

ALDEX

Connecting Canadian Healthcare

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Canada's Healthcare Challenges & Our Solution

Canada's healthcare system faces long wait times, overwhelmed emergency rooms, limited access to family doctors, and rising costs. A lack of a centralized patient record system worsens these issues, leading to miscommunication between providers, redundant procedures, and difficulty accessing medical records.

Our hackathon project aims to address these challenges by developing a national patient record system based on FHIR standards. This system will enable secure data sharing across hospitals and clinics, AI-driven record summarization, wearable health tracking, and intelligent symptom monitoring, improving both patient outcomes and provider efficiency.

Key Problem Statements

1 Lack of a centralized medical record system

Currently, patient data is stored in separate systems within hospitals, clinics, and provinces, making it difficult for healthcare providers to access complete patient histories. Without a unified system, doctors may order redundant tests and procedures because they cannot retrieve prior records. Patients moving between hospitals or provinces face delays in treatment due to missing records, requiring manual data transfers.

2 Delays in prescription processing

Many patients wait in long lines at clinics or hospitals just to refill simple prescriptions that could be automated. A lack of digital prescription systems means doctors spend unnecessary time on routine approvals, reducing efficiency. This inefficiency adds strain to healthcare providers, contributing to longer patient wait times and administrative burdens.

3 Limited access to specialists

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4 Overworked and underpaid medical staff

The shortage of healthcare professionals leads to high workloads, increasing stress and risk of errors in patient care. Administrative burdens, like manually managing records and scheduling, take time away from actual patient care. Implementing AI-driven automation for documentation, prescriptions, and scheduling can reduce workload and allow healthcare providers to focus on patients.

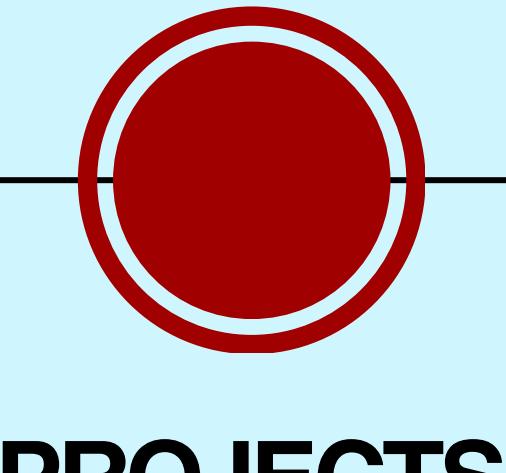
Develop a Python-based backend with AI-driven anomaly detection and record summarization for healthcare. Implement wearable data sync, AI chatbots for patient support, and image-based logging. Ensure security & compliance with OAuth 2.0, encryption, and audit logging.

Design an FHIR-based database for secure patient data storage. Integrate AI for pattern analysis, real-time health tracking, and record summarization. Sync with wearables, enable chatbots, and image-based logging. Ensure Bill C-72 compliance.

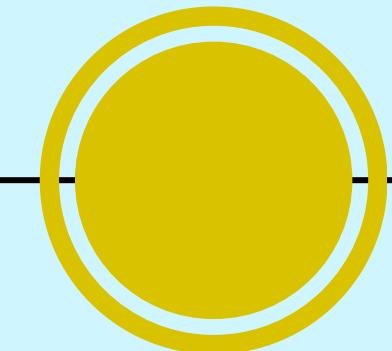
Build a centralized, FHIR-compliant patient record system that enhances security, accessibility, and interoperability. Utilize AI for record summarization, anomaly detection, and health tracking. Enable chatbots, image-based logging, and online supplement prescriptions.

Leverage FHIR, AI, and wearables to create an interoperable digital healthcare platform with high security, minimal redundancy, and improved efficiency for patients and providers.

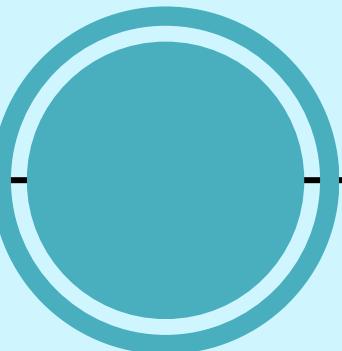
Create a seamless, connected, AI-powered national healthcare system that enables secure, real-time medical record access across Canada, improving patient outcomes and reducing inefficiencies.



