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FACULTY OF ENGINEERING AND TECHNOLOGY

********** UNIVERSITY OF BUEA **********

DEPARTMENT OF COMPUTER ENGINEERING

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TASK 5: DESIGN AND IMPLEMENTATION

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INTRODUCTION:

In today's world, natural disasters are happening more often and causing more damage. That's why our team decided to create a mobile app called **Safe Space** to help people during emergencies .The main goal of the "Safe Space" app is to be a user-friendly and flexible tool that can coordinate disaster response efforts, share important information in real-time, and make communities more prepared for natural disasters.

To design the app, we used a software called **Figma**. Figma allowed us to create a visually appealing and easy-to-use interface for the app. For the actual development of the **Safe Space** app, we chose to use the Flutter framework. Flutter is a great choice because it lets us build a high-performance app that works on both Android and iOS devices.

In this report, we'll explain the key features of our app, the technology we used to build it, and the strategies we followed during the implementation process. By sharing our approach, we hope to provide useful insights that can help others develop similar disaster management apps in the future.

DESIGN PHASE:

As earlier said for the Safe space app, we used Figma to come up with a user-friendly design which enables us to achieve the goal of satisfying our user’s needs, providing intuitive and accessible design. The key features of our application and how we designed each feature will be outlined below;

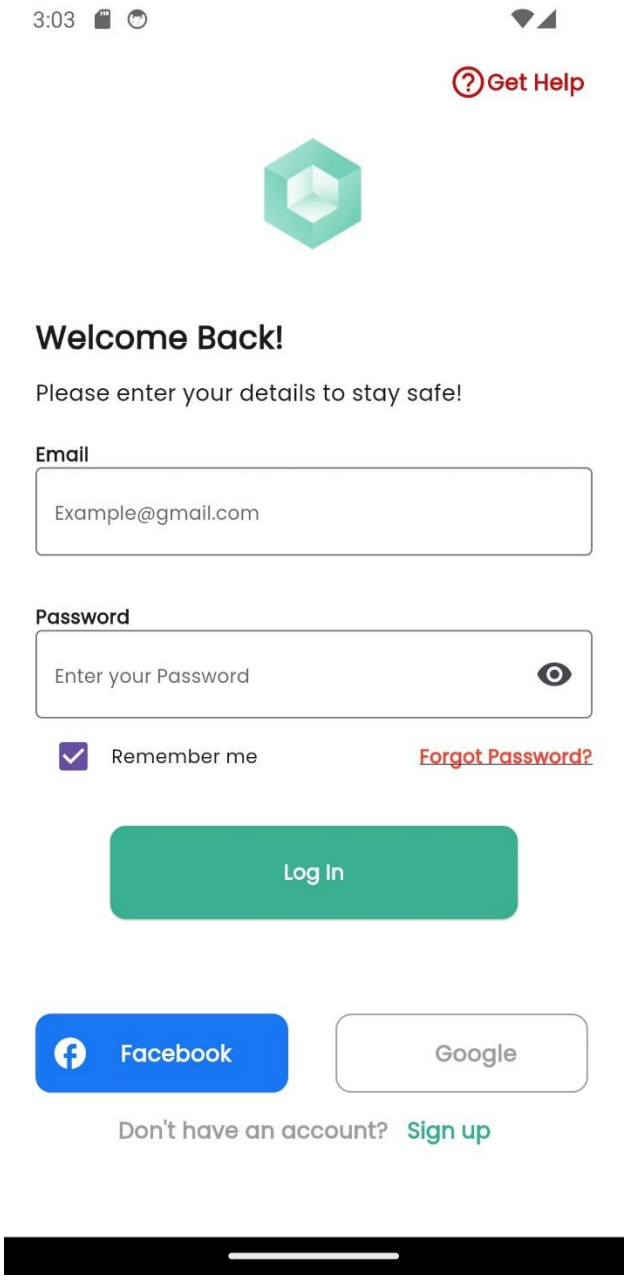
Key Features

1. **Splash screen:**

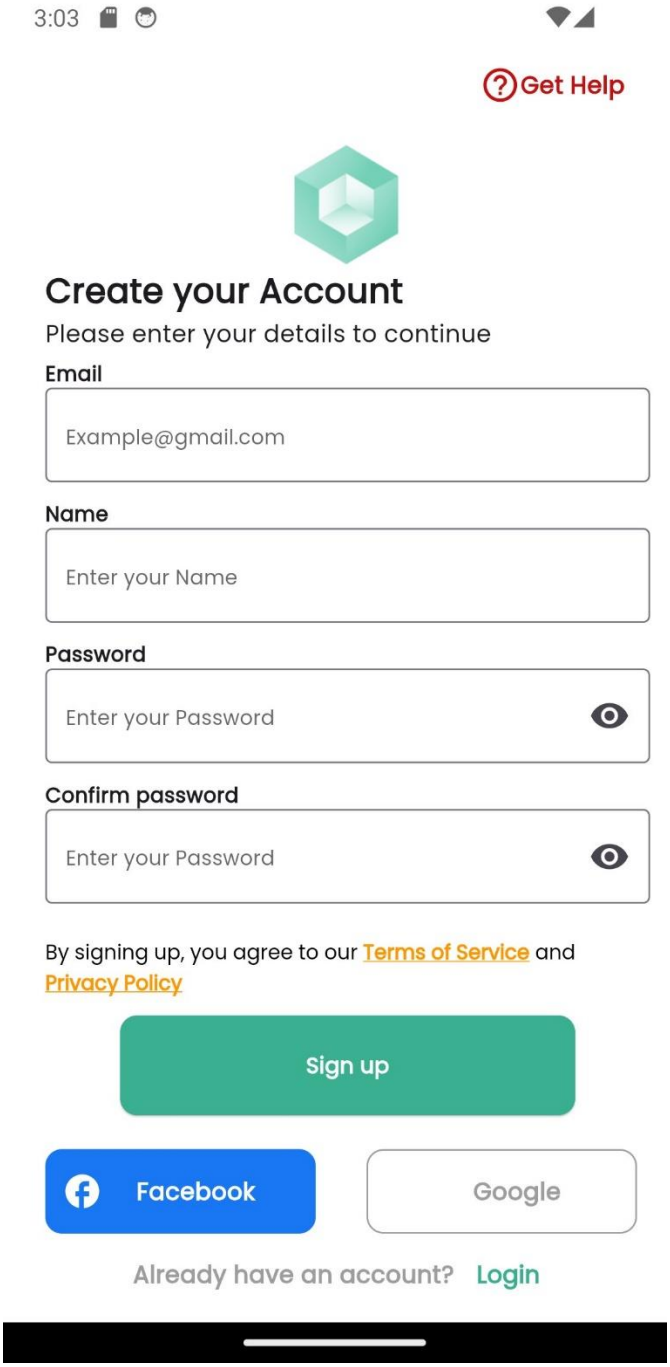
   This screen consists the Logo together with the name our app with the background colour green which gives the user a sense of calm and safety.

2. User Account Management

- **Login Page**: Allows users to access their account using their email and password. It includes options for remembering the login, password recovery, and social media logins (Facebook and Google).

