Project Deliverable E: Project Plan and Cost Estimate

University of Ottawa

GNG 1103: Engineering Design

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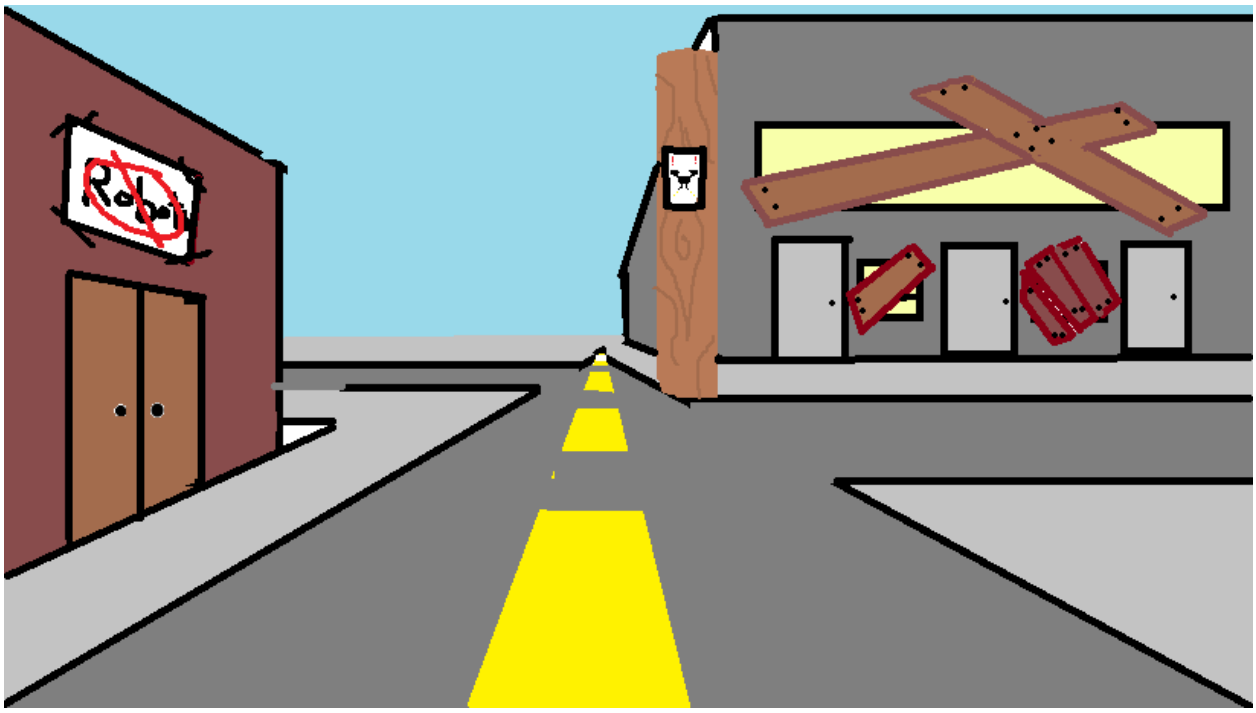
1.0 Introduction

