Deliverable E – Project Schedule and Cost

University of Ottawa

GNG 1103: Engineering Design

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Abstract

This deliverable will be used to organize our thoughts and ideas for the project as well as provide a schedule for the completion of the prototypes and a bill of materials breaking down how much things will cost and where we are allocating our budget; the total cost of the prototype will be roughly $48. Our final concept is the experience of a girl forced to relocate to cautious housing after her family falls victim to drone attacks. Cautious housing is a segregated area fueled by superstition toward drone targets, guarded by armed personnel. The narrative unveils the bleak conditions within the zone, with limited supplies, escape ropes, and signs warning of drone patrols. Inside, the living quarters resemble a makeshift prison, emphasizing the oppressive nature of this society. The story ends with a twist, revealing the experience as a dream, prompting reflection on preventing such a dystopian reality.

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1 Introduction

After combining all our ideas and making one refined single concept in deliverable D, we will clearly and in detail summarize our chosen concept. We will outline our schedule for testing and the prototyping plan, the cost of our materials and components in a Bill of Materials, and a list of all the equipment, whether software or hardware, that we will be using. We will break down and explain the environments different parts such as, the audio and visual aspects, the "cautious housing" and the street.

2 Concept Summary

This story follows a girl who, after her family is attacked by autonomous drones, is compelled to move into cautious housing. In this society, people are superstitious about those targeted by drones, leading to the creation of a walled-off zone called "cautious housing." The narrative begins from the girl's point of view as she enters the zone, with the gates closing behind her, guarded by two armed guards. A warning sign notifies inhabitants about the drone patrols in the area. As the user walks down the street, they come across a storefront with signs indicating limited supplies. Ropes hanging from windows serve as quick escape routes in case of a drone threat. The neglected area is marked by burning garbage on street corners, rubble from destroyed buildings, blacked-out glass, and graffiti on walls. At the end of the street is the entrance to the living quarters, where families in cautious housing reside. The user enters a large dome-shaped commercial building adapted into functional living quarters, featuring rows of bunk beds akin to a prison, with buckets used as toilets. Stacks of mirrors are available for those who may need to leave, accompanied by multiple warning signs outlining protocols. Throughout the experience, the girl's thoughts provide narration, offering insights into the unfolding story. Users can conclude the experience at their discretion, but the video ends with the girl entering her bed, and the screen goes blank. A quick clip reveals her waking up, disclosing that it was a dream. This serves as a reminder that there is still an opportunity to prevent such a reality from taking place.

3 Concept Idealization
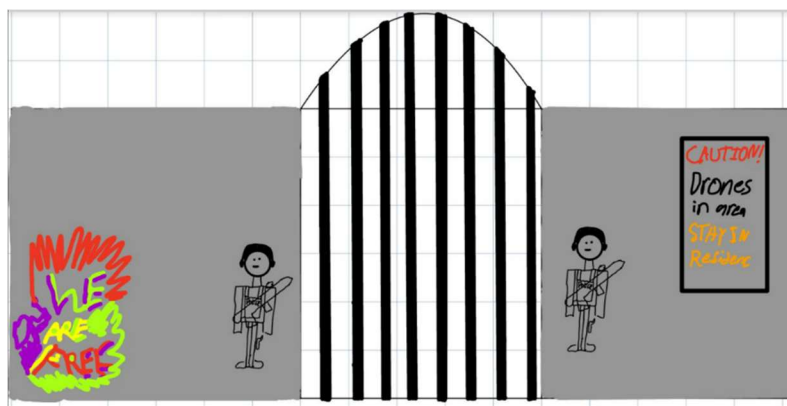
4 Bill of Materials (BOM)

Table 1: Bill of Materials

Item no.	Description	Store	Price (CAD)	Link
#1	VIS – PBR Grass	Unity Asset store	FREE	https://assetstore.unity.com/packages/2d/textures-materials/floors/vis-pbr-grass-textures-198071

	texture			
#2	Fence Gate Pack	Unity Asset store	$4.99	https://assetstore.unity.com/packages/3d/environments/urban/fence-gate-pack-119711
#3	Abandoned Car	Unity Asset Store	$4.99	https://assetstore.unity.com/packages/3d/environments/urban/abandoned-car-181912
#4	Streetlights Pack	Unity Asset Store	FREE	https://assetstore.unity.com/packages/3d/props/exterior/street-lights-pack-31644
#5	Garbage and Trash props	Unity Asset Store	$9.90	https://assetstore.unity.com/packages/3d/props/industrial/garbage-and-trash-props-74482
#6	Garbage Heap The last	Unity Asset Store	FREE	https://assetstore.unity.com/packages/3d/environments/industrial/garbage-heap-the-last-70773
#7	Guard	Unity Asset Store	$10	https://assetstore.unity.com/packages/3d/characters/humanoids/low-poly-soldiers-53612
#8	Bunks bed, Cautious Housing Utilities	Unity Asset Store	$8	https://assetstore.unity.com/packages/3d/environments/urban/survive-nuclear-war-interior-35996
#9	Wall Graffiti	SketchFab	FREE	https://sketchfab.com/3d-models/cco-decal-graffiti-textures-69a07e3d256e4b0490ac49e99ac57896
#10	Street Pack	Unity Asset Store	FREE	https://assetstore.unity.com/packages/3d/environments/urban/low-poly-street-pack-67475
#11	Outdoors bunker with observatory	Unity Asset Store	10$	Outdoors bunker with observatory	3D Props	Unity Asset Store
#12	Sad walk	Mixamo	FREE	Mixamo
#13	Free cans pack	Unity Asset Store	FREE	Free Cans pack	3D Props	Unity Asset Store
#14	Unity	Unity	Free	https://unity.com/
#15	Computer	N/A	N/A	N/A
#16	GitHub	GitHub	Free	https://github.com/

