

Care Corner

Feel like you should: Safe

CS-411 Copper Team Prototype
Demonstration Presentation
Spring 2021

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BACKGROUND

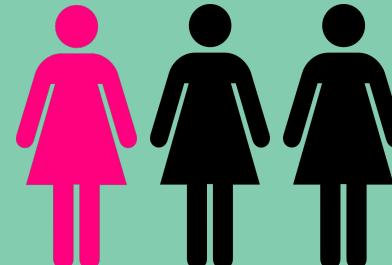
61% of women regularly take steps to avoid being sexually assaulted^[20]



7 out of 10 women say they always have their phone prepared when walking alone^[20]



Only $\frac{1}{5}$ of rapes and attempted rapes are reported.^[17]



1 in 3 women have been a victim of rape or attempted Rape^[17]

THE PROBLEM

Too often, people feel unsafe in situations when they are alone and live with a constant fear of being attacked. If an attack does happen, confusion about what to do following the attack is likely to follow.

PROBLEM CHARACTERISTICS



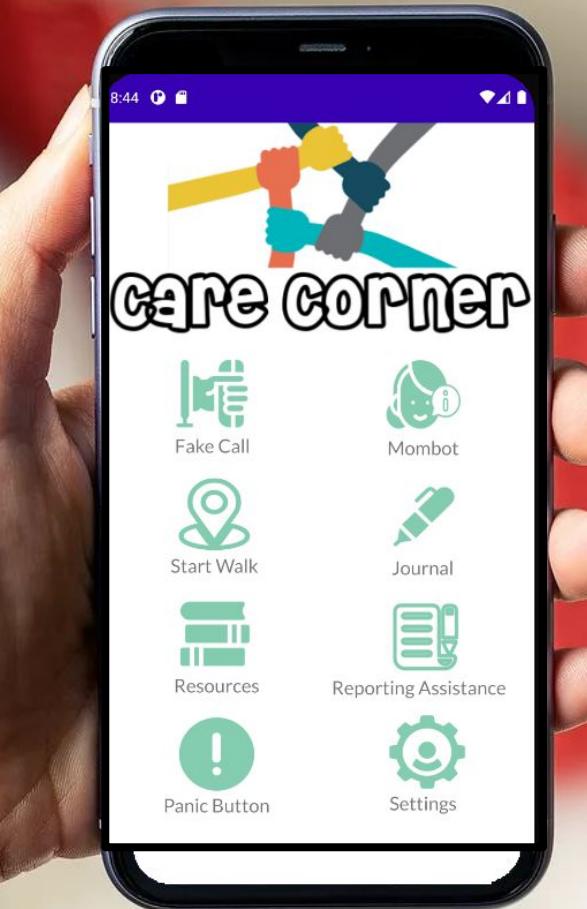
Many victims are confused about how to and what the right way to report is.^[22]

In the moment of an attack, the victim's resources are limited to calling 911.



People are not aware of the actions they could take to aid in the fight against sexual assault^[23]

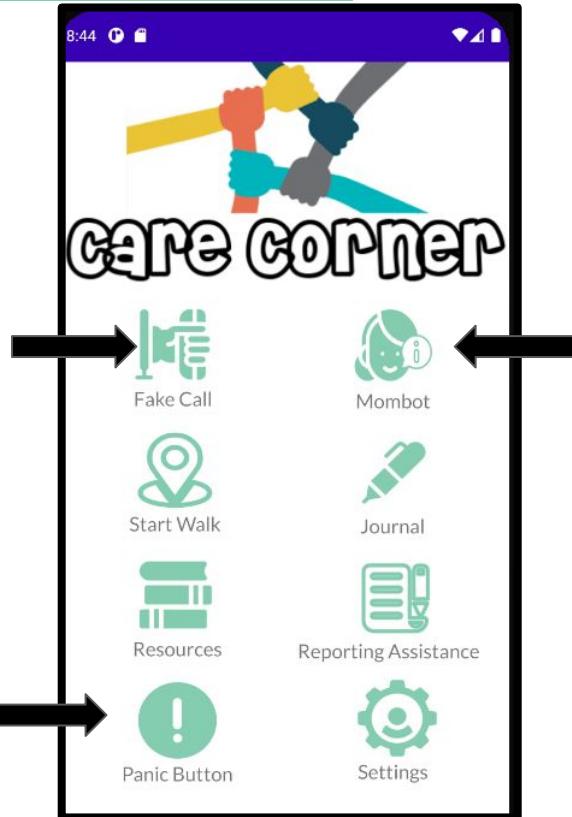




THE SOLUTION

Care Corner is a mobile application that will provide safety features for responding to potentially unsafe situations, aid in the fight against sexual assault, and assist victims of assault in determining how to find resources and report the crime.

SOLUTION CHARACTERISTICS: SAFETY FEATURES



Panic Button

When the Panic Button is triggered it will send an alert to your trusted contacts as well as begin recording video and audio.

Mombot

Mombot will analyze your words for keywords and return helpful feedback with relevant information to be cautious of.



Fake Phone Call

User will receive a fake phone call to 'chat' with while walking alone or an fake emergency to get out of an uncomfortable situation.

SOLUTION CHARACTERISTICS: RECOVERY



Journal

Users are provided a private Journal to assist in their recovery

Resources



Provides current hotlines, help sites, and other resources to help users.



Reporting Assistance

Users can access their Incidents created after deactivating the Panic Button



Customer & Users

Case Study:

Product Customers:

College-age women experience a high amount of abuse: astoundingly 26% of all undergraduate women experience some form of sexual violence.

