Project Deliverable E: Project Schedule and Cost

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**Abstract:**

This project schedule and cost deliverable will be used to organize the project from the development of the first prototype to the final design day prototype. The concept follows an individual experiencing the increasing severity of tornadoes over time due to climate change, highlighting the necessity of disaster preparedness. To bring this VR experience to life, we compiled a list of required equipment and tools. Additionally, the total estimated cost for the project has been calculated, around $22.58-33.88. Finally, a prototype test plan was created to test how well it meets design criteria and user needs. Ultimately, this project schedule and cost outline will be used as reference in future.

**Table of Contents**

[Introduction: 3](#_Toc1809207836)

[Concept Summary: 4](#_Toc599172134)

[Bill of Materials 5](#_Toc1323974426)

[List of equipment: 6](#_Toc1927138392)

[Project risks and contingencies 6](#_Toc1269806538)

[Prototyping and Test Plan 8](#_Toc11292098)

[Conclusion 8](#_Toc1590150386)

[References 8](#_Toc871062015)

# 1.0 Introduction

Last week we completed deliverable D which we generated some conceptual designs according to our problem statement. We received feedback from the client during the second meeting and in this deliverable, we have refined a version of our conceptual design with a sketch provided to represent it. Then we proceed to create a task list with a timeline which will guarantee success for the upcoming three prototypes. Also, we added a cost estimate, and we outlined the necessary components for our project. We also added project risks and contingency in the event of any setback. Lastly, we created a prototyping test plan to ensure that our simulation reaches the client's needs.

# 2.0 Revised Story

## 2.1 Chosen Story: Benny?

## 2.2 Selected Catastrophe

Tornados

## 2.3 Storyline/Overall Objectives

1. The opening scene is the home screen of a phone which displays the date (some day in 2025).
2. The home screen will display a tornado alert to the user with the alert sound.
3. The user will look up from their phone and must find their dog, Benny, by following barking sounds and muddy footprints.
4. Once the dog is found, he can be clicked on, and he will follow the user to the basement door.
5. The basement door will act as a scene switch button, so when it is clicked on, the user will enter the basement with the dog.
6. In the basement, there will be minimal decoration. There will be a calendar with a “!” icon floating over it, indicating that the user should click it.
7. When the user clicks the calendar, they will be transported to a basement in 2030. The basement will have noticeably more supplies for tornado shelter.
8. The user will click the calendar again and be transported to 2050. Here, the basement will be extremely prepped for tornado shelter. There will also be a pile of newspapers with a “?” hovering over to indicate that the user should click on it.
9. Once clicked on, the newspaper will come into the users view and there will be an article with educational information relating tornados to climate change
10. To end the simulation, the users' phone will ring. The user will pick up the phone and it will be a friend who talks to the user about tornados are so frequent. The user's friend will not seem scared, only annoyed, showing that tornados are so frequent now that they don’t even have a panicking effect on people anymore.

## 2.4 Secondary Objectives

1. Interactivity: The user will have to interact with the simulation to find Benny and to switch scenes.
2. Education: The newspapers and the basement over the years will educate the user on how climate change and tornados are related and how their life will be if climate change doesn’t stop.

## 2.5 Logistics

1. “!” over interactive objects that will cause scene switch or decision making
2. “?” over any educational objects
3. Muddy footprints and dog barking to lead the user to Benny

## 2.6 Sound Design

**Scene 1:**

* Alert sound from phone
* Barking dog
* Rattling windows
* Wind
* Crunching leaves

**Scene 2:**

* Phone ring
* Whining dog
* Calendar flipping when pressed

## 2.7 Environment Design

**Scene 1: Upstairs**

* Simple house
* No stairs that the user can access

**Scene 2: Basement 2025**

* Minimal decoration
* No supplies
* Calendar is obvious to user

**Scene 3: Basement 2030**

* Some supplies
* Calendar
* A little more decoration

**Scene 4: Basement 2050**

* A lot of supplies
* More decoration, the user often lives in the basement for days at a time.
* Newspapers: Pictures of tornado disaster comparison over the years with a small body of text telling the user about why the tornados are more frequent and more severe.
* Calendar

## 2.8 Insurance of Education

1. Comparison between basements
2. Newspaper article
3. Friend on the phone

## 2.9 Accessibility Accommodations

1. Adjustable audio
2. Adjustable brightness
3. Voice over for newspaper article
4. English and French options
5. Play sitting down or standing up
6. Exit button
7. Disclaimer

## 2.10 Pros of Design Concept

1. The user will be able to understand how climate change is affecting tornado activity.
2. There will be no narration or telling the user what to do. The user will have no contact with the outside world while inside the game. This will yield a more immersive experience.
3. Simple concept.
4. The user will switch between making decisions, interacting with objects, and getting information.
5. Interactive
6. Educational

## 2.11 Restrictions

1. No background with Unity
2. Time restriction for creating all three basement scenes
3. Time restriction for creating English and French versions of the simulation

