

- Problem Statement ID : OPEN INNOVATION, THEME-3
- Team Name : NGI- NEW GEN INVENTORS
- TEAM ID : HK-014
- TEAM MEMBERS : SNEHANSHU SHEKHAR, RYAN SINGH GOSAIN, AYUSHKUMAR JHA , MOHD. HAMMAZ

Problem & SOLUTION

1.) Instant Emergency Activation (Eliminating Friction) :

- The Problem: In a high-stress situation, a victim often cannot unlock their phone or navigate a UI to call for help.
- The Solution: The 5-Shake Detector and Panic Button allow for "blind activation." This ensures alerts are triggered instantly without the need to look at the screen, providing a critical advantage when time is of the essence.

2.) Precision Response (Eliminating Location Ambiguity) :

- The Problem: During a crisis, users are often disoriented and unable to communicate their exact location to rescuers . The
- Solution: Integrated GPS Tracking and SOS Messaging automatically broadcast the user's real-time coordinates to multiple registered contacts. This creates a "Digital Breadcrumb" trail for immediate and accurate rescue.

3.) Psychological Deterrence (Creating Social Pressure) :

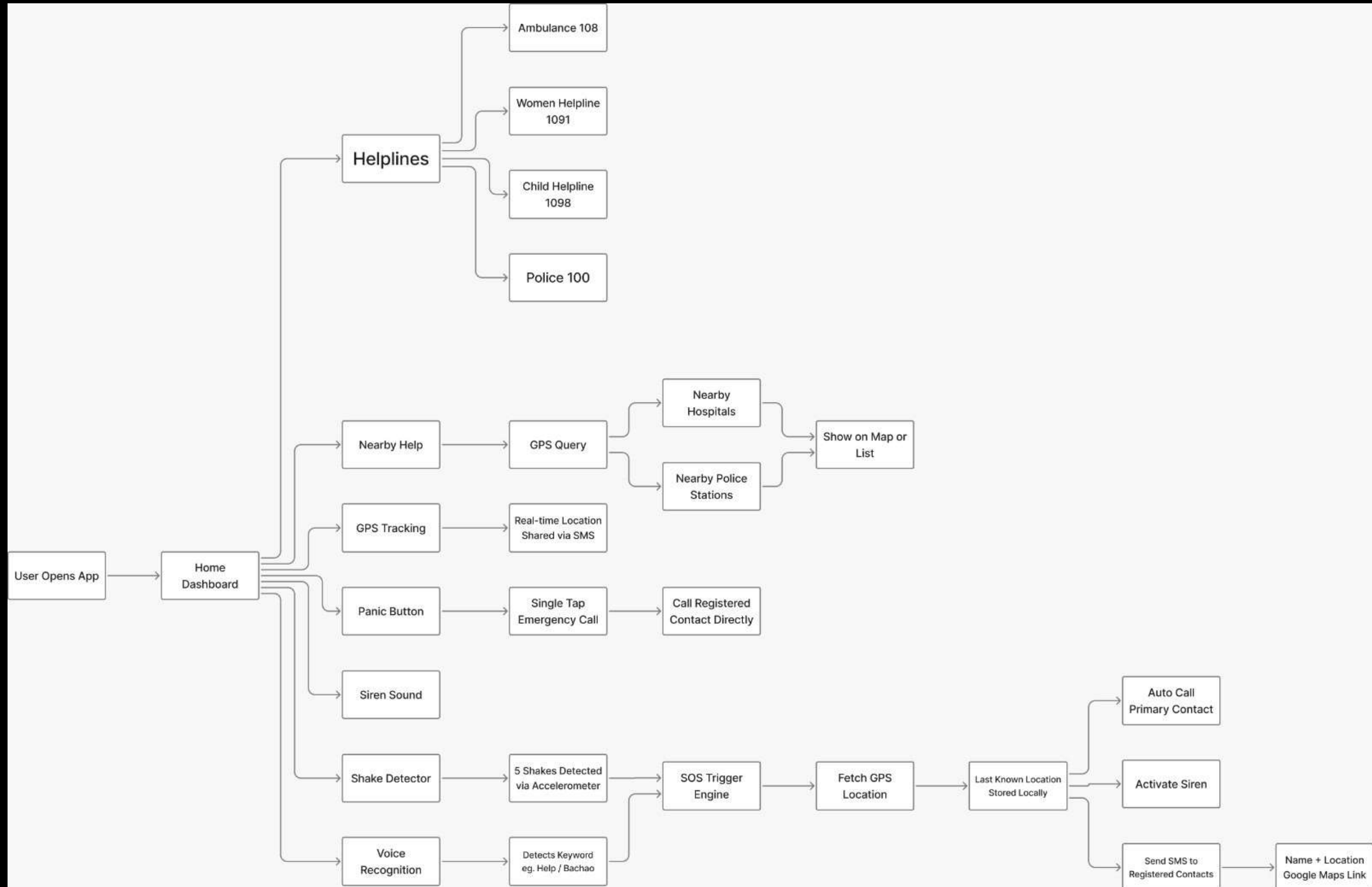
- The Problem: Many attackers rely on the victim's silence and the lack of witnesses to commit a crime.
- The Solution: The Loud Siren Sound forces an immediate public intervention. It disorients the attacker and draws the attention of bystanders, effectively turning a private threat into a public emergency.

