

Care Corner

Feel like you should: Safe

CS-410 Copper Team
Fall 2020

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THE PROBLEM

Too often, women 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

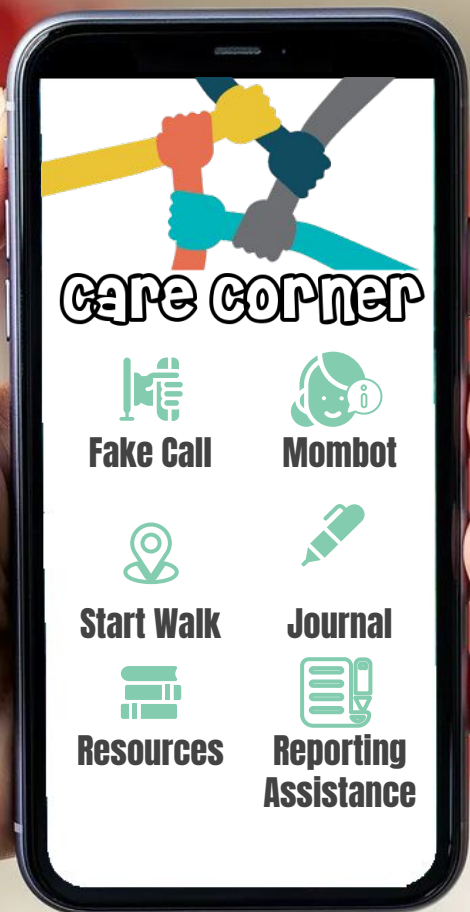
In the moment of an attack, the victim's resources are limited to calling 911.



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

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



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



Journal

Users are provided a private Journal to assist in their recovery

Resources

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



Education on Reporting

Users will be able to learn how to report a crime that happened to them and the different ways there are to report.



REAL WORLD PRODUCT VS PROTOTYPE

Functional Element	RWP	Prototype	
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