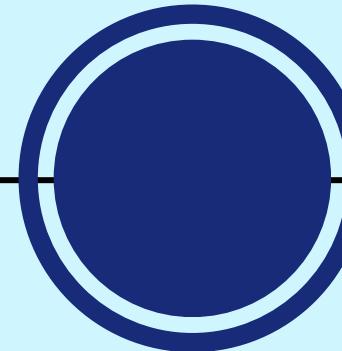
PROJECTS



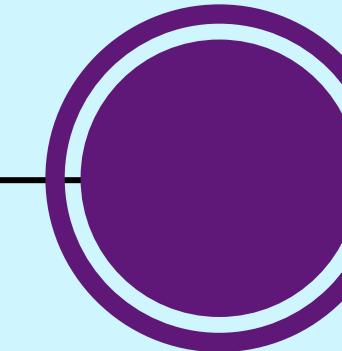
INITIATIVES



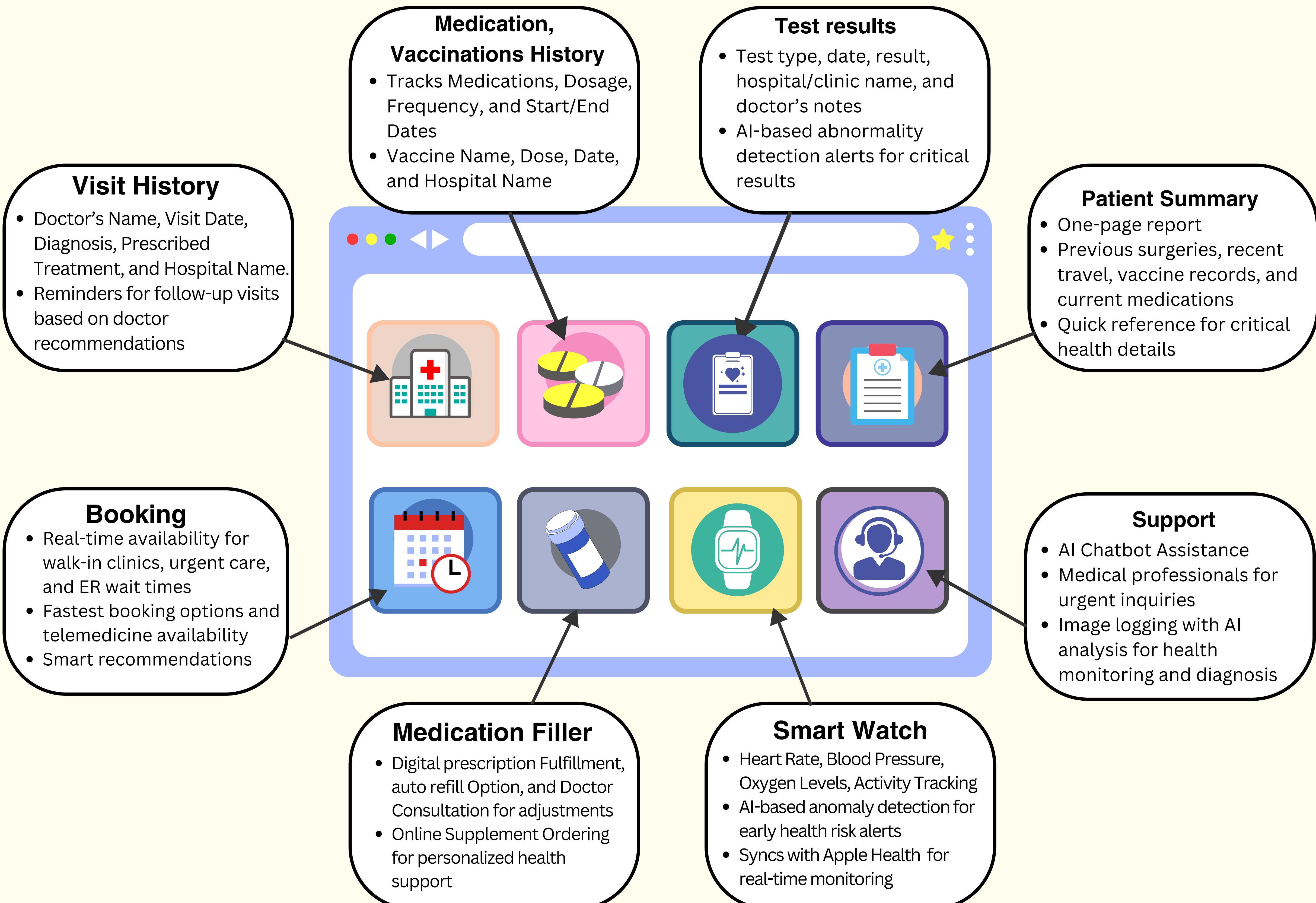
OBJECTIVES



MISSION



VISION



KEY FEATURES

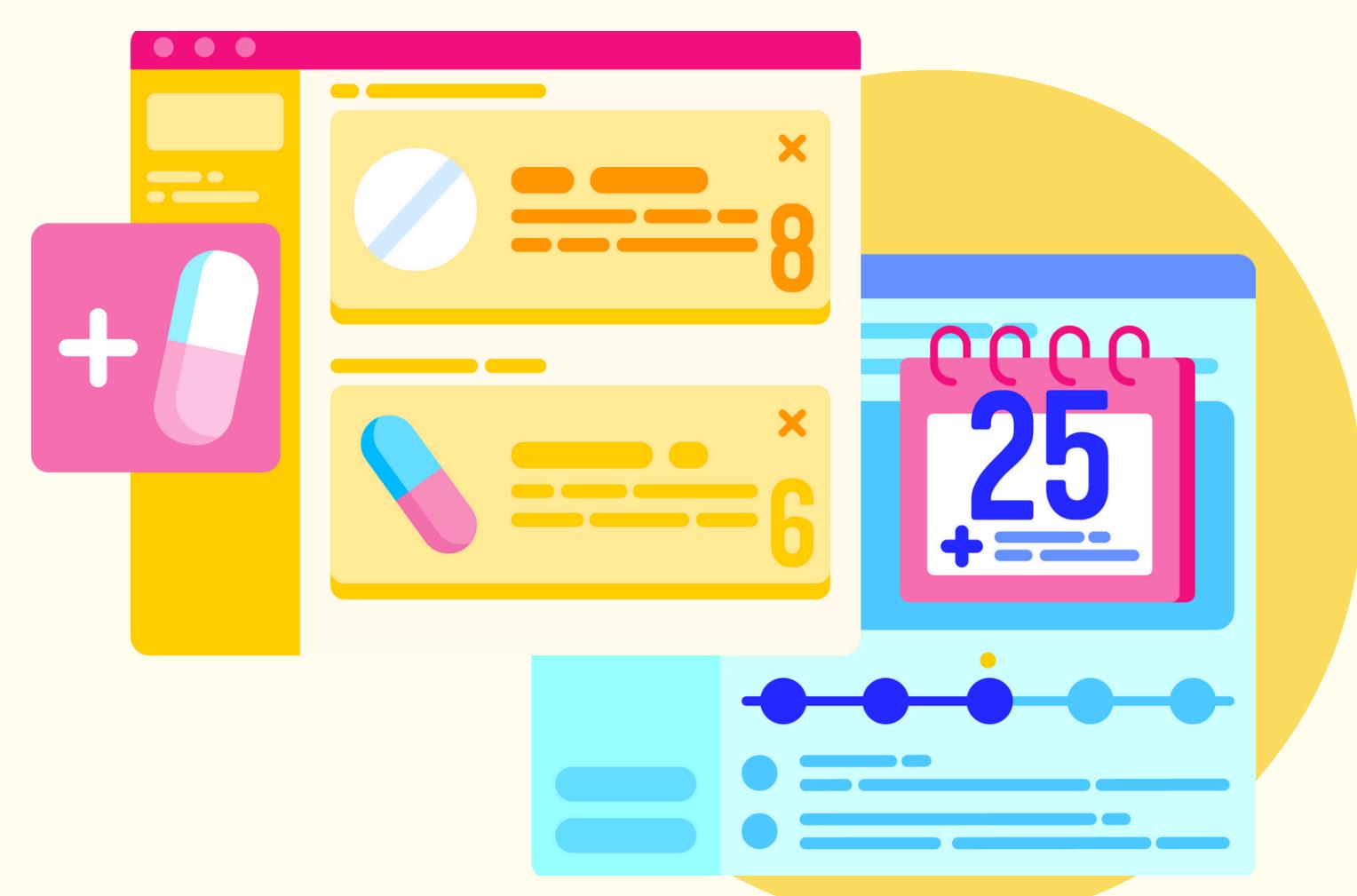


Provider Portal vs Patient Portal

- Two ways to access the site, as a patient or a provider
- Patient logs into their account through email
- Provider can view patient's information by looking them up by their Personal Health Number (PHN) when selecting a feature

