Lab 1 – Care Corner Product Description

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1. Introduction

Far too often women feel unsafe and uncomfortable when they are in situations where they are alone and some may live with a constant fear of being attacked (Ballard 2019). To make matters worse, when women are attacked they can be unsure how to go about getting help and how to begin their recovery(“After Sexual Assault”, n.d.). There is more that can be done to help improve this unfortunate situation which far too many women find themselves in today.

Fifty-plus percent of women do not feel comfortable walking alone at night: this is a fear members of the opposite sex do not frequently share at sixteen-plus percent (Ballard 2019). This trend continues with each everyday activity surveyed, from riding a bus to going on a first date (Ballard 2019). Women may arm themselves with defensive weapons from mace, tasers, or even car keys between their knuckles to feel prepared for a possible threat (Runyen 2007). Some women find themselves in uncomfortable situations on dates from which they need a way out with little to no confrontation. These three examples are worries women are found to be more often burdened with than men (Ballard 2019).

In an attack or a potential attack, a woman can find herself limited in her options for help; she can fight, she can run, she can scream for help. There is nothing stopping her from doing these actions yet when it comes to wanting to alert trusted friends and or family she is now met with difficulty as there is not an easy way to alert a preselected group of contact near-instantly. Police or other emergency services are an option but more women are becoming hesitant to reach out to them for various reasons(Schreyer 2018). It must become easier to send an alert to trusted friends and family and quickly begin recording video and sound.

After an attack women can be unsure what to call what they have just experienced; sexual assualt, sexual abuse, sexual harrassment, and rape can be difficult enough to distinguish and can

only be more difficult after being in a traumatic state(Amnesty International 2019). Women may also be hesitant to report the crime of which they have been a victim of due to four things: confusion, lack of evidence, being afraid of judgement, and not knowing who or how to share their experience. Making evidence collection easier and well as education would make an improvement over all four of those.

There is currently no application available to women to try and ease the burden of these issues addressed. Care Corner fills this void by offering a platform that has features for getting users out of uncomfortable situations; easily and quickly alerting trusted friends and family members; quickly recording audio and video; as well as offering educational resources on how to get help, where to get help, and what the reporting process is like.

2. Product Description

Care Corner is a mobile application which provides tools for reducing the likelihood of sexual assault and provides resources to help users understand what to do in the event a sexual assault does occur. The app works to reduce likelihood of sexual assault, reduce severity of situations, and make recovery resources more accessible. In more detail, it aims to do this by offering resources, educational material, recovery features, likelihood reducing features, and severity reducing features.

2. 1 Key Product Features and Capabilities

The key features of the app are the Armed Journey Mode, Fake Phone Call, Panic Button, Mombot, Journal, resources, and education pages. Here are a few ways in which the app could aid the user: a potential predator could be deterred by the fake phone call feature reducing likelihood, alerted friends and family could quickly respond to the situation leading towards a hopefully less severe situation, and educational material and resources make help one click away rather than time wasted trying to find resources on your own which may or may not be helpful.

The Armed Journey Mode feature provides a set of tools that can be used in uncomfortable situations. It provides the capability to directly communicate location information and scripted messages to selected contacts. A Panic Button is available which, when activated, initiates audio and video recording and the capability to immediately notify selected contacts. The user is able to decide how much information they share. The user must be able to quickly share this alert of information because time is of the greatest essence in these situations. This feature achieves the product goal of giving the user a tool to quickly alert a pre-selected group of certain information, this information varies depending on user selection.

The Fake Phone Call feature provides a set of tools that can be used in uncomfortable situations. It provides the capability to activate or schedule a fake call to their phone so that they can excuse themselves from a situation when needed or seem to be on the phone with a friend. These fake calls can be programmed to occur at specific times, appear to come from a specific person, and to be able to say a key phrase to the fake call to activate the Panic Button. This feature achieves the product goal of providing the user with a tool to easily excuse themselves from a situation minimizing chance of unwanted confrontations or deter potential attackers by appearing to be on the phone with a friend.