Women attending Old Dominion University
All genders, members of the LGBTQ+ community



RWP VS PROTOTYPE FEATURES

	Real-World	Prototype	Current	
ArmedSafe Walk				
Notify contacts via MMS	Fully Functional	Fully Functional	Fully Functional	
Send location/destination to contacts	Fully Functional	Fully Functional	Fully Functional	
Audio Recording & Storage on Server	Fully Functional	Fully Functional	Fully Functional	
Video Recording & Storage on Server	Fully Functional	Fully Functional	Eliminated	Complex, camera on the emulator difficulty.
GPS data Recording & Storage on Server	Fully Functional	Fully Functional	Fully Functional	

REAL WORLD PRODUCT VS PROTOTYPE FEATURES

	Real-World	Prototype	Current	
Panic Button				
Send Location	Fully Functional	Fully Functional	Fully Functional	
Send preset message	Fully Functional	Fully Functional	Fully Functional	
Start recording audio	Fully Functional	Fully Functional	Fully Functional	
Timestamp location and time of panic	Fully Functional	Fully Functional	Fully Functional	
Journal				
Can record in/ view Journal	Fully Functional	Fully Functional	Fully Functional	
Password(PIN) Protected	Fully Functional	Fully Functional	Partially Functional	Functional but not merged into master

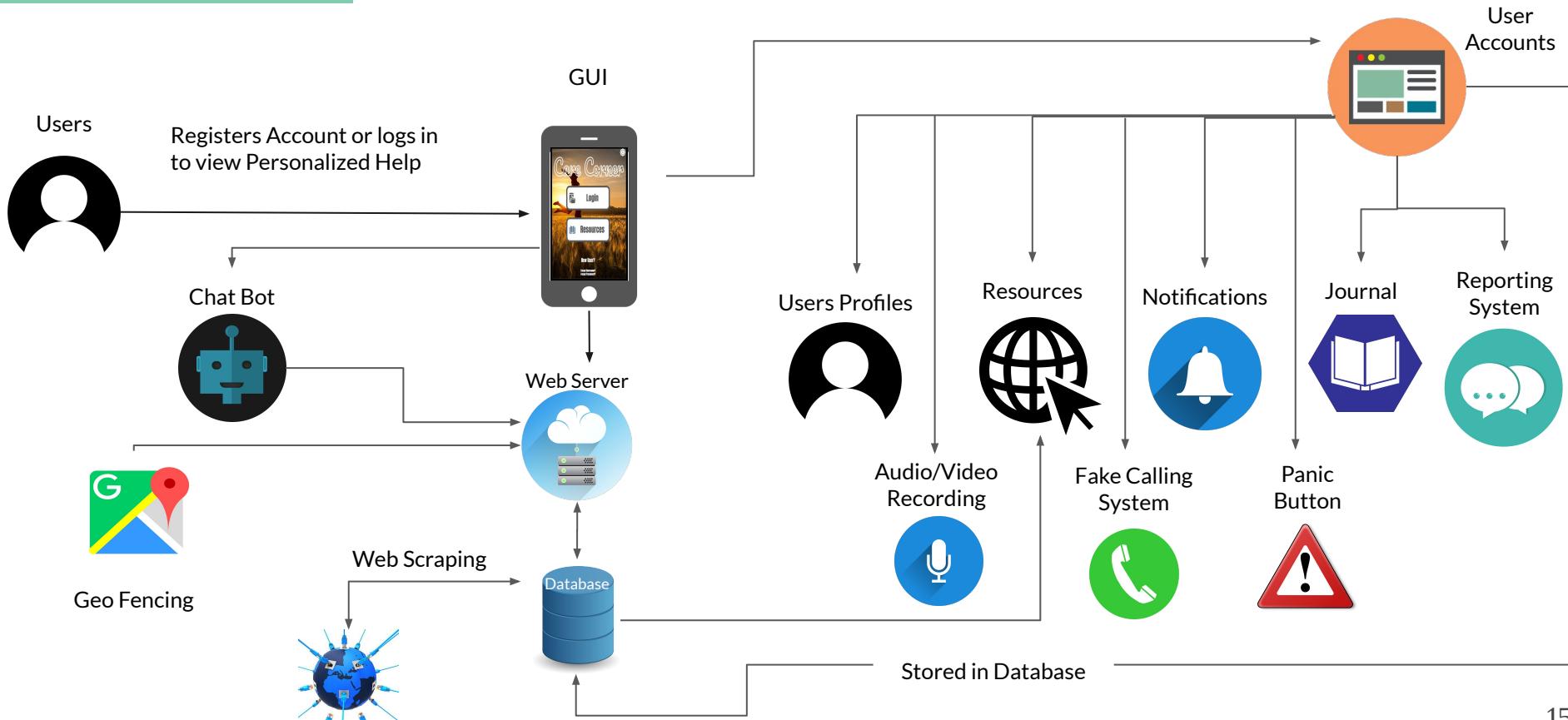
REAL WORLD PRODUCT VS PROTOTYPE FEATURES

	Real-World	Prototype	Current	
Fake Phone Call				
Start recording audio	Fully Functional	Fully Functional	Fully Functional	
Start recording video	Fully Functional	Fully Functional	Fully Functional	
Activate Panic	Fully Functional	Fully Functional	Fully Functional	
Include fake voice	Fully Functional	Fully Functional	Fully Functional	
Pre-program what name the call appears to come from	Fully Functional	Eliminated	Eliminated	
Mombot				
Write plans and receive advice in response	Fully Functional	Partially Functional	Partially Functional	Simpler, keyword based
Verbalize plans, verbalized advice in response	Fully Functional	Partially Functional	Partially Functional	User can use built-in speak-to-text,

