

EMERGENCY RESPONSE SYSTEM

A PROPOSAL PRESENTED BY

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ABBREVIATION

ERS	-	Emergency Response System.
GPS	-	Global Positioning System.
UX	-	User Experience.
ER	-	Entity Relationship.

CHAPTER 1

1. INTRODUCTION

In today's fast-paced world and also in our country Sri Lanka, emergencies can occur at any time and any place, so the need of efficient emergency response systems has become more crucial than ever. Our project aims to address this critical need by developing a comprehensive mobile application tailored for emergency situations. With the ubiquity of smartphones and the rapid advancement of mobile technology, there exists a unique opportunity to leverage these platforms to enhance emergency response capabilities. By creating an intuitive and user-friendly application.

We seek to empower individuals to quickly and effectively respond to emergencies, ultimately saving lives and mitigating the impact of natural disasters, medical emergencies, accidents, and incidents of crime necessitate swift and coordinated responses to minimize loss of life and property damage. However, across the world and particularly in Sri Lanka existing emergency response systems face various challenges that hinder their effectiveness

This proposed mobile application will serve as a centralized hub for accessing emergency services, providing users with a seamless and efficient means of reporting emergencies, communicating with responders, and accessing critical information during crises. By leveraging features such as real-time location tracking, instant communication, and community alerts, our solution aims to overcome the limitations of traditional emergency response systems and provide a comprehensive tool for addressing a wide range of emergencies.

CHAPTER 2

2. BACKGROUND AND MOTIVATION

2.1 BACKGROUND

The background behind our project stems from the recognition of the inherent limitations and inefficiencies in traditional emergency response systems. Current methods often rely on phone calls to emergency services, which can lead to delays in communication and response, particularly during times of high call volume or network congestion. Additionally, accurately conveying one's location during an emergency can be challenging, further complicating response efforts.

Despite the existence of dedicated emergency services in many countries, traditional response systems often face limitations in reaching those in need swiftly and effectively. Communication barriers, logistical challenges, and gaps in awareness about available resources contribute to delays and inefficiencies in emergency response efforts.

By harnessing the ubiquity of mobile devices and leveraging features such as geolocation services and push notifications, mobile applications can enhance the efficiency and effectiveness of emergency response efforts. Moreover, the interactive nature of mobile applications allows for greater community engagement, enabling users to take proactive measures to prepare for and respond to emergencies.

2.2 MOTIVATION

The motivation behind the development of an Emergency Response System Mobile Application stems from the recognition of the critical need to enhance the effectiveness and efficiency of emergency response efforts. Traditional emergency response systems often face significant challenges in promptly reaching and assisting those in need during various emergency scenarios. These challenges include communication barriers, logistical hurdles, and delays in coordination among stakeholders.

In conclusion of motivation is, the development of an Emergency Response Mobile Application represents a significant step towards enhancing our country's emergency preparedness and response capabilities. By harnessing the power of mobile technology, we can create a more resilient and responsive society, better equipped to mitigate the impact of emergencies and safeguard the well-being of our citizens. Through collaboration with stakeholders and the deployment of cutting-edge technology, we aim to create a safer and more secure future for all.

CHAPTER 3

3. PROBLEM IN BRIEF

Traditional emergency response is only calling via phone calls. One of the primary issues is the reliance on phone calls to report emergencies, which can lead to delays due to communication barriers, language barriers, or network congestion. Moreover, accurately conveying one's location to emergency services can be challenging, particularly in unfamiliar or chaotic situations, leading to further delays in response times.

Additionally, existing systems often lack integration with modern technology, making it difficult to leverage innovations such as real-time location tracking, instant communication, and community alerts. This results in inefficiencies in resource allocation and coordination, further delaying response efforts and potentially compromising the effectiveness of rescue operations.