The Panic Button feature provides a set of tools that can be used in uncomfortable, unsafe, or threatening situations. It provides the capabilities to quickly message preselected contacts, share GPS location with preselected contacts, and prepare a call to 911 or campus police. The Panic Button also begins recording video and audio, GPS location, and takes a timestamp of the button's activation. This feature achieves the product goal of providing the user with a tool to quickly send alerts, record audio and video, location, and time, or in other words alerting help and gathering possible evidence to help the user.

The Mombot feature provides a tool to be used before entering a potentially unsafe situation. It provides the capabilities for a user to verbalize their plans then receive helpful mom-like feedback or advice as well as reminding the user of the option to schedule a Fake Call or start an Armed Journey. An example of the way the Mombot works is the user states to the Mombot that they will be going to a bar tonight, the Mombot then advises the user to be sure to watch their drink being poured and not to leave their drink unattended. This feature achieves the product goal of providing the user with a tool to remind the user of things to look out for to help the user stay safe.

The Journal feature provides a tool to be used in safe situations. It provides a secure journal or diary to use as they would like and which could possibly aid in recovery if something were to happen. This feature is similar to having a paper diary but on their phone, even better than a real one because there is no need to worry about ink or paper as well as this Journal is password protected. This feature achieves the product goal of providing the user with a tool to aid in recovery, though it also serves other benefits outside of that goal.

The resources and education feature provides a tool to be used in safe situations. It provides the user with quick and easy access to resources from a national level or a local level through the use of geofencing. Reading material is from government or official documents to trusted blogs or national hotlines. Geofenced resources are shelters, nonprofits, counselors, and campus police. Websites offered are from government websites as well as trusted non-profit organizations. The user is offered educational material to inform them of what the reporting process is like as the more comfortable they are with the process, the more likely they may be to report.

2.2 Major Components (Hardware/Software)

Care Corner is a mobile application which will need internet connection, camera permissions, microphone permissions, and access to contacts.

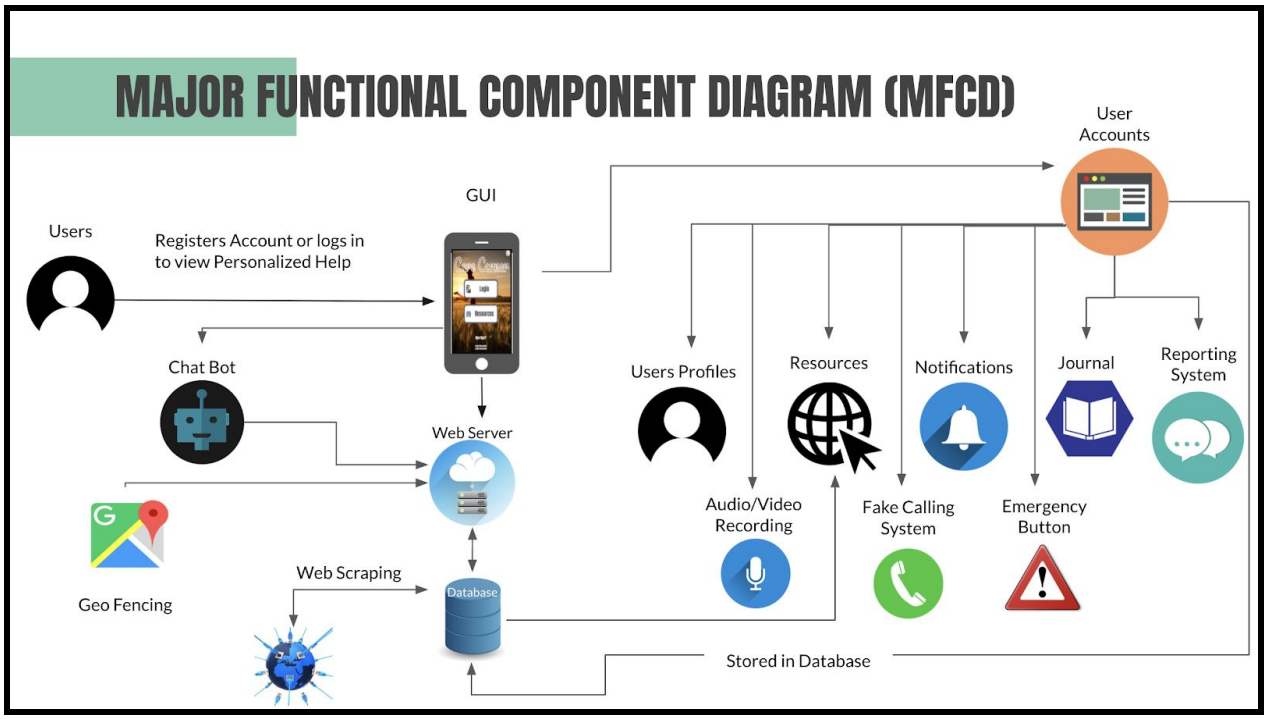
Care Corner has the following hardware requirements: a file server, a web server, a cloud based database server, as well as an Android or iOS phone with connection. There is a need to backup important and sensitive information that could potentially be used as evidence of a crime. Care Corner's server infrastructure is done on Amazon Web Services. The web server and file server are maintained on AWS-S3 web service and the database is maintained on AWS-RDS with MySQL.