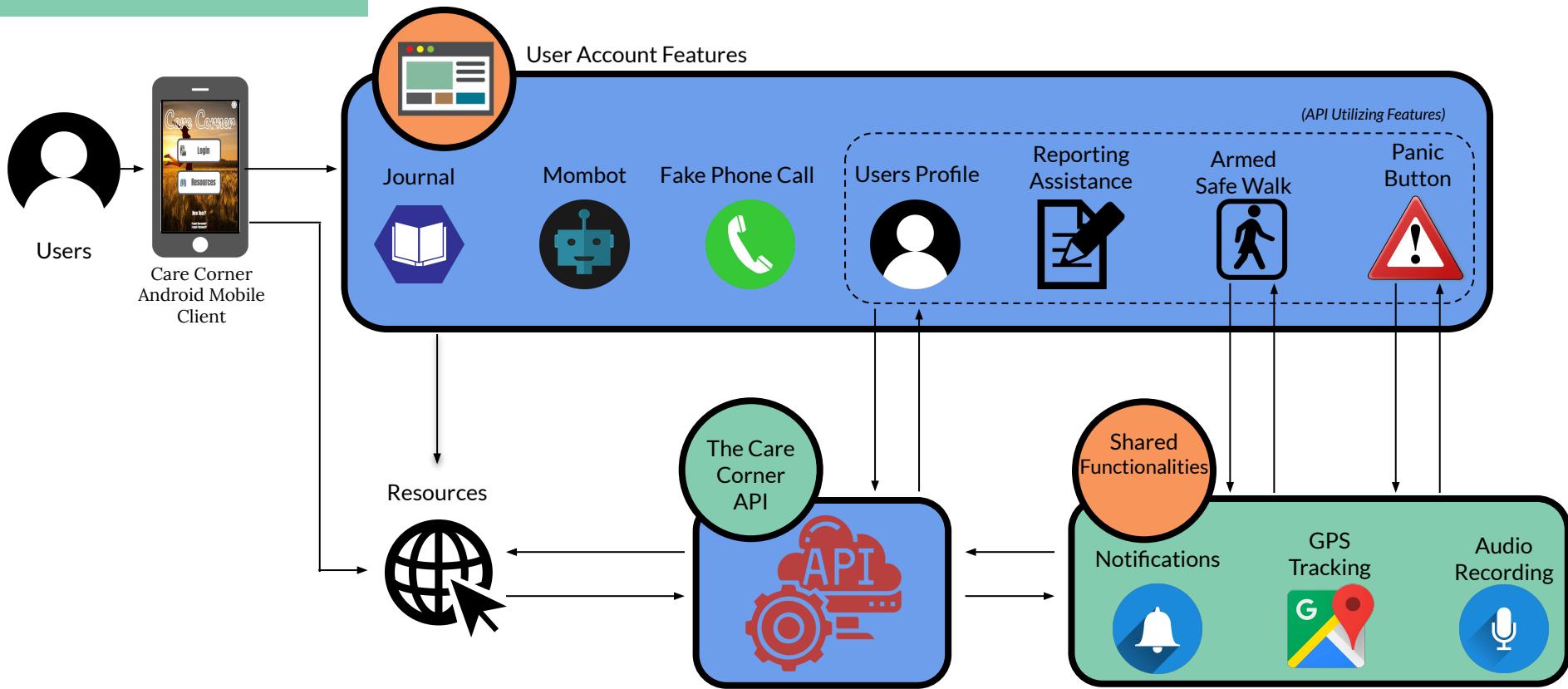
REAL WORLD PRODUCT VS PROTOTYPE FEATURES

	Real-World	Prototype	Current	
Reporting Assistance				
View incidents	Fully Functional	Fully Functional	Fully Functional	
Resources				
Educational Readings	Fully Functional	Partially Functional	Partially Functional	A few simple hardcoded sources
Geofenced Resources	Fully Functional	Partially Functional	Partially Functional	
Websites	Fully Functional	Partially Functional	Partially Functional	
Authentication				
User account creation	Fully Functional	Partially Functional	Partially Functional	Emergency Contacts are prepopulated with ability to edit/update.
User Credential Authentication	Fully Functional	Partially Functional	Partially Functional	Prepopulated database

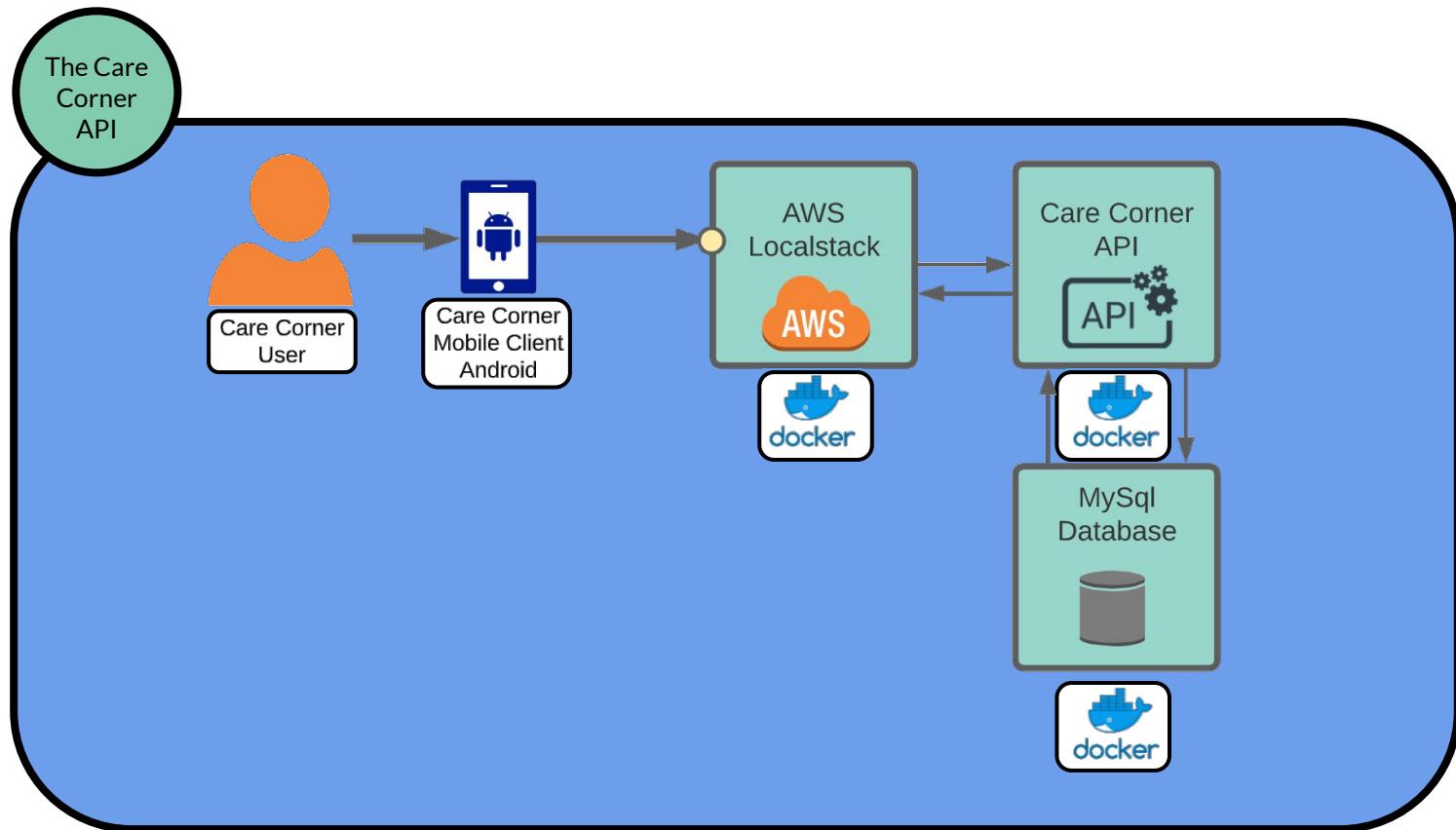
RWP MAJOR FUNCTIONAL COMPONENT DIAGRAM (MFCD)