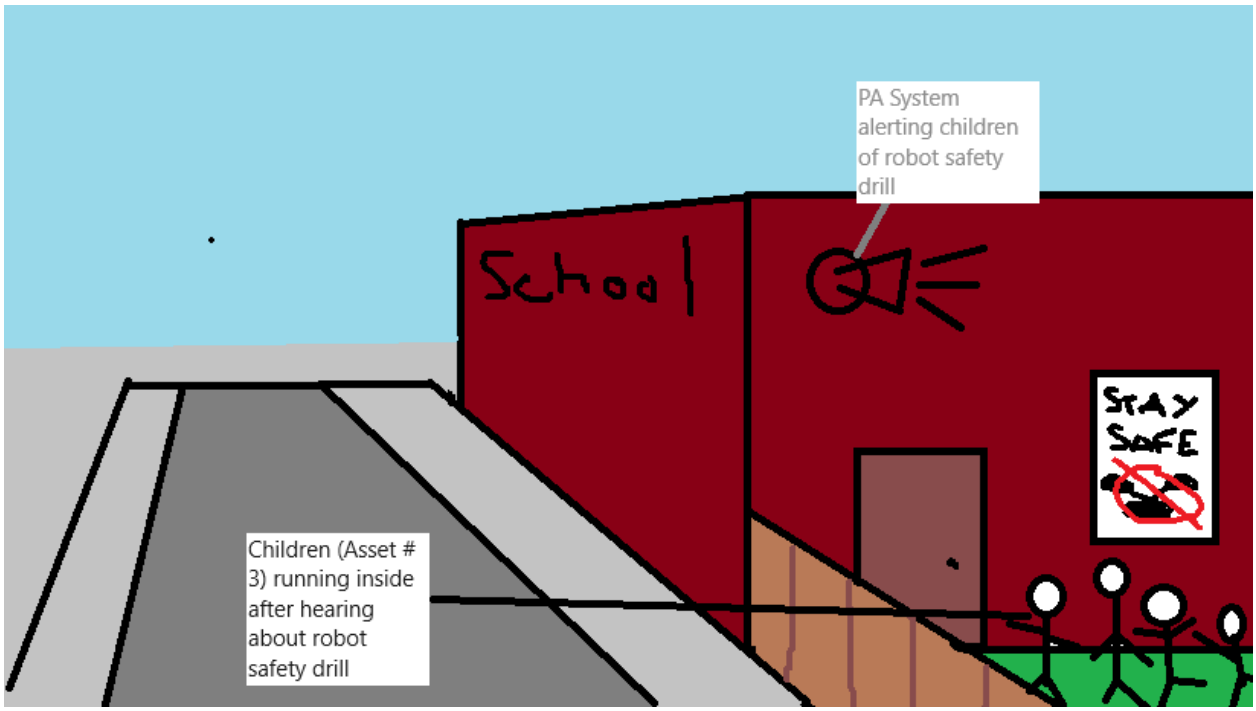
This document outlines the overall plan of the project that our group plans to take going forward. In this plan the design, equipment needed, a bill of materials, the project rank, and a prototyping outline is included.

2.0 Detailed Design

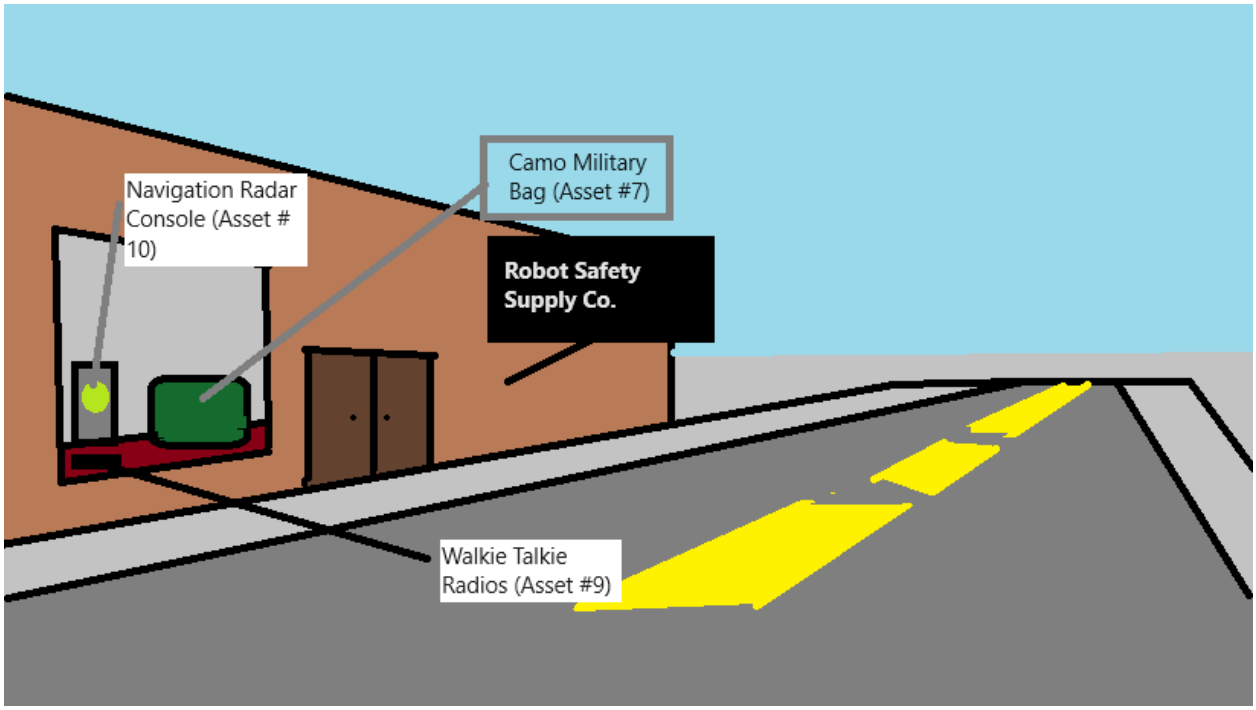
2.1 Storyboard, Environment, User Interface, and Flowchart