Care Corner has the following software requirements: Web Programming on HTML, CSS, JS, and PHP; Operating Systems on Windows, Linux, Android, and iOS; Github for collaborative development and software version control; Build Manager of Grade; Workflow of Gitlab. All are standard for cross development and team work. HTML and such enables the upkeep of the website. Operating systems enable both development and maintenance of site and mobile application. Build Manager and Gitlab aid development and maintenance.

The MFCD (Figure 1) shows that the Chatbot, GUI, and GeoFencing work directly with the Web Server: this works to feed the Chatbot information as well as make the Chatbot perform properly; also this allows the GeoFencing API to work properly for our needs of finding nearby resources; and finally the GUI works with this to display all the information on the mobile application. The Web Server works with the Database to retrieve and send data, ranging from account information to videos that have been recorded. The Database works with the Web Scraper, Accounts, and Resources to retrieve current information both data and resources to ensure everything listed stays up to date. Finally it shows the User Accounts work with the GUI and the database to ensure proper mobile application functionality as well as personalization and profiles. The User Accounts can be broken down into many different nodes which have corresponding data being stored; profiles, recording, resources, notifications, Fake Call, Journal, Panic Button, and reporting system. There will be a fair amount of software to be developed, difficult algorithms for the features and our resource gathering/updating to be created, as well as the interface to be made.

Figure 1

Care Corner Majoral Functional Component Diagram



3. Identification of Case Study

The main target of the product would be women though Care Corner can be used by anyone. The initial user base would be English speaking women in the United States. This is because women are the main target of the product, the early implementation will not support other languages, and the mapping API will be United States restricted. An example use of the app would be as follows: Someone has decided to go to the bar tonight, they open Care Corner and check with the Mombot on what to look out for to keep themself safe; they decide they will be walking alone to the bar, the user begins an Armed Journey to share their location with their friend, the user also begins an immediate Fake Phone Call so that they can appear to be on the

phone with a friend while walking; the user arrives at the bar and later in the night becomes off-put by someone who will not take a hint and leave the user alone, the user discreetly schedules a Fake Phone Call, the user explains to their unwanted company that the call was a family emergency and the user must leave to attend to it; the user begins another Armed Journey, on their walk home, the user notices they are being followed and triggers the Panic Button, her friend see's the alert and notifies the police as well as begins heading to the location, the user is attacked and the phone collects video and audio evidence, the police quickly arrive thanks to the friend seeing the Panic Button alert, the friend is there to comfort the user; the user later uses the resources section to aid in recovery; the user later uses the Journal feature to aid in recovery. Care Corner could make a significant positive impact on the LGBTQ+ community as well. In the future Care Corner could easily be tailored to also make a significant positive impact on teens and preteens. Further in the future Care Corner could also be tailored to be used worldwide and in many different languages and make significant positive impacts everywhere.