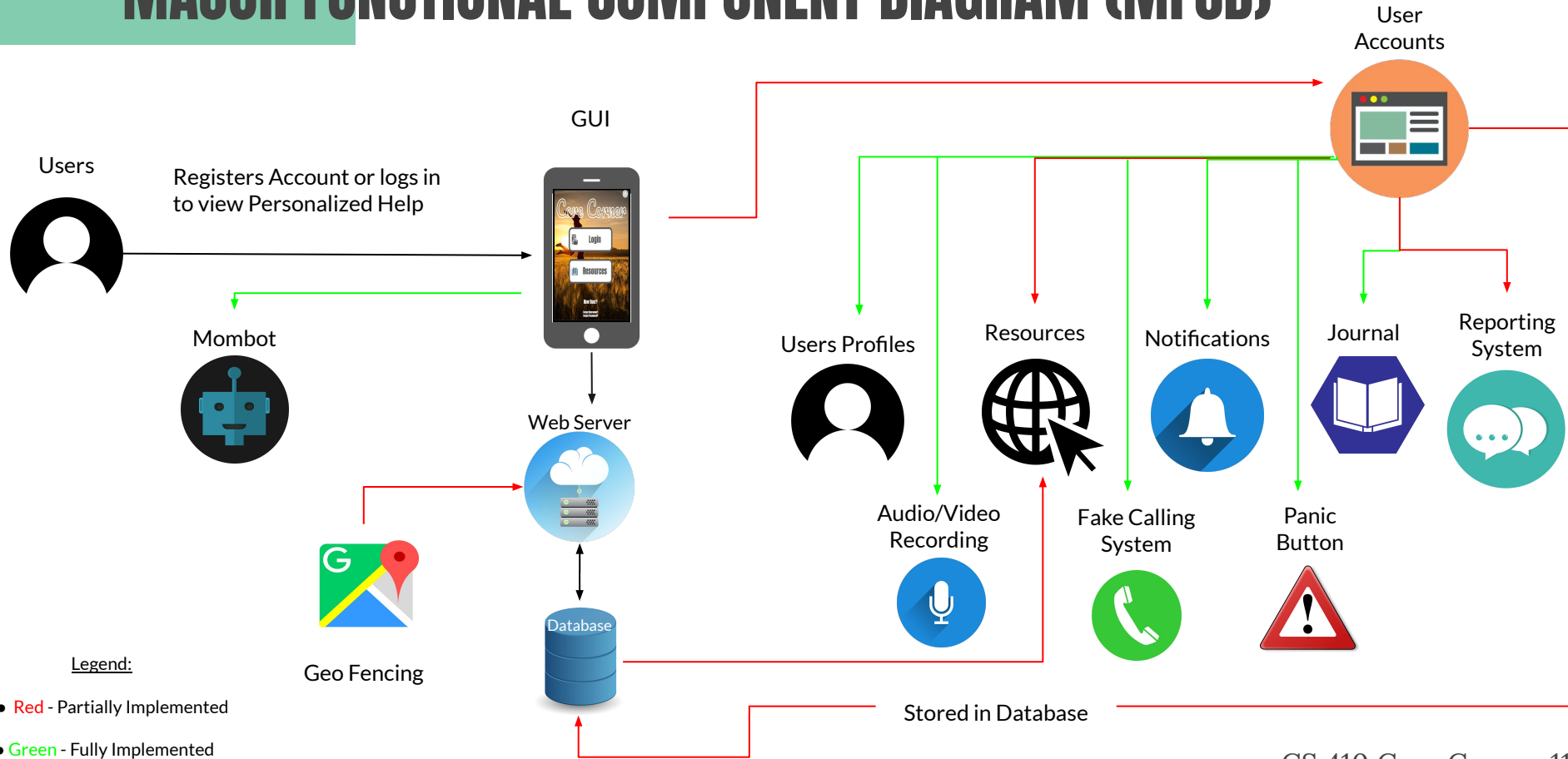
REAL WORLD PRODUCT VS PROTOTYPE FEATURES

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/Destination 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	

REAL WORLD PRODUCT VS PROTOTYPE FEATURES

Functional Element	RWP	Prototype	
Mombot			
Write plans and receive advice in response	Fully Functional	Partially Functional	The responses will be a small sample size
Verbalize plans and receive verbalized advice in response	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
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	Will include a minimized question/field set

MAJOR FUNCTIONAL COMPONENT DIAGRAM (MFCD)



DEVELOPMENT TOOLS

Software Requirements:

Components	Android
Language	Java
IDE	Android Studio
UI/UX	Android Studio
Database	MySQL
Build Manager	Gradle
Version Control	GitLab
Project Management	Jira
Testing Framework	JUnit

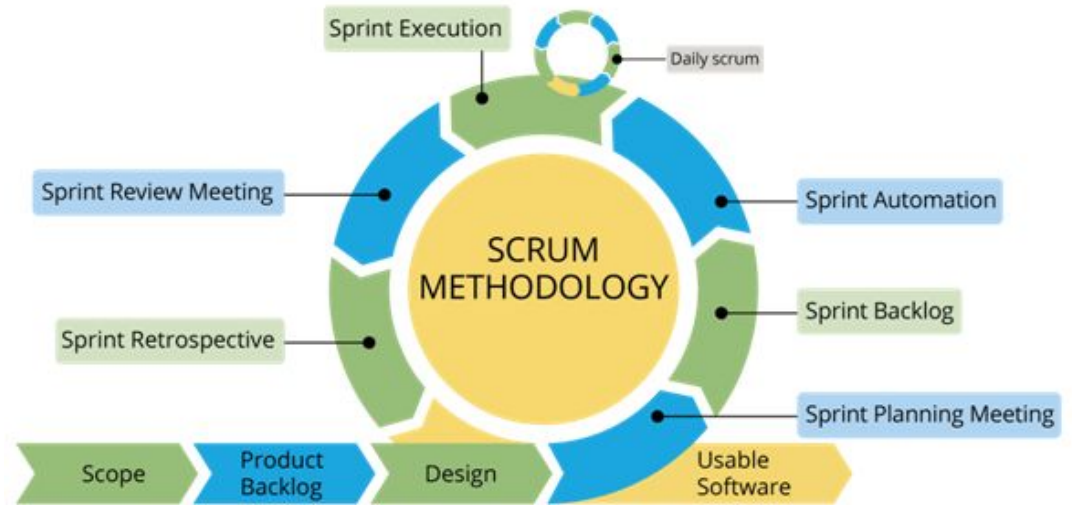
Hardware Requirements:

- Web Server (ODU Server)
- Database Server (AWS - RDS)
- File Server (ODU Server)
- Android Smartphone

