

**Lab 2 - Care Corner Product Description**

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## **1 Introduction**

Sexual violence prevention is an issue women face on a regular basis. Nearly half of all women in the United States have been victims of sexual violence at some point during their lives (Smith et al, 2015). An annual survey conducted since 1973 has consistently held that women are twice as likely to feel unsafe walking at night alone as men (T. Smith et al, 2018). Six in ten women regularly take steps to avoid being sexually assaulted (YouGov, 2019). Some ways that women prepare to prevent sexual violence are: 73% report maintaining awareness of surroundings, 68% have a phone prepared, and 64% avoid certain areas (YouGov, 2019).

Care Corner is a mobile application that provides a toolkit to help deter sexual attacks, take action in the midst of sexual violence, and report a sexual violence incident. By incorporating a reliable and comprehensive feature set, Care Corner provides cohesive functionality for a reliable experience in handling sexual attacks. By helping to deter an attack, handle situations of an attack, and assist in processing an attack after it happens, Care Corner provides tools to help women handle sexual violence.

### **1.1 Purpose**

Care Corner is a mobile application with software features addressing different aspects of sexual violence. Functionality focuses on helping to deter sexual violence, deal with a sexual attack incident, and resources to report a sexual attack. The Care Corner mobile application has two main features to help deter sexual violence: enabling a user to make a fake phone call and providing contextualized safety tips before going on a walk. If a sexual assault occurs, a panic button is available to record and notify close contacts about the incident.

## 1.1 Scope

Goals of the Care Corner prototype are to demonstrate the main product features, evaluate parts of the product that are unique or risky, and to provide a technical foundation to build the final product from. The main set of features are trimmed to their minimal form in order to demonstrate and ensure there is a need for the product. Features of the application that do not provide core functionality are removed from the prototype so that user feedback can better inform and determine the most useful features for the next version.

The Care Corner prototype demonstrates the main functional elements of the solution. While the mobile application could easily capture and demonstrate the main features without the Care Corner API, a stated goal of the prototype is to prove architectural risks with using an API. The server side API provides needed resilience if someone's mobile phone was lost or stolen.

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### 1.3 Definitions, Acronyms, and Abbreviations

**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

**AWS AppGateway:** a fully managed service that makes it easy for developers to create, publish, maintain, monitor, and secure APIs at any scale

**AWS AppSync:** A fully managed service that makes it easy to develop GraphQL APIs

**AWS Cloudfront:** a fast content delivery network (CDN) service that securely delivers data, videos, applications, and APIs to customers globally

**AWS Lambda:** a serverless compute service that lets you run code without provisioning or managing servers

**AWS RDS:** easy to set up, operate, and scale a relational database in the cloud

**AWS S3:** an object storage service that offers industry-leading scalability, data availability, security, and performance

**Android:** Mobile operating system primarily developed by Google

**API:** Application Programming Interface

**CDN:** Content delivery network

**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

**DBA:** Database administrator

**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

**Gradle:** Build automation tool for multi-language software development

**GUI:** Graphical user interface

**HTML:** 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

**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)

**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

**Web Scraping:** Extracting/scraping data from websites

**Web Server:** server software, or a system of one or more computers dedicated to running this software, that can satisfy client HTTP requests

**Windows:** Series of operating systems developed by Microsoft

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## **1.5 Overview**

The remaining part of the product specification provides a more detailed description of various aspects of the Care Corner prototype. An overall description of the Architecture is covered, a functional description, external interfaces, hardware and software interfaces, user interfaces, and communication protocols.

## **2 General Description**

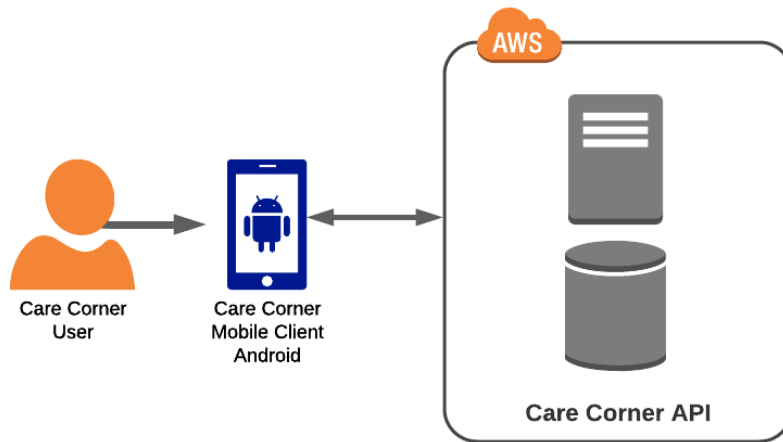
The Care Corner prototype is a mobile application

