POCKET COMM

Disaster-Proof Messaging for the Last Mile

TEAM NAME : POWERHOUSE

SRM Institute of Science and Technology Ramapuram

Hardware Innovation | Disaster-Tech | Emergency Communication

PROBLEM STATEMENT

COMMUNICATION FAILURE DURING EMERGENCIES IS STILL A LIFE-THREATENING PROBLEM

- During earthquakes, floods, accidents, forest zones, and remote travel, mobile networks collapse or overload, leaving victims completely disconnected.
- According to disaster response studies, the first 10–30 minutes decide survival, but communication blackout makes this impossible.
- Zero communication = Zero rescue coordination = Higher fatality rate.
- Women, solo travelers, rural workers, disaster victims, and patients cannot send SOS, location, or medical status in the most critical moments.
- Existing emergency solutions are expensive, infrastructure-dependent, and unusable in real blackout conditions.

SOLUTION

POCKET COMM – WHEN ALL NETWORKS FAIL, THIS ONE SURVIVES

WHAT THE SYSTEM DELIVERS

- Free-text emergency messaging across kilometers without mobile networks
- Long-range communication across kilometers using LoRa technology
- Guaranteed message delivery with real-time acknowledgement feedback
- Real-time cloud visibility for rescue coordination and monitoring

WHAT MAKES THIS A REAL SOLUTION

- Operates completely independent of telecom infrastructure during disasters
- Designed for scalability from prototypes to field-deployable networks
- AI-assisted prioritization for faster, smarter rescue decisions

Pocket Comm ensures that help is never out of reach — even in complete network failure.

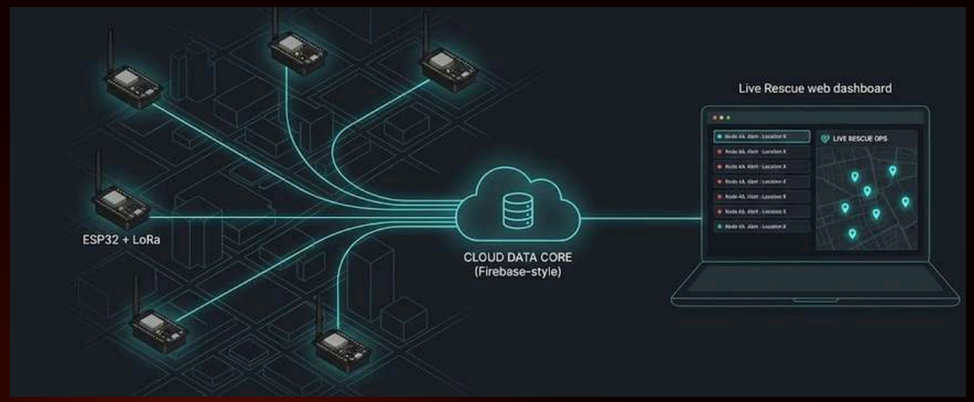
INNOVATION & USP

CORE INNOVATION

Pocket Comm enables natural, free-text human communication across disaster zones without any telecom infrastructure, using a Bluetooth–LoRa–Cloud hybrid architecture.

KEY INNOVATIONS

- Free-text messaging over LoRa, not limited to fixed SOS
- Usage of Bluetooth–LoRa–Cloud hybrid architecture
- Acknowledgement-based delivery protocol for guaranteed message reliability.
- AI-driven message classification & prioritization using Google Gemini



UNIQUE SELLING PROPOSITIONS (USP)

- No Network. No App. No Limitation on What You Can Say.
- Disaster-proof messaging without towers, SIMs, or limits
- Human-centric design : real messages, not restricted templates.
- Scalable from two nodes to a community-wide disaster network.

WORKFLOW DIAGRAM WITH TECH STACK

USER LAYER
Serial Bluetooth Terminal App
Web Dashboard (HTML, CSS, JS)

CLOUD & BACKEND
Firebase Realtime Database
Firebase Hosting
REST API (ESP32 → Firebase)

INTELLIGENCE LAYER
Google Gemini API (Message classification & priority scoring)

EMBEDDED LAYER
ESP32 – Sender & Receiver Nodes
LoRa SX1278 Module
GPS Module (for location tagging at sender)

DEVELOPMENT TOOLS
Arduino IDE
Firebase Console
Google Cloud Platform

COMMUNICATION LAYER
Bluetooth Classic (Phone ↔ ESP32)
LoRa RF (ESP32 ↔ ESP32)
Wi-Fi (Gateway ESP32 ↔ Cloud)

TEAM MEMBERS

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