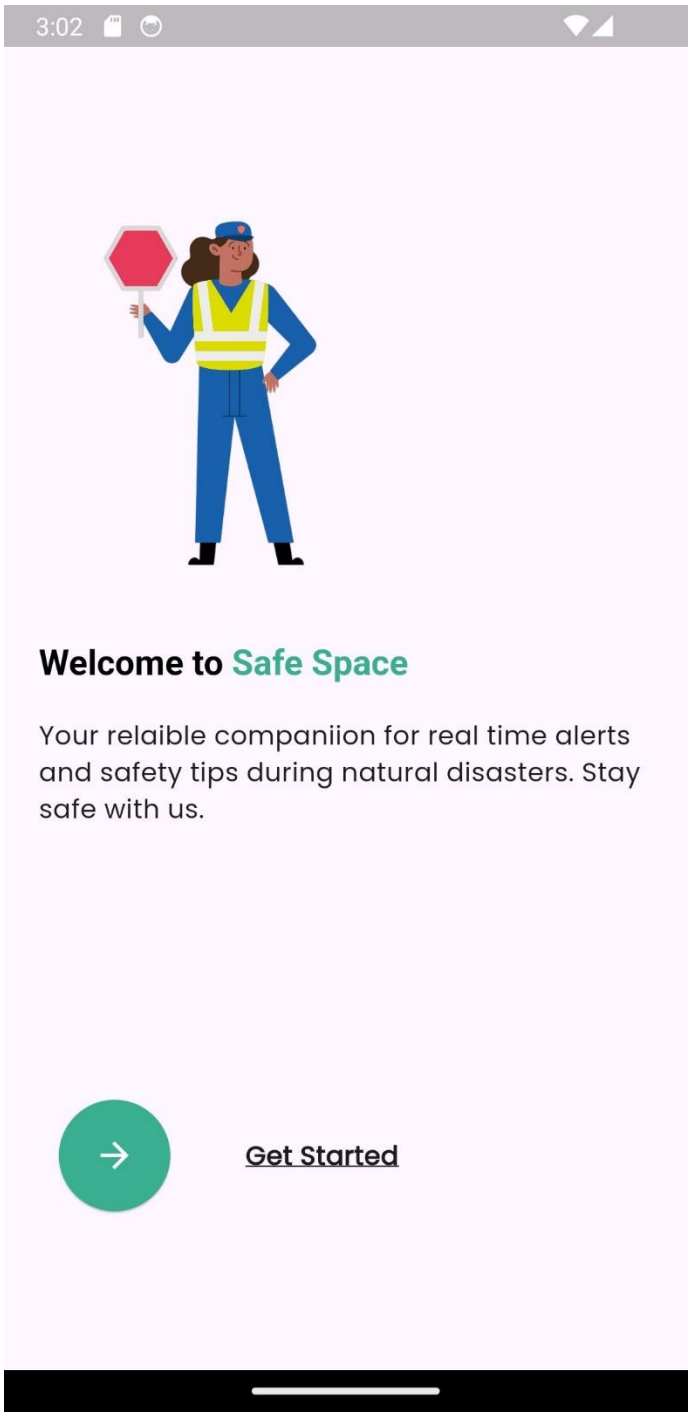


- **Sign Up Page**: New users can create an account by providing an email, name, and password, along with confirming their password. Terms and conditions are linked for users to read and accept.

2. 

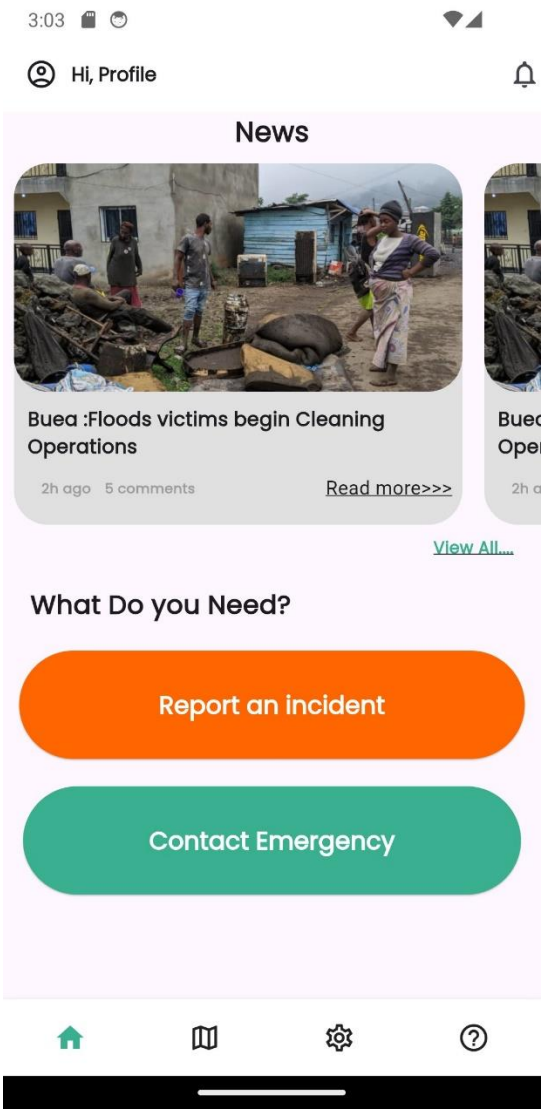
3. Home Screen

a. Features a minimalistic design with a primary focus on the logo and a **'Get Started'** button to guide new users.

