Dublin City University - School of Computing

BSc in Enterprise Computing
4th year project proposal (CA472)
Idea Proposal
2020/2021

Updated October 2020

Student name	Student Number
SammyJoe Macri	21707659
Kheeleswari Devi Ramanjooloo	21340941

Project Title:

SafeHer - Your Personal Safety App

Date: 27/09/2024

Project Summary:

SafeHer is a mobile application crafted with the primary goal of enhancing personal safety for women. It combines a variety of security-focused features to create a reliable and accessible tool that provides users with peace of mind in potentially dangerous or uncomfortable situations. The app is designed to empower women by offering easily accessible resources that can be discreetly activated in times of need, ensuring users can act swiftly without drawing unnecessary attention. In addition to its quick-response capabilities, SafeHer includes preventive measures to help users avoid risky situations, thereby fostering a sense of security and confidence in day-to-day life.
SafeHer addresses the growing concerns around women's safety by focusing on both immediate responses to threats and long-term preventive strategies. It leverages technology to enhance real-time safety, allowing women to navigate public and private spaces with greater confidence. The app encourages proactive behaviour, enabling users to take control of their personal security through various real-time safety alerts and community-driven tools. SafeHer's seamless integration of technology and user-friendly design ensures that it is not only effective but also easy to use in high-pressure situations.

Why This Project?
Women's safety has become an increasingly urgent issue worldwide, as reports of harassment, violence, and unsafe environments continue to rise. Many women face daily concerns about their safety, whether walking home alone, traveling through unfamiliar areas, or using public transportation. While there are safety tools available, many of these solutions only address isolated aspects of the issue, lacking a comprehensive approach that integrates real-time response, prevention, and post-incident support. This gap in the market is what led to the development of SafeHer—a solution that brings all critical safety features into one cohesive platform.

The inspiration for SafeHer came from personal experiences and conversations with women who expressed dissatisfaction with the tools currently available. They highlighted the need for a product that is not only easy to use but can also be discreetly activated in stressful situations. Many existing solutions are either too complex or unreliable in critical moments, often requiring manual input at times when users need to act quickly. SafeHer was developed to overcome these limitations, offering a simple, yet powerful tool that women can rely on when they need it most.

Additionally, SafeHer aims to not only respond to threats but also to prevent them by providing users with real-time alerts about potentially dangerous areas or situations. By combining preventive measures with rapid response options, the app offers a more holistic approach to women's safety. This dual focus ensures that users can take steps to protect themselves before a situation escalates, while still having robust tools at their disposal for emergencies.

Through SafeHer, the goal is to provide a safety tool that adapts to the varied and unpredictable nature of threats women may face. Whether it's a subtle alert to check in with loved ones or a more urgent call for help, SafeHer is designed to be a constant companion that enhances women's confidence and control over their personal safety. By creating a tool that is practical, discreet, and effective, this project aims to make a meaningful impact on how women approach their personal security in everyday life.

Expected Technical Delivery:

The final delivery of the SafeHer project will begin as a fully functional, web-based platform before transitioning into a beta-version mobile app. Starting with a website will allow us to focus on core functionality, user testing, and refinement in an accessible environment, gathering valuable feedback before developing the more complex mobile application. The website will mirror the main features of the app, providing users with a consistent experience across platforms.

Once the website version proves stable and effective, we will move into mobile app development, utilising a user-friendly interface integrated with advanced safety technologies. The mobile app will be designed to ensure that its features can be quickly accessed in stressful situations, and it will incorporate both proactive and reactive safety measures.

Here's what we aim to deliver in both the web and mobile versions:

1. Emergency Button:
A gesture-activated or voice-command-triggered emergency button, allowing users to discreetly send an SOS alert to their pre-selected emergency contacts. The button will automatically share the user's real-time GPS location, sending periodic updates until the user is safe. This feature will be implemented using GPS services and APIs like Google Maps, ensuring real-time accuracy.

2. Real-Time GPS Tracking with Safe Route:
Users can plan a safe route and share their journey with trusted contacts. Notifications will be sent if there is a significant deviation from the route or an unexpected stop, ensuring that help can be alerted if necessary. This feature will integrate real-time GPS tracking and route deviation alerts.

3. Fake Call Feature:
The app will simulate an incoming call from a pre-selected contact, offering a discreet way to defuse potential threats. This will involve an audio simulation feature with customisable contacts, allowing users to create convincing scenarios when they feel threatened.

4. Community Hazard Reporting:
Users can report potentially dangerous areas or incidents through the app, which will display these reports on a dynamic map. This feature will encourage community-driven hazard reporting, providing real-time insights into areas to avoid. A backend database will store and display user-generated reports, keeping users informed of safety risks.

5. Data Security and Privacy:
To ensure the highest levels of data protection, all communication and storage within SafeHer will use strong encryption methods. Personal information, including GPS location and recordings, will be safeguarded with cloud integration aligned to international data privacy regulations such as GDPR, guaranteeing user privacy.