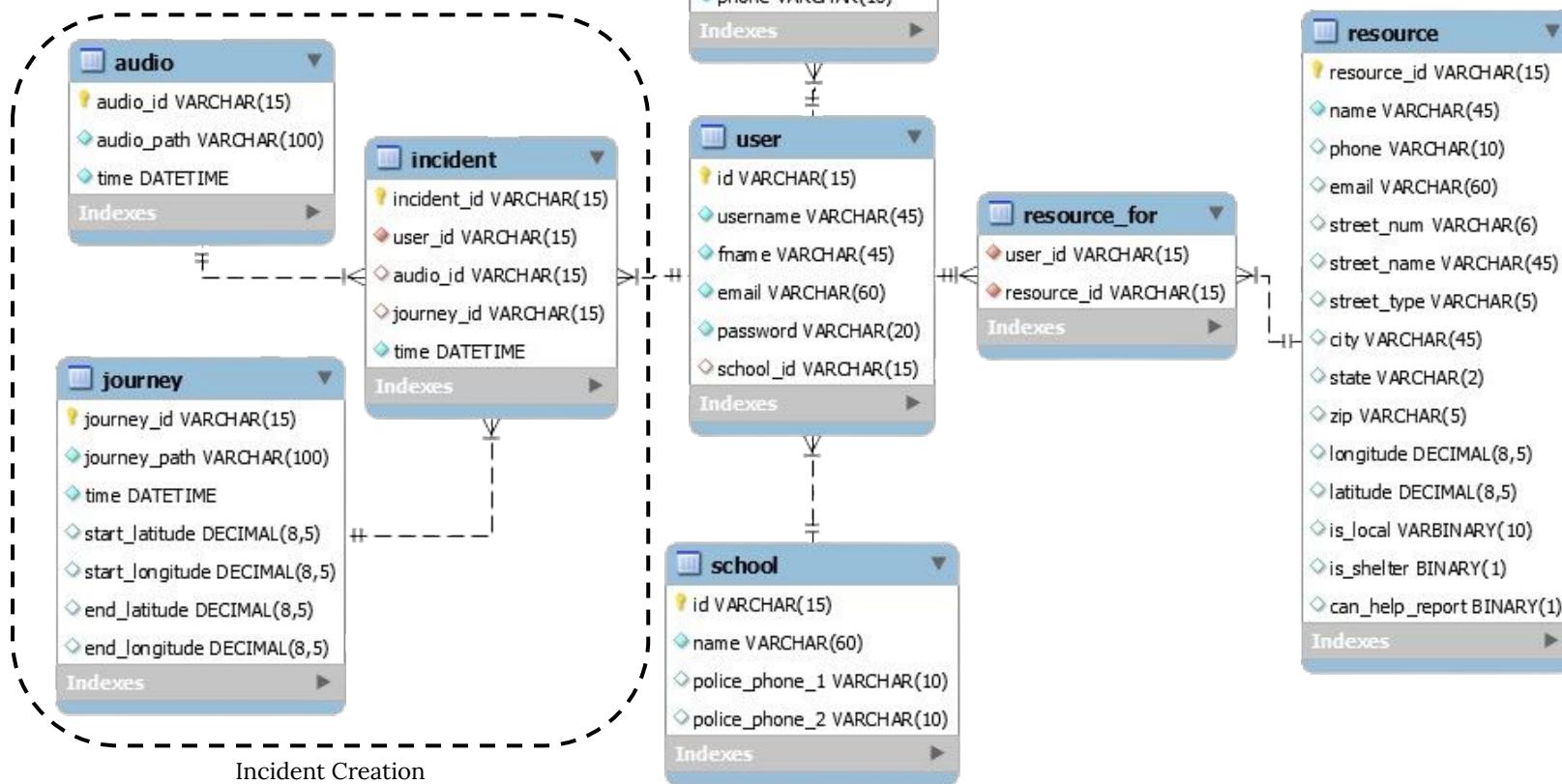
PROTOTYPE MAJOR FUNCTIONAL COMPONENT DIAGRAM (MFCD)



