### **GNG2101**

# **Project Deliverable C**

# Conceptual Design and Project Plan

Submitted by

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# Abstract

This report introduces the concepts generated by the team members for the client. The team members come up with their individual concepts, and via consensus mix and match up ideas to come up with a global concept to be presented to the client.

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### 1. Introduction

The next step in all the deliverable processes is to start working towards a solution based on the target specifications and metrics that we found in the last deliverable. We will have to start with doing a functional decomposition of our project to make sure we know what ideas and sketches we need to start putting our minds to as well and showing us a clear path for the rest of the project. Once we have the flowchart ready, we will also be able to separate all the attributes into subsystems to be able to not look at the project as one scary thing we need to achieve but instead, as multiple subsystems that we can work on one step at a time. Once those subsystems are properly drawn out and clarified, the sketching and ideation process will start with each team member. From those ideas that will be generated, as a team, we will decide what is the proper vision for each subsystem that we defined in the previous step. This gives us an even clearer vision of how the application may look like in the future if everything in the functional decomposition is done to the standards that we would hope to finish the product in.

## 2. Highlight from Deliverable B

#### 2.1. Problem Statement

The final product needs to be an effective solution to the issue of complex, overly intrusive personal safety devices/applications. This product is primarily intended for those who live alone and feel vulnerable to serious injury or ailments if something were to occur

### 2.2. Target Specifications

#### Table 1: Target Specifications

	Relations (=, <,>)	Values	Units
User Startup activity detection	N/A	Yes	N/A
Automatic daily reset	=	1	N/A
User Custom check-in time	>	1	N/A
Fail Safe check frequency	=	3	Number
The app requires a phrase to be typed when a check is missed	=	1	N/A
App communication with pre-set contacts	N/A	Yes	N/A
Emergency contacts Stored	>	3	Number
Modes of Communication with emergency contacts	=	2	Number
User custom app activation/deactivation (Pause Check in)	N/A	Yes	N/A
The app can be set to check multiple times in a day for high-risk activities	N/A	Yes	N/A
Number of activities to be selected by user	=	1	Number
iOS Functionality	N/A	Yes	N/A
User devices that can sync with app	>	2	Number
The app's emergency contacts are prioritized by order, and it contacts them in that order, one at a time	N/A	Yes	N/A
App functional Languages	>	2	Number
User Actions Per Screen	<	3	Number
In-App text Font size	=	20	Points
The app uses high contrast font/background pairings	N/A	Black/White	N/A

User location tracking	N/A	Yes	N/A
Application storage size	<	100	Mb
Application Development cost	<	100	\$

# 3. Team Member Concept Generation

3.1. David's Concepts



Figure 1: David's Concepts

3.2. Ekene's Concepts



Figure 2: Ekene's Concepts

### 3.3. Maya's Concepts



Figure 3: Maya's Concepts

### 3.4. Riley's Concept



Figure 4: Riley's Concepts

### 3.5. Teo's Concepts



Figure 5: Teo's Concepts

Phone 13 / 13 Pro - 1	iPhone 13 / 13 Pro - 3	iPhone 13 / 13 Pro - 2
More Options =	e Go Back	← Go Back
	Pause App	Emergency Contacts
	Hike Mode	John Smith Number: xxxxxxxxxx
$\frown$		Edit
$(\checkmark)$		John Smith Number: xxxxxxxxx
$\bigcirc$		Edit
You are set for the day	Yo	
Next check-in: Tomorrow 8AM to 10AM	7	
Emergenov Contects	Settings 🌣	Add new contact
Emergency Contacts -	Susan	Add new contact

Figure 6: Teo's Concept - Welcome Page

# 4. Global Design Concept

#### 4.1. Subsystems

iPhone 13 / 13 Pro - 1	iPhone 13 / 13 Pro - 3	iPhone 13 / 13 Pro - 2
More Options =	← Go Back	← Go Back
	Pause App	Emergency Contacts
	Hike Mode	John Smith Number: xxxxxxxxxx
$\frown$		Edit
$(\checkmark)$		John Smith Number: xxxxxxxxxx
		Edit
You are set for the day	Yo	
Next check-in: Tomorrow 8AM to 10AM	т	
Contraction (Association (Association)	Settings 🌣	
Emergency contacts →	Susan	Add new contact

Figure 7: Subsystem 1 - Home Screen

The home screen of the app consists of a very simple layout. The focus of the user will be put on the current state of the day, whether the check-in time is about to happen or if the user already checked in with the system (as shown above). The user can tap on "More Options" to show a drawer with more sections and features of the app, as well as configuration options. They can also tap on "Emergency Contacts" to quickly set up its contacts.