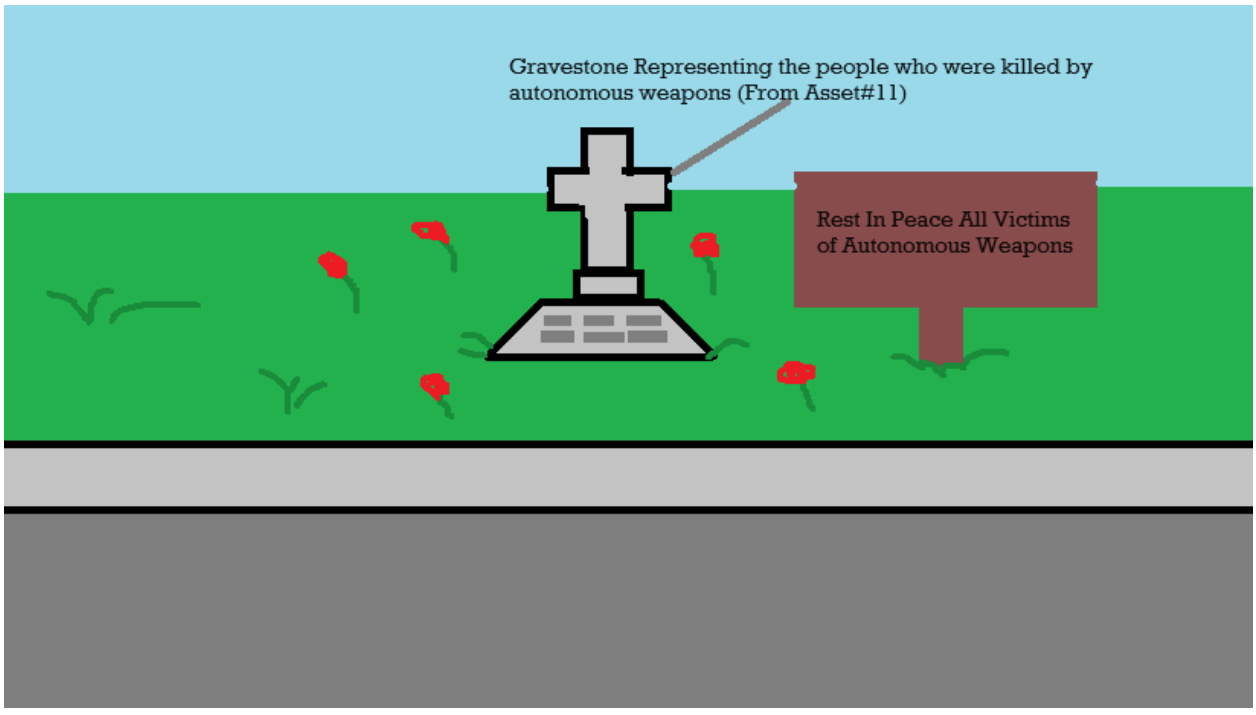
The player will start in a street environment similar to this one. There will be boarded up windows on buildings, as well as posters in the streets warning people about killer robots, and how to protect themselves from them. The posters will have to be custom made by us as they are very specific to the project.



Once the player advances down the street, they will come across an elementary school which has Children playing in the yard. The PA will then inform the children that they are having a scheduled “robot safety drill”, which causes all the children to run inside. The hardest aspect of this sequence will be animating the children, however the assets that we will purchase are already fully rigged, meaning that they will have a manipulable “skeleton” that we will use to animate them. The school will be included in asset #4. Once again any posters that are included will have to be made by hand, and the voice of the PA will also have to be done by one of us.



As the player continues to walk down the street, they will see a robot safety supply store. The idea of this building is to create a sense that people are starting to adapt to the threat of killer robots via supplies that are deemed necessary. Inside the store will be a generic camo military bag(which can be labelled as a robot safety supply bag), as well as walkie talkies, and a radar. These assets can be slightly tweaked to fit the theme of robot safety, which may take some time to complete.



