

Lab 1 - Care Corner Product Description

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1. Introduction

Sexual assault is far too common. It is reported that one in three women have been the victim of rape or attempted rape (*What is Sexual Abuse?*, 2018). Sexual assault on women has become so prevalent that a majority of them admit to taking regular steps to avoid being sexually assaulted including always having their phone with them when preparing to walk alone (*Journalist*, 2019).

Another negative aspect of sexual assaults is how often they go unreported. Only around one in five rapes are ever reported (*What is Sexual Abuse?*, 2018). Not only is there a lack of education in regards to how to report rape or sexual assault, there is also a lack of education on what rape or assault even is. In addition to not knowing if what happened to them is considered rape or sexual assault, victims often have to deal with other barriers including confusion, fear of judgment, and perceived lack of evidence (*The US System Didn't Protect These Women*, n.d.). As a result, both victims and potential victims live in fear of being assaulted and, if they are assaulted, the assailant is rarely held accountable.

Care Corner is a tool designed to reduce the frequency of these assaults by building an appropriate confidence in people while walking alone, and increasing the frequency that attacks are reported. Care Corner offers preventive measures such as a Panic Button feature to notify friends of emergencies and a Fake Phone Call feature to excuse oneself from uncomfortable situations. Care Corner also looks to assist those who have been assaulted by offering local and national resources to aid and assist with the reporting process.

2. Care Corner Product Description

Care Corner is a mobile application for both Android and iOS that is meant to aid anyone who feels they are at risk of being assaulted. Care Corner was designed with the safety of women in mind because the issue of sexual assault affects them at a higher rate than men. However, Care Corner is not designed for only women; instead it can be used by anyone who feels the need to take additional precautions in regards to their safety. The application consists of two main areas which are prevention and reporting.

Care Corner offers several options to assist in the prevention of assault. This extends from making sure the user's friends and family are aware of the user's location to planning a night out accordingly to maximize the user's safety.






Care Corner also looks to educate users and ensure if an assault does occur that the user has all the necessary tools needed to properly report any assailants. In addition, Care Corner also looks to assist users with recovery by connecting them with local and national aid.

As shown in Figure 1, Care Corner offers a more comprehensive set of features that give the user direct access to tools that will help improve safety. Care Corner also offers information sources for obtaining assistance, reporting, and relevant educational resources.

(This section is intentionally blank. Please continue to page 5 to view Figure 1)

Figure 1

Care Corner Market Assessment

	Care Corner	bSafe	JJoe	Circle of 6	Aspire News
MARKET ASSESSMENT					
Panic Button to instantly notify those you trust when you need help.	✓	✓		✓	✓
Fake phone calls to excuse yourself from uncomfortable situations	✓	✓		✓	
Automatically connects students to their local Campus Police	✓				
Record a journey with Audio, Video, and/or GPS location	✓	✓			
Interactive system to provide best practices when planning a Journey	✓				
Access to education and resources at a local and national level	✓		✓	✓	✓
Snapshots to record time & location for accurate reporting of an incident.	✓		✓		
Prompted Reporting Assistance to discover necessary details commonly requested by law enforcement.	✓		✓		

Care Corner offers a more comprehensive set of features that provide users with tools to improve their safety as well as information sources for assistance, reporting, and relevant educational resources.

2.1 Key Product Features and Capabilities

Care Corner offers several features to aid in the safety of its users. The first of which is the Armed Journey Mode. In this mode the user's location and destination can be sent to select contacts in order to ensure friends and family are aware of the user's location. The users have complete control over which contacts receive what information.

Care Corner also features a Fake Phone Call feature. This can be pre-programmed to occur at a specified time or can be activated to use in real time. This feature is used by the user when excusing themselves from uncomfortable situations. It also puts the phone in a more alert state in case an emergency happens.

While the phone is in Armed Journey mode or in a Fake Phone Call, the Panic Button feature can be activated. The Panic Button feature is used if the caller feels as though they are in

any imminent danger. The user can pre-set what the activation of the Panic Button does.

Activating the Panic Button can result in messaging pre-selected contacts, sending GPS location to pre-selected contacts, recording audio and video or GPS location, noting the time and GPS location of the activation of the button, and offering emergency services contact information such as 911 or campus police.

Care Corner also provides easy access to information to help educate users so that they can make more safer decisions when planning and engaging in journeys or outings. Care Corner also provides access to information to help provide guidance in the case that an assault takes place. Care Corner's Mombot feature provides users with the ability to verbally present plans for an outing and receive suggestions or information to consider for improving safety and situational awareness during the event.. Mombot issues a battery warning so the user may be reminded to charge their phone before starting their journey. Mombot also connects users to resources, both local and national, that can assist with everything from locating a local shelter to reporting and education.