In Sri Lanka we encounter unique emergency challenges that require tailored solutions. These challenges may include:

- **Natural Disasters:** such as earthquakes, floods, wildfires, etc., and their impact on communities and infrastructure.
- **Medical Emergencies:** including challenges in accessing healthcare facilities, shortage of medical supplies, and the need for efficient ambulance services.
- **Safety Concerns:** such as accidents on highways, crime rates in urban areas, and the importance of timely intervention by law enforcement agencies.
- **Vulnerable Populations:** specific groups within the population that may be more vulnerable during emergencies, such as the elderly, children, persons with disabilities, and migrants, and discuss their unique needs.

CHAPTER 4

4. AIMS AND OBJECTIVES

4.1 Aim

The aim of this Emergency Response System Mobile Application project is to develop a comprehensive, user-friendly and quick response mobile application that enhances emergency response capabilities in Sri Lanka. This project aims to address the limitations and challenges faced by traditional emergency response systems by leveraging the power of mobile technology to streamline communication, improve situational awareness, and facilitate rapid coordination among stakeholders.

4.2 Objectives

1. **To Make Real-time Communication:** Implementing a system for users to report emergencies and communicate with emergency services in real-time.
2. **To Track Accurate Geolocation Tracking:** Integrating technologies for precise location sharing to expedite the dispatch of assistance to the user's exact location.
3. **To Provide User Safety Features:** Incorporating features such as first-aid guidance, emergency contact storage, and community alerts to enhance user safety and preparedness.
4. **To Get Seamless Coordination:** Facilitating coordination and collaboration between responders and individuals in distress to ensure swift and effective response to emergencies.
5. **To Contact Multiple Emergency Department:** Can send a message or notification to multiple emergency helpline departments.

By accomplishing these objectives, this project seeks to address the shortcomings of existing emergency response systems and provide a comprehensive solution that enhances public safety and resilience in the face of emergencies.

CHAPTER 5

5. PROPOSED SOLUTION

The project proposed solution is involves the development of a user-centric mobile application that leverages the power of modern technology to streamline emergency response efforts. This new idea for an emergency application is really innovative. It's made to be easy for anyone to use, focusing on making things simple and helpful. With my application, you can quickly tell emergency services what's happening and where you are using GPS. It's not just about asking for help - you can also find first-aid tips, store emergency contacts, and get alerts from your community. This application helps everyone work together smoothly during emergencies, making it faster for help to come. This will make our country better prepared for emergencies and help keep everyone safe.

This ERS application is a big deal for keeping our communities safe. By using smartphones, we're making it easier for everyone to get help fast when they really need it. We're working closely with different groups to make sure this application is the best it can be. With the latest technology and our promise to keep making things better, we're sure this application will really help during emergencies. We're committed to keeping this application updated and making sure it's always there to support people when they're in trouble.

This new application is a big step forward for making sure everyone stays safe during emergencies. We're using smartphones to make it simple for anyone to get help quickly when they need it most. We're working together with lots of different people to make sure our application works really well. With the best technology and our promise to keep improving, we know our application will make a real difference. We're determined to keep this application working well and always ready to help people when they need it most.

CHAPTER 6

6. REQUIREMENT

6.1 RESOURCE REQUIREMENTS

6.1.1 Hardware Requirements

Server requirement

- Supports up to 040 concurrent users
- 2TB Hard disk space
- 8GB RAM
- Intel core i7 processor

Smartphone Requirements

- Dual core or More processor / Smartphone
- 40GB of hard disk space
- 2GB or More RAM

6.1.2 Software Requirements

Server requirement

- Windows 04 or above
- Android Studio

Smartphone Requirements

- Android up to 5. versions

6.1.3 Programming Languages

Frontend

- Java
- Kotlin
- Xml

Backend

- Java
- Python
- Kotlin

6.2 Functional and Non-Functional Requirements

6.2.1 Functional Requirement

1. User Registration and Authentication

- Users should be able to register and create accounts securely.
- Authentication mechanisms, such as email verification or two-factor authentication, should be implemented to ensure the security of user accounts.

