.Facilitates crowdfunding and partnerships with assurer, labs and pharmaceutical companies.
3.Generates new revenue through teleconsultations, diagnostics, and digital prescriptions.
4.Enhances PPP (Public-Private partnerships) under initatives like ABDM/UHI.

Supporting Facts for Feasibility and Viability

- More than **73 crore** people in India have already created **ABHA Health** IDS under ABDM, showing massive readiness for an integrated digital health record system.
- **27+ crore teleconsultations** have been delivered via **eSanjeevani**, showing the scalability and acceptance of digital healthcare platforms across India.
- India's **digital health market is** expected **to reach $52 billion by 2030**, growing at over **20% CAGR**, securing long-term viability and investment potential..

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IMPACT AND BENEFITS

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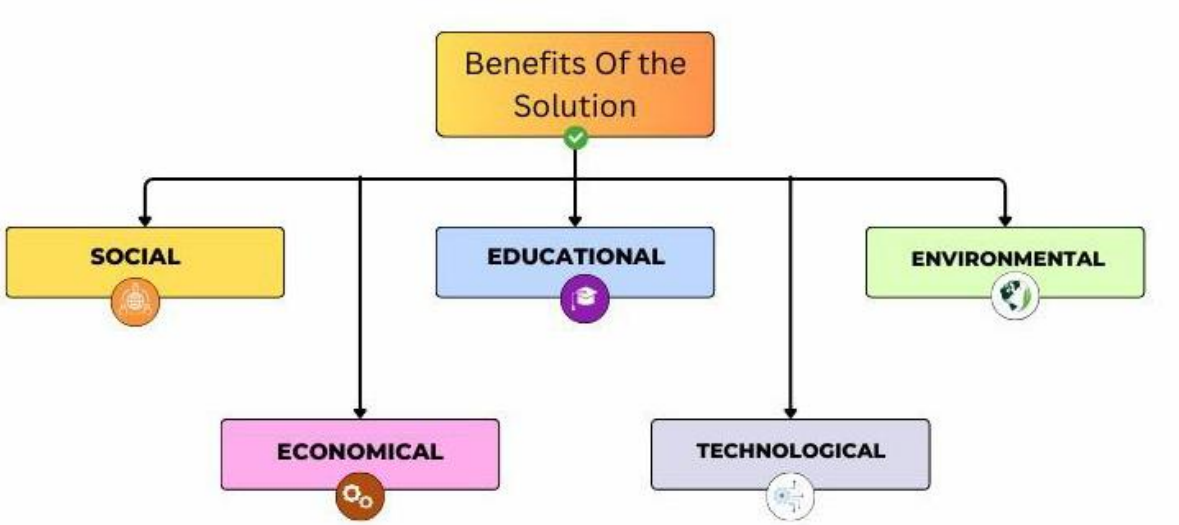

❖ Potential Impact on Target Audience:

- **User Growth:** From 50 lac+ active users today to 50-80% increase in user base, managed by mobility and ease of access.
- **Doctors' Efficiency:** No more assumption, better treatment and 30-50% more patients treated while saving time via AI-powered history summarization.
- **Public Awareness:** Rural and under-privileged citizens receive better access to vaccination drives, free health camps, and campaigns.
- **Government & Public Insights:** Dashboards enables authorities with outbreak analysis and scheme management, while directing citizens with on-time precautions.

❖ Benefits of the solution:

Social:

Unbiased & fair healthcare access for migrants and rural populations.
Early detection in disease trends reduces public health risks.
Safe and secure access of health records build patient trust.

Economical:

Reduction in travel & hospital waiting-time costs for patients.
Cloud infrastructure minimizes system implementation costs.
Creates jobs in health tech, telemedicine, and data analysis.

Educational:

Continuous medical education for public & doctors through digital dashboards.
AI chatbot helps in checking symptoms and suggests preventive methods and remedies.
Dashboards educate citizens on campaigns, vaccination drives & disease outbreaks.