In the event of an assault, Care Corner assists with the reporting process. First, when the Panic Button is activated, the GPS location and time will be noted. This is instrumental in reporting exactly where and when and assault took place. Care Corner also provides a log feature to assist users in recording relevant information as soon as possible. This helps reduce the chance of the user forgetting important details before those details can be reported to authorities.

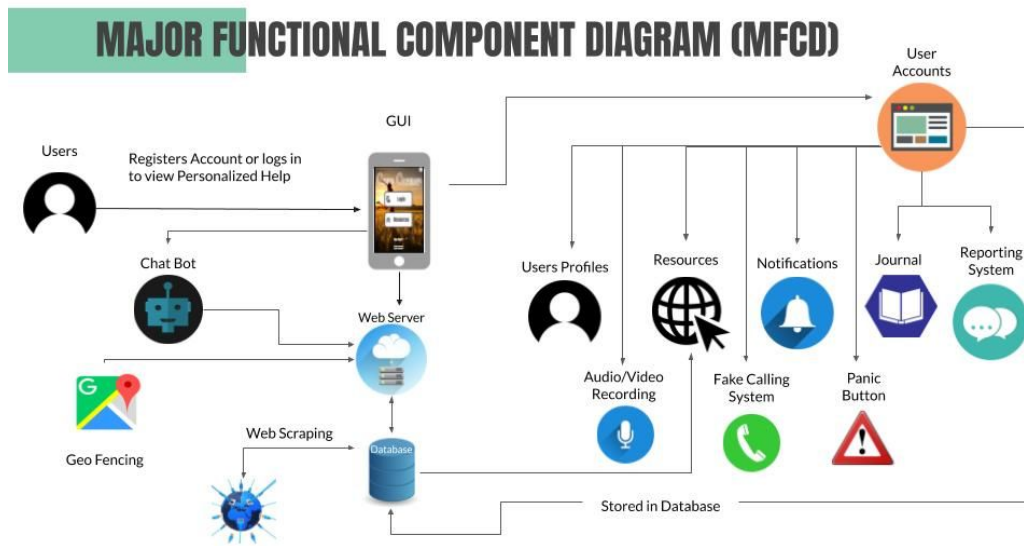
2.2 Major Components (Hardware/Software)

Care Corner is a mobile application that runs on both Android and iOS devices. Care Corner's server infrastructure is supported entirely through Amazon Web Services (AWS). The web server for the Care Corner site is provided through the AWS- S3 web service. The database

server runs on AWS- RDS servers using MySQL. The file server is also hosted through the AWS-S3 service. These relationships are outlined in Figure 2

Figure 2

Care Corner Major Functional Component Diagram



The Care Corner website, which serves as an information landing point about the app, is constructed using a combination of HTML, CSS, JS, and PHP. The development of the app takes place primarily within the Windows operating system. The Care Corner team utilizes GitLab for development and software control. Gradle is used as the primary build management tool, and the organization regarding the development of the app is also done in GitLab.

Care Corner also relies on external dependencies and APIs. The user's GPS location is used in conjunction with the Google Maps API to geofence local resources for the user. Twilio service is used to message the user's contacts in case a journey is started or the Panic Button is activated. Care Corner utilizes web scraping and RSS feeds to gather resource information and educational information for the users

3. Identification of Case Study

Early deployments of Care Corner's would target women as its primary users, despite it being designed for anyone. These users would be required to be English speakers because early iterations of Care Corner will not be multilingual. Due to limits on the API used for mapping, Care Corner will only support use in the United States during early deployment.

Care Corner's case study would be a 3-month period and involve providing several women with access to the application. Early users would be encouraged to explore and utilize any of the non-emergency features as often as possible. This would include seeking advice from Mombot and sharing their walking location with their in-application contacts. User's would also be encouraged to test features such as the Panic Button and Fake Phone Call, despite them not being needed at a given time. This testing is necessary because the unsafe situations that these features are designed to mitigate are not common enough for the case study. There exists a strong chance that without this additional testing, data gathered during the case study period may be insufficient.

As future deployments of Care Corner are released, the target user pool will expand. Care Corner sees, for instance, the LGBTQ+ community as a demographic that can greatly benefit from the features offered by Care Corner. Educational information and resources would continue to be added to support the expanding user base.

4. Care Corner Product Prototype Description

Care Corner is designed to mitigate the risk of an assault taking place, educate users on preventative practices, and resources and information if an assault should occur. The Care Corner prototype is designed to demonstrate the key features that achieve these goals. Despite

the omitted features in the prototype, the Care Corner prototype will still demonstrate proof of concept for the real world version of Care Corner.