6. Extra Feature (if time permits) – Automatic Audio/Video Recording:
When the emergency button is activated, the app will begin automatically recording audio and video through the user's device. This data will be securely stored in the cloud and can be used as evidence if necessary. This feature will rely on native camera and microphone capabilities, with cloud storage solutions like AWS or Google Cloud for backup.

Web App Development

The web application is developed using HTML, CSS, and JavaScript for the frontend, delivering a responsive and visually appealing interface. These technologies enable key features such as real-time GPS tracking, dynamic map displays, and gesture-activated emergency alerts. JavaScript ensures smooth interactions with APIs and provides dynamic updates, like route deviations and hazard reporting, to enhance user experience.

On the backend, Django is utilised for its robust, scalable framework and built-in capabilities, such as user authentication, session management, and data handling. It facilitates seamless integration with APIs and ensures secure storage of user data, including emergency contacts, hazard reports, and location history. The Google Maps API is integrated for real-time tracking, route visualisation, and community hazard reporting, leveraging its accuracy and reliability for critical safety features.

Django's security measures, including CSRF protection, SQL injection prevention, and encrypted data handling, ensure compliance with international data protection standards such as GDPR, safeguarding user privacy and trust.

Mobile App Development

The mobile application is in the planning phase, with frameworks such as Flutter and React Native under consideration. Flutter offers a single codebase for both Android and iOS, ensuring faster development cycles, excellent UI design flexibility, and native-like performance. React Native provides a robust option for cross-platform development, leveraging the team's existing expertise in JavaScript for seamless integration with web technologies.

Insights from the web application will guide mobile app development, ensuring consistency in design and functionality while addressing user feedback. Both frameworks aim to deliver a secure, intuitive, and feature-rich experience for mobile users on Android and iOS platforms.

By starting with a web-based platform, we can refine SafeHer's core features and address user feedback before rolling out a full mobile solution. This phased approach allows for faster iteration cycles, ensuring that both versions—web and mobile—are polished, functional, and secure.

Market Rationale:

The increasing need for women's safety tools in a global climate where harassment, assault, and other threats have become alarmingly common underscores the necessity of SafeHer. As urbanisation continues to grow, more women find themselves commuting, traveling, or working late in environments where personal safety is often compromised. SafeHer aims to address these issues by providing a comprehensive, discreet, and easy-to-use app that offers both proactive safety measures and emergency response tools.

Target Audience and Market Demand

SafeHer's primary market consists of:

- Young professionals and students who commute or work late.
- Urban women who frequently walk alone or use public transportation.
- Frequent travellers in unfamiliar environments.
- Parents/guardians concerned about the safety of their teenage daughters.

This market segment is well-defined, with a growing demand for personal safety tools. According to various market reports, the use of personal safety apps has seen significant growth in recent years, driven by increasing awareness of safety issues, particularly in urban centres. As more women seek quick, discreet, and reliable solutions, SafeHer is positioned to meet this demand by combining proactive safety features (safe routes, community hazard reporting) with reactive tools (emergency buttons, real-time tracking).

Unmet Needs in the Current Market

Despite the existence of other personal safety apps, many fail to deliver a comprehensive solution that effectively integrates emergency response, real-time tracking, and community-driven prevention features. Competing apps such as Noonlight and bSafe offer emergency alerts and tracking but often lack features like hazard reporting and automatic audio/video recording. In addition, many apps fail to be discreet, which can be crucial in threatening situations.

SafeHer differentiates itself by offering an all-in-one platform that includes preventive measures alongside rapid emergency response tools. The app's emergency button, voice-

command activation, and fake call generator address the key user pain points of needing fast, discreet help in high-stress situations.

Market Opportunity

The global demand for women's safety solutions is expected to rise as safety concerns increase, particularly in high-risk areas and among vulnerable demographics such as students, night-shift workers, and travellers. SafeHer's focus on empowering women with customisable safety features creates a unique value proposition that appeals to these users. Additionally, the app's adaptability for parents and guardians seeking tools to protect their children opens up new market opportunities.

As SafeHer is initially rolled out as a web app before transitioning to a mobile app, its accessibility to a broader audience at launch will help establish a user base, refine the features based on real-world feedback, and prepare for a larger-scale mobile release.