4. Care Corner Product Prototype Description

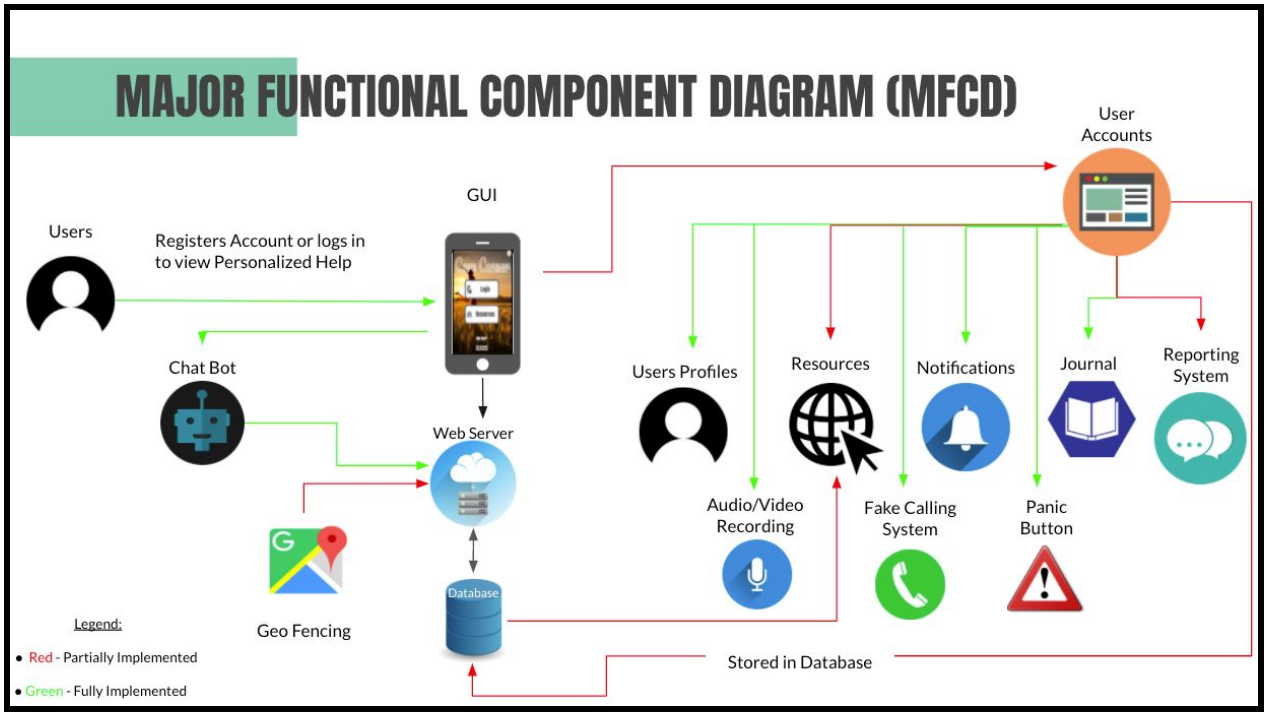
The purpose of Care Corner is to reduce both the likelihood and severity of sexual assault, as well as making resources more accessible. The solution is to provide tools for getting users out of uncomfortable situations; easily and quickly alerting trusted friends and family members; quickly recording audio and video; as well as offering resources and educational material on how to get help, where to get help, and what the reporting process is like. The objective of the Care Corner prototype is to demonstrate this key functionality. This prototype will not include all functions and features of the real-world product. Omitted features will not be necessary to demonstrate the key capabilities of the Care Corner solution.

