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VISHWA VIDYAPEETHAM
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HACKxAMRITA
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REFLEX

TECH TITANS

OPEN INNOVATION

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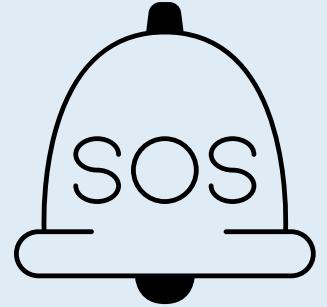
NEHA KRITHIK LAKSHMI DURGA NIMMALA

ANISHA DESABATHULA

PROBLEM STATEMENT



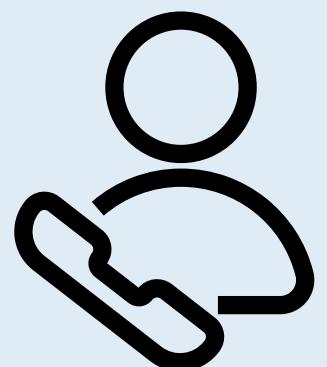
THE GAP



Current SOS systems are too slow. They require a user to unlock, open an app, and tap: impossible during a sudden attack.



Rural areas are left behind. Low signals, zero surveillance, and basic phones make standard safety apps useless.



No unified response exists that alerts trusted contacts, dispatches surveillance, and notifies police; simultaneously.

OUR VISION

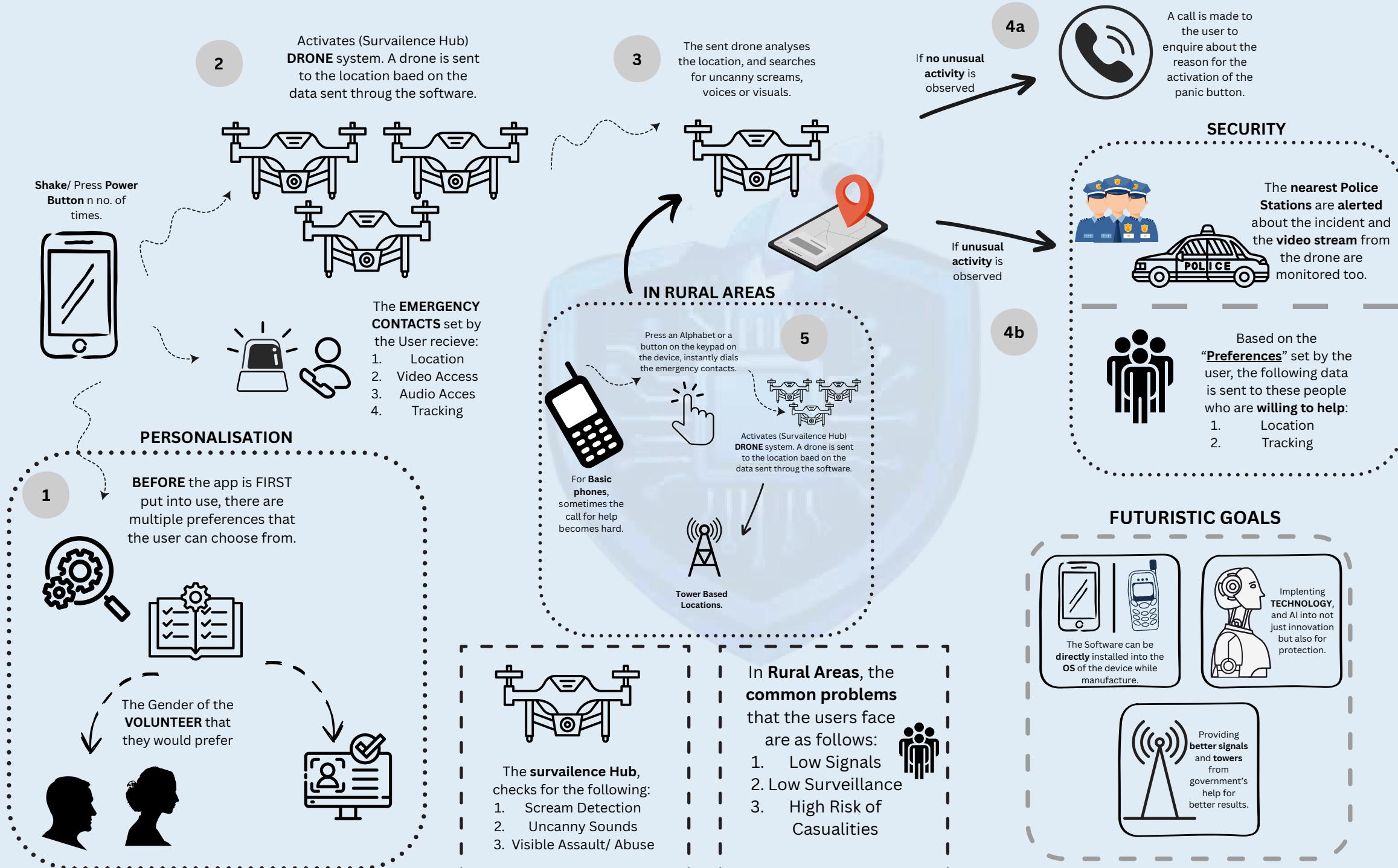
SAFETY THAT IS INSTINCTIVE,
INVISIBLE, AND UNIVERSAL.