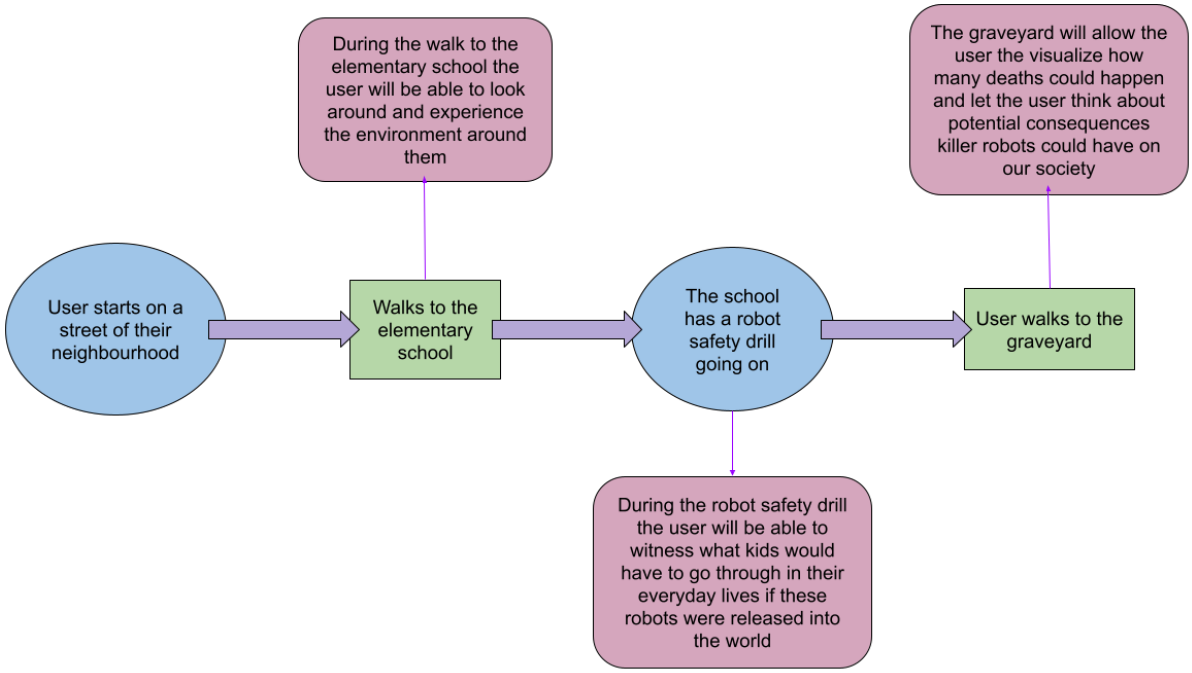
Finally, the player will come across a lone grave, which will represent all of the people who have been wrongfully killed by the killer robots around the world. The asset that we will be purchasing will only be a generic grave, so we will also have to modify this asset slightly to have plaques on it to represent individual people. This may take some time, as will all custom assets.

Storyboard:
The user will start on the street of a neighbourhood, where they will then have the opportunity to walk around and experience the environment. The user will be prompted to work their way down the street towards an elementary school. Once they reach the school, a robot safety drill will be taking place, in order to show what the children are going through and what schools have become with these robots roaming the streets. There will be a memorial gravestone that includes names of those killed by the robots. This is all shown in the images above.

Environment:
This environment will show what the world has come to as people are living in fear of these robots. Windows and doors to businesses and homes will be boarded up and have extra locks. There will be anti-autonomous weapons posters up around the streets. The colours of this environment will be dull and dark to complete the feeling of uneasiness and gloomy. The environment overall will be realistic and recognisable but simple with slight changes to make the user slightly uncomfortable.

User Interface: The system of the VR environment will be designed in a way that makes the user feel uneasy. This will include things like dark and dull colours, characteristics of an apocalyptic society, and an overall sad/upsetting storyline. This will force the user to think about the possibility of this reality. The user will be able to walk around throughout the entire street, this allows them to move towards things they find interesting. They will also be guided towards the overall ideas of the environment such as the school, the posters, the robot safety supply store, and the memorial. The images above show the general walkthrough of the system and what the user will be facing when using the VR.

Flow Chart:



3.0 Equipment

The equipment needed to develop this project are: a virtual reality headset, a software to develop the game, assets to put into the game, and a computer or laptop to access the software to develop on and run the experience. The virtual reality headset is needed to experience the developed project, and go through testing of the VR experience while it is being developed. A software to develop the game is needed so we can create the desired experience for the user that the client wants. For this software Unity and Steam VR will be used to develop. A computer will be needed to develop the game so we can access the softwares, and we also need a computer to run the game as well. On Design Day we will also need a computer to have a video of a playthrough of the game for when we do not have the VR headset.