Medical Consultation History

- A comprehensive history of clinical visits from a patient
- Data can be entered by patient through their account or a doctor or nurse through the provider portal
- Key details include: Date, Location, Reason for visit, Attachable Files, Duration of Visit





Medication Tracker

- History of prescribed medication list
- Data includes Drug Name, Ingredient Content, Dosage, Pharmacy, etc.
- Medication API from FDA
- Patients can add pills and track which ones they've taken

Test Results

- A place for patients to store medical results and comments
- Providers can input files and comments into a special folder on the patient's page called clinical results



Patient Summary Report

- A one page report that contains all the important procedures a patient has undergone and other important details
- Includes previous surgeries, recent travel, vaccine records, current important medication
- Can be manually imported by patient
- Providers can view a patient's records through their portal

Scheduling Appointments

- Providers can input their clinics and their availability
- Patients will see clinics closest to them or be able to search them up
- Patients can either choose to book in-person or virtual appointment
- Page will show a list of bookable clinics and once clicked on a calendar with bookable times will show up

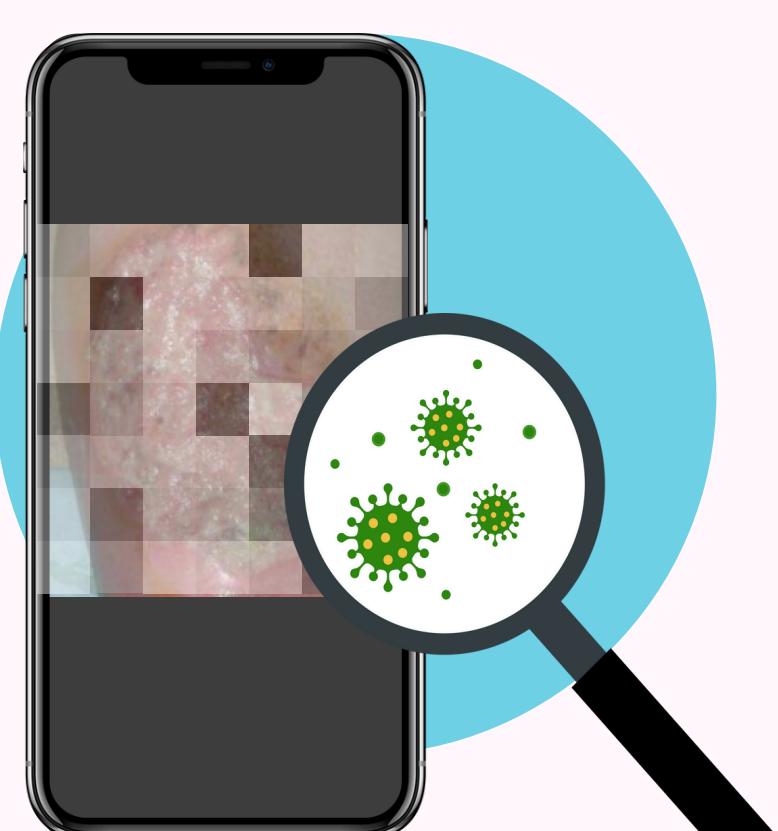


Prescription Filler

- A button that allows patients to submit symptoms and receive a prescription virtually from a provider
- Patients can also view active and inactive prescriptions as well as request refills
- Providers will get notification of prescription requests and can choose to approve or deny them and send them a virtual prescription

Smart Watch Sync

- Use Healthkit API to allow patients to upload health data from their Apple Watch to AIDEX
- An AI algorithm will flag the patient and a provider if vitals are abnormal
- Providers are able to access and view vitals



AI Diagnosis (Image Processing)

- Allows patients to log and upload images of physical conditions such as wounds, rashes, burns, or post-surgery healing.
- AI analyzes images to detect infections, abnormal healing patterns, or skin conditions.
- Doctors can review assessments and provide feedback for remote monitoring.

1

AI Model for Image Analysis

- AI analyzes the uploaded image for signs of infection, abnormal healing, or skin conditions.
- Uses computer vision models trained on medical datasets to classify and assess severity.
- Generates risk scores and determines whether medical attention is needed.