- Shake or press the button; no unlocking needed
- Drone-based surveillance detects screams, sounds & visual threats
- Live feed sent to trusted contacts + nearest police station
- OS-level integration at manufacture: no app install required

PROPOSED SOLUTION



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TECH STACK



MOBILE APP FRONTEND LAYER

React Native
Cross-platform iOS & Android from one codebase

Firebase Cloud Messaging
Instant push alerts to emergency contacts

Accelerometer API
Detects shake gesture to trigger SOS silently

Google Maps SDK
Live location tracking + nearest police stations

BACKEND SERVER CORE LOGIC LAYER

Node.js + Express
Fast REST APIs for SOS event handling

Firebase Realtime DB
Live sync of user location & incident status

Twilio SMS Gateway
SMS fallback for zero-internet rural zones

AWS / GCP Cloud
Scalable hosting, storage & video streaming

DRONE SYSTEM SURVEILLANCE LAYER

MAVLink Protocol
Commands drone dispatch to GPS coordinates

WebRTC Live Stream
Real-time drone video feed to police & contacts

ArduPilot / PX4
Open-source autopilot for autonomous flight

GPS + Tower Trilateration
Location fallback for basic phones, no internet

AI / ML DETECTION LAYER

TensorFlow Lite
On-device scream & distress sound detection

OpenCV + YOLOv8
Visual threat & assault detection via drone cam

Librosa (Audio ML)
Classifies uncanny sounds, cries, anomalies

Python + Flask API
Serves ML model inferences to backend in real-time

UNIQUE SELLING PROPOSITION