4.0 Bill of Materials

Asset #	Asset Name	Link to Asset	Cost
1	Modular Low Poly Streets	https://assetstore.unity.com/packages/3d/environments/urban/modular-lowpoly-streets-free-192094	$0
2	Low Poly City Buildings	https://assetstore.unity.com/packages/3d/enviro	$14.99

		nments/urban/low-poly-city-buildings-256801	
3	LowPoly Little Kids Rigged Bundle	https://www.turbosquid.com/3d-models/lowpoly-little-kids-rigged-bundle-3d-model-1780379	$20
4	Simple Generic Buildings - Cartoon Buildings	https://assetstore.unity.com/packages/3d/environments/simple-generic-buildings-cartoon-buildings-266743	$0
5	Church Model	https://assetstore.unity.com/packages/3d/environments/historic/church-model-110307	$0
6	Simple Drone	https://assetstore.unity.com/packages/3d/vehicles/air/simple-drone-190684	$0
7	Military camo bag	https://assetstore.unity.com/packages/3d/props/clothing/accessories/military-camo-bag-62496	$0
8	Character Pack-Lowpoly	https://assetstore.unity.com/packages/3d/characters/humanoids/character-pack-lowpoly-free-221766	$0
9	Walkie Talkie Radios	https://assetstore.unity.com/packages/3d/props/electronics/walkie-talkie-radios-245895	$0
10	Navigation Radar Console	https://assetstore.unity.com/packages/3d/props/electronics/walkie-talkie-radios-245895	$6.50
11	Low Poly Pack-Environment Lite	https://assetstore.unity.com/packages/3d/props/exterior/low-poly-pack-environment-lite-102039	$0

	Total		$41.5

5.0 Project Ranks

In this project the most important part is how the user will go through the environment with the VR headset on. This will get rank 1 which is the highest rank because it will take the most time to do, and is the most important aspect of the project. The next rank in this project will go to the story of the virtual reality experience. It gets rank 2 because the story is really what will give the user the experience that the client wants them to feel, and all the other aspects go into making the story told better. The next rank for the project is the environment and character designs. These get rank 3 because it is what the user is seeing in the headset, and what will really tell the story that we want to tell with this virtual reality experience. The next rank goes to the sound effects and music. These get rank 4 but are still important as they really are there to enhance to story and really get the user more invested into what is being told.

6.0 Prototyping Outline

Test ID	Test Objective (Why)	Description of Prototype used and of Basic Test Method (What)	Results to be Recorded and how these Results will be used (How)	Estimated Test Duration and Planned Start Date (When)
1	Determine the compatibility/feasibility of the purchased assets.	This will be a focused prototype. We will load each of the assets into unity, starting with the city environment assets (1,2 and 5). We will then Ensure that none of the assets look too out of place with each other, and that we can create a rough idea of what our environment will be.	We can compare these assets and how they work together using some elements from the Nielsen Usability Heuristic. Some important criteria will be match between system and real world, error prevention (ensuring that the player is “pushed” along the desired path), and aesthetic design(assets	This test should be started on Tuesday, October 31st, and completed by Wednesday, November 1st.

			don't clash)	
2	To get feedback on our initial idea	This will be a comprehensive prototype, but with low fidelity. We will present the overall story(with the use of sketches) to a variety of people in order to gather reactions and feedback. We can each show one person at a time (could be friends, family, classmates, or even strangers.) We will also show them some of the assets that we will be using, and ask them if they seem appropriate for the theme of the experience. A list of questions about both the story and the assets should be created beforehand and asked to the participants.	We will need to create a sort of 'points system' in which the participant can assign a value to a certain set of criteria depending on how they feel about that aspect. These criteria can include believability, emotional impact, overall appeal, how much they would like to play the game, immersiveness of environment, etc. The values given to us can then be used to improve on the aspects which were given a low rank, as well as keep the aspects that were given positive feedback.	This test should be started as soon as the first test is completed (Nov 1st), and will most likely take a few days, depending on everyone's schedule. This test should be completed by Friday, Nov 3rd.
3	To create an updated conceptual design.	In this test, we will use the results of the previous two tests to create an updated conceptual design. This will be a focused prototype test, as we will be focusing on the story/environment, without worrying about how we will actually piece the separate scenes together using character movement(this will come in later prototypes). In this test, we will use the detailed design we have	For each scene, we may use a different combination of assets, or a different approach based on the feedback given to us, to recreate the given scene. We will then compare the new scene to our Nielsen Usability	This test should begin as soon as the previous test is complete, and should be completed by Sunday, Nov 5th.

		created above to test how different combinations of assets can be used to get our idea across. We will recreate each scene using the actual assets that we have purchased, and then compare these scenes with the feedback given to us from our second test.	Heuristic criteria to envision how the player may interact with these environments. We can also compare these new environments to the questions we asked the participants in test 2. We will stop this test once we are satisfied that the elements that were ranked low are improved upon in the new concept.	