2

Image Upload & Storage

- Patients upload images of wounds, rashes, or post-surgery sites through the app.
- Images are stored securely in a PIPEDA-compliant cloud database.

3

AI Decision & Alert System

- AI detects signs of infection or abnormalities, notifies the patient and recommends seeking medical attention. If no issues are found, the system tracks the healing progress over time.
- Doctors can review AI assessments and provide feedback via a clinical portal.

4

Doctor Review & Monitoring

- Doctors can access patient images and AI assessments through their secure dashboard.
- AI-assisted healing progress tracking helps monitor improvement over time.
- Enables remote patient follow-ups and reduces unnecessary in-person visits.

5

Continuous Learning & Model Improvement

- Collect real-world data (with patient consent) to improve AI accuracy.
- Retrain models periodically using new medical cases to enhance reliability.
- Implement doctor feedback loops to refine model performance.

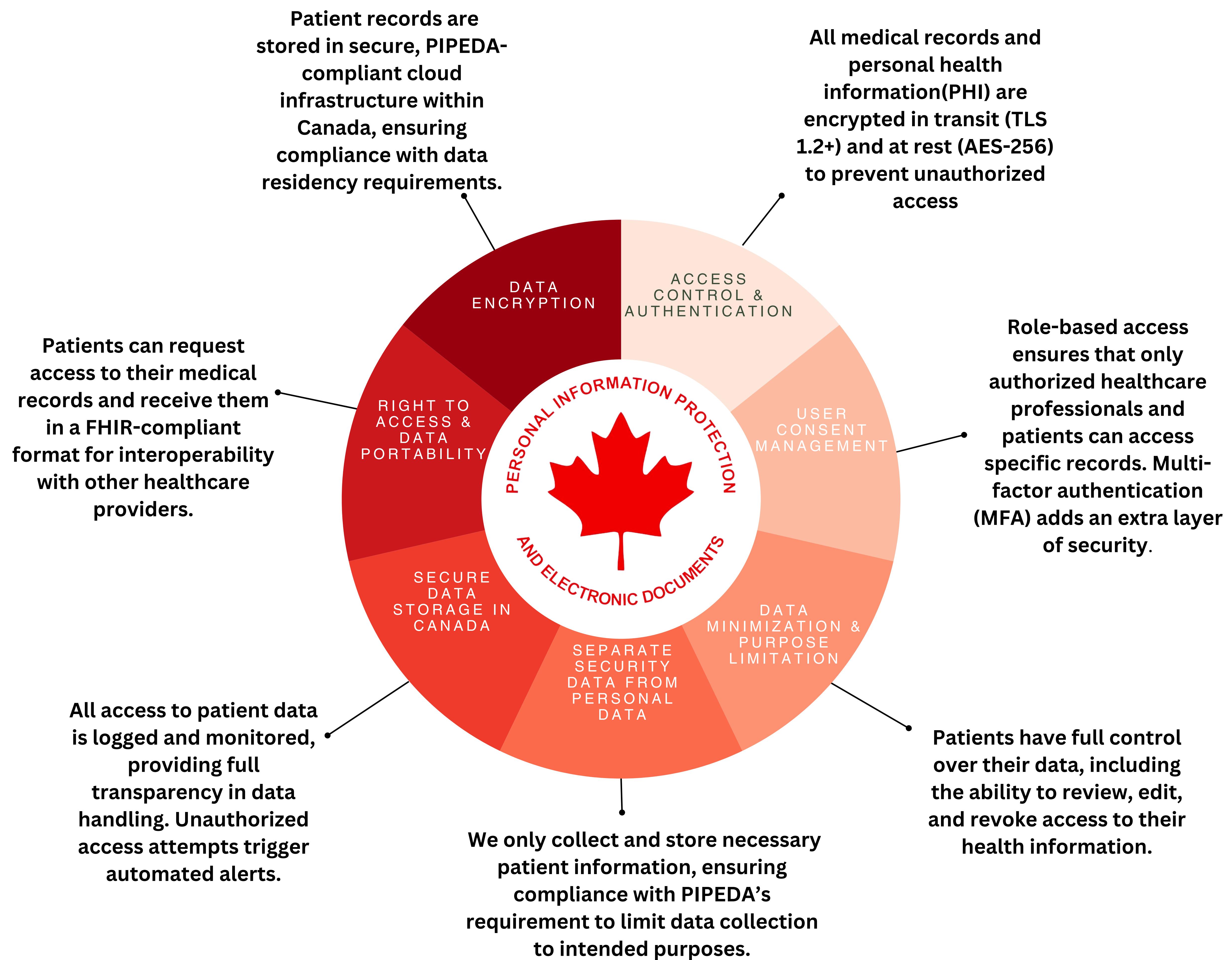
TECH FRAMEWORK



**FRONT END
CLIENT SIDE**

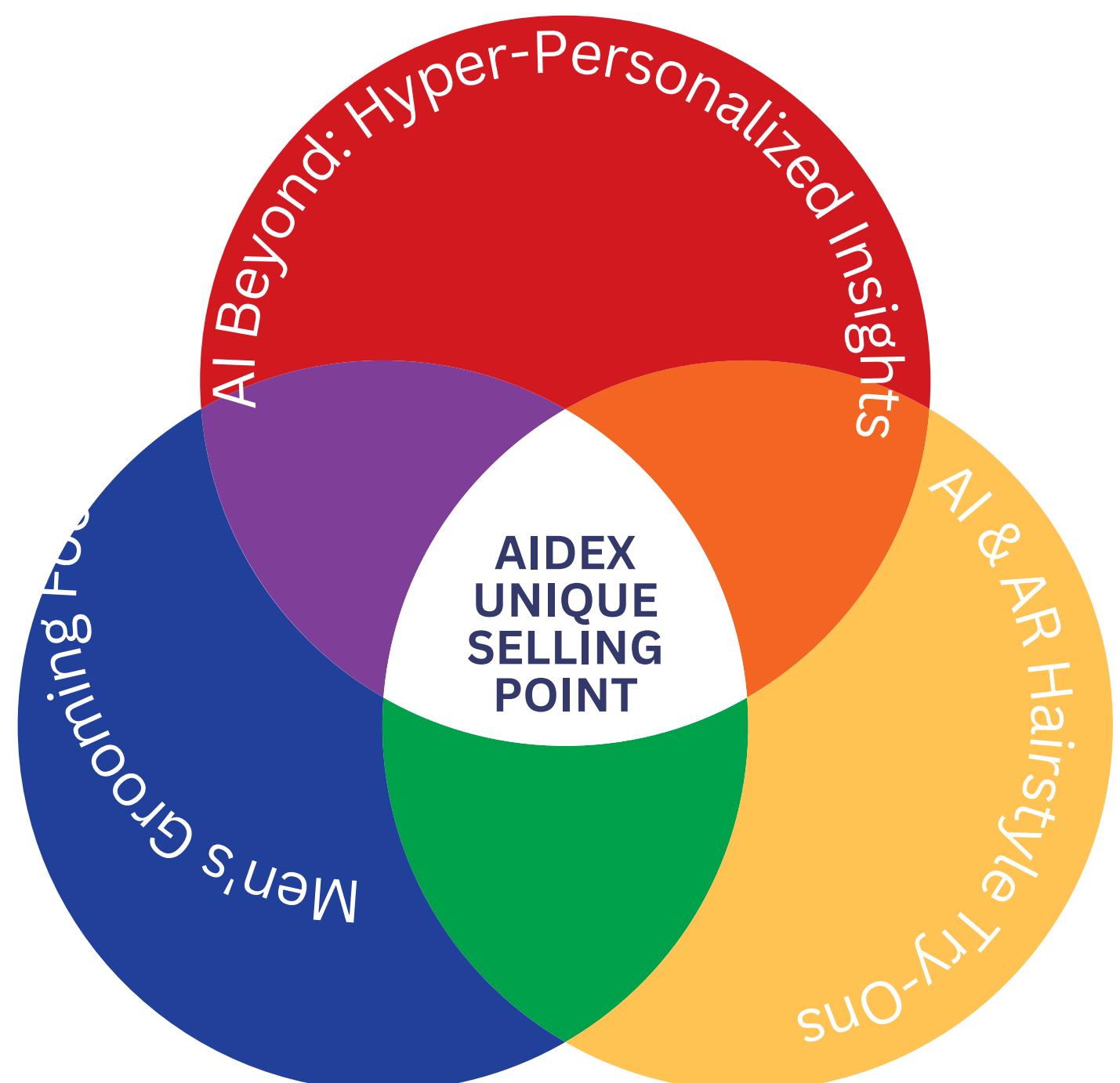
**BACKEND
SERVER SIDE**

Compliance with PIPEDA



Competition Analysis

Competitors	Offering	Their features
Medeo	Online doctor consultations and online prescriptions	Lacks a centralized national medical record system and health monitoring
Pulsara	Hospital communication platform	No AR/guidance for on-scene procedure
AccuVein	Hospital communication platform	Single-use, no holistic emergency support
Proximie	AR for remote surgery guidance	Focused on hospitals, not pre-hospital care
First Aid Apps	Step-by-step guides (non-AR)	Not hands-free or context-aware



Eliminating Paper Waste in Healthcare

The Problem: Over 2.2 billion prescriptions are issued annually in the U.S., consuming millions of tons of paper, contributing to deforestation and medical waste.

