Project Deliverable E: **Project Schedule and Cost**

GNG 1103 – Engineering Design

Faculty of Engineering – University of Ottawa

Mohammad Al-Mousa Al-Elian,

Saif Alshawabkeh,

Avery Deschamps,

Joumana El Hajj Hassan,

Grace Fitzgerald

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Abstract

The purpose of this report is to develop tasks with a schedule to ensure all prototypes are completed by the end of the semester. In this deliverable we will also determine cost estimations, required components for our project, as well as the creation of our first prototype.

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1. Introduction

This document focuses on the development of a schedule constating of project tasks to ensure that our team completes all three of the required prototypes by the respected due dates. As well, we will be covering cost estimates and components that will be required for our project. We will be including a detailed design drawing of our chosen concept, a list of equipment, project risks and an outline of a prototyping test plan.

2. Detailed design

This section focuses on our detailed design drawing, which summarizes our ideas from our chosen conceptual design. We will be presenting all our individual ideas into a single idea.

3. Project Plan and Schedule

Number	Task	Dependencies	Owner	Duration	Due Date
1	Client Meeting 2	None	Everyone	Milestone	15/02/2023
2	Deliverable E: Project Plan and Cost	Deliverable D	Everyone	7 days	19/02/2023
3	Build Prototype 1	1 & 2	Everyone	6 days	01/03/2023
4	Gather Feedback	3	Everyone	2 days	03/03/2023
5	Deliverable F: Prototype 1 and Customer Feedback	3 & 4	Everyone	14 days	05/03/2023
6	Client Meeting 3	5	Everyone	Milestone	06/03/2023
7	Organize client Feedback	6	Everyone	2 hours	07/03/2023
8	Iterative Prototyping and Prototype 2	6	Everyone	5 days	10/03/2023
9	Customer Feedback for Prototype 2	None	Everyone	2 days	12/03/2023
10	Deliverable G: Prototype 2 and Customer feedback	8 & 9	Everyone	7 days	12/03/2023
11	Iterative Prototyping and Prototype 3	9 & 10	Everyone	10 days	21/03/2023
12	Deliverable H: Prototypes 3 and customer Feedback	11	Everyone	14 days	26/03/2023
13	Deliverable I: Design Day Presentation Materials	12	Everyone	3 days	29/03/2023
14	Design Day	13	Everyone	Milestone	30/03/2023
15	Deliverable J: Project Presentations	14	Everyone	5 days	04/04/2023
16	Deliverable K: User and Product Manuel	15	Everyone	7 days	11/004/2023

Note that the Project Plan is not fixed as it is a rough estimate and might slightly change later on during production.

4. BOM

Part #	Part Name	Description	Quantity	Unit Cost	Extended Cost
1	Personal computers	Provided by team members and university	5	NA	NA
2	Unity	3D game engine. Student/Personal edition used	5	NA	NA
3	HTC Vive	VR set, provided by university	1	NA	NA
4	Control/Security Room Interior	Unity asset control/security room interior	1	9.99$	$9.99
5	Unity Asset: Sentinel Drone	Unity Asset sentinel drone	1	15$	$15
6	Unity Asset: Abandoned Area – Ruined Factory	Unity Asset abandoned area - ruined factory	1	35$	$35
7	Unity Asset: NPC populator	Unity Asset NPC populator	1	15$	$15
8	Unity Asset: Guns pack: low poly guns collection	Unity Asset guns pack: low poly guns collection	1	0$	$0
				Total	75$

Note that the bill of materials is not fixed and might slightly change during development.

5. List of Equipment

Item name	Description	Type	Prototype #	Source
HTC Vive	The VR set to test the program	Equipment	1,2,3	Maker Lab
Testing area	The lab space needed to test the VR	Safe empty space	1,2,3	Maker Lab
Test computers	Powerful test computers	Equipment	1,2,3	Maker Lab
Unity SteamVR Plugin	VR integration with Unity	Library		Valve

6. Project risks

This section will present several risks that can be encountered during the development of our product. For each risk, we will be associating contingency plans to alleviate them. In order to distinguish each risk, we will be categorizing them by importance, as well as their impact on the progress of our design.

Risks	Impact	Importance	Probability of occurring	Solution
Program crashes	Moderate	2	High	Ask the TA or PM for experienced help, extensive testing during development
Equipment failure	Moderate	2	High	Notifying TA immediately, backup VR sets
Data loss	High	3	Low	Periodic cloud backups, source version control
Time management	Moderate	2	High	Organizing and planning our task according to upcoming due dates, using Wrike, etc.
Group conflicts	Moderate	3	Low	Communicating continuously, working together, helping one another and solve any conflicts that come up.

7. Client's Feedback on the Conceptual Design

We received positive feedback from the client regarding our design idea, indicating that it serves it's purpose well. However, the client has requested a more focused storyline, and to make sure it doesn't lose track of the main goal of the project.

We considered specific mentions of the some of the problems with autonomous weapons such as system failure, hacking and exploitation. Also, mentioning and emphasizing on the fact that the failure of the autonomous weapons led to losses in a civilian area killing non-combatant people.

8. Verifying feasibility

The project is mostly software-based, the feasibility of our project is determined by what software equipment are capable of and we can do as students in a limited time. Also, the project doesn't need much physical resources to put it into work. Most of the physical equipment is already available and provided by the university.

9. Stopping criteria

Our stopping criteria was determined based on the client's need to make an impact on the target audience's decisions and views once they try the virtual reality experience. So, we will collect feedback from the users experience when we they try the prototype. The goal should be to have an emotional and moral on impact on the user so that they change their view on legalizing autonomous weapons. If not changing their view completely, at least, to make them feel and empathize with the potential victims of legalizing autonomous weapons.

10. Prototyping test plan:

Test #	Test Objective (why)	Prototype used and Basic Test Method (What)	Description of Results to be Recorded a (How)	Estimated Test duration and planned start date (When)
1	Learning control scheme effectiveness	Play area used, intuitiveness of controls, learning speed of new user	Recording play session, measuring time to progress with test tasks	Starts with completion of prototype 1, until client feedback
2	Communicating scene flow	Measure user attentiveness to scenes	User feedback at the end	Start with completion of prototype 2, until client feedback
3	Communicating dialogue flow	Measure ability of user to follow our story	Collect user feedback and opinion at the end, small quiz	Start with completion of prototype 2, until client feedback 2
4	Message effectiveness	Measure impact of message, visuals, on user	Collect user feedback, ask for description	Starts with prototype 3, ends with client feedback 3
5	De-risking iteration process effectiveness	Internal test of development tools	Efficiency of each team member with the development tools chosen	Starts with development of prototype 1 until end of development

11. Conclusion

In conclusion, we have discussed our task schedule, as well as our requirements for this project. In this deliverable, we introduced a detailed design drawing of our chosen conceptual design. We included our spending budgets and cost estimations of our needed material. Also, we added a list of equipment needed for the initial part of our prototyping. We discussed possible risks that we would encounter during the advancement of our projects, and we found solutions for each one. To finish up this document, we added an outline of our prototyping test plan.

12. Appendix

Concept Sketches

From left to right, top to bottom: Concept UI menu, Concept scene in-game, possible first scene to collect user input before and after