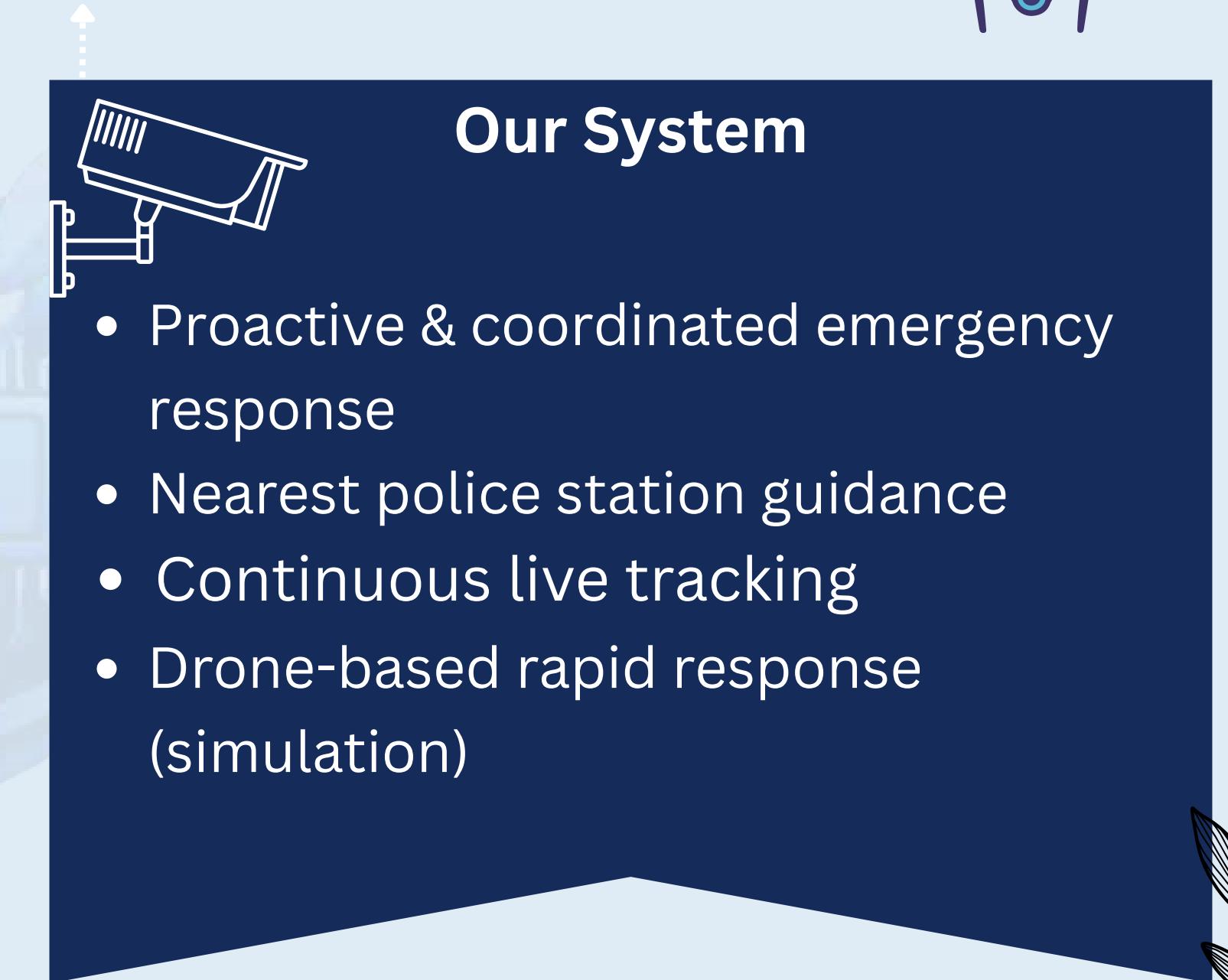


How We're Different



Existing Safety Apps

- Reactive (Manual SOS only)
- Contact-only alerts
- No coordinated authority response
- No rapid intervention support



REAL WORLD APPLICATION

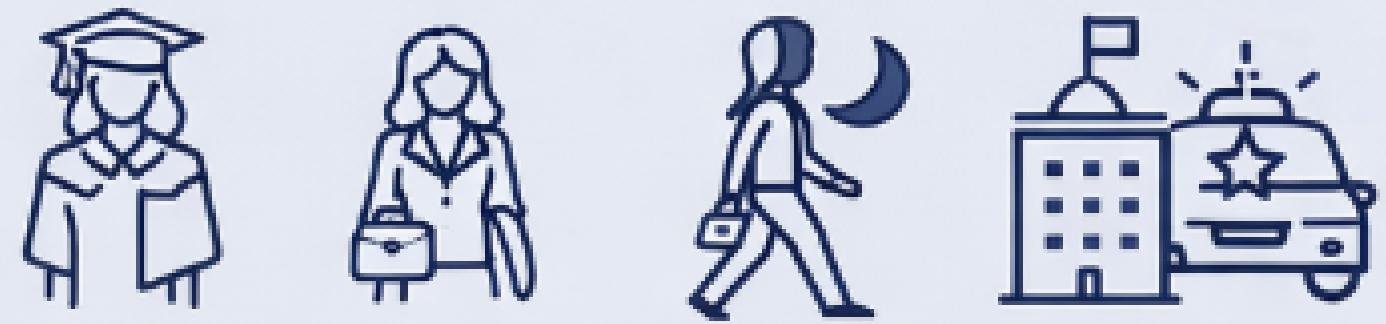


Target Audience

This system is designed for women students, working professionals, and night commuters who require reliable real-time safety support. It can also be adopted by colleges, corporate organizations, and local security authorities to strengthen emergency coordination.

Implementation Framework

- Enhances safety during night travel and daily commuting
- Supports emergency assistance in colleges and workplaces
- Improves safety in public transportation systems
- Enables quick identification of nearest police stations
- Strengthens coordination with local authorities during emergencies



FEASIBILITY & VIABILITY



Operational Feasibility:

Runs entirely on the user's smartphone

No physical infrastructure required

Cloud backend is scalable

Can function with:

Internet (preferred)

SMS fallback (if internet unavailable)

Scalability:

Highly scalable because:

Purely software-based

Cloud backend expandable

Can integrate:

Wearables

Campus networks

Smart city systems

Economic Feasibility:

Operational Cost (Future):

Cloud hosting (low at early stage)

SMS gateway costs (pay-per-message)

Google Maps API usage (minimal initially)

Revenue Models (future vision):

Freemium model

Institutional licensing (schools, corporate offices)

