Project Deliverable E: **Project Plan and Cost Estimate**

GNG 1103 – Engineering Design

Group: 7

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Abstract

The objective of this deliverable is to form a project plan based on the final conceptual design which was decided in the previous deliverable. A project schedule was created which outlined the major and minor tasks that are to be completed throughout the development process of the design as well as their start and end dates, owner and dependencies. A risk and contingency plan was developed to analyze the risks associated in the project plan and their consequences. Lastly, the cost of all materials to develop the design were determined, and the total cost of the project is less than $20.

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1. Introduction

Based on the final conceptual design, HAZO, that was previously finalized, the team decided to create an AR reverse image search app to help fulfill the client's needs. With the design finalized, the project planning must begin to organize and facilitate the development of the project. The project planning outlined in this deliverable will consist of the creation of a schedule with all the required tasks to complete the project, a risk and contingency plan, and a bill of materials. The project plan will ensure that the team can remain organized and on track during the development of the app.

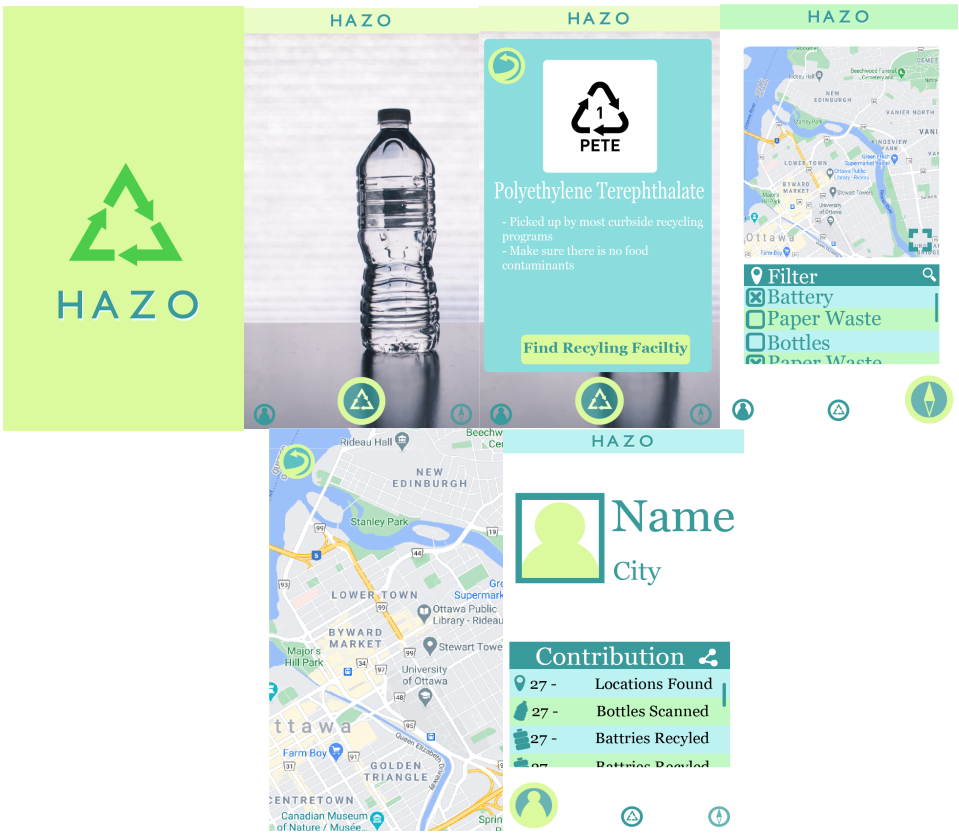

Figure 1: Finalized conceptual design, HAZO

2. Project Plan and Schedule

In order for optimal project planning, the project has been broken down into modules and sub tasks; which is shown in figure 2. A modulus is a key feature of the application headed by an individual or a group of individuals. A sub task is a set of tasks required to be completed in order to fully implement a module. Each sub task has been given two to three days for smaller similar tasks (Ex. UI related task), while larger and more complex tasks are allocated a week inorder to be properly implemented. The UI and UX module focuses on the creation of aesthetically pleasing features, page transitions and key page infrastructure (Ex. menus, buttons, pop ups, etc). The Map module focuses on implementing third party maps, setting

landmarks and other key features required in locating the nearest recycling facility (recycling bin, bottle depot, etc). The AR module focuses on the classification of recyclables through AR and verification questionnaires. Finally, the Data Management module focuses on the creation of a database that can be used by the Map and AR modulus.