Only a few options for actions will show up at a time per screen, reducing decision fatigue. A pleasing blue color was chosen as it represents, from a color psychology point of view, trust, and security.



Figure 8: Subsystem 2 - User Check in Monitor (Back-end)

The mobile app will do the check-in process with a backend server. The server is responsible for orchestrating all system functionality, from logging check-in's to sending SMS emergency messages to the user contacts through SMS services/APIs.

As the client requested that the check-in process needs to happen automatically when she "goes online", a couple of extra ways were proposed for achieving this. One would be through a client on the browser in the form of a browser extension, and the other through a link in an email sent from the server (daily).



Figure 9: Subsystem 3 - Missed Check in & Dexterity (Front-End)

In this concept the check-in will be a pop-up window that is as minimal as possible, with high contrast fonts and font colors. The user will need to type in exactly the word "YES" within 15 seconds of the pop-up appearing, if the word is typed incorrectly or the time passes the check-in will be considered a failure.



Figure 10: Subsystem 4 - Emergency Contact Communication

This is a back-end depiction of how the app communicates with the emergency contacts when the fail-safe is unsuccessful. A link is attached to a text message sent to the first emergency contact. This contact in this case is assigned a rank 3. This is a live link that'll be connected to the app, such that, as soon as the text recipient clicks on it, it's acknowledged on the app and prevents further contact of subsequent contacts.



Figure 11: Subsystem 5 - Change Settings

This is a mock-up of how each change system that we will implement into our app will hopefully look like. We have focused on a very clear and simple design so that the user is able to use the application in the most efficient and effective way possible.

The first panel is the "Set Time" setting. It gives the client access to change the window period of the first check in of the day as well as the failsafe check in window and prompts. We decided to give the option of the duration between the failsafe check in prompts opposed to the number of checks in prompts to facilitate and make it a little easier for the user to understand how often they will be opposed to having to do the math.

The second panel is our "Hike mode" that will be used when the client goes on an activity that could be considered high-risk. We gave the user a clear ON button on the top to make the start of the process easier. We also gave them multiple options afterwards that could be implemented if wanted. These can include the use of GPS location for emergency contacts to use if anything would happen. We have also added a feature to add contact information of someone who will be accompanying the user on the hike that will/can be shared to the emergency contacts if needed.

Lastly, we have the same options as the previous screen, having a return time that will be able to be set to a window as well as the same failsafe options.

The third panel is our emergency contact information. This gives the user an easy access to add and edit contact information for the emergency contacts that will be contacted after the failsafe prompts are not answered by the user.

The last panel is the pause and play feature that the client requested. The apps and check-ins will be paused from the start day entered to the end date entered. The big PAUSE button on the top of the screen will switch to a play button with an "are you sure?" prompt if the client presses it before the end date that they entered at the beginning of the entire process.



Figure 12: Global Concept

### 5. Conclusion and Recommendations

#### 5.1. Conclusion

In conclusion, using the problem statement and target specifications developed in the previous deliverable we used functional decomposition to divide the project into 5 distinct subsystems, Welcome Page, Monitoring for User Check-In, Missed Check-Ins Prompt, Emergency Contact Communication and Change Settings Menu. After this each subsystem was assigned to a different team member and 3 concepts were generated for each subsystem. Then through using our knowledge of the customers' needs and empathizing with them, we decided on a single concept for each subsystem or combined and adapted concepts, creating a complete global concept.

#### 5.2. Future Work

The next step in our project plan is for the global concepts and back-up subsystem concepts to be presented to the client, where feedback will be collected. This will allow us to verify whether our concept meets her needs and if we are ready to move to the next step. After this the first iteration of prototyping will begin and we will attempt to make a proof of concept or semifunctional model.

#### 5.3. Preparations for Second Client Meeting

In preparation for the next meeting with the client it appears that the most important thing will be preparing back-ups and determining the best compromise for the customer in case their needs cannot be met. Multiple times in concept generation we ran into discussions about the feasibility of functions with our skillset and time frame, such as the morning check-in without any prompts or visible activity from the app. While these features may be possible, it would be best to prepare for any shortcomings with alternatives.

# 6. Appendix

• Wrike Snapshot

 $\underline{https://www.wrike.com/frontend/ganttchart/index.html?snapshotId=tOESQEPZKwD8oFiQxhJc6}$ 

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