- Digital Prescriptions: Secure, electronic prescription management eliminates the need for paper scripts, reducing environmental impact.
- EHR Integration: By leveraging FHIR-based medical record storage, we enable seamless digital documentation, reducing reliance on printed records.
- Sustainability Impact: Less paper usage means lower carbon footprint, reduced medical waste, and a more efficient healthcare system.

Cutting Carbon Emissions in Healthcare

The Problem: Healthcare-related travel accounts for 10% of global transportation emissions, significantly contributing to climate change.

- Virtual Appointments: By enabling remote consultations through AI-powered chatbots and telehealth integration, we reduce patient travel, cutting emissions by 36-90% per visit.
- Hospital Energy Efficiency: Digital health solutions reduce in-person visits, lowering facility energy consumption from lighting, heating, and medical equipment usage.
- Hospitals operate more efficiently with optimized resource usage.

Market Segment	Market Size	Growth Rate	Potential Adoption
Global Digital Health Market	\$559.52B (2027)	17.8% CAGR	High adoption expected
Wearable Medical Device Market	\$61B (2027)	13.6% CAGR	Expanding demand for AI-driven health monitoring
AI in Healthcare Market	\$187.95B (2030)	37% CAGR	Rapid growth, driven by AI decision support
Telehealth & Virtual Care	\$290B (2028)	24.2% CAGR	Post-pandemic shift to AI-powered remote healthcare

Serviceable Available Market (SAM):

- Targeting hospitals, emergency response providers, and telehealth companies in North America (~\$50B market).
- Initial adoption from private healthcare institutions and first responder agencies.

Serviceable Obtainable Market (SOM):

- First 2 years: Penetration in Canada and the U.S. (~\$5B market) through partnerships with clinics, emergency response units, and telehealth startups.
- Scaling globally after securing initial adoption.

Short-Term (MVP - Minimum Viable Product) - 6-12 months	Mid-Term (Expansion & Partnerships) - 12-24 months	Long-Term (Scalability & Full Integration) - 2-5 years
Develop a Prototype of the AI-Assisted Medical Record System <ul style="list-style-type: none"> • Build an AI-powered summarization tool that processes patient data and identifies key insights. • Start with a pilot version that works with a limited dataset (e.g., test cases from open-source medical data). • Ensure HIPAA and PIPEDA compliance for data security and privacy. 	Expand the National Medical Record System Pilot <ul style="list-style-type: none"> • Partner with clinics, telehealth providers (e.g., Medeo, Maple), and hospitals to integrate patient data. • Develop a secure blockchain-based system to ensure data integrity and accessibility. 	Full Integration with National Healthcare Systems <ul style="list-style-type: none"> • Work with government health agencies to integrate the national patient record system into existing healthcare infrastructures. • Expand AI diagnostic capabilities to predict long-term health risks (e.g., diabetes, cardiovascular diseases).
Integrate AI Chatbot for Symptom Monitoring <ul style="list-style-type: none"> • Create a conversational AI chatbot that asks symptom-related questions and provides initial recommendations. • Develop a simple web/mobile app interface for testing. 	Enhance AI Decision-Making for Emergency Cases <ul style="list-style-type: none"> • Train AI to assess medical urgency and provide real-time triage recommendations. • Partner with emergency services to test AI-powered 911 and 311 triage features. 	
Basic Wearable Device Integration <ul style="list-style-type: none"> • Sync with Apple HealthKit and Samsung Health to collect heart rate, blood pressure, and oxygen levels. • Use AI to detect trends and alert users if early warning signs appear. 	Develop Image-Based AI for Symptom Logging <ul style="list-style-type: none"> • Train AI models to analyze images for skin conditions, wounds, infections, and physical abnormalities. • Provide preliminary assessments to users before consulting a doctor. 	