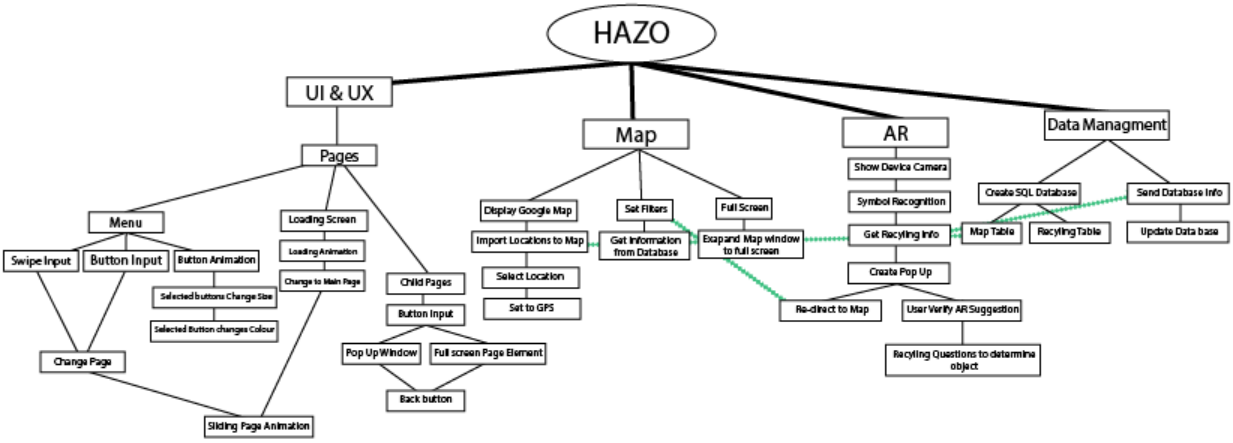

Figure 2: The HAZO app broken down into modules and their sub tasks

The timeline of each task is also based on previous foundational tasks and inter-modular tasks. For instance, tasks related to receiving information from a database have been scheduled to start after the data management module team implements a system to send information from the database to the app. The Schedule for each module can be seen figure 3 - 6.

