



- Problem Statement ID: WS002
- Problem Statement Title: Safety Route Navigation
- Domain: Women Safety
- Team Name: HerWay AI Safety Team
- Team Leader Name: Lavanya Dhoke



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Idea/Approach Details

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HerWay AI: Navigating Safely, Empowering Women



Shortest Route
Navigation



Safe Route
Navigation



Lack of Safety
Awareness



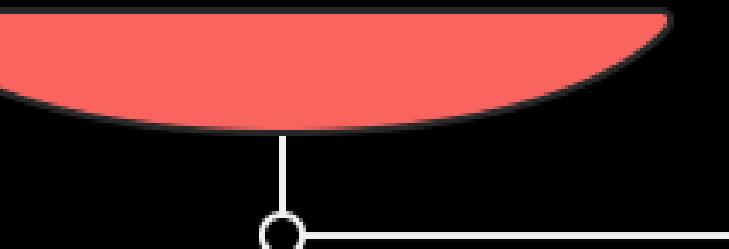
Safety Features



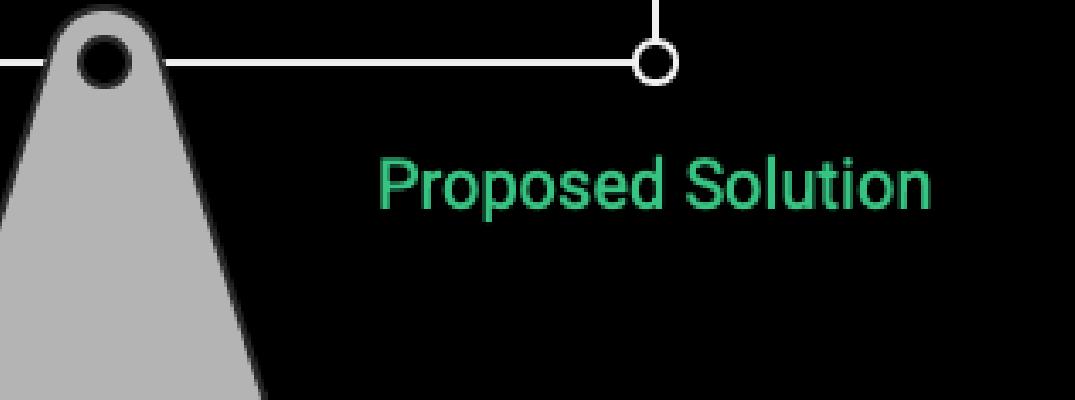
No Help Points



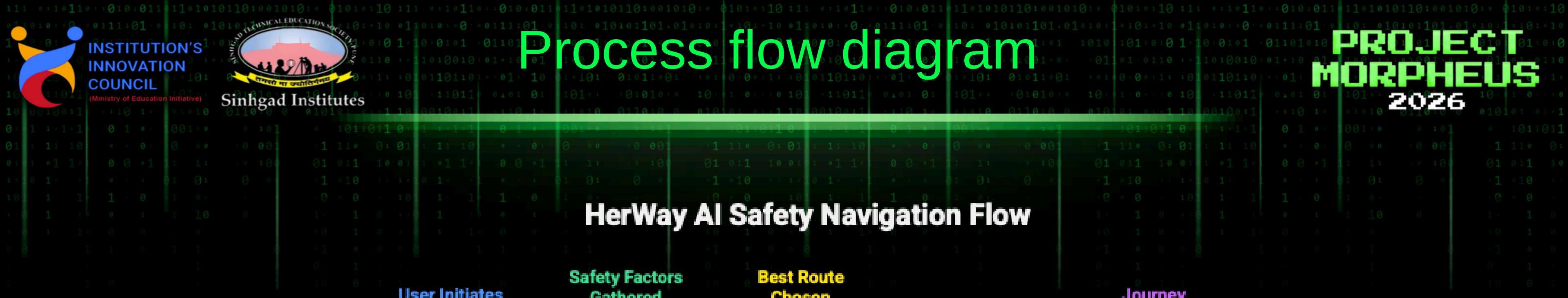
Nearby Help
Points



Problem Statement



Proposed Solution



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Process flow diagram

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HerWay AI Safety Navigation Flow

