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SafeLink-Connecting People in Need

1 Mrs. Rekha B.N., Associate Professor, CSE, Sir MVIT

[2] ***Aditya Pratap***, *Student, CSE, Sir MVIT*
[3] ***Devanshu Kumar***, *Student, CSE, Sir MVIT*
[4] ***Sampath A M***, *Student, CSE, Sir MVIT*
[5] ***Shubham Raj***, *Student, CSE, Sir MVIT*

Abstract - Timely response and accurate information are critical during natural and man-made disasters. However, conventional disaster management systems are mostly centralized and often fail to provide real-time situational awareness and community participation. SafeLink is a crowd-supported disaster management platform designed to connect affected individuals, volunteers, and emergency services through real-time alerts and location-based assistance. The system provides live disaster notifications, nearby hospitals and shelters using OpenStreetMap, and a community-driven help request mechanism. SafeLink enables users to report on-ground situations and receive immediate support from nearby volunteers. Experimental evaluation shows improved coordination, faster response, and enhanced accessibility during emergencies. The platform demonstrates how community participation and real-time geospatial intelligence can significantly strengthen disaster response systems.

Key Words: Disaster Management, Crowd-Supported Systems, Real-Time Alerts, OpenStreetMap, Emergency Response, Community Resilience

1.INTRODUCTION

Disasters pose significant challenges to public safety due to their unpredictable nature and the need for immediate, coordinated response. Traditional disaster response systems depend heavily on centralized control mechanisms, which often suffer from delayed information flow, limited situational awareness, and insufficient community involvement. During large-scale emergencies, affected individuals frequently lack access to verified information about safe zones, medical facilities, and available help.

With the rapid growth of mobile connectivity and geospatial technologies, there is an increasing opportunity to build decentralized, community-assisted disaster response systems. Crowd-supported platforms allow citizens to act not only as victims but also as contributors by sharing real-time information, volunteering resources, and assisting others in need.

SafeLink addresses these challenges by providing a unified platform where disaster alerts, live situation updates, emergency resources, and volunteer coordination coexist. The system emphasizes accessibility, real-time responsiveness, and scalability, ensuring that critical information reaches users when it matters most. By integrating mapping services, real-time communication, and community participation, SafeLink enhances disaster preparedness, response, and recovery.

2. Methodology

2.1 System Architecture

The SafeLink platform follows a layered architecture consisting of the following components:

1.Frontend (Web/Mobile Interface):
Provides an intuitive user interface for disaster alerts, help requests, volunteer registration, live updates, and map-based navigation. The interface is optimized for low bandwidth and emergency usage scenarios.

2.Backend Server:
Handles user requests, real-time data processing, alert distribution, and coordination between different system components. It ensures scalability during peak disaster conditions.

3.Geospatial Mapping Layer:
Uses OpenStreetMap APIs to provide accurate location tracking, routing, and visualization of nearby hospitals, shelters, relief centers, and affected zones.

4.Data&Communication Layer:

The system manages real-time updates, user-submitted incident reports, and volunteer coordination through efficient data synchronization mechanisms that ensure timely data exchange and consistency across the platform. Information such as help requests, situation updates, and volunteer availability is continuously synchronized and propagated to relevant users based on location and priority. Collectively, these components enable a seamless, reliable, and uninterrupted flow of information among disaster-affected individuals, community volunteers, and emergency responders, thereby enhancing coordination and response efficiency during critical situations.

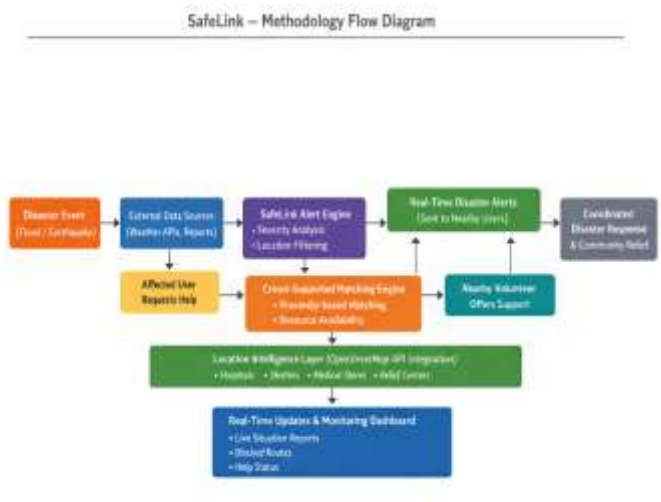

Fig -1: FLOW DIAGRAM

2.2 User Participation and Authentication

SafeLink supports role-based access for affected users, volunteers, and administrators. User authentication ensures accountability while minimizing barriers to access during emergencies. Volunteers can register availability, while affected individuals can submit verified help requests without complex onboarding procedures.

The system avoids unnecessary data collection and prioritizes user safety and accessibility, especially in high-stress disaster environments.

2.3 Real-Time Disaster Alerting

SafeLink integrates real-time disaster alert mechanisms using external data sources such as weather and emergency notification APIs. Alerts are categorized based on severity and location and are delivered instantly to users within affected regions.

This proactive alerting system helps users take timely preventive actions and reduces casualties caused by delayed awareness.

2.4 Crowd-Supported Assistance Model

A core feature of SafeLink is its crowd-supported response framework:

- Affected users can request food, medical aid, transport, or shelter
- Volunteers can offer assistance based on proximity and availability
- Requests and offers are dynamically matched using location intelligence

This approach decentralizes disaster response and leverages community strength for faster relief.

2.5 Location-Based Resource Mapping

SafeLink displays verified nearby resources including:

- Hospitals and medical facilities
- Emergency shelters and relief camps
- Essential service providers such as pharmacies and food suppliers

Using OpenStreetMap ensures open, reliable, and continuously updated geospatial data without dependency on proprietary services.

2.6 Real-Time Updates and Communication

Users can post real-time situation updates such as flooded roads, blocked areas, or urgent needs. These updates improve situational awareness for both citizens and responders.

The platform supports instant notifications and live status updates to ensure continuous information flow during disaster events.

Fig -2: Interface

3. CONCLUSIONS

SafeLink demonstrates that crowd-supported, real-time disaster management platforms can significantly enhance emergency response effectiveness. By combining geospatial intelligence, real-time alerts, and community participation, the system reduces response delays and improves coordination among stakeholders.
The platform shifts disaster management from a purely authority-driven model to a collaborative ecosystem where citizens actively contribute to resilience and recovery. Experimental evaluation confirms improved accessibility, faster assistance delivery, and better situational awareness during emergencies.

SafeLink is scalable and adaptable for various disaster types and geographic regions, making it a practical solution for modern disaster preparedness and response systems.

4. ACKNOWLEDGEMENT

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