CARE CORNER API DIAGRAM



DATABASE



DEVELOPMENT TOOLS

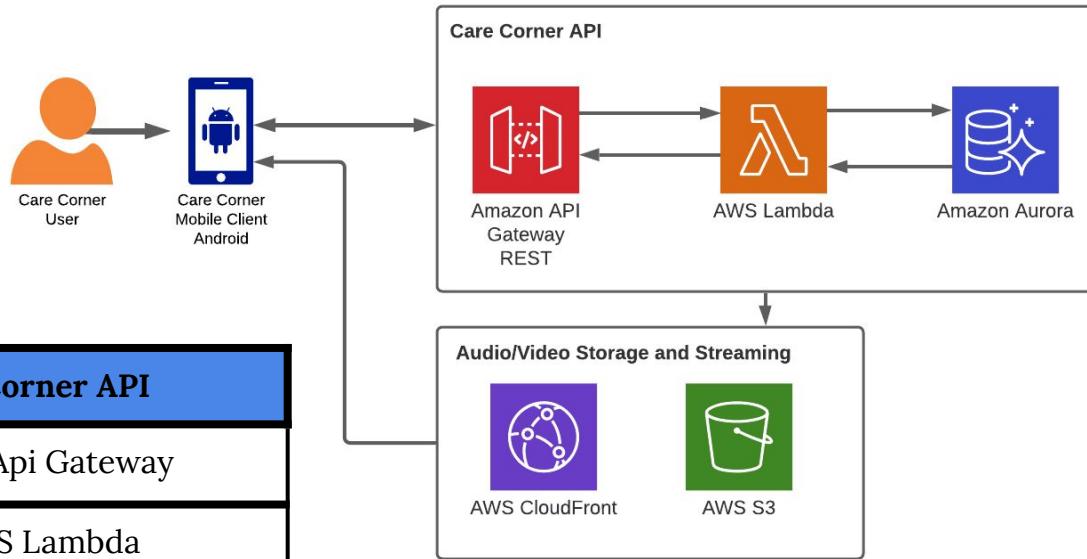
Software Requirements

Component	Care Corner Mobile
Language	Java
Operating System	Android
IDE	Android Studio
UI/UX	Android Studio
Build Manager	Gradle
Testing Framework	JUnit / Robolectric

Component	Care Corner Api
Language	Java
Api Protocol	REST
Web Server	Serverless Framework
Database	MySQL
AWS Local Environment	Localstack

Collaboration	Tool
Version Control	GitLab
Project Management	Trello
Team Chat	Discord
Activity Feed	Zapier Integrations

DEVELOPMENT TOOLS: Infrastructure Requirements



Component	Care Corner API
Api Management	AWS Api Gateway
Serverless Service	AWS Lambda
Audio/Video Data Storage	AWS S3
Content Delivery Network	AWS Cloudfront
Database Service	AWS Aurora

Component	Care Corner Mobile
Mobile Phone	Android compatible

Challenges We Faced

- Lack of Android Development Knowledge/Experience
 - RecyclerView
 - Layout Files
 - Robolectric
 - Collaborate Development
 - Git
- Database Usage
 - Most of the team never developed a program that used a database
- API Usage
 - Never used Twilio or Google Maps API before.
- COVID-19 indirectly and directly affecting team.
- Collaboration between team members living in different time zones

Development Model (Scrum)

FAKE PHONE CALL

in list Epics

LABELS START DATE
Fake Phone Call + Feb 7 at 8:00 AM ▾

SUGGESTED
Join Members Labels Checklist Due date Attachment Location

DUE DATE
Mar 18 at 7:59 PM COMPLETE ▾

Description
Add a more detailed description...

Epic status: 83% done Remove...
Open (1) Done (5)
Complete epic
Audio Recording

Attachments
FPC.png ^ Added Feb 10 at 8:17 PM - Comment - Delete - Edit
Remove cover
Add an attachment

User Stories
Delete
0%
Set up FPC Landing Screen
Setup Fake Call Screen/Functionality
Set Functionality for End Call Button
Save Last FPC settings
Set up Audio Recording
Setup (multiple) fake conversations
Add an item

Epics

Stories

The board contains the following cards:

- Epics:**
 - USER AUTHENTICATION
 - NEW USER SETUP
 - WELCOME
 - AWS S3 SERVER
 - FILE TRANSFER
 - FILE STREAMING
 - BASIC BUTTONS
- To Do (Sprint 2):**
 - Set up Onboarding Screen
 - Build Lambda Function for New User
 - AWS S3 SERVER
 - Set Lambda Accessor Functions
 - FILE TRANSFER
 - FILE STREAMING
 - BASIC BUTTONS
- Doing:**
 - DESIGN/ARCHITECTURE
 - Create Mobile Styleguide
 - JOURNAL
 - >Password Protect Journal
 - FAKE PHONE CALL
 - Audio Recording
- Code Review:**
 - 0 / 3
- Testing:**
 - Dockerize Care Corner API
 - Set Up Local Aurora Dev
 - Set Up Local Lambda Dev
 - Set Up Local Api Gateway Dev
 - FAKE PHONE CALL
 - Fake Call Screen/Functionality
 - JOURNAL
 - Journal Editor
 - FAKE PHONE CALL
- Done:**
 - Set Up Local Lambda Dev
 - Set Up Local Api Gateway Dev
 - FAKE PHONE CALL
 - Fake Call Screen/Functionality
 - JOURNAL
 - Journal Editor
 - FAKE PHONE CALL

Development Model (Stories)

Audio Recording

in list Doing

MEMBERS LABELS START DATE DUE DATE

+ **Fake Phone Call** + Feb 7 at 8:00 AM ▾

+ Mar 18 at 7:59 PM COMPLETE ▾

Description

As a user, I want _ in order to _

This is the implementation of the ability for your phone to record audio. These will be used in the FPC, as well as the Panic Button and the Safe Walk. So, this should be packaged keeping in mind it needs to be called by multiple functions

- once a recording is stopped, the recording should auto-save locally
- The idea behind the "store_last" and "delete_last" methods are that within the flow of the feature that is using call recording (FPC, Safe Walk, etc) should be a user prompt that asks if the user wants to save the recording. If the user responds with a:
 - YES** - the flow would call the "store_last" method, which should call the appropriate (*and currently non-existent*) methods to store on our servers
 - NO** - the flow would call the "delete_last" method, which will delete the latest saved audio file (aka, the one we just saved)