4.) Reducing Cognitive Load (Simplifying the Crisis) :

- The Problem: Panic causes a "mental block," where users forget emergency numbers or lose their sense of direction . The
- Solution: Pre-loaded National Helplines and the Nearby Police/Hospital Finder centralize all life-saving resources. Users don't have to search or type; help is just one tap away.

5.) Post-Event Support & Accountability:

- The Problem: If a phone is snatched or powered off, the trail often goes cold.
- The Solution: By sharing the Last Known Location immediately upon trigger, the site ensures that law enforcement and family have a definitive starting point for search and rescue operations.



TECH STACK & APPROACH

The Tech Stack

Frontend - React 19, TypeScript, Vite

Styling - Tailwind CSS 4

Web APIs - Speech Recognition, Device Motion, Geolocation, Web Audio, Media Recorder, Media Devices

External - OpenStreetMap Nominatim(geocoding), Google Maps, WhatsApp Web, SMS Protocol
Storage – Local Storage for contacts

Approach

- Offline-First: Critical SOS features function without an internet connection.
- Privacy-Centric: Zero server-side data storage; 100% of user data stays on-device.
- Resource Optimized: No external dependencies ,optimized for low-end hardware.
- Native-Ready: Pre-configured for immediate conversion to an Android APK.

UNIQUENESS & INNOVATION FACTOR

- Works on Low-End Devices

Targeting Android 5.0+ with no dependency on high-end hardware means the web app reaches the population that needs it most — women in rural or economically disadvantaged areas who typically own budget smartphones

- Evidence Collection Mode (Suggested Addition)

Silently start recording audio or video in the background the moment SOS is triggered and auto-upload it to cloud storage or send it via email. This creates a digital evidence trail, which is critical for legal cases.

- Multilingual Voice Trigger

Supporting distress keywords in regional languages (Hindi, Tamil, Bengali, Telugu etc.) makes it accessible to non-English speaking users across India, which no mainstream safety web app currently does well

FeASiBility & ChAllenGeS

Feasibility

Uses existing smartphone features (GPS, SMS, microphone, internet) Built with scalable cloud infrastructure Real-time database for instant alert delivery Low development and deployment cost No additional hardware required Easily expandable to city/state/national level Compatible with Android & Web platforms Can integrate with police & emergency services APIs

Challenges

Ensuring user data privacy & encryption Maintaining real-time accuracy in low network areas Avoiding false SOS triggers Battery optimization for background monitoring Gaining user trust & widespread adoption Collaboration with authorities for faster response Handling large-scale user data securely

ReSeARCh & ReFeRenCe

Human–Computer Interaction (HCI) research:

Yadav, D., et al. (2020). “Design and Evaluation of Mobile Apps for Women’s Safety.” ACM Digital Library . Kumar, A., & Gupta, R. (2021). “Integrating IoT and GPS in Women Safety Applications.” IEEE Access . Privacy and cybersecurity guidelines:

OWASP Mobile Security Testing Guide . Offers frameworks for ensuring secure communication, GPS protection, and safe data handling . GDPR (for Europe) or IT Act (India) compliance for data privacy . Crisis response digital frameworks:

GSMA Mobile for Development Reports (2019–2023): cover how mobile technology supports emergency and safety applications in developing contexts . Harvard Humanitarian Initiative (HHI): research on digital emergency alerts and ethical design.