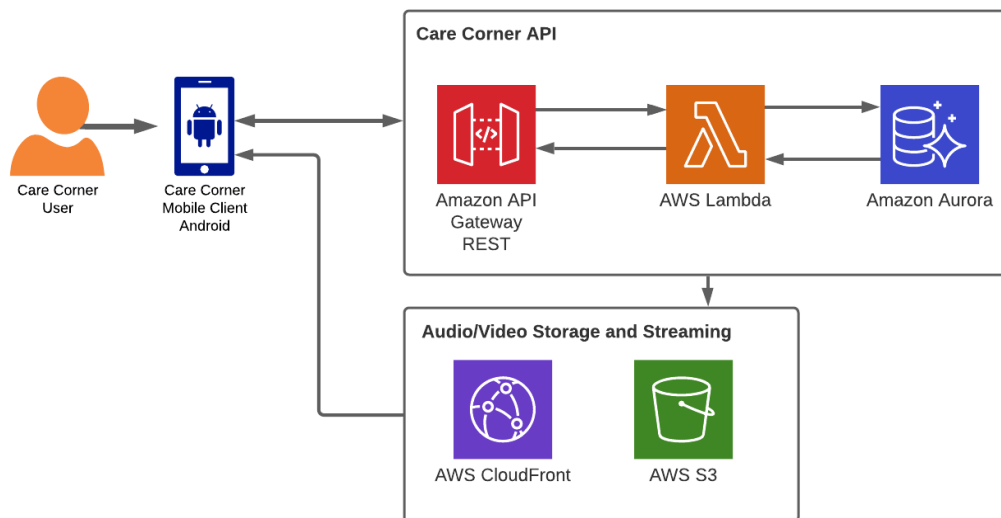
### **2.1 Prototype Architecture Description**

The main architectural components of the Care Corner prototype are a mobile application and an application programmer interface (API). As illustrated in Figure 3, the user interacts with the Care Corner mobile client. The mobile client is primarily responsible for the user interface for Care Corner and for communicating with the Care Corner API. The Care Corner API is responsible for the centralized logic that is used by all users of Care Corner and persisting data, such as the audio and video recordings.

**Figure 1.**

*Care Corner mobile client and API*



**Figure 2.***Care Corner API Architecture*

## 2.2 Prototype Functional Description

**Table 1**

*Care Corner RWP Features Verse Prototype Features*

	RWP	Prototype
Safe Walk (armed) mode		
Notify contacts via MMS	Fully Functional	Fully Functional
Customize MMS messaging	Fully Functional	Eliminated
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/Destination is sent	Fully Functional	Eliminated
<b>Panic Button</b>		
Send location	Fully Functional	Fully Functional
Send preset 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
<b>Fake Phone call</b>		
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
Pre-program what name the call appears to come from	Fully Functional	Fully Functional
<b>Mombot</b>		
Write plans and receive advice in response	Fully Functional	Partially Functional
Verbalize plans and receive verbalized advice in response	Fully Functional	Partially Functional
<b>Journal</b>		
Can record in/ view Journal	Fully Functional	Partially Functional
Journal will be encrypted	Fully Functional	Eliminated
Password Protected	Fully Functional	Fully Functional
<b>Educational Readings</b>		
Govt/Official documents (just main sites like RAINN)	Fully Functional	Partially Functional
Trusted blogs	Fully Functional	Partially Functional
National hotlines	Fully Functional	Partially Functional



Geofenced Resources		
Shelters	Fully Functional	Partially Functional
Non-Profits	Fully Functional	Partially Functional
Counselors	Fully Functional	Partially Functional
Campus Police	Fully Functional	Partially Functional
Websites		
Govt Official Sites	Fully Functional	Partially Functional
Trusted non-profits/ other	Fully Functional	Partially Functional
Depression/PTSD Counselor		
Reach a counselor via MMS	Fully Functional	Eliminated
Reporting Assistance (Partial)		
Time/location stamp at any time	Fully Functional	Fully Functional
Assistance reporting via preset questions	Fully Functional	Partially Functional

General		
Cross-Platform Support	Fully Functional	Partially Functional
Authentication		
User account creation/ authentication	Fully Functional	Partially Functional
User Credential Authentication	Fully Functional	Fully Functional
Password Recovery	Fully Functional	Fully Functional
File Server		
Audio/Video/GPS data stored	Fully Functional	Fully Functional
Database		
User/Contacts	Fully Functional	Fully Functional
Incident/Audio/Video/Jour ney	Fully Functional	Fully Functional
School/Resources	Fully Functional	Fully Functional
Mombot Advice	Fully Functional	Fully Functional

## **2.3 External Interfaces**

### ***2.3.1 Hardware Interfaces***

The Care Corner prototype is hosted on Amazon Web Services (AWS) interfacing with various serverless services that provide access to virtualized hardware and databases.

### ***2.3.2 Software Interfaces***

The Care Corner prototype interfaces with the several software interfaces to provide functionality. The Andriod SDK is used to enable standard application features. The Andriod Media Recorder is used to record audio and video. The Android GPS API is used to manage the user's geographical location. Twilio is used to provide SMS functionality. The Localstack and Serverless Framework containerized with Docker are used to emulate an AWS development environment.

### ***2.3.3 User Interfaces***

A touch screen mobile phone is the user interface to the Care Corner prototype. The prototype supports the Andriod operating system, following recommended user experience and usability for mobile application interfaces.

### ***2.3.4 Communications Protocols and Interfaces***

The Care Corner prototype uses the REST application level protocol to communicate between the amobilepplication and API. All traffic is served over HTTP/1.1 and SSL/TLS 1.2.

The data format is in JSON requiring the Content-Type HTTP header to be set. An API key is used to provide access in a HTTP header.