4.1 Prototype Architecture (Hardware/Software)

The prototype for Care Corner will run on any Android device that is API version 21 Lollipop or higher. The prototype will be developed on Android Studio within the Windows 10 operating system. The application will be primarily built in Java, with the occasional use of Kotlin.

Within the Care Corner's prototype a new user can create their profile. All user credentials and information will be stored within the AWS database.

The prototype will utilize several AWS products to cover data storage and access. The databases will be stored within AWS RDS and built using MySQL. The servers for the prototype will be an AWS S3 server which are primarily used to store audio and video. The computing functions will be handled by AWS Lambda serverless computing. AWS Cloudfront will manage any audio or video streaming. Twilio will handle any SMS messaging. Google Maps API will handle all mapping associated with GPS use.

4.2 Prototype Features and Capabilities

When a user creates a new account with Care Corner, the user's information is stored on a cloud database. This cloud storage offers users the ability to change devices, log in, and have their profile accessible from their new device.

The Care Corner prototype will include both the Panic Button and Armed Safe Walk. A user's location can be tracked. Audio and video can be captured and stored locally on the user's device. The audio, video and GPS data will be stored within the AWS cloud server. The Panic Button feature will automatically notify contacts in case of an emergency via SMS. However, the

prototype will not include the ability for a user to choose which contacts get sent a message or the contents of that message.

The Fake Phone Call feature will also be fully implemented. Users can choose when a fake phone call will occur. They can also choose what name will display on the call and what phone number. When a user goes back in to set up another fake phone call, these options will auto-populate based on the information that was filled in on the last phone call.

Within the prototype, the Journal will fully implemented. This means that users can create, read, update, and delete all entries. Access to the Journal is also password protected. Users are required to re-input their password to access the Journal if 30 minutes of non-use has passed since they last accessed the Journal.

The prototype includes The Mombot, Reporting Assistance, and Resource Archive. These features are included in the prototype to primarily show their functionality. Mombot provides helpful information, but the range of information that is offered will be limited. The Reporting Assistance log fields are based on facts about an incident and are designed to assist in recording as many details as possible for accurate reporting of an incident. The log included as part of the Reporting Assistance feature will also be limited in scope. The Resource Archive will only include a few resources as well.

4.3 Prototype Development Challenges

The first development challenge for the Care Corner prototype will be the proper setup of Android Studio with Git capabilities. The unique IDE can result in unexpected barriers that can slow progress. An additional level of complexity may be added with the integration of GitLab.

The external resources may also provide a challenge. Unfamiliarity with AWS setup, configuration, and integration with the application via APIs may serve as a hurdle during development. Similar hurdles may also be experienced with Twilio and Google Maps.

5. Glossary

Agile: Set of frameworks and practices where solutions evolve through collaboration between self-organizing cross-functional teams

Amazon Web Services (AWS): Cloud computing platform provided by Amazon

Android: Mobile operating system primarily developed by Google

API (Application Programming Interface): A set of functions that allow one program to access data and interact with an external program

Cloud Based Database Server: Virtual infrastructure that performs application and information-processing storage

Data Retention: Storage of an organization's data for compliance or business reasons

Database: Structured data held in a computer

File Server: Controls access to separately stored files

Geofencing: Using GPS to create a virtual geographic boundary

GitHub: Web-based collaboration platform for software developers

GPS (Global Positioning System): Provides users with positioning and navigation information.

Gradle: Build automation tool for multi-language software development

GUI (Graphical User Interface): The set of interactive visual components in software to improve the user experience

HTML (Hypertext Markup Language): Standard markup language for documents designed to be displayed in a web browser

iOS: Mobile operating system developed by Apple

JavaScript: Object-oriented computer programming language commonly used to create interactive effects within web browsers

Jsoup: Open source Java library used mainly for extracting data from HTML

Kotlin: Object-oriented programming language initially designed for Android and Java Virtual Machine (JVM)

Linux: Unix-like, open source operating system for computers, servers, mainframes, etc.

MySQL: A freely available open source relational database management system that uses structured query language (SQL)

PHP (Hypertext Preprocessor): General-purpose scripting language suited to web development

RSS Feed (Really Simple Syndication Feed): Set of instructions on the computer server of a website. The feed tells the reader when new material has been published on the website

Scrum: A process framework used to manage product development and other knowledge work

Stakeholder (direct): Those involved in the company's day-to-day activities

Stakeholder (indirect): Those more interested in the result of the production

Twilio: A developer platform for communications

UI / UX (User Interface/ User Experience): The graphical layout of an application which includes components such as buttons, navigations bars, etc.

Web Scraping: Extracts and scrapes data from websites

Web Server: A computer that runs websites

Windows: Series of operating systems developed by Microsoft

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