DEVELOPMENT MODEL - AGILE (Scrum)

Three Pillars:

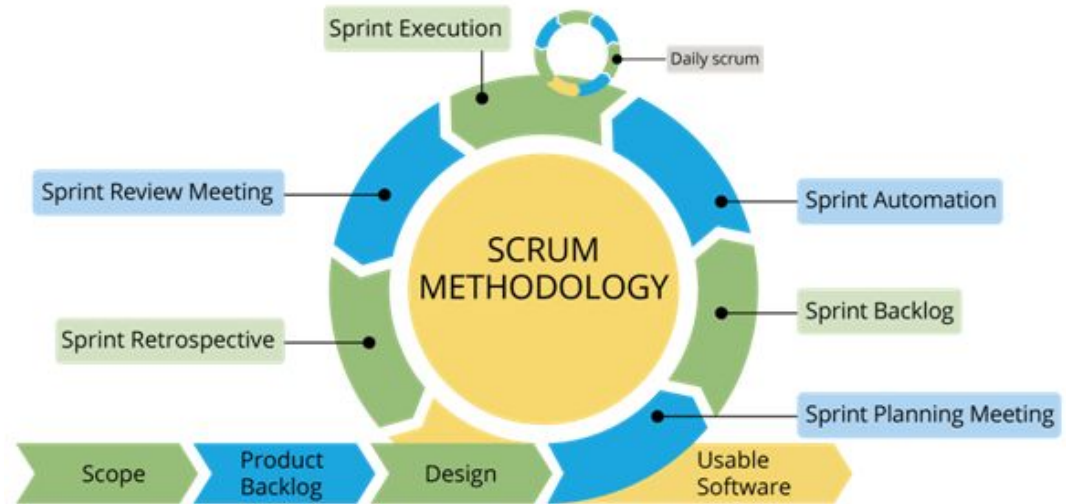
- **Transparency** - Team members must work in an environment where everyone is aware of the issues other team members are having.
- **Inspection** - Frequent inspections on how the process is working. This includes the Daily Scrum meeting and the Sprint Review Meeting.
- **Adaptation** - Team members must constantly investigate areas of the process that do not make sense and revise them.



DEVELOPMENT MODEL - AGILE (Scrum)

Practices

- Project Management - Jira
- Stand-up / Daily Scrum - 2-3 times a week
- Sprints - 2 weeks long
 - **Sprint Planning** - Decide which backlog items will be included in the sprint and determine how to successfully deliver the item
 - **Backlog Refinement** - Inspect backlog to ensure backlogs are appropriate and properly prioritized
 - **Sprint Review** - Gather feedback and deliver a product, or demo.
 - **Retrospective** - An opportunity for the team to self-assess and improve



SPRINTS

Sprint 1: Environment Setup

- Create development tools
- Create roles and attributes
- Account Creation and User Profile Database
- Begin UI Framework

Sprint 2: Develop Web Server

- Set up query format and routes
- User Profile Framework

Sprint 3: Connect Web Server and Database

- Finished Web Server
- Finished Database

Sprint 4: Algorithm Development

- Collect Resources
- Location Handler
- Recording of Video & Audio management
- Mombot



SPRINTS

Sprint 5: GUI Development

- Sections for each feature
- Include help and settings
- Testing

Sprint 6: SafeWalk, Panic Button, Journal Development

- Build features
- Implement features into GUI
- Testing

Sprint 7: Fake Call, Mombot, Resources Development

- Build features
- Implement features into GUI
- Testing

Sprint 8: Finalize GUI

- Finalize color and UI flow
- Finalize layout
- Accomplish any finishing touches
- Final Acceptance Testing



CUSTOMER RISK

Risks

- **C1 - Location Not Enabled:** ~~Customer prefers not to enable their location data~~
- **C2 - User Runs out of Battery:** User's battery dies while on a Journey.
- **C3 - Location used by Attacker:** ~~A potential assailant could use GPS location to assault user~~
- **C4 - User Doesn't Like the Mombot:** User refuses to, or doesn't like, using the Mombot

		Impact				
		Negligible	Minor	Major	Hazardous	Catastrophic
Likelihood	Frequent					
	Probable		C2			
	Occasional	C4				
	Remote		C1			
	Improbable			C3		