4.1 Prototype Architecture (Hardware/Software)

The Care Corner prototype will be developed using the expected hardware and software of the real world product. Our components are laid out in the MFCD below with note to partial or full implementation.

Figure 2

Care Corner Prototype Majoral Functional Component Diagram



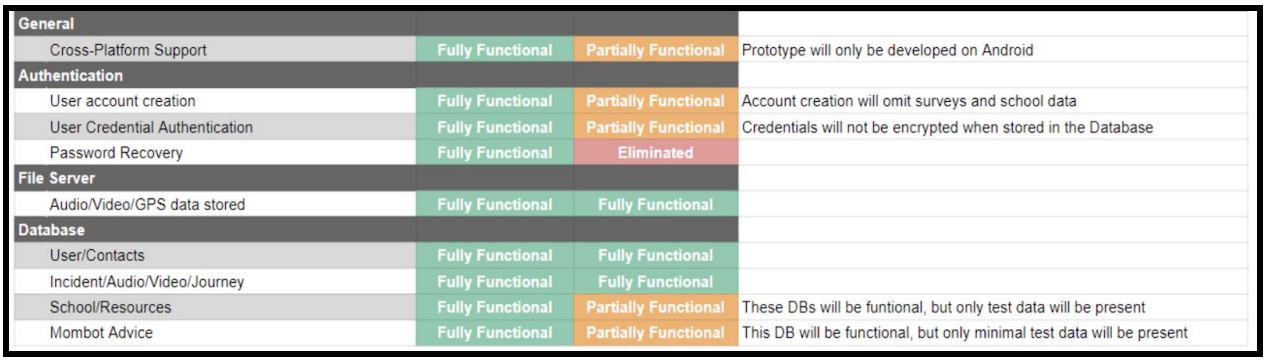
The hardware requirements are a web server, database server, file server, and an Android smartphone. Each of the hardware requirements will use AWS. The cloud server will be AWS S3, the database server will be AWS RDS, and the file server will be AWS FSx. The software is developed on Android Studio in Java with version control through GitLab as well as using Gradle for build management. The database is MySQL. The web programming is done through HTML, CSS, JS and PHP.

4.2 Prototype Features and Capabilities

All of the main features of the Care Corner real-world application are implemented in the prototype. These features are not as detailed as the real world prototype, for example certain features may have reduced customization, but the real-world products's features are adequately demonstrated in the prototype. The features to be implemented are detailed in Figures below.

Figure 3

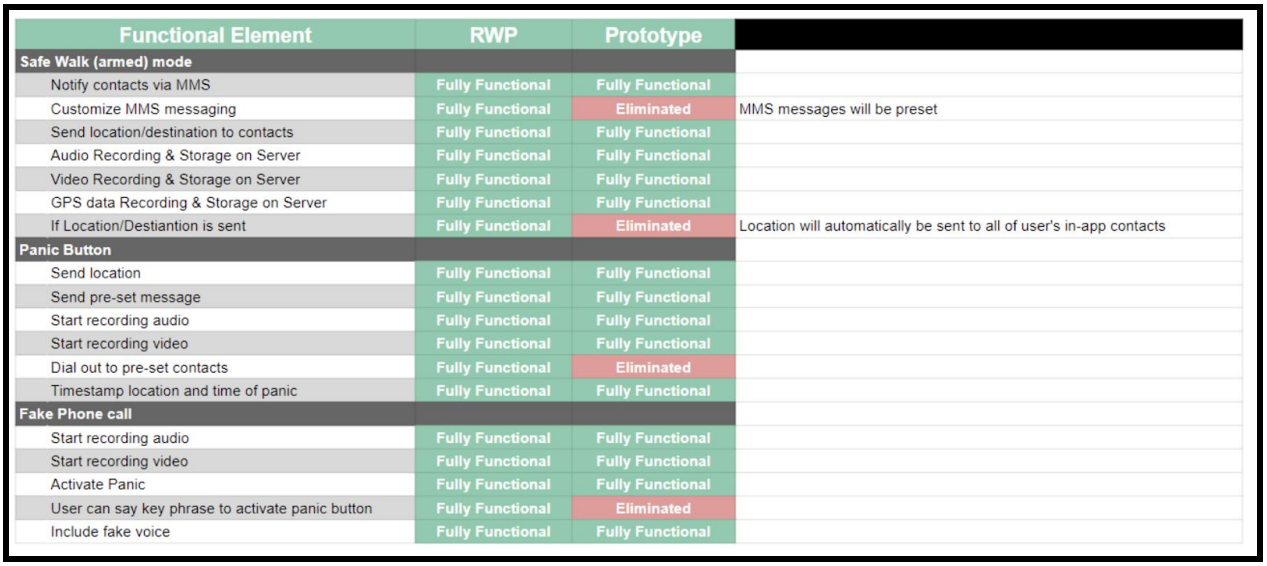
Care Corner Feature Real-World Product vs Prototype 1