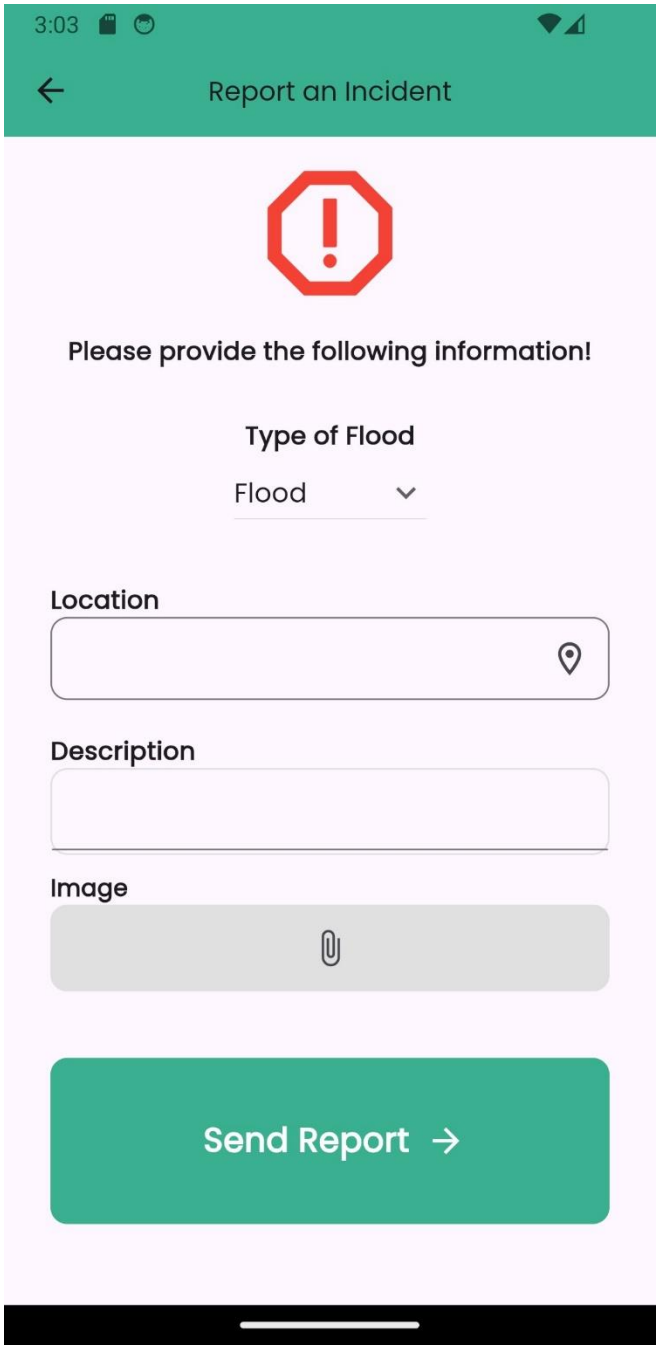


4. Dashboard

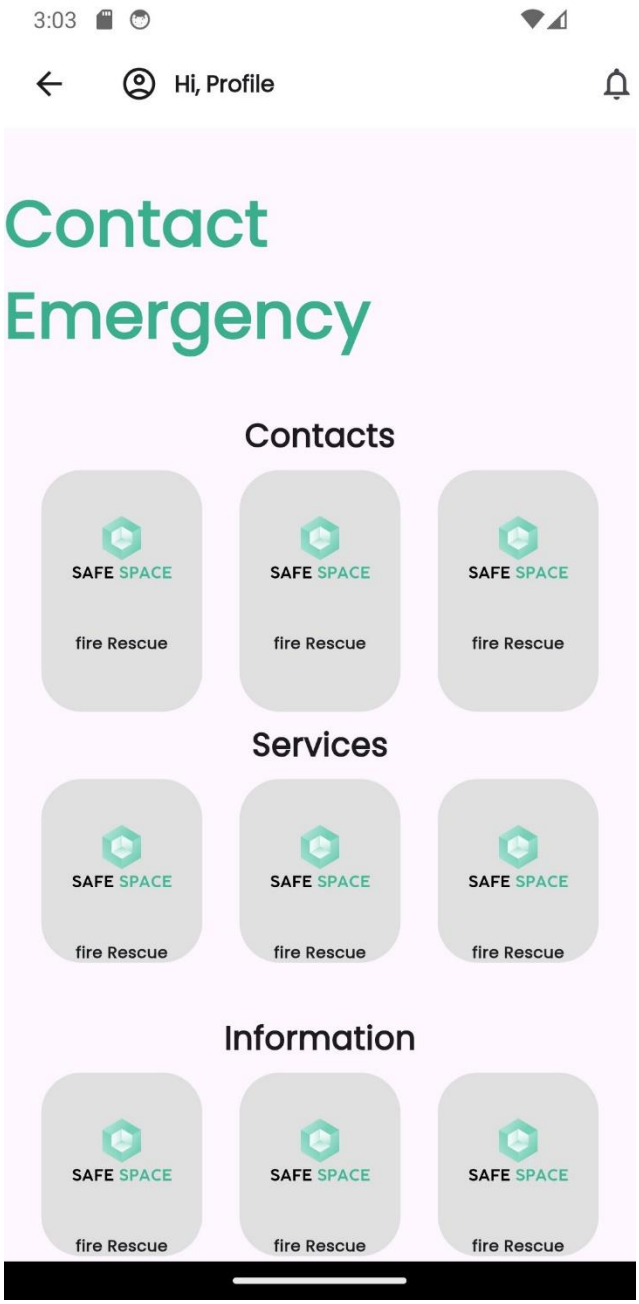
The dashboard provides a centralized and user-friendly interface that enables users to report incidents, quickly access emergency contacts, and stay informed about the latest news and updates related to disasters and other