SUGGESTED

- Join

ADD TO CARD

- Members
- Labels
- Checklist
- Due date
- Attachment
- Location

POWER-UPS

- BigPicture
- Google Drive

+ Add Power-Ups

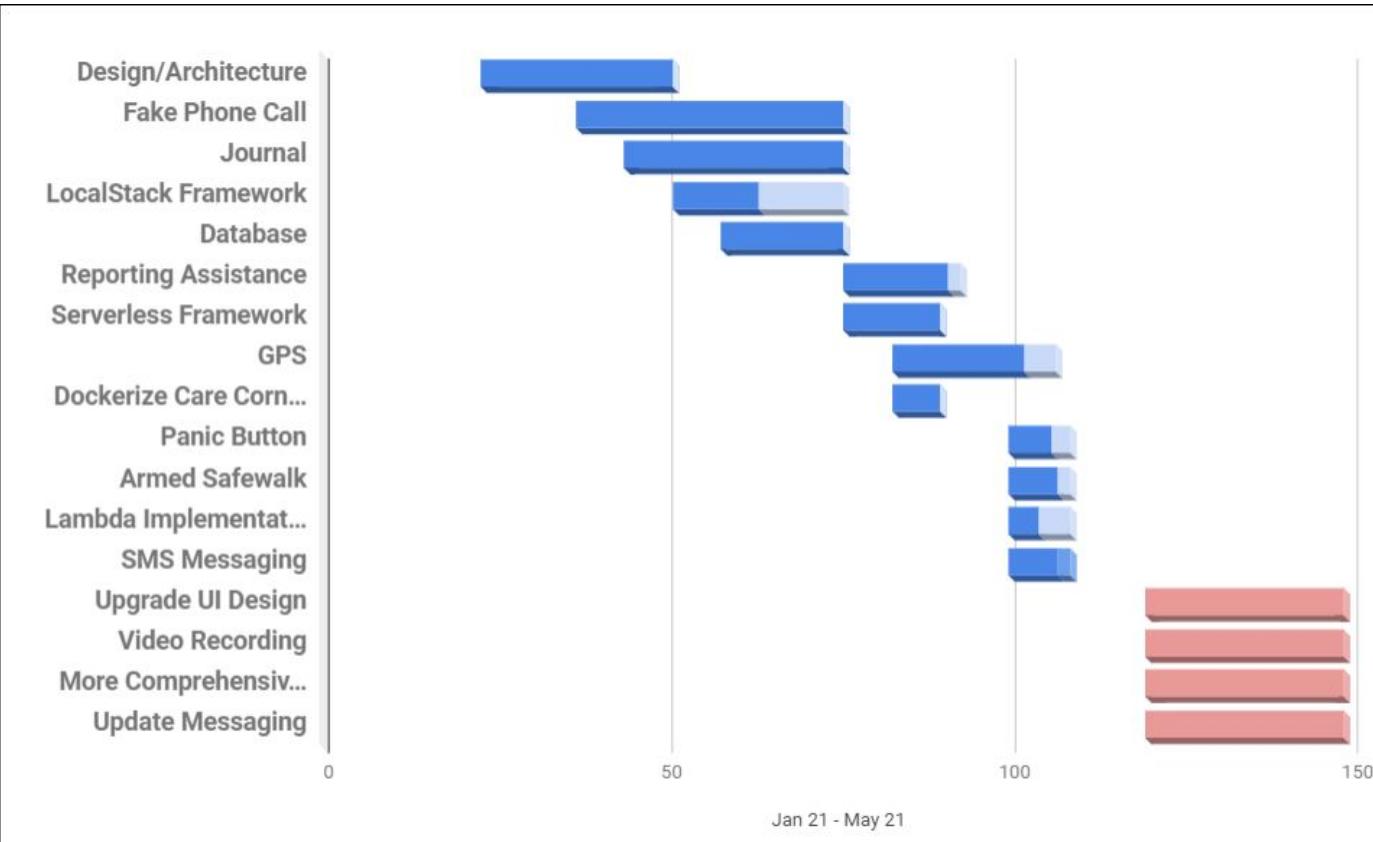
Acceptance Criteria

11%

- Method:** start recording
- Method:** stop recording
- Method:** save recording
- Method:** Delete last Recording
- Method:** Upload last recording (call stub)
- Method:** store recording in specific location
- Method:** delete recording
- Peer Code Review
- Unit Testing

Add an item

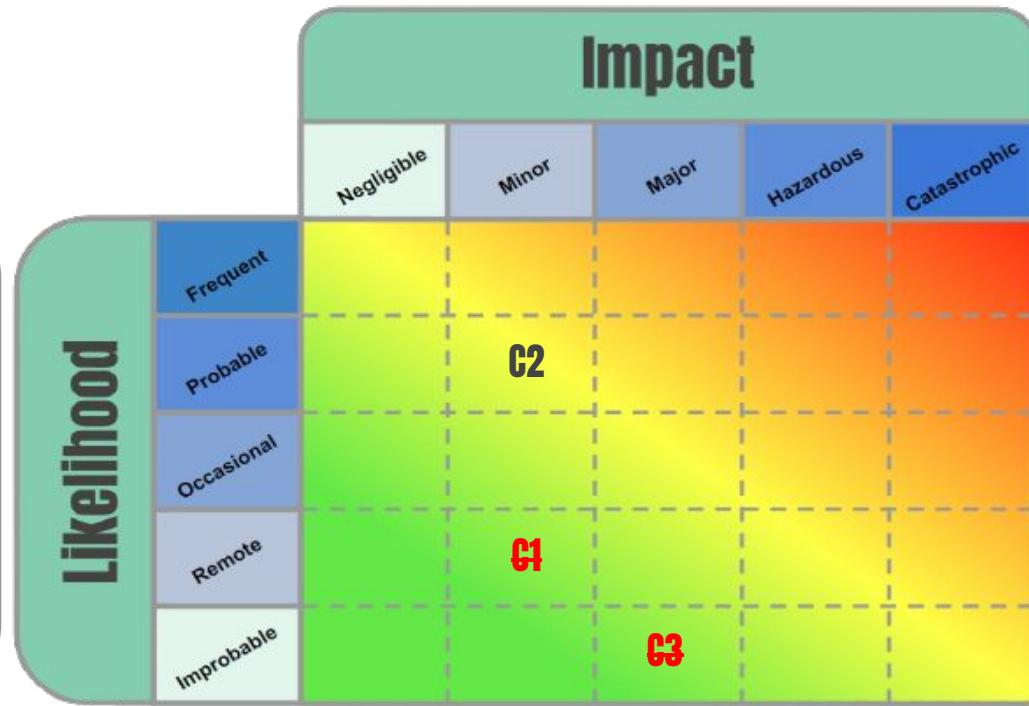
DEVELOPMENT MODEL (Sprint Tracking)