General			
Cross-Platform Support	Fully Functional	Partially Functional	Prototype will only be developed on Android
Authentication			
User account creation	Fully Functional	Partially Functional	Account creation will omit surveys and school data
User Credential Authentication	Fully Functional	Partially Functional	Credentials will not be encrypted when stored in the Database
Password Recovery	Fully Functional	Eliminated	
File Server			
Audio/Video/GPS data stored	Fully Functional	Fully Functional	
Database			
User/Contacts	Fully Functional	Fully Functional	
Incident/Audio/Video/Journey	Fully Functional	Fully Functional	
School/Resources	Fully Functional	Partially Functional	These DBs will be funtional, but only test data will be present
Mombot Advice	Fully Functional	Partially Functional	This DB will be functional, but only minimal test data will be present

Figure 4

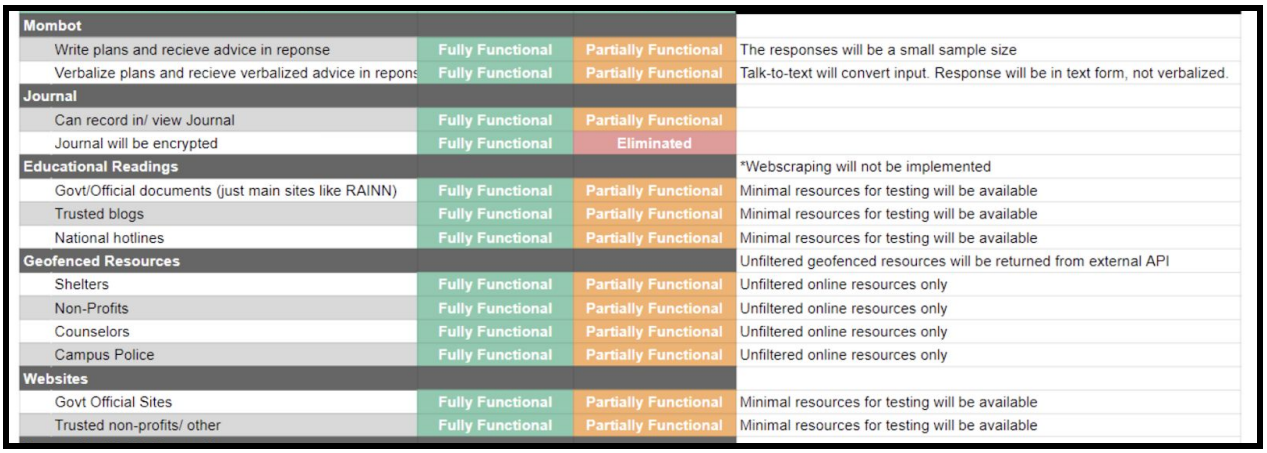
Care Corner Feature Real-World Product vs Prototype 2