5 Equipment List

Table 2: Equipment List and Quantity

	Equipment	Quantity
Hardware	Oculus Headset	1
	Oculus Controllers	2
	Laptop/Computer	1
	Glasses Spacers	1
	Connection Cables	1
Software	Unity	N/A
	GitHub	N/A
	Unity Asset Store	N/A
	Maximo	N/A
	SketchFab	N/A

6 Task Delegation

To stay on schedule, we need to assign tasks such as storyline, environment, audio, etc. to the most qualified team members. This will ensure that we are as efficient as possible.

6.1- Storyline

- ▪ ***Description of task:***

The team members will have to finish the complete storyline from the global concept chosen in the previous deliverable. In addition to that, it'll be his/her duty to ensure that the following points meet the customer's expectations during the second meeting:

- Message/theme
- Plausibility
- Adaptations
- Etc.

Finally, they'll present their work to the others member of our team to do a quality check.

- ▪ ***Team members in charge and why:***

Anna, Qassim and Reina are going to oversee the storyline for two major reasons. First, they have a great imagination that is useful to come up with great ideas for how to present the story and the adaptations while keeping it realistic. For instance, everyone on the team agrees that Qassim's contextualization was the best out of us all.

The second reason is because they have different points of view. We want to have different perspectives to ensure the creativity of our project by having as many ideas as possible. By doing so, our project is going to reach higher levels than if everyone had intentions. Plus, the ones chosen for this task are critical thinkers which will instore a state of constant improvement. By having people questioning others and not only accepting everything there will be progress.

- ▪ *Time estimation:*

The estimation of time to accomplish this task is 5 days since we know that a good story can be created within this deadline without slowing down the rest of the project.

6.2- Environment (Cautious Housing)

- ▪ *Description of task:*

In this section, the task demanded is to first find the appropriate decoration for Cautious Housing using the Unity assets store. In addition to that they'll have to keep track of the cost of each asset found.

- ▪ *Team members in charge and why:*

Marcel and Reina have been assigned to this section because Reina is the one who came up with this idea. Since she has the best vision of how it should look like, it is a must that she oversees this section and has one of the storyline managers, she'll make sure that this section fits the latter.

Marcel's role will be related to the design with the Unity software. Since he has good visualization skills, he can accomplish what was on Reina's mind and make it a reality. Finaly, since they are both organized and reliable, nobody has any problems assigning this task to them.

- ▪ *Time estimation:*

We agree that we need to complete this task before the next client meeting on the 8th of March. So, we determine that one week and two days will be enough to finish the environment, review it with the rest of the team and finish the video.

6.3- Environment (Street)

- ▪ *Description of task:*

In this section, the task demanded is to first find the appropriate decoration for the street part of the VR/video using the Unity assets store. In addition to that they'll have to keep track of the cost of each asset found.

- ▪ *Team members in charge and why:*

Anna, Mitchell and Qassim are those who will manage who the street looks like and what we'll find in it.

The role Anna has in the environment is the adaptation and the posters. When going through everyone's story, we all agree that Anna had the best adaptation that would provoke emotions

such as fear and sympathy towards the protagonist. So, she will have to find out which adaptations will be shown and how to represent the latter with the help of Unity asset store or with the help of the other team members.

Mitchell's part is to create the world in Unity software. When first introduced to the software he was the best at navigating through the software and helped everyone. Because of that and the fact that he is efficient in his work, he decided to assign this part of the project.

Qassim's role will be to ensure the street environment is faithful to the storyline. We discuss that having a storyline manager in each environment is necessary to reach that objective. Plus, with his high standards, he'll be able to check the quality of this section.

- ***Time estimation:***

To be synchronized with the previous environment, we also determine that the time required to accomplish the streets will be one week and two days for the same reasons as the Cautious Housing section.

6.4- Audio/Sound/Music

- ***Description of task:***

To emerge from the audience in the video and the VR, we must add the right audio/music to make them feel emotions as if they are in the video. To do so we separate this section into two parts. The first will be the audio for Cautious Housing and the second for the street.

- ***Team members in charge and why:***

To correspond to the previous assignment, we have decided that Marcel and Reina are going to oversee finding the audio for the cautious housing since they are going to do the environment for the latter. That leaves Anna, Mitchell and Qassim in charge of finding the audio for the street for the same reason.