critical events. This comprehensive dashboard aims to enhance the app's effectiveness in supporting users during times of crisis and emergency.



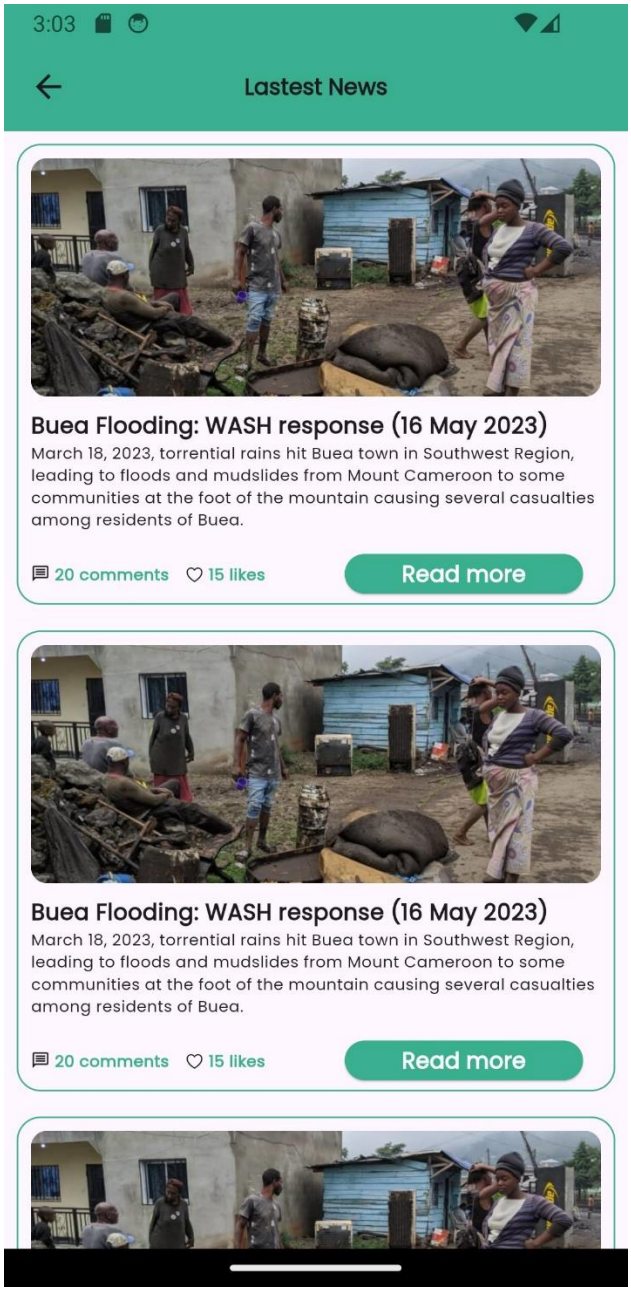
a. **Report an Incident**: Users can report new incidents by providing details about the incident type, location, and description.