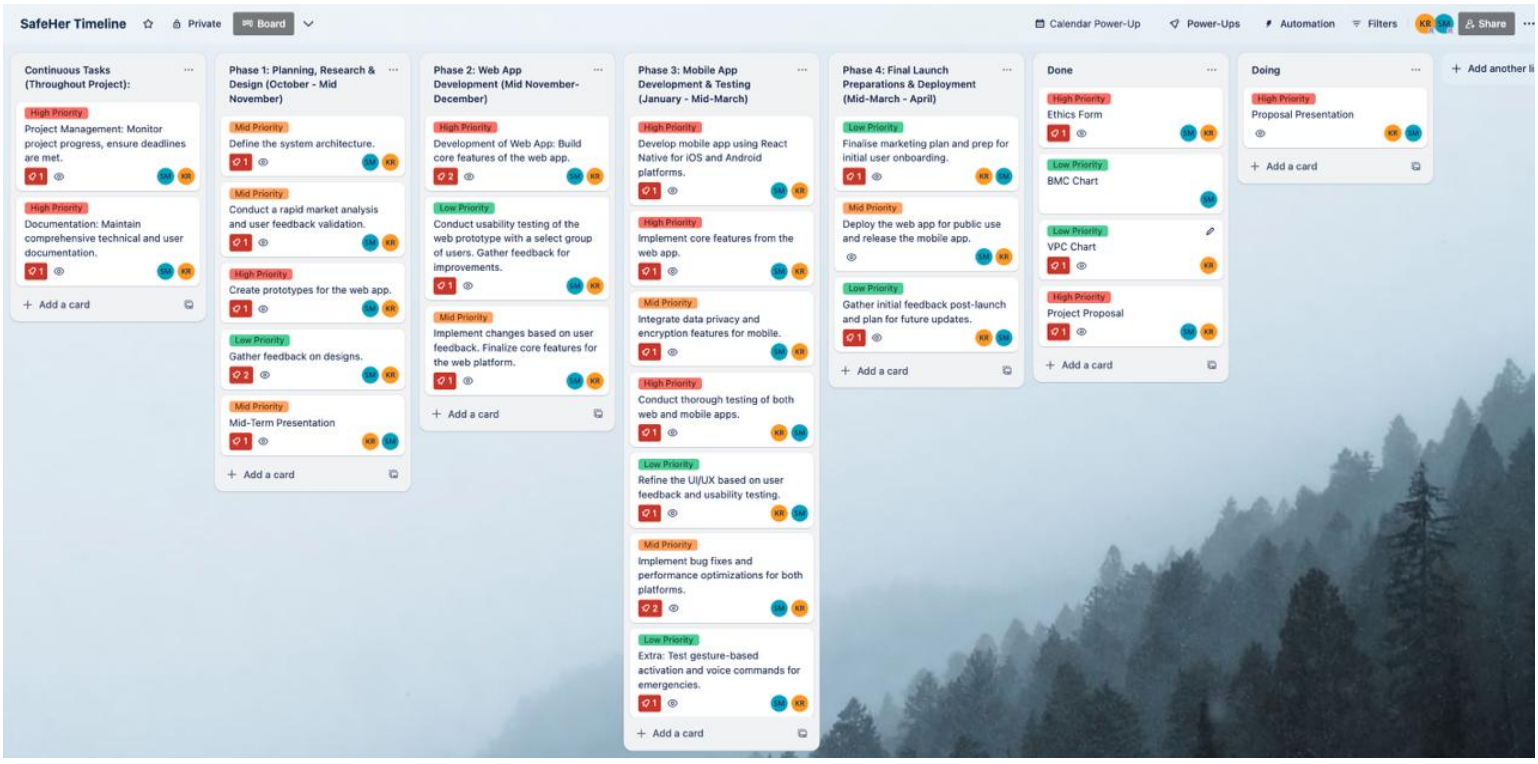
Revenue Potential and Business Model

SafeHer's potential revenue streams include:

- Freemium Model: Offering essential features for free while charging for premium safety tools and cloud storage.
- Partnerships and Sponsorships: Collaborations with insurance companies, universities, safety organisations, and NGOs to provide bundled safety services.
- Crowdfunding and Donations: Leveraging NGO support and crowdfunding campaigns to drive community investment.

With the growing emphasis on women's safety and the proven demand for personal security apps, SafeHer is well-positioned to capture a substantial market share by addressing unmet needs and delivering an innovative, comprehensive solution that stands out in a crowded market.

Proposed Timeline:



All tasks outlined in the project timeline will be collaboratively tackled by both team members, as illustrated in the Trello board. Each member will contribute their unique skills and expertise to ensure the successful development and launch of SafeHer. By working together, we aim to create a comprehensive safety tool that meets the needs of our users effectively.

Workload Distribution :

Both of us, Devi and SammyJoe, will work together on every aspect of the SafeHer project to ensure a cohesive and well-rounded result. While we'll each have areas where we'll focus more, we plan to collaborate and support each other throughout the entire process.

Devi, will likely focus more on the documentation and technical aspects, such as:

- Writing the technical specifications, designing the architecture, and ensuring we comply with security regulations like GDPR.
- Overseeing the integration of APIs, backend systems (like GPS tracking and cloud storage), and ensuring everything functions smoothly from a technical standpoint.
- Managing the detailed project documentation and technical reports, and refining our code through reviews with SammyJoe.

Meanwhile, SammyJoe, will lean more towards the practical development side, including:

- Leading the development of the key features, such as the emergency button, real-time GPS tracking, and the hazard reporting system.
- Handling the coding for both the web and mobile versions, ensuring the user interface and experience (UI/UX) are intuitive and smooth.
- Overseeing user testing, gathering feedback, and refining the app to meet user needs, while also working with Devi to align the technical documentation.

Even though we have our individual strengths, we'll be constantly checking each other's work, sharing feedback, and making sure both the technical and practical sides are aligned. We want to ensure that both of us have a hand in every part of the project.

Staff Consulted:

Cathal Gurrin, from the School of Computing and Head of the ADAPT Research Centre, will be supporting SafeHer as the project advisor.