Technological:

Blockchain ensures secure, tamper-proof medical data.
AI driven app guide, symptom checking, summarizer bot improves decision making.
Real-time dashboards support predictive analytics for disease explosions.

Environmental:

Cuts down carbon footmarks by reducing unessential patient travel.
Reduces paper use with digital prescriptions & records.
Encourages virtual consultations over resource-heavy hospital visits.

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RESEARCH AND REFERENCES

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*Note: *We're working on prototype, and will add link of working system after evaluation in Internal Hackathon.*

❖ References

Health Record Platforms

- Abha: https://abha.abdm.gov.in/abha/v3/
- Aarogya Setu: https://www.digitalindia.gov.in/initiative/aarogya-setu/
- E-Health Point: https://www.meditec.lv/en/solutions/ehealthpoint/

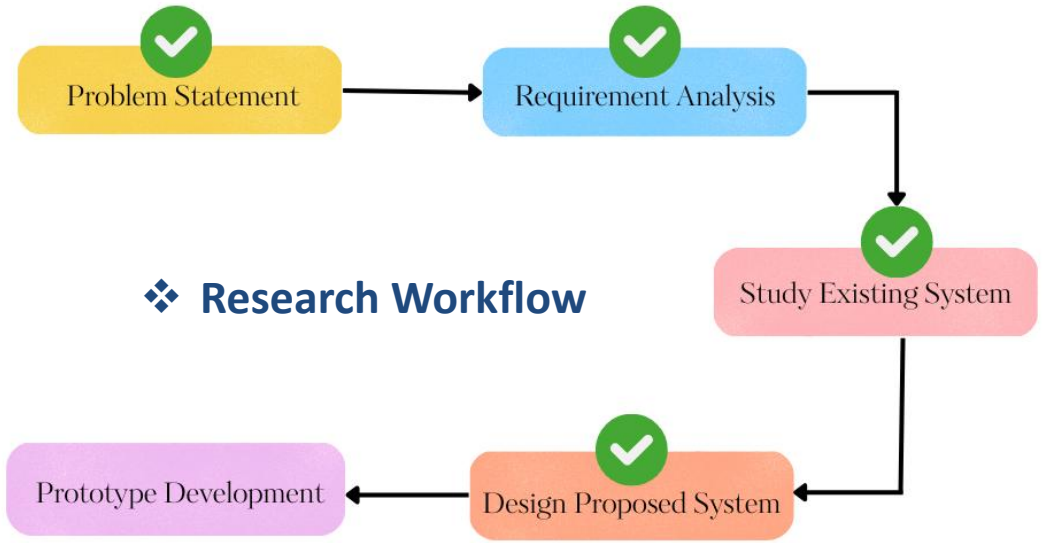
Research & Best Practices

- Electronic Health Record (EHR) System
- The Aarogya Setu mobile application as a bodyguard against COVID-19
- EHR as Source of Data
- Technological Progress in EHR System Optimization
- An Analysis of EHR System in Healthcare Services in Cloud

Feasibility Facts

- Precedence Research
- National Institute of Health

❖ Research Workflow



Features	SWASTHYA	ABHA App	Aarogya Setu
Multilingual	✓	✗	✗
Offline Access	✓	✗	✗
Full Health Records	✓	⚠ (Limited)	✗
Doctor–Patient Consultation	✓	✗	✗
AI Chatbot & Summarizer	✓	✗	✗
Blockchain Security & Dual Consent	✓	✗	✗
Public Health Dashboards	✓	⚠ (Limited)	⚠ (COVID-only)
Crowdfunding & Partnerships	✓	✗	✗
Scalability (Pan-India)	✓	⚠ (Fragmented)	✗
Adoption Potential	✓ (Designed for all literacy levels)	✗ (11.7% adoption only)	⚠ (Dropped post-COVID)