User Initiates Navigation

User opens HerWay AI and enters destination

Safety Factors Gathered

AI collects crime, lighting, crowd, time, and help point data

Best Route Chosen

System selects the route with the highest safety score

Risk Identified

AI detects abnormal activity during the journey

Journey Completed

User reaches destination safely or SOS is resolved



Multiple Routes Provided

System generates several route options for user selection

AI Assesses Safety

AI calculates a safety score for each route

Journey Tracked

AI monitors user's journey in real-time

Emergency Response

If risk is detected, AI triggers an SOS alert



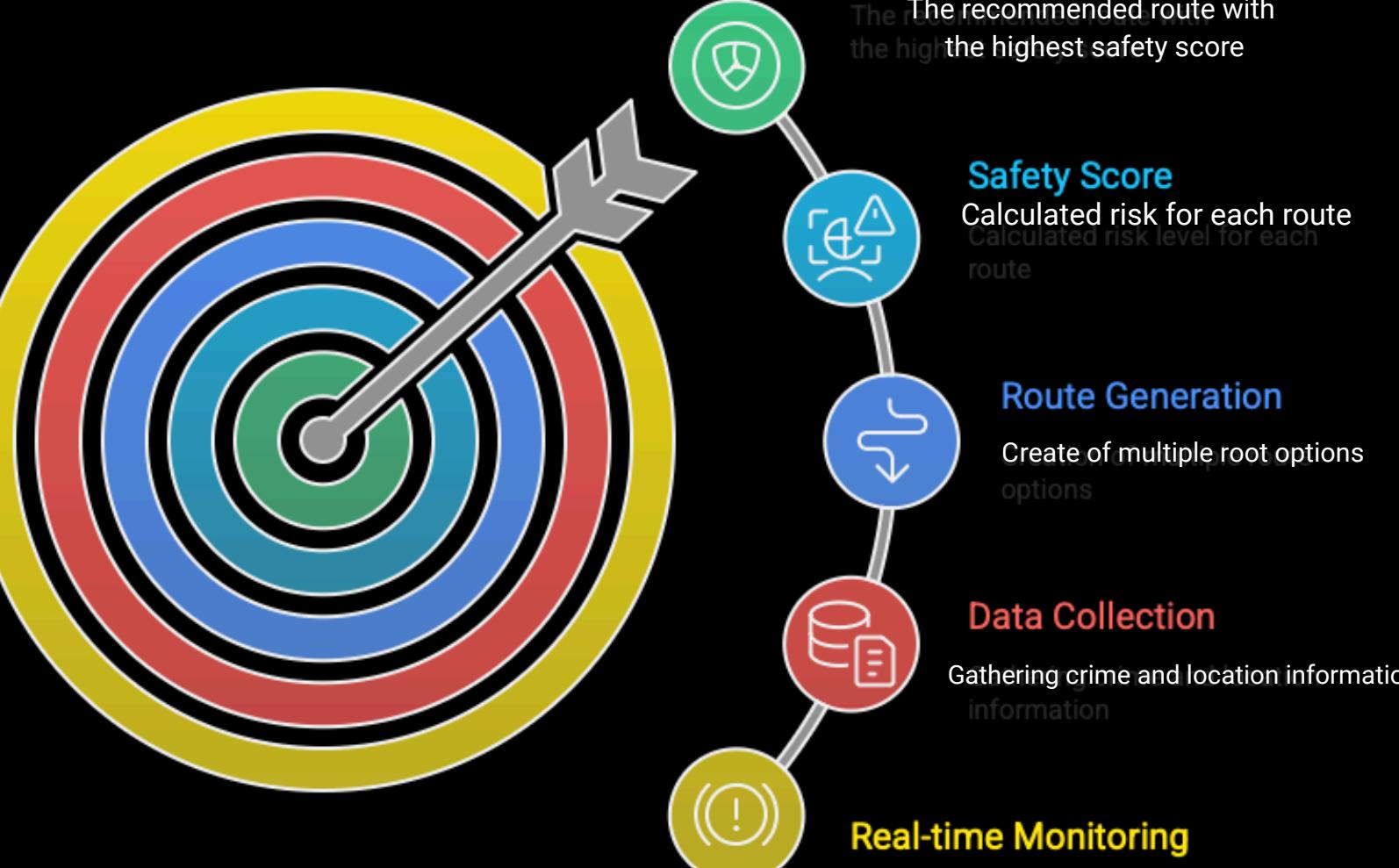
Methodology used

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- Integrate Google Places API to fetch nearby police stations and street lighting locations
- Use open crime data APIs (e.g., data.gov.in for India) to access historical and regional crime statistics
- Store and manage user-generated safety ratings using Firebase
- Build an ML-based safety scoring model (e.g., Random Forest) trained on historical crime and location data
- Use Socket.io to enable live safety alerts and updates

Crime Route Safety System

Safest Route
The recommended route with the highest safety score





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Solution Concept & Feasibility

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Hybrid Navigation System Feasibility and Demand

Advanced AI Navigation

High demand but low feasibility hinders immediate implementation.