b. **Contact Emergency**: Quick access buttons to contact emergency services such as police, hospital, and fire services. Additional services like crime reports, wildlife conservation, and disaster recovery are also accessible.

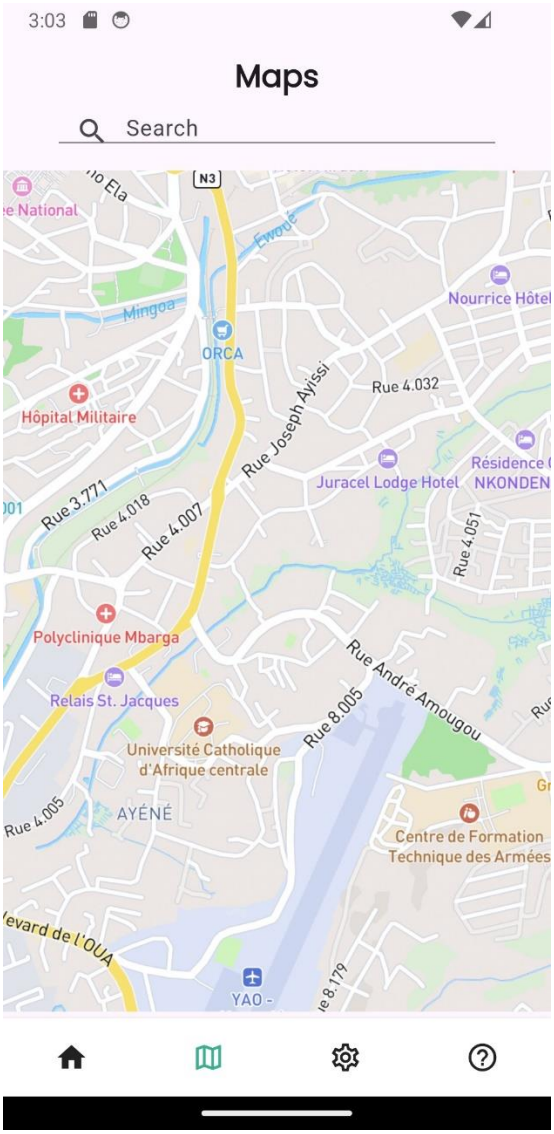


c. **Latest News**: Displays recent news related to road incidents and other emergencies, with options to like and share.