2. Emergency Reporting

- Users should be able to report emergencies through the mobile application.
- The reporting process should include capturing essential information such as the type of emergency, location, and additional details if necessary.
- Users should have the option to attach photos or videos related to the emergency.

3. Geolocation service

- The application should utilize GPS or location services to accurately determine the user's location when reporting emergencies.
- Geolocation data should be transmitted along with the emergency report to enable rapid response by emergency services

4. Emergency Service Directory

- The application should maintain a comprehensive directory of emergency services including hospitals, fire stations, police stations, and other relevant organizations.
- Users should be able to search and access contact information for these services within the application.

5. Alert and Notification System

- The application should send real-time alerts and notifications to users regarding nearby emergencies, safety advisories, and updates from local authorities.
- Users should have the option to customize notification preferences based on their location and emergency types.

6.2.2 Non-Functional Requirement

1. Performance

- The application should have low latency and respond quickly to user interactions, especially during emergency situations.
- It should be able to handle a large volume of emergency reports and notifications without experiencing significant downtime or slowdowns

2. Reliability

- The application should be reliable and available 24/7, ensuring users can report emergencies at any time.
- Robust backup and failover mechanisms should be in place to prevent data loss or service interruptions.

3. Security

- The application should adhere to industry-standard security practices to protect user data and privacy.
- Encryption should be implemented for data transmission and storage to prevent unauthorized access or tampering.
- Measures should be in place to prevent misuse of the application for false reporting or malicious activities

4. Usability

- The application should have an intuitive and user-friendly interface to ensure ease of use, especially during stressful emergency situations.
- User experience (UX) design principles should be followed to optimize accessibility and usability for users of all demographics and abilities.

CHAPTER 7

7. PROJECT PLAN AND SCHEDULE

7.1 GANTT CHART

Figure 1 Gantt Chart



7.2 SCHEDULE AND BUDGET SUMMARY

7.2.1 Schedule

Table 1 Project Schedule

Item	Date
Project Proposal	2024/03/11 to 2024/03/14
Software Project Management Plan	2024/03/15 to 2024/03/20
Interface Design	2024/03/21 to 2024/04/05
ER Diagram Design	2024/04/06 to 2024/04/09
Mid Progress Review	2024/04/10 to 2024/04/12
Starting Development coding	2024/04/13 to 2024/05/05
Software Testing	2024/05/06 to 2024/05/12
Error Handling	2024/05/13 to 2024/05/18
Software Testing and Error Handling	2024/05/19 to 2024/05/23
Making Final Report	2024/05/24 to 2024/05/27
Final Report Submission	2024/05/28 to 2024/05/30
Papering Project Presentation	2024/05/31 to 2024/06/05
Final Project Presentation	2024/06/06 to 2024/06/10

7.2.2 Budget Summary

Table 2 Budget Summary

Item	Date	Rate	Hours	Cost
Project Proposal	2024/03/11 to 2024/03/14	50.00 Rs	10	500
Software Project Management Plan	2024/03/15 to 2024/03/20	50.00 Rs	50	2500
Interface Design	2024/03/21 to 2024/04/05	400.00 Rs	84	33,600
ER Diagram Design	2024/04/06 to 2024/04/09	200.00 Rs	15	3000
Mid Progress Review	2024/04/10 to 2024/04/12	300.00 Rs	10	3000
Starting Development coding	2024/04/13 to 2024/05/05	500.00 Rs	110	55,000
Software Testing	2024/05/06 to 2024/05/12	200.00 Rs	30	6000
Error Handling	2024/05/13 to 2024/05/18	200.00 Rs	25	5000
Software Testing and Error Handling	2024/05/19 to 2024/05/23	1000.00 Rs	20	20,000
Making Final Report	2024/05/24 to 2024/05/27	100.00 Rs	15	1500
Final Report Submission	2024/05/28 to 2024/05/30			
Papering Project Presentation	2024/05/31 to 2024/06/05	50.00 Rs	25	1250
Final Project Presentation	2024/05/29 to 2024/06/01			
Total Cost				Rs. 131,350.00

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