Government partnership

CSR collaborations

Future integration potential:

AI-based scream detection

Pattern-based unsafe zone alerts

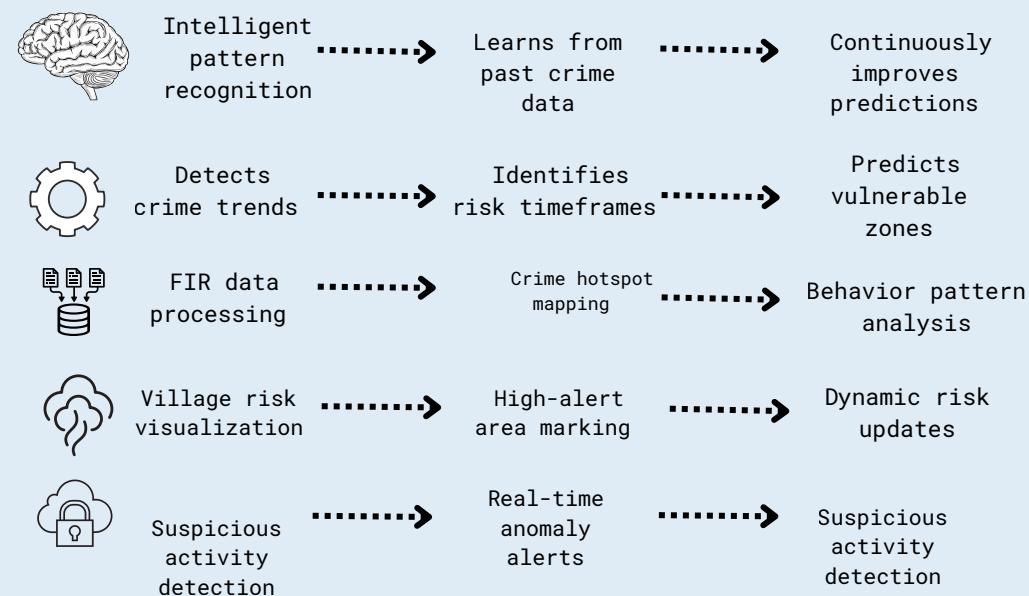
Government emergency dashboards

FUTURE SCOPE & ROADMAP

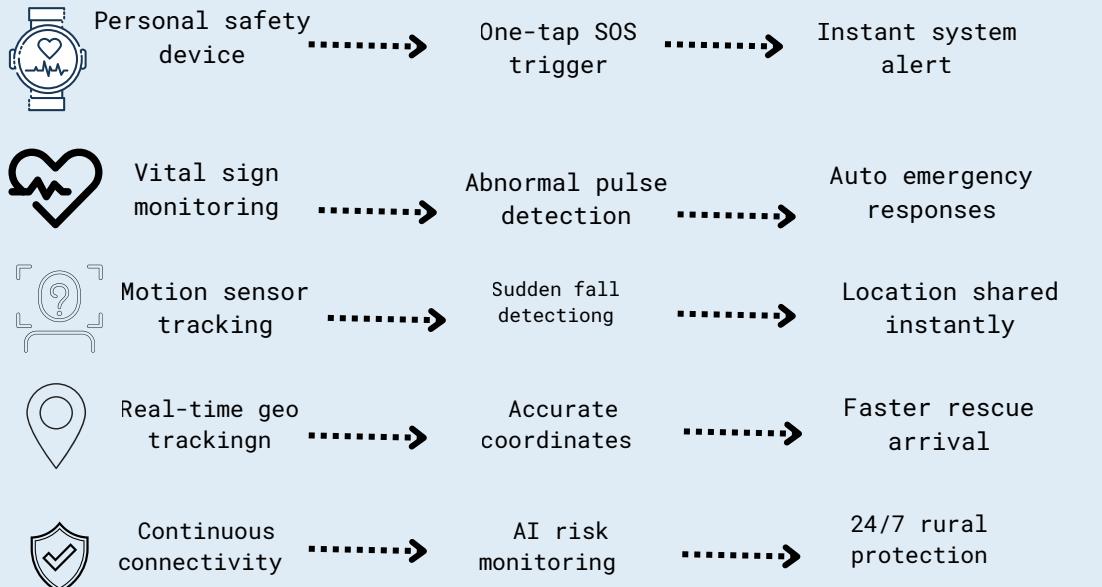


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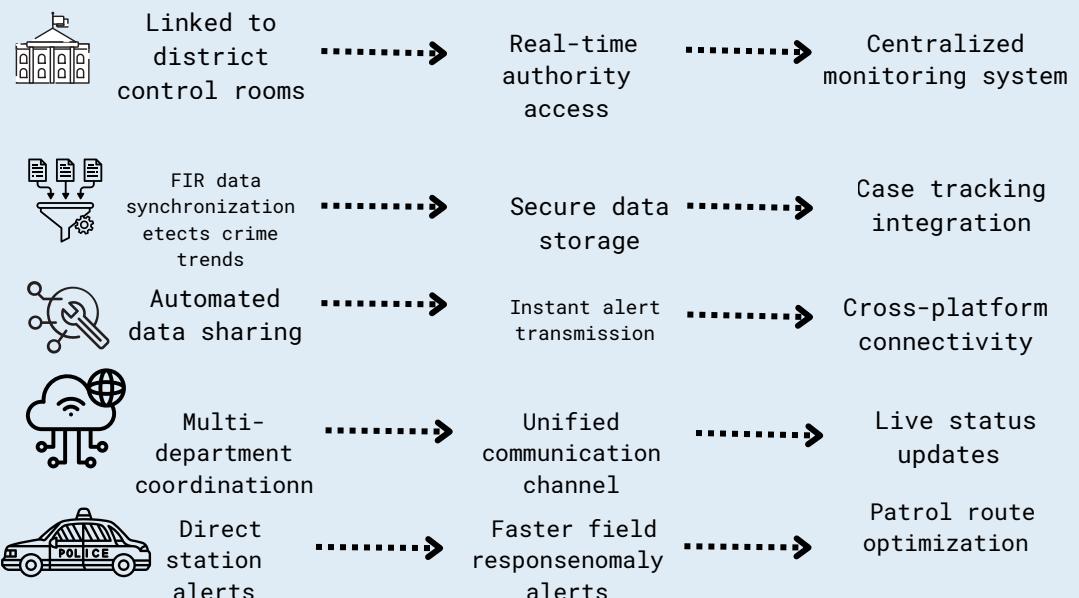