Low Feasibility

Basic Safety Features

Low feasibility and demand limit its potential.

High Demand



Low Demand

Urban Crime Alerts in India

High feasibility and demand make it a strong market.

High Feasibility

Community-Driven Risk Mapping

High feasibility but low demand requires market development.



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Use cases & description



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1. Safe Route Navigation*

* Provides the safest route based on safety scores, crime data, and environmental factors rather than only shortest distance.

2. Night-Time & Vulnerable User Safety

* Recommends well-lit roads and police-station-proximate routes to ensure safer travel for women, students, and senior citizens.

3. Real-Time Unsafe Zone Alerts

* Sends instant alerts when users approach or enter high-risk areas, enabling quick preventive action.

Women's Safety

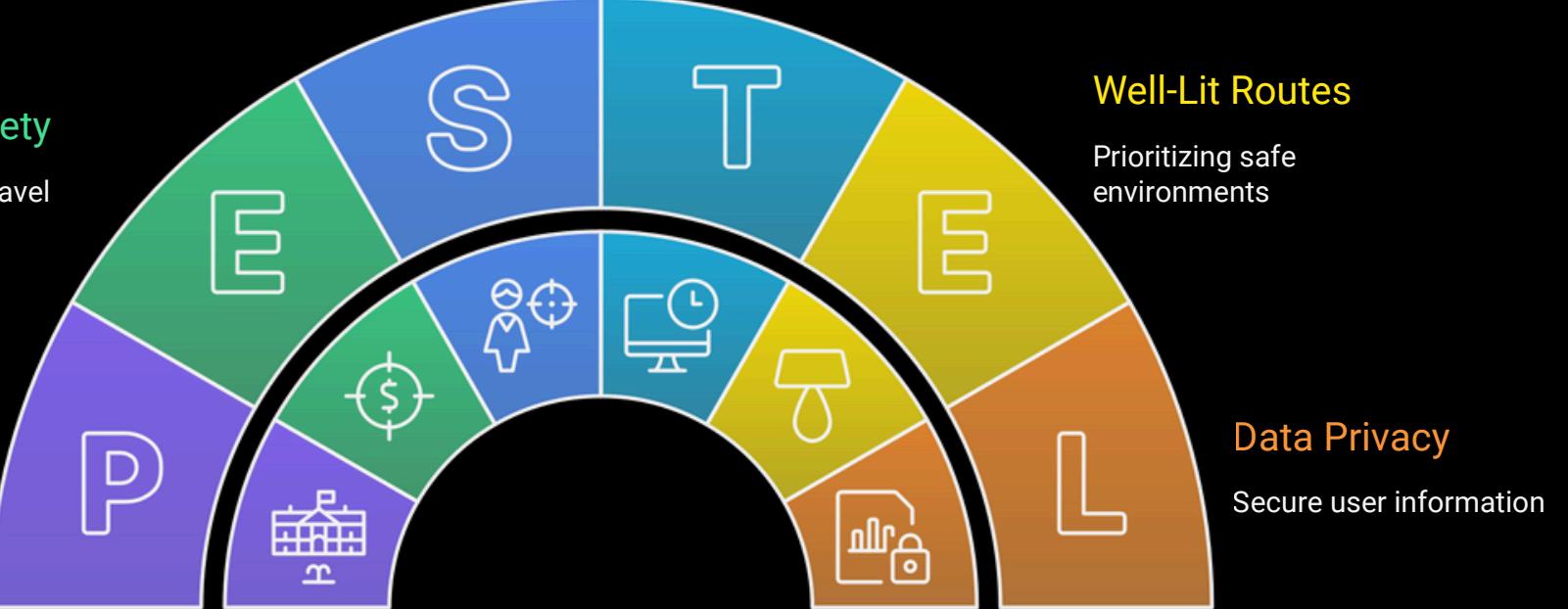
Empowering female commuters

Real-Time Monitoring

Advanced safety features

Well-Lit Routes