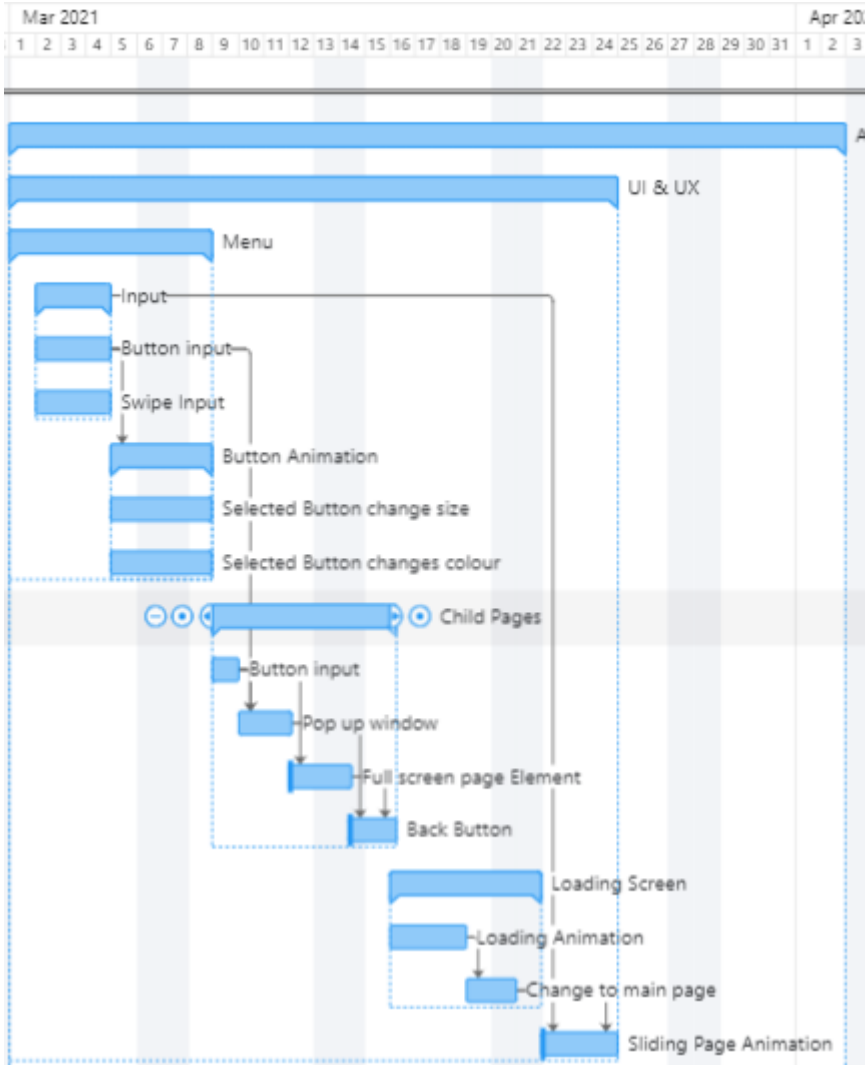

Figure 3: Schedule for UI & UX module

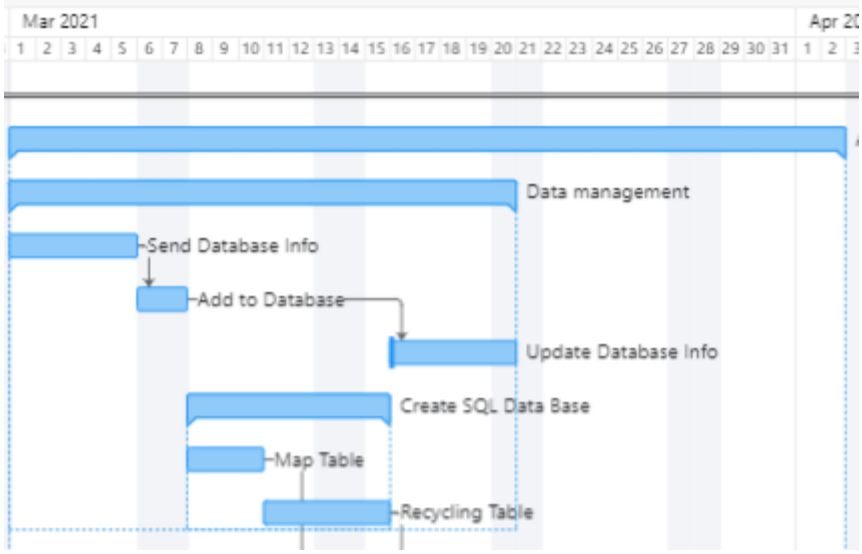

Figure 4: Schedule for Data Management module

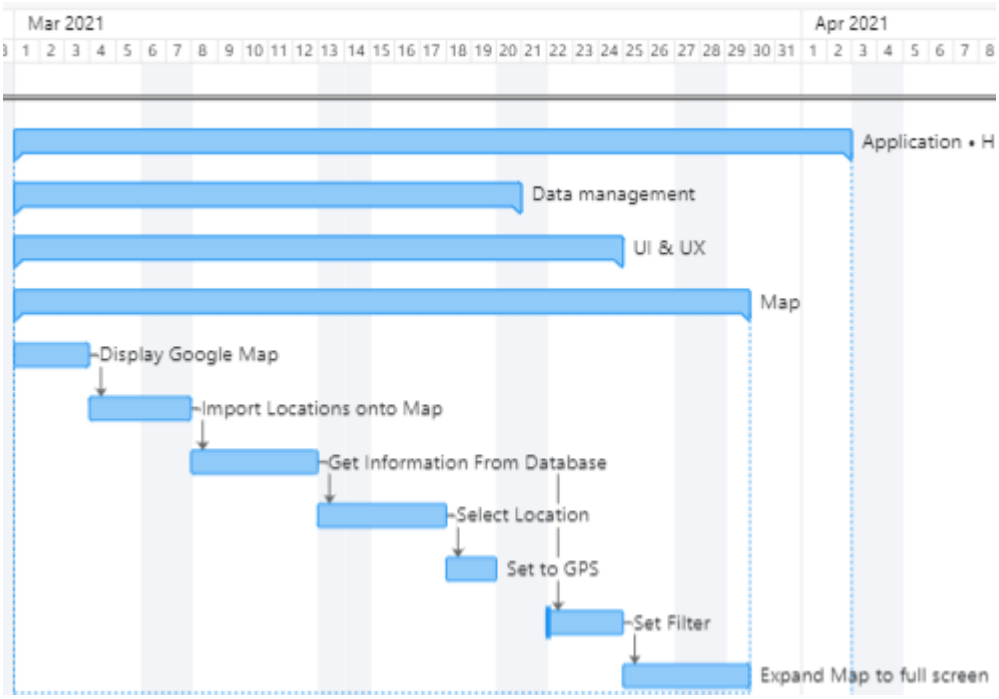

Figure 5: Schedule for Map module

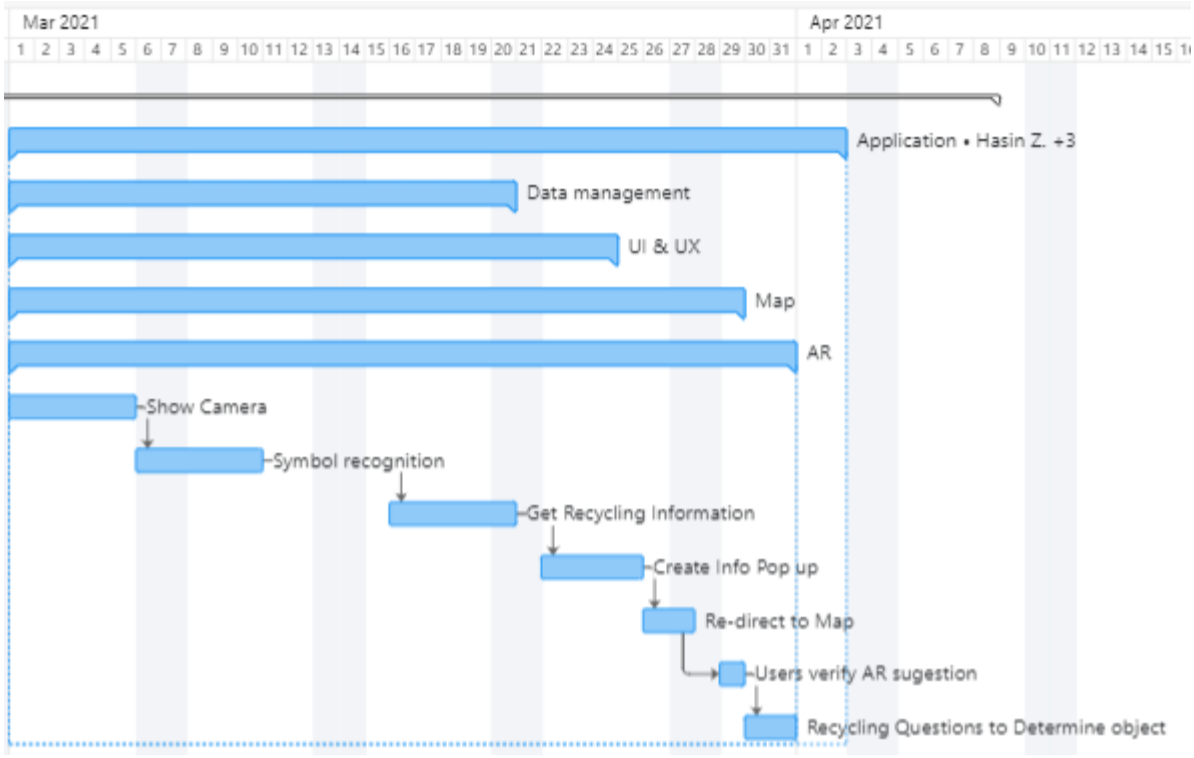

Figure 6: Schedule for AR module

Each modulus was assigned to individuals based on the difficulty of tasks, respective skill level and time cometiments.

Table 1: Table of Module responsibilities