Functional Element	RWP	Prototype	
Safe Walk (armed) mode			
Notify contacts via MMS	Fully Functional	Fully Functional	
Customize MMS messaging	Fully Functional	Eliminated	MMS messages will be preset
Send location/destination to contacts	Fully Functional	Fully Functional	
Audio Recording & Storage on Server	Fully Functional	Fully Functional	
Video Recording & Storage on Server	Fully Functional	Fully Functional	
GPS data Recording & Storage on Server	Fully Functional	Fully Functional	
If Location/Destiantion is sent	Fully Functional	Eliminated	Location will automatically be sent to all of user's in-app contacts
Panic Button			
Send location	Fully Functional	Fully Functional	
Send pre-set message	Fully Functional	Fully Functional	
Start recording audio	Fully Functional	Fully Functional	
Start recording video	Fully Functional	Fully Functional	
Dial out to pre-set contacts	Fully Functional	Eliminated	
Timestamp location and time of panic	Fully Functional	Fully Functional	
Fake Phone call			
Start recording audio	Fully Functional	Fully Functional	
Start recording video	Fully Functional	Fully Functional	
Activate Panic	Fully Functional	Fully Functional	
User can say key phrase to activate panic button	Fully Functional	Eliminated	
Include fake voice	Fully Functional	Fully Functional	

Figure 5

Care Corner Feature Real-World Product vs Prototype 3



Mombot			
Write plans and recieve advice in reponse	Fully Functional	Partially Functional	The responses will be a small sample size
Verbalize plans and recieve verbalized advice in repons	Fully Functional	Partially Functional	Talk-to-text will convert input. Response will be in text form, not verbalized.
Journal			
Can record in/ view Journal	Fully Functional	Partially Functional	
Journal will be encrypted	Fully Functional	Eliminated	
Educational Readings			*Webscraping will not be implemented
Govt/Official documents (just main sites like RAINN)	Fully Functional	Partially Functional	Minimal resources for testing will be available
Trusted blogs	Fully Functional	Partially Functional	Minimal resources for testing will be available
National hotlines	Fully Functional	Partially Functional	Minimal resources for testing will be available
Geofenced Resources			Unfiltered geofenced resources will be returned from external API
Shelters	Fully Functional	Partially Functional	Unfiltered online resources only
Non-Profits	Fully Functional	Partially Functional	Unfiltered online resources only
Counselors	Fully Functional	Partially Functional	Unfiltered online resources only
Campus Police	Fully Functional	Partially Functional	Unfiltered online resources only
Websites			
Govt Official Sites	Fully Functional	Partially Functional	Minimal resources for testing will be available
Trusted non-profits/ other	Fully Functional	Partially Functional	Minimal resources for testing will be available

The prototype will achieve most of the real-world product goals while being achievable by the set of constraints. The feature components that have been reduced or eliminated are not crucial for the prototype to adequately demonstrate the real-world product.

4.3 Prototype Development Challenges

The development of the Care Corner prototype has many challenges. The prototype has a strict time constraint of needing to be developed in less than a semester with many technologies the team has never worked with before. The use of new languages and frameworks to develop and deploy Care Corner will be the largest challenge as it will take time from the already strict time constraint. The team will work hard to overcome this obstacle.

Another challenge for the creation of the prototype is that the team lacks experience for the most part. The team will need time to get collaboration on track, staying organized with Scrum methods and a Trello board aims to ease these challenges.

The final and largest challenge for the creation of the prototype is the implementation of the complex APIs and features needed for our prototype. Teamwork and working hard will help the team overcome this challenge as well as reaching out to our plentiful resources we have available to us. Laying out the algorithms needed in the previous semester will also help the team overcome this challenge.

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

Client-server: Computer system where a central server provides data to a number of networked workstations

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 Web site. The feed tells the reader when new material has been published on the Web site

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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