Prioritizing safe environments

Data Privacy
Secure user information



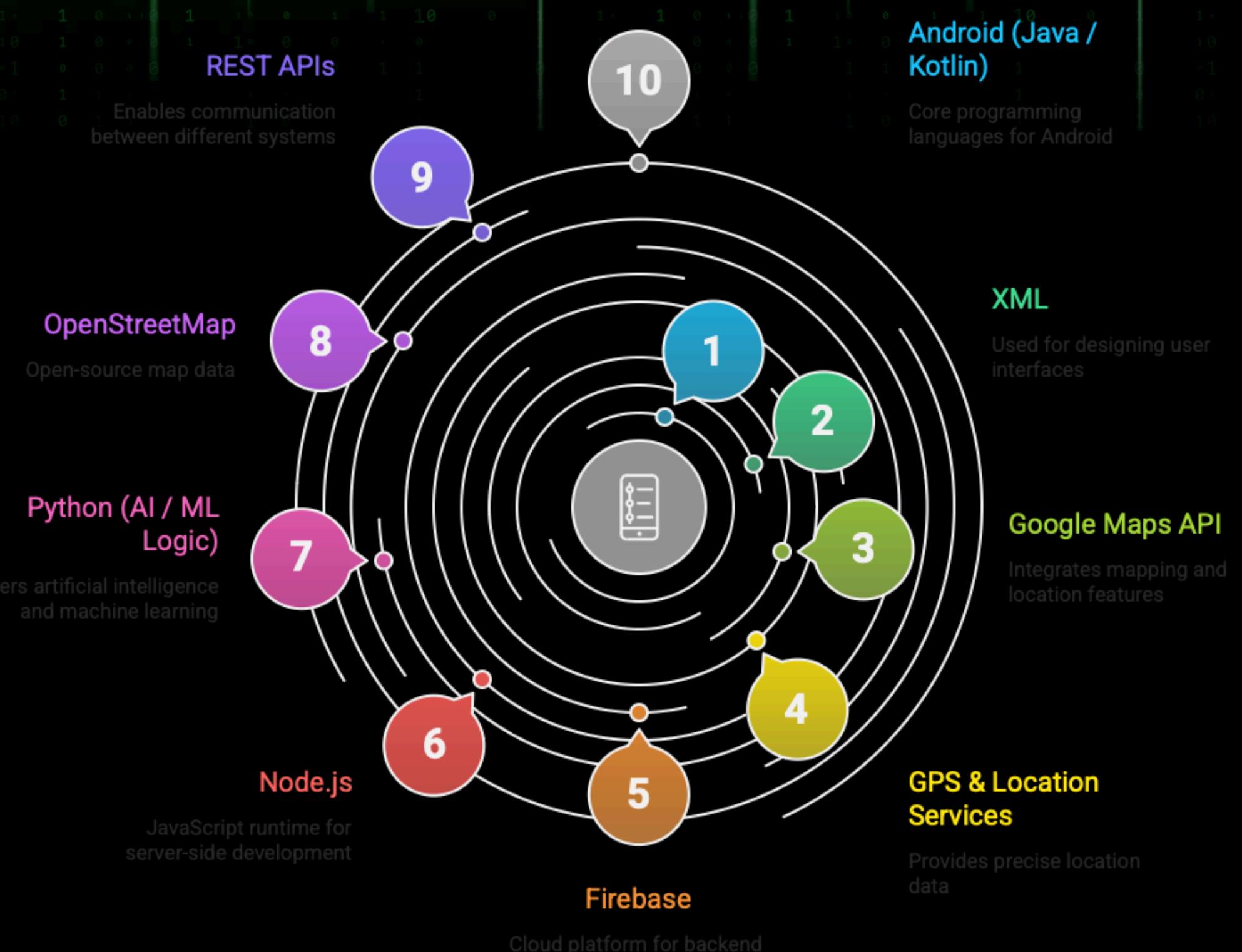


Technology stack used

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- Frontend: Flutter/React Native
 - Backend: Firebase/Node.js
 - Maps/APIs: Google Maps, OpenStreetMap, NCRB Crime API
 - ML: TensorFlow Lite (on-device scoring)
 - Database: Firestore (real-time ratings)
 - Other: Socket.io (alerts), ARCore (overlays)





Constraints

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- **End-to-End Encryption:** Ensure all live location data and personal travel history are encrypted so they cannot be intercepted by third parties.
- **Minimal Data Retention:** Adopt a "delete-by-default" policy where sensitive location logs are purged after a set period.
- **Granular User Permissions:** Allow users to toggle location sharing off or choose "only while using the app" to limit background tracking.
- **Regular Security Audits:** Conduct frequent third-party penetration testing to identify and patch vulnerabilities before they can be exploited.