CUSTOMER RISK

Risks

- C1 -Inadvertent Panic activation.
- C2 - Safe Walk and Fake Phone call complexity: User is required to preset both functions.
- C3 -User lost internet while on Safe Walk.



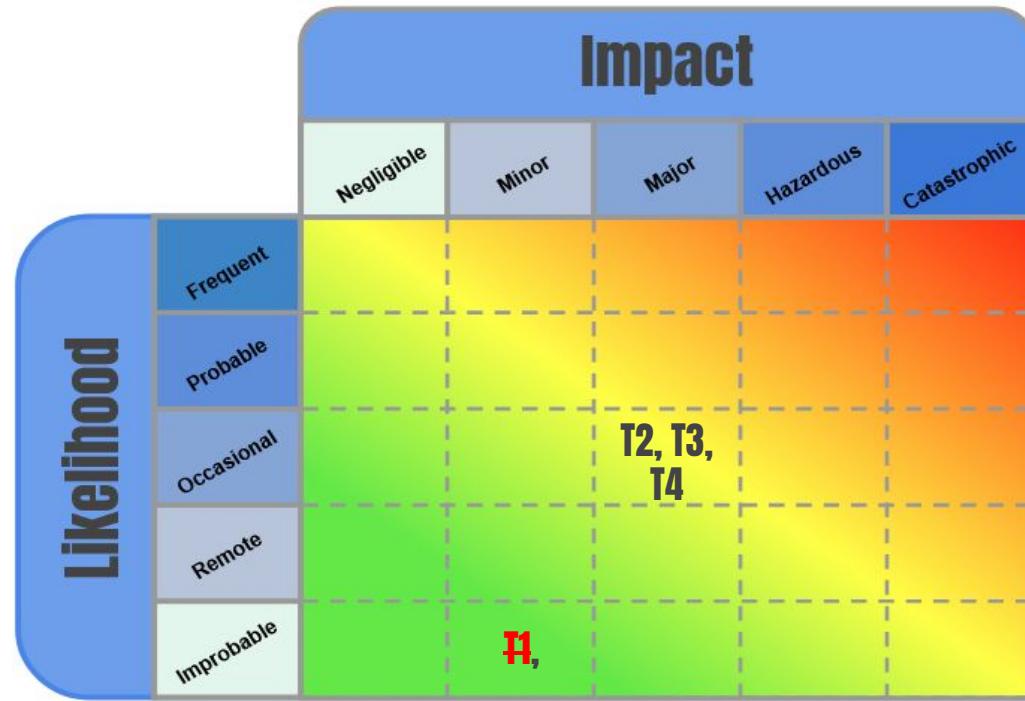
Mitigation

- C1 - Delay timer that countdown for five seconds is implemented in prototype, this gives the user an opportunity to cancel the activation.
- C2 - Prototype offers preset which user can customize.
- C3 -audio recording saved locally, GSP updates and MMS reporting continues.

TECHNICAL RISK

Risks

- T1 - Automatic coordination and distribution of MMS updates during SafeWalk and Panic situations
- T2 - Audio recording management
- T3 - Mombot performance
- T4 - Data integrity



