

Deliverable E - Project Plan and Cost Estimate

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Group 01

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Abstract

This deliverable outlines a detailed timeline, task plan, cost estimate, and prototype testing plan for the first prototype. It includes task breakdown, estimated durations, assigned responsibilities, and identified risks and contingencies. Provides a bill of materials and equipment requirements to ensure the development process proceeds smoothly and all three project prototypes are available to completed by the end of the semester.

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1.0 Design Drawing

We got feedback from client meetings 2 that every interaction in our project should help users understand how behaviour affects climate change, causes natural disasters, and everything we build should contribute to a deeper understanding of climate change. Therefore, we improved the story architecture:

Part 1: User enters the world, is asked to cut trees because he's a lumberjack. As the user cuts the trees, the CO2 rises and the user witnesses this (we will do research).

Part 2: A cut scene will display the effects of deforestation on the forest by showing greenhouse gasses being released into the atmosphere causing the forest to dry out due to global warming caused by the greenhouse gasses.

Part 3: User asked to go to the wooden house to drop off the wood they collected as they walked to the house. The temperature gauge will increase due to the user's previous actions.

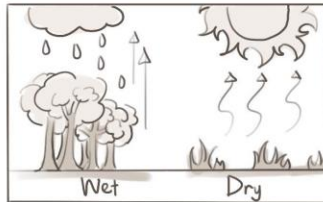
Part4: The user will turn on the radio announcing a forest fire and will then have to escape the forest.

Forest Fire
GNG 1103 Group 01

Feb. 16, 2025



User is asked to cut trees because he's a lumberjack.



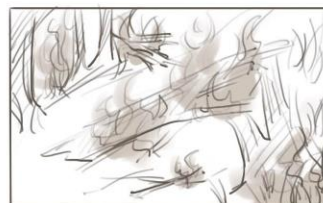
Cut scene display the effects of deforestation, dry out due to global warming.



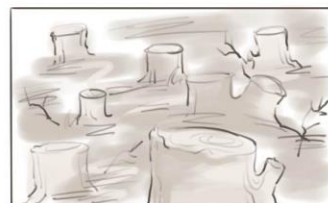
Go to the wooden house to drop off the wood they cut down. Temperature increase.



Radio announcing forest fire.



Escape the forest from the fire.



A lot of trees were cut down, and after the fire, only charred tree stumps remained.

2.0 Key Metrics

The important metrics in the project should show how the forest fire occurred and why it happened based on users' interactions and real data. These interactions include actions such as tree cutting and environmental changes, which will be structured in a process to explain the specific causal relationships to users.

3.0 Schedule Plan

Since we only had a little over five weeks and had to test at least three prototypes, it was best to limit the build time of each prototype a week to a week and a half.

Table 1: Plan for Tasks in Prototype 1 that need to be completed

Tasks	Estimated duration (due date)	Name of the responsible	Notes
Scene Development	2 weeks (Mar.15)	J.D.	Visual aspects, for example backgrounds and scenes [5].
Cut Scene Animations	2 weeks (Mar.17)	O.O.	Greenhouse gasses being released into the atmosphere.
Coding for Interactions	2 weeks (Mar.17)	T.Z.	Cutting trees and trees falls.
Coding for UI	2 weeks (Mar.15)	R.K.	User interface [4], include the gauge system for temperature. And the cutting animation.
Quality Contral	Depend on the bugs (Mar.23)	M.B.	Testing. Make sure the prototype works properly and fix any bugs.
Voice line	3 days (Mar.20)	M.B.	Recorded voice line for news and character.

4.0 Project Risks and Contingency Plans

The development of our project prototype involves several potential risks that could impact the project timeline, budget, and final quality. These risks primarily stem from technical challenges, resource limitations, and team coordination. Identifying these risks early allows us to prepare appropriate contingency plans to make sure our progress keep going.

Table 2: Risk Analysis and Contingency Plan

Risk	Likelihood	Impact	Contingency Plan
Technical Issues with VR and Unity	Medium	High	Find videos online and use Unity tutorials first, if still not working then ask TA for help.
Development Delays	High	High	Break tasks into smaller steps, hold weekly progress meetings, and reassign tasks if delays occur.
Budget overages	Low	Medium	Use free assets whenever possible, researching for more materials and track expenses.
Team Member Unavailability	Medium	High	We can assign work through online meetings or by sending messages. We can also help team members complete part of the work if we are available.
Software Bugs and Crashes	Medium	High	Regular testing, version control and fix them as soon as possible.
Prototype Fails to Meet Testing Criteria	Medium	High	Schedule buffer time for reworking prototypes, adjust scope if necessary to prioritize core functionality.