1. AI-Powered Predictive Crime Detection



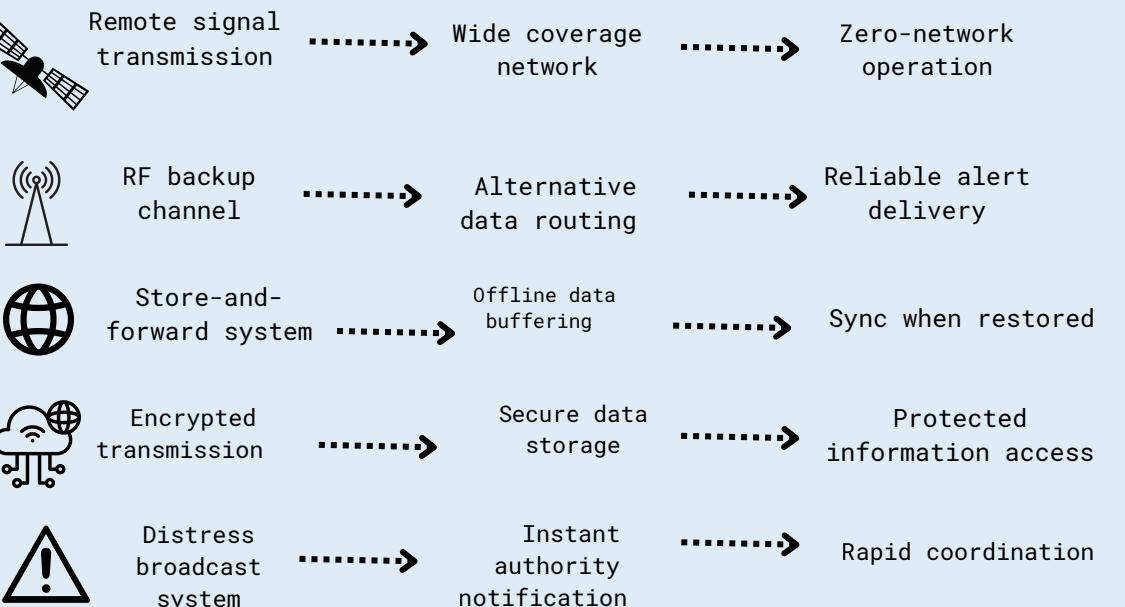
3. Smart Wearable Integration



3. Government Integration



4. Offline & Satellite Communication



“FROM REACTIVE RESPONSE TO PROACTIVE PROTECTION”.



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THANK YOU