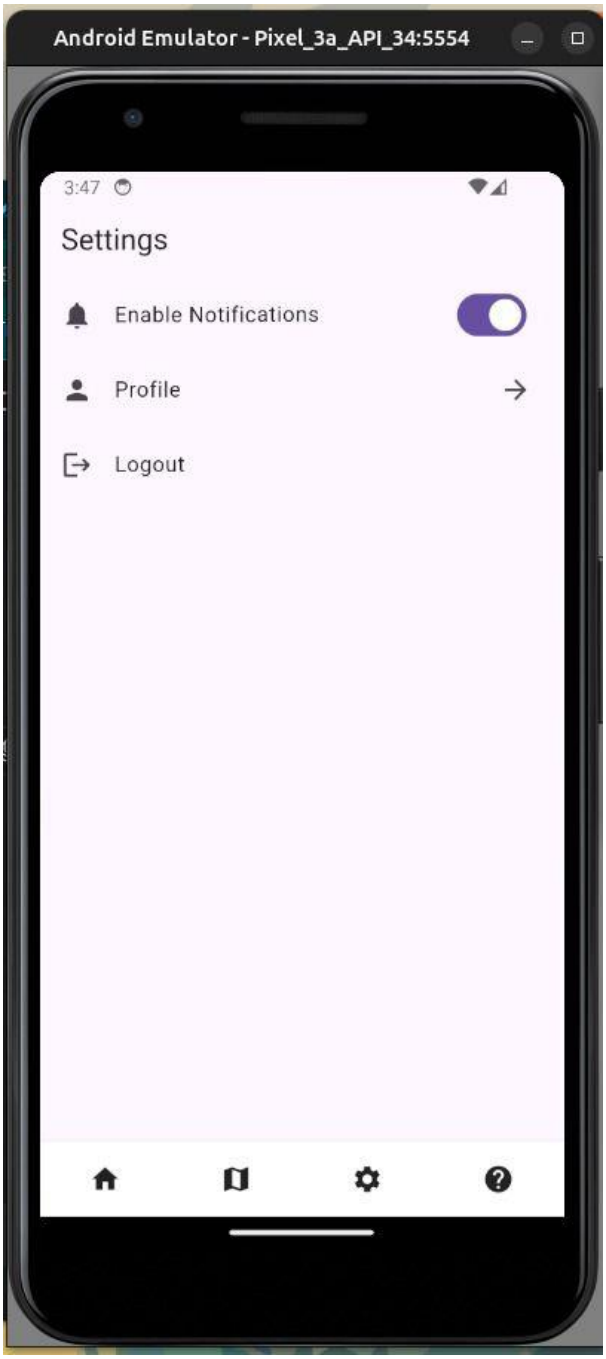
5. **Maps**

Provides a detailed map view allowing users to pinpoint their location and view incident locations or safe zones.



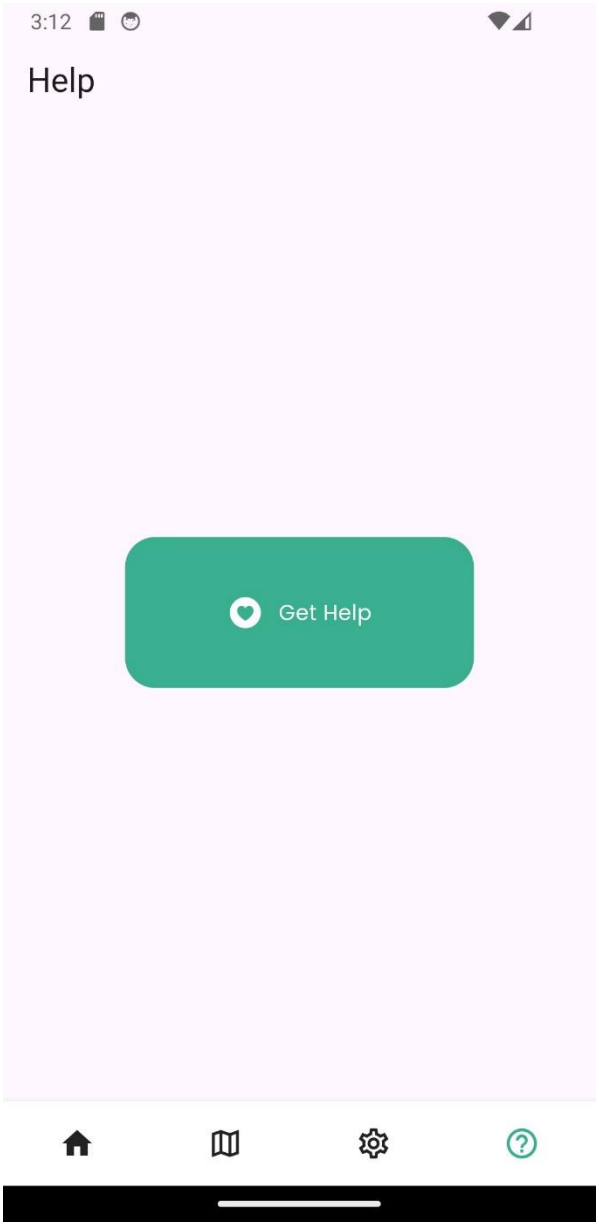
6. Profile and Settings

a. Users can access their profile, adjust settings, and seek help through a simplified navigation bar located at the bottom of the app.



7. **Help page:**

   The help page helps to guide, assist and educate the user on how to use the application and also learn about a new feature and troubleshoot to solve problems.