Module	Timeline	Difficulty	Leader
UI & UX	Figure 3	Easy to moderate	Alina
Data management	Figure 4	Easy to moderate	Hasin
Map	Figure 5	Moderate	Olafusi
AR	Figure 6	Moderate to Hard	Zach

Deliverables have been scheduled parallel to the App modules. This is due to two main reasons. Firstly, deliverables need to be worked on by everyone in order to properly integrate everyone's module into one combined prototype. Secondly, deliverables require a longer period of time compared to sub tasks in order to address the bugs and issues relating to merging of multiple modules.

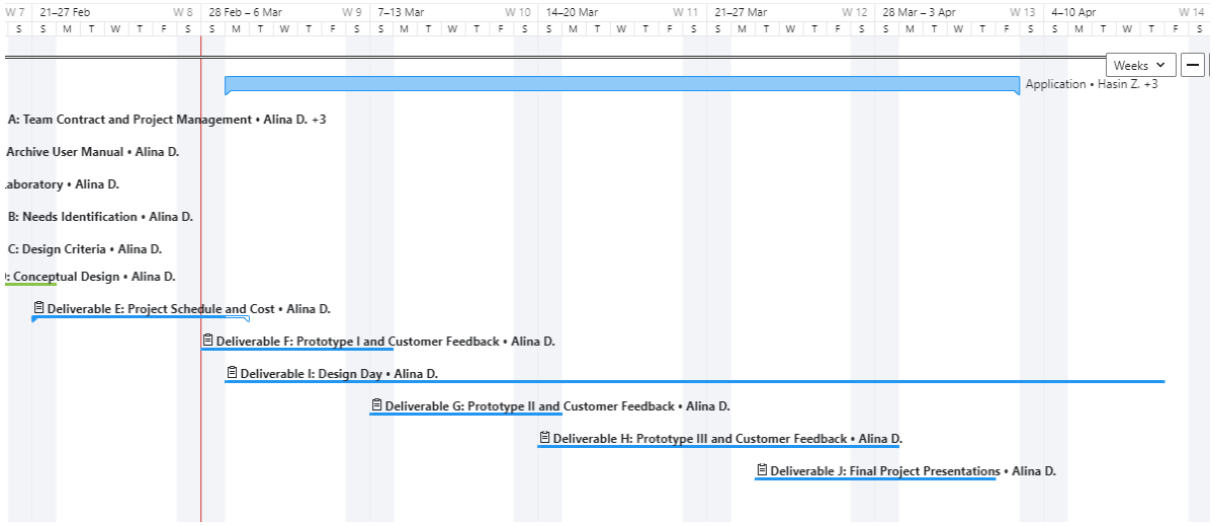

Figure 7: Schedule of Deliverables

Table 2: Table of Modules, Deliverables, Duration, Owner and Due dates

Module	Sub Task	Duration	Owner	Due Date
UI & UX		18 days	Alina	March 24
	Menu	6 days		March 8
	Loading Screen	6 days		March 21
	Child Pages	5 days		March 15
	Sliding Page Transition	3 days		March 24
Map		21 days	Olafusi	March 29