# Bill of Materials

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Item No** | **Component** | **Importance level (1-4)** | **Quantity** | **Cost (Including Tax)** | **Unity Link** |
| 1 | House floorplan | 4 | 1 | $11.29 | [Low Poly Cartoon House Interiors | 3D Interior | Unity Asset Store](https://assetstore.unity.com/packages/3d/props/interior/low-poly-cartoon-house-interiors-167425) |
| 2 | Dog (Benny) | 4 | 1 | $11.30 (1 and 2)  Free | [dog Chihuahua | Characters | Unity Asset Store](https://assetstore.unity.com/packages/3d/characters/animals/mammals/dog-chihuahua-105073)  [Dog Beagle | Characters | Unity Asset Store](https://assetstore.unity.com/packages/3d/characters/animals/mammals/dog-beagle-70832)  [Animals FREE - Animated Low Poly 3D Models | 3D Animals | Unity Asset Store](https://assetstore.unity.com/packages/3d/characters/animals/animals-free-animated-low-poly-3d-models-260727) |
| 3 | Survival Kit Items | 3 | 1 | Free | [Item Pack: Survival | 3D Props | Unity Asset Store](https://assetstore.unity.com/packages/3d/props/item-pack-survival-131598) |
| 4 | Cell Phone | 2 | 1 | Free (both) | [[Free] Phone | 3D Props | Unity Asset Store](https://assetstore.unity.com/packages/3d/props/free-phone-181455)  [Low Poly Office Props - LITE | 3D Environments | Unity Asset Store](https://assetstore.unity.com/packages/3d/environments/low-poly-office-props-lite-131438) |
| 5 | Proximity Noise | 1 (only if tutorial cannot be used) | 1 | $5.65 | [Sound Proximity | Audio | Unity Asset Store](https://assetstore.unity.com/packages/tools/audio/sound-proximity-182591) |
| 6 | Trees/Shrubs | 3 | 1 | Free | [Polygon Trees | 3D Trees | Unity Asset Store](https://assetstore.unity.com/packages/3d/vegetation/trees/polygon-trees-224068) |
| 7 | Tornado | 4 | 1 | Free | [Ez Tornado | Environment | Unity Asset Store](https://assetstore.unity.com/packages/vfx/particles/environment/ez-tornado-203025) |
| 8 | Dark Weather Background | 3 | 1 | Free | [seasons/weather effects | Particles/Effects | Unity Asset Store](https://assetstore.unity.com/packages/tools/particles-effects/seasons-weather-effects-268820) |
| 9 | Household assets | 1 | 1 | Free | [Low Poly Food Lite | 3D Food | Unity Asset Store](https://assetstore.unity.com/packages/3d/props/food/low-poly-food-lite-258693) |
| 10 | Fonts | 1 | 1 | Free | [Retro Sprite Font and Icons | 2D Fonts | Unity Asset Store](https://assetstore.unity.com/packages/2d/fonts/retro-sprite-font-and-icons-39741)  [Fatality FPS Gaming Font | 2D Fonts | Unity Asset Store](https://assetstore.unity.com/packages/2d/fonts/fatality-fps-gaming-font-216954) |
| 11 | Return/Exit Menu | 2 | 1 | Free | [UltimateMenus | GUI Tools | Unity Asset Store](https://assetstore.unity.com/packages/tools/gui/ultimatemenus-71893)  [Settings & Options Menu Creator | GUI Tools | Unity Asset Store](https://assetstore.unity.com/packages/tools/gui/settings-options-menu-creator-268863) |
| 12 | Progress Bar | 1 | 1 | Free | [Progress Bars - Customizable and Extensible (Health Bars etc) | GUI Tools | Unity Asset Store](https://assetstore.unity.com/packages/tools/gui/progress-bars-customizable-and-extensible-health-bars-etc-268457) |
| 13 | Home Furniture | 2 | 1 | Free | [Furniture FREE - Low Poly 3D Models Pack | 3D Furniture | Unity Asset Store](https://assetstore.unity.com/packages/3d/props/furniture/furniture-free-low-poly-3d-models-pack-260522) |
| 14 | Water Jugs | 3 | 1 | $5.64 | [Water Bottle "19 Litre PET" | 3D Interior | Unity Asset Store](https://assetstore.unity.com/packages/3d/props/interior/water-bottle-19-litre-pet-211076) |
| 15 | Picture Frames | 1 | 1 | Free | [Picture Frames | 3D Furniture | Unity Asset Store](https://assetstore.unity.com/packages/3d/props/furniture/picture-frames-301169) |
| 16 | Pet Accessories | 1 | 1 | Free | [Small Kit 3D Stylized Petshop Asset | 3D Props | Unity Asset Store](https://assetstore.unity.com/packages/3d/props/small-kit-3d-stylized-petshop-asset-291990) |
| 17 | More survival supplies | 3 | 1 | Free | [Survival Kit Lite | 3D Tools | Unity Asset Store](https://assetstore.unity.com/packages/3d/props/tools/survival-kit-lite-92549) |
| 18 | Ambient noise | 2 | 1 | Free | [Thunderstorms SFX Pack | Audio Sound FX | Unity Asset Store](https://