User Flow

1. **Onboarding**: New users are greeted with the home screen that directs them to either log in or sign up.
2. **Dashboard Navigation**: After login, users land on the dashboard where they can choose to report incidents, view maps, or contact emergency services.
3. **Reporting an Incident**: Users select the 'Report an Incident' feature, fill out the necessary details, and submit the report.
4. **Emergency Contacts**: From the dashboard, users can quickly access emergency contacts and services.
5. **Maps and Navigation**: Users can switch to the maps view to locate themselves or find nearby incidents.

Design and Usability

- **Color Scheme**: The app uses a soothing green and white color scheme, promoting a sense of safety and calm. The orange on the **report incident** to trigger the user to know that that's the button to be clicked during danger.
- **Typography**: Clear and legible typography is used to ensure that information is easily readable under stressful situations.
- **Iconography**: Intuitive icons are employed to facilitate quick navigation and understanding of the features.

Accessibility Features

- The app includes high-contrast text options and large buttons to accommodate users with visual impairments.
- Voice commands can be integrated to enhance accessibility for hands-free operation during emergencies.

IMPLEMENTATION:

The technologies used to implement the design of our app will be outlined below;

Technology Stack

- **Frontend**: Flutter for cross-platform mobile app development which uses the Dart language
- **Backend**: Node.js with Express for server-side logic.
- **Database**: MongoDB for storing user data and incident reports.
- **APIs**: Google Maps API for map integration and real-time location tracking.

Security Measures

- Use of HTTPS for secure communication.
- Data encryption for sensitive user information like passwords and personal data.
- Regular security audits to identify and mitigate vulnerabilities.

This documentation serves as a comprehensive guide to our app's functionality, design, and technical considerations, ensuring stakeholders have a clear understanding of the project.

Implementation in Flutter

Overview: The Safe Space app, designed as a companion for disaster management and emergency response, has been implemented in Flutter to provide a robust and user-friendly experience. This report details the functionalities and interfaces of the implemented app.

1. Splash and Home Screens:

- **Splash Screen:** Features the app logo with a soothing background, offering a calm visual start to the app.
- **Home Screen:** Includes a welcoming message and a ‘Get Started’ button, effectively guiding new users into the app.

2. User Authentication:

- **Sign Up Page:** Allows new users to register using their email, name, and password. Social media integration for registration includes Facebook and Google, enhancing ease of access.
- **Login Page:** Simplified login interface with options for remembering the user, and links for those who might need to recover their password or register anew.

3. Main Dashboard:

- **News Feed:** Provides real-time news related to disasters, with options to comment and like posts, making the app interactive and informative.
- **Quick Actions:** Users can swiftly navigate to report an incident or contact emergency services directly from the dashboard.

4. Reporting and Emergency Services:

- **Report an Incident:** Users can report incidents by specifying the type, location, and description, and they can also upload images relevant to the incident.
- **Emergency Contacts:** A dedicated section for contacting emergency services like fire rescue, which is critical in urgent situations.

5. Navigation and Information Access:

- **Maps:** Integrates maps for users to find locations and track incidents or safe zones nearby.
- **Latest News:** Users can access detailed news articles related to disasters, providing them with updated information and actionable insights.
- **Contact Emergency:** Organized and accessible interface with categorized emergency contacts and information sections.

6. Additional Features:

- **Help Section:** Offers a straightforward help button for users needing assistance, reinforcing the app's commitment to user support.

Technical Considerations:

- The implementation uses Flutter, allowing for a seamless and consistent experience across iOS and Android platforms.
- Ensures responsiveness and quick updates to user interactions thanks to Flutter’s efficient rendering engine.

Security and Privacy:

- The app includes strong privacy policies and secure data handling practices to protect user information, crucial for the app dealing with sensitive information.

Usability:

- The app maintains a clean and intuitive UI/UX, making it accessible for all user demographics, especially during stress-driven scenarios like disasters.
- Accessibility features include high-contrast modes and text resizing for visually impaired users.

Conclusion: The Safe Space app in Flutter showcases a well-rounded implementation with a focus on user safety and real-time responsiveness. It stands as a vital tool for disaster management and emergency situations, providing users with necessary information and quick access to emergency services. The consistent UI/UX design ensures that users can navigate the app intuitively and efficiently.