Mitigation

- **C1** - For the prototype, all test will be done with location enabled. The RWP will have the option to opt out of sharing location with in-app contacts.
- **C2** - App will provide battery warnings prior to arming.
- **C3** - This risk only applies to the RWP.
- **C4** - Provide search and filter options in the resources menu for user to manually search for information

TECHNICAL RISK

Risks

- **T1 - Resource Website Unavailable:** Care Corner uses a resource that has gone down
- **T2 - External Dependency Unavailable:** A 3rd party API/Service Care Corner uses goes down
- **T3 - Database Failure:** Care Corner's database becomes unavailable
- **T4 - Location Data Unavailable:** GPS/Location Data is not available to use in a query
- **T5 - No Internet:** Customer Loses internet Access

		Impact				
		Negligible	Minor	Major	Hazardous	Catastrophic
Likelihood	Frequent					
	Probable					
	Occasional			T2, T3, T5		
	Remote					
	Improbable		T1, T4			

Mitigation

- **T1** - Prototype will not depend on external site. If it goes down, we can wait until it is up again.
- **T2** - Try to limit external dependencies by gathering relevant data and storing it in our database for users to access
- **T3** - Relevant data will be stored on the user device in order to run with app with limited functionality. Other data relevant to the user will also be stored on their device, including: previously queried resources and journal entries
- **T4** - For the prototype, all test will be done with location enabled.
- **T5** - Previously located resources will be stored on the phone. User can still record their trips with audio/video/GPS journey

SECURITY RISK

Risks

- **S1 - Database Attacked:** Database could be wiped in a cyber-attack
- **S2 - Database Injection Attack:** Database information is maliciously edited in cyber-attack. For instance a SQL Injection (25)
- **S3 - User Forgets Password:** User cannot login due to forgotten password
- **S4 - Data Exposure:** User's data could be exposed during transmission or while stored on their device

		Impact				
		Negligible	Minor	Major	Hazardous	Catastrophic
Likelihood	Frequent					
	Probable		S3			
	Occasional					
	Remote		S4		S1, S2	
	Improbable					

Mitigation

- **S1** - Access to the database will be limited/controlled. Database will be monitored and regularly backed up
- **S2** - Database queries will be written with properly-formatted prepared statements so attackers cannot change the intent of the query (19)
- **S3** - Prototype will not include PW reset.
- **S4** - No sensitive data will be stored for the Prototype

STORIES-USERS

As a user, I want to:

Armed Safe Walk

- Notify all my in-app contacts of my walk, so that I feel more secure.
- Disclose my location when notifying others of my walk, so that I feel more secure.
- 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 in-app contacts when I use the panic button, so that they are notified of my location.
- Send a pre-set message to my in-app 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 a 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.
- 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
- 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 a 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 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-TESTER

As a tester, I want to:

Tester

- Be able to download the app so that I can test all its intended functions
- Be able create a user account so that system can recognise me as I interact specific entity of the app
- Be able use the panic button to call for help with a quick press of the button so that I can send location to preset contact
- Be able to use the fake call button and have it push a call to me so that I can get out of unsafe situation
- Be able to request a resource from the app so that I can verify the accuracy of GPS returned value

STORIES-GUEST

As I guest, I want to:

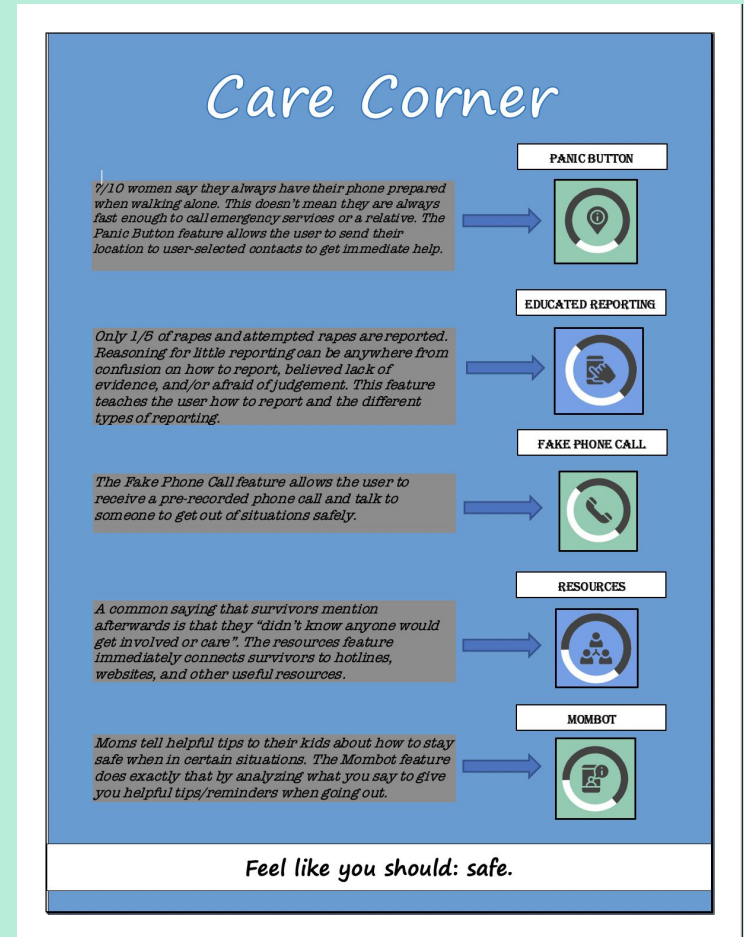
Resources & Education

- 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.

SUPPLEMENTAL MATERIAL

View our supplemental material in more detail on our website:

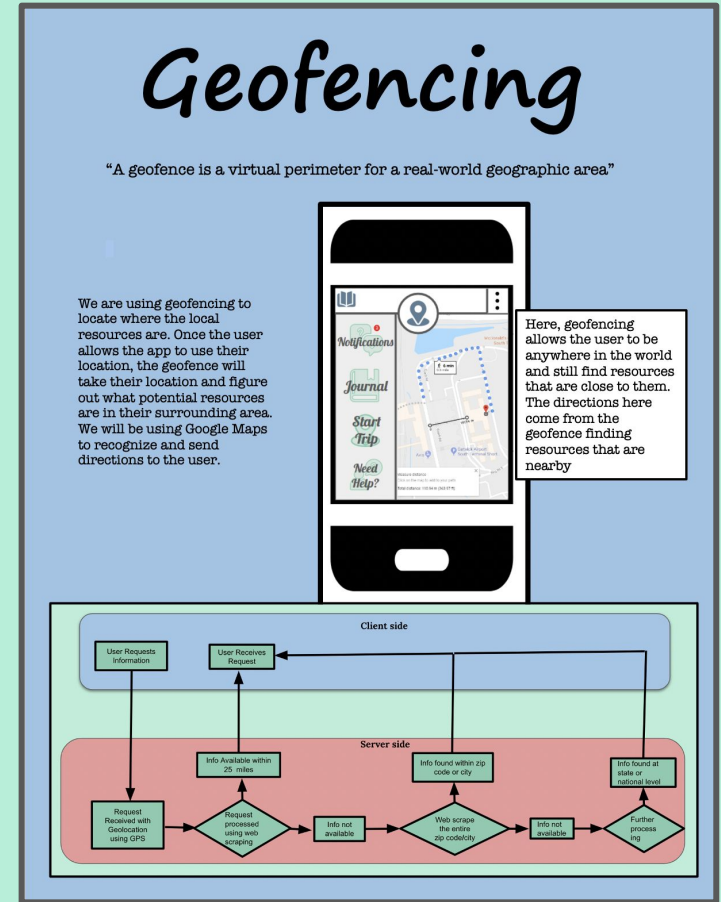
<https://www.cs.odu.edu/~410copper/presentations.html>



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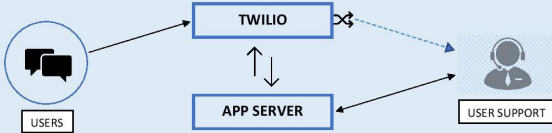
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What exactly is Twilio?

Twilio is a developer platform for communications. Its programmable APIs are used to build practically any digital experience, using capabilities like SMS, voice, video, etc.



We are utilizing Twilio's messaging API to send and receive SMS messages globally. Using its intelligent sending features, we'll be able to ensure that messages reliably reach our end users.

1-800-YOURBIZ



Thank you for listening to our presentation!

QUESTIONS?

RESOURCES

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