5.0 Materials Budget

Forest:

Environment Forest - Low Poly 3D:

<https://assetstore.unity.com/packages/3d/environments/environment-forest-low-poly-3d-295608>

Free Trees:

<https://assetstore.unity.com/packages/3d/vegetation/trees/free-trees-103208>

SMM - Stylized Grass:

<https://assetstore.unity.com/packages/3d/environments/smm-stylized-grass-184975>

Fire and Smoke:

Low Poly Fire and Explosion:

<https://assetstore.unity.com/packages/vfx/particles/fire-explosions/low-poly-fire-and-explosion-161920>

House:

Wooden House:

<https://assetstore.unity.com/packages/3d/environments/wooden-house-free-low-poly-270889>

Others:

Carpentry Tools:

<https://assetstore.unity.com/packages/3d/props/tools/carpentry-tools-118471>

Low poly trees:

<https://assetstore.unity.com/packages/3d/vegetation/trees/low-poly-trees-free-nature-pack-300824>

Woods Lifestyle:

<https://assetstore.unity.com/packages/3d/environments/low-poly-woods-lifestyle-65306>

Figur 1: Project Asset Store Materials Cost Spreadsheet

Project Asset Store Materials Cost Spreadsheet			
	Material's Name		Costs(\$)
Forest	Environment Forest		0
	Free Trees		0
	Stylized Grass		0
Fire	Low Poly Fire and Explosion		5
House	Wooden House		0
Others	Carpentry Tools		0
	Low poly trees		0
	Woods Lifestyle		0
Total Costs			5

Above are the current costs of materials and components that need approval for our project. Additional materials may be required as we progress through prototype testing.

6.0 List of equipment

Hardware:

- Oculus VR Headset (Meta quest 2)
- Oculus Hand controls
- NVIDIA GeForce RTX 3060 Laptop

Software:

- Game Engine (Unity)
- VR SDK
- 3D Modeling software, for specific parts and shapes (on shape)
- Testing tools
- Audio editing software

7.0 Prototyping Test Plan [1]

The prototyping test plan is preparing for the development of the first prototype for our interactive simulation on deforestation and its link to global warming and forest fires. Ensure that testing is purposeful, efficient, and provides valuable insights into the feasibility and functionality of the core system components. Here are our goals for prototype testing:

- Make sure that CO2 and temperature measurement systems can intuitively and effectively communicate to users the environmental impact of deforestation.
- Try to identify any potential technical limitations or issues early in development.
- Design an intuitive, simple interface that makes it easy for users to understand what is going on.
- Ensure interactions and animations such as chopping trees, tree falling, and transporting wood are smooth.

8.0 Stopping Criteria

- Animations such as tree cutting, wood collection, and wood delivery are executed without lag or bugs in at least 5 test runs. [2] [3]
- Cut scene can be inserted smoothly without delay or error.
- Confirm that there is no clipping through or failure to load in the scene.
- The different scenarios all work properly and proceed in a coherent sequence.

9.0 Resources

[1] Lecture Slide “Prototyping Test Plan”

[2] <https://www.youtube.com/watch?v=PQsHE4BQYDw>

[3] <https://www.youtube.com/watch?v=qc3cBzuGGyl>

[4] <https://www.youtube.com/watch?v=Uk91lEiKn2g>

[5] <https://www.youtube.com/watch?v=1xW2e3dTP5Y>

[6] <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/about-bcws/wildfire-statistics/wildfire-averages>

10.0 Task Separation Table

Sections	Author(s)	Editing
Abstract	T.Z.	-
Design Drawing	T.Z.	-
Schedule Plan	R.K., T.Z.	-
Project Risks and Contingency Plans	O.O., T.Z.	-
Materials Budget	J.D., T.Z.	-
List of Equipment	M.B.	T.Z.
Prototype Test Plan	T.Z.	-
Stopping Criteria	O.O., T.Z.	-

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