- ***Time estimation:***

Since we already have most of the audio, we think this section will be finished in three days.

6.5- VR Experience

- **Description of task:**

In this section, everything that is linked to the VR experience will be the priority. For instance, accessibility, interaction in the VR world, user experience, etc.

- **Team members in charge and why:**

Anna and Marcel are those assigned to this section. Anna is the one who had the best user experience and VR idea in general, so she was assign the role of the manager of this section and Marcel' role will be to aid in the development of the section.

- **Time estimation:**

Considering our low knowledge of VR creation, we think that it'll take one week and four days to finish this product.

6.6- Video

- **Description of task:**

This task is to edit and to ensure that the video has everything that it needs to convey to the client needs by looking at the duration, the quality, the sound, etc.

- **Team members in charge and why:**

Mitchell is the one who is the most experienced with editions of videos and he is diligent with his work, so he'll oversee this section and then present it to the rest of the team to propose modifications.

- **Time estimation as of February 25th:**

Mitchell's experience with video editing tells us that he can finish the video in 3-4 days.

7 Project Risks and Contingencies

Table 3: Project Risks and Contingencies

Project Risk	Assessment		Contingency Plan
	Likelihood	Impact	
Project environments are too complex, such that they are unachievable within the given time frame (schedule risk)	Moderate	High	Conduct project evaluations each meeting to recalibrate tasks with durations (are tasks taking longer or shorter) to see if the ideas are unrealistic for the time frame
Project ideas are poorly communicated, resulting in conflicting project work, which fails to adequately achieve the identified design criteria (quality risk)	Low	High	Conduct emergency meeting in which miscommunication is sorted and a plan moving forward is establish to redirect the project
Dependencies within a task series is disregarded or underestimated, such that project progress is deaccelerated (schedule risk)	Moderate	High	Divide the dependent task amongst more team members to accelerate the rate of completion

Interactive features in VR are nonfunctioning or not feasible (technical risk)	Moderate	Moderate	Seek guidance from Project Manager to troubleshoot technical issues
Collaboration using Unity and GitHub malfunctions resulting in lost project work on conflicting changes with VR environment (technical risk)	Moderate	High	Seek guidance from Project Manager to trouble shoot technical issues
Interpersonal team conflict (team risk)	Low	Moderate	Conduct a group meeting in which conflict management steps are implemented to meet resolution
Team member is unable to complete part due to emergency or sickness (team risk)	Moderate	High	Divide the remaining task amongst their team members
Exceeding budget range due to purchasing assets (cost risk)	High	Low	Eliminate asset costs by creating objects using Blender (3D modelling/graphics) software

8 Prototyping Test Plan

We have developed a prototyping test plan to have a systematic method to check if the prototypes we develop are meeting user design needs effectively. A table of the different tests that will be conducted are listed below.

Table 4: Prototyping Test Plan

Test Objective (Why)	Associated Design Criteria (What)	Testing Method (How)	Observe/Record and Results (Analysis of method)	Estimated Test duration and start date (When)
What reaction does the video evoke	Instill a sense of urgency & empathy	Google forms survey	Used to see how accurate to target specifications	**When:** March 3rd **Duration:** A week
Is the environment presentable	Civilian Adaptations / General video environment/ content	VR Headset trial	Observe if interactive functionalities work, is motion smooth, are objects where they should be	**When:** Feb 26th **Duration:** 5 minutes
Is the VR experience accessible	User accessibility	Transcript Review	Bilingual	**When**: Feb 26th **Duration**: 10 minutes
	User accessibility	VR Headset trial	nauseousness, Light sensitivity Audio level	**When:** Feb 26th **Duration**: 10 minutes
Do people understand and relate to the story	Effective storytelling	Google Forms Survey	Used to see how accurate	**When**: March 3rd **Duration**: A week
Is the VR experience simple/ intuitive.	Cater to random people's knowledge	VR Headset trial	If someone who is unfamiliar with the topic of autonomous weapons understands the impact	**When:** March 3rd **Duration:** A week
Is the thematic of the video will reach the targeted audience?	Target audience: Decision Makers	Google forms survey	Used to determine if prototype targets the right audience	**When:** March 3rd **Duration:** A week

9 Conclusion

Upon extensive comparison and analysis against pre-established client needs and design criteria, a project plan and cost budget has been established. Dividing the VR environments into two discrete sections, the street and Cautious housing facility, asset budgeting has been respectively allocated. Furthermore, considering task delegation & durations and the required equipment, a list of plausible project risks has been derived. With differing levels of impact and likelihood, correspondent contingencies plans have been constructed, to ensure project redirection should any of these risks occur. In addition to contingencies plans, a prototyping test plan has been developed to address various project risks in its early stages, most prominently several technical and qualitative risks. Moving forward, this document contains the framework upon which the team will construct the first project prototype. Effectively, following the first prototyping test phase, the figures and details listed in the document may be subject to modification.

10 Trello link

GNG 1103 Group 3 | Trello