	Display Google Map	3 days		March 3
	Import locations into Map	4 days		March 7
	Select Location	5 days		March 17
	Set To GPS	2 days		March 19
	Set Filter	3 days		March 24
	Get Information From Database	5 days		March 12
	Expand Map to Full Screen	5 days		March 29
AR		23 days	Zach	March 31
	Show Camera	5 days		March 5
	Symbol Recognition	5 days		March 10
	Get Recycling Information	5 days		March 20
	Create Info Pop Up	4 days		March 25
	Redirect to Map	2 days		March 27
	Users verify AR suggestion	1 day		March 29
	Recycling Questions to Determine Object	2 days		March 31
Data Management		20 Days	Hasin	March 20
	Create SQL Database	6 days		March 15
	Send Database Info	5 days		March 5
	Update Database Info	5 days		March 20

	Add to Database	2 days		March 7
Deliverable F		7 days	Everyone	March 7
Deliverable G		7 days	Everyone	March 14
Deliverable H		7 days	Everyone	March 28
Deliverable I		7 days	Everyone	April 8
Deliverable J		7 days	Everyone	TBD
Deliverable K		3 days	Everyone	April 11

3. Risk Assessment and Contingency Plans

Table 3: Risks and Contingencies

Risks	Probability	Impact	Contingency
Location and number of people who live in the area can be a determining factor in the success or failure of a recycling program.	Medium	Medium	Members should research more on location that will be included.
Inability to meet deadlines	low	High	Cutoff times are talked about in the project plan and have just been planned cautiously to relieve the danger of timing overwhelms.
Group conflicts	Low	High	The project plan has been cautiously curated to guarantee an even focal point of undertaking viewpoints needing advancement. On the off chance that a

			need emerges to move center to an ignored viewpoint, the project plan will be modified to represent the change.
Lack of communication	Very low	Very High	To relieve time/correspondence vulnerability, various types of correspondence have been set up between all gathering individuals. This will help guarantee that correspondence with bunch individuals is conceivable even without prior warning.

4. Bill of Materials

This section describes all of the associated costs. The description of the item is listed in Table 4 as well as its unit cost and total estimated cost for the project. The team listed the costs associated with the app development as well as some costs associated with uploading the app to the App Store and Google Play Store. Even though the team is focusing mainly on the app development for this project, the fees for App Store and Google Play are listed to consider if the client decides to go further with the project. Therefore, those fees will be omitted from the calculation of the project total cost.

Table 4. Bill of Materials and Costs

Item #	Item Name	Item Description	Quantity	Unit Cost (CAD)	Total Cost (CAD)
1	Unity Hub	Video-game software development program.	1	Free	Free
2	Vuforia	Platform for AR content creation by Unity, provides image recognition tools.	1	Free	Free
3	Maps SDK for Unity	Set of development tools, services, and assets, that allow for extension of Unity app development.	1	Free	Free
4	App Store Fee	The fee for a membership account that allows you to post the app in the App Store.	1	$126/ year	$126
5	Google Play Fee	The developer fee associated with posting an app to the Google Play Store.	1	US $25 CAD $31.85	CAD $31.85
6	Asset store items	Any items purchased in the Asset Store on Unity Hub. Since there are a lot of free products, this cost is not necessarily; however, if the budget allows, some additional things can be purchased.	N/A	<$20	<$20

The team budget for the project is CAD $100. Since the membership fee for the App Store Development account is US$99/year, which is CAD$126. That cost alone exceeds the entire budget of this project. Since it was mentioned earlier that the App Store development and Google Play membership fees are not included in the final calculation, the total cost for the development of the app is less than $20.

5. Conclusion

The project plan was completed. A schedule of the tasks required to complete the project was created. Each task was given a duration, owner, and dependencies. A risk and contingency plan was formed to analyze and determine solutions to avoid possible risks in the creation of the project. Furthermore, a bill of materials was prepared to determine the overall cost to create the design. It was found that the total cost of the project should not exceed $20. Now that the project plan has been completed, the team should be organized and ready to complete the project by the final deadline.