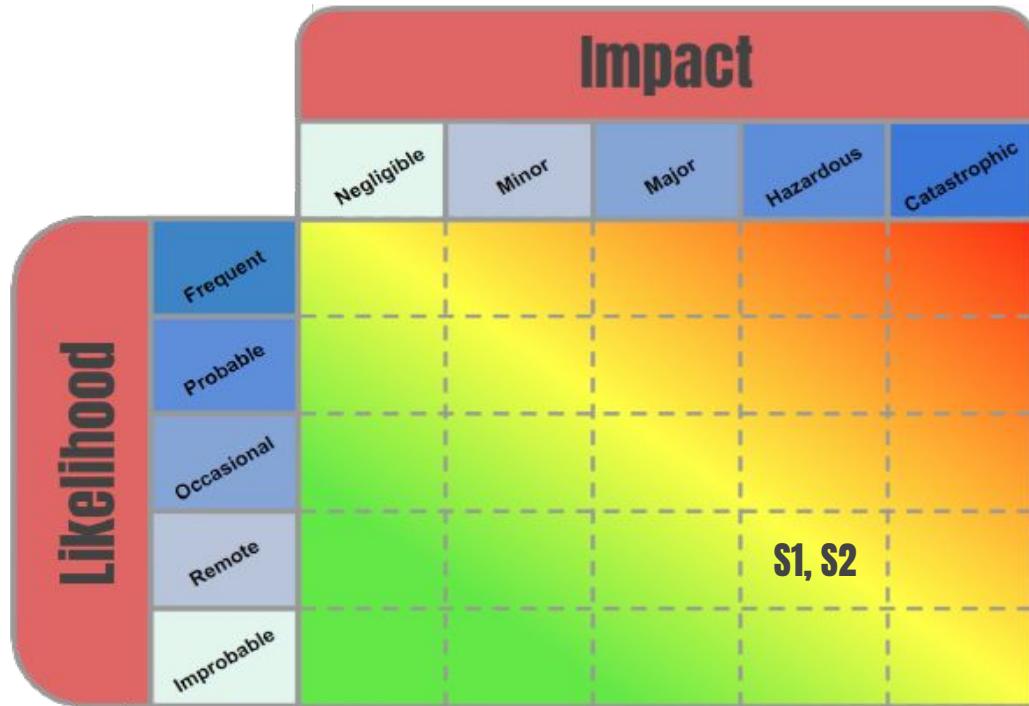
Mitigation

- T1 - Twilio features is employed to ensure fail safe communication
- T2 - AWS cloud services is employed to ensure fail safe storage
- T3 - Mombot was trained for keyword recognition
- T4 - Took advantage of AWS security and integrity

SECURITY RISK

Risks

- S1 -Data security
- S2 - Unauthorized access



Mitigation

- S1 - AWS DB offer a robust security which is employed in the prototype
- S2 - Two factor authentication couple with AWS security feature

Appendix: Traceability Matrix

Traceability Matrix		Test Cases														
Requirements	Requirement ID	4.1.1	4.1.2	4.2	4.2.1	4.3	4.4	4.5	4.6	4.7	4.8	4.9	4.10	4.11	4.12	4.13
	Account Creation	3.1.1.1.*														
	Login	3.1.1.2.*														
	Panic Button	3.1.2.*														
	Incident Creation	3.1.2.5														
	Armed Safe Walk	3.1.3.*														
	Fake Phone Call	3.1.4.*														
	Journal	3.1.5.*														
	Mombot	3.1.6.*														
	Reporting Assistance	3.1.7.*														
	Resources	3.1.8.*														
	Audio Recording	3.1.9.*														
	GPS	3.1.10.*														
	Notifications	3.1.11.*														
	Main Menu Screen	3.1.12.*														
	Welcome Screen	3.1.13.*														

Appendix: With another month...

- Expand on Incident creation
- Expand Mombot to talk-to-text
- Add more conversations to Fake Phone Call
- Add filters to resources

STORIES-USERS

As I user, I want to:

Armed Safe Walk

- Notify selected members of my circle of my walk, so that I feel more secure.
- Have the option of personalizing my message when notifying others of my walk, so that it is not just the generic message.
- Have the option to disclose my location when notifying others of my walk, so that I feel more secure.
- Have the option to disclose my destination when notifying others of my walk, so that I feel more secure.
- Be able to instantly begin recording video on my walk, so that I would have evidence if something were to happen.
- Be able to instantly begin recording audio on my walk, so that I would have evidence if something were to happen.
- Be able to instantly begin recording my location on my walk, so that I would have evidence if something were to happen.

Panic Button

- Have quick access to a panic button to call for help, so that I can press it quickly if I feel unsafe.
- Send my location to my selected contacts when I use the panic button, so that they are notified of my location.
- Send a pre-set message to my selected contacts when I use the panic button, so that they are notified that I am in an unsafe situation.
- Start video & audio recording when I activate the panic button, so that I can use it later on if needed.
- Have my location and time of panic button activation timestamped, so that I can use it later if needed.

STORIES-USERS

As I user, I want to:

Fake Phone Call

- Pre-program what name I would like to appear to “call” me so that it appears as a regular phone call
- Click to “answer” the phone call, so that it appears as a regular phone call
- Activate the microphone and record the audio of my fake phone call so that I can use it later if needed.
- Activate the camera and record the video of my fake phone call so that I can use it later as evidence if needed.
- Say a certain phrase to activate the panic button feature so that I can alert someone if I am attacked.
- Press a button to also be able to activate the panic button feature so that I can alert someone if I am attacked.
- Have multiple fake conversations to choose from so that I can use the feature for different situations.

Resources & Education

- Read professional blogs, so that I can educate myself on sexual assault
- Be given the phone number of the national sexual assault hotline, so that I can call them if I need to
- Be given the phone number of the national suicide prevention hotline, so that I can call them if I need to
- Find shelters based on my location, so that I can get directions to one if I need to
- Find nonprofits based on my location, so that I can get directions to one if I need to
- Find counselors based on my location, so that I can get directions to one if I need to
- Find campus police if I am on a college campus, so that I can get directions to one if I need to
- Find police stations based on my location, so that I can get directions to one if I need to
- Visit official government websites, so that I can see their positions on sexual assault
- Visit trusted nonprofit websites, so that I can see what services they provide for my need.
- The location based help to change as my location changes, so that I can use the app no matter where I am located.

STORIES-USERS

As I user, I want to:

Mombot & Reporting

- Get helpful tips so that I can help protect myself when I go out.
- Get information for reporting sexual assault to multiple reporting agencies so that I know how & where to report my crime.
- Have speech-to-text recognition so that I don't have to use my hands.
- Learn the difference between how to report to different types of places, so that I am transparent in who/where I will be reporting
- Speak into the app to tell them where I am going and have the app redirect me to tips for that location, so that I can get tips relevant to the location I am going to.
- Have the mombot run through a checklist of things to do before I go out, so that way I don't forget to do the safety precautions.

Journal & Depression/PTSD

- Reach out to a counselor in a time of crisis so that I can get immediate help.
- Have a private journal so that I can work through my thoughts in a safe place.
- Have a private journal that is password protected so that I can ensure that my privacy is protected.
- Have resources available for dealing with PTSD and depression so that I can use them if I need to.
- Share selected journal entries with selected contacts so that I can communicate my thoughts in a less direct way.

STORIES-GUEST

As I guest, I want to:

Resources & Education

- Access the resources section without logging in, so that I can find resources near me quick without having to make an account.
- Access the reporting section without logging in, so that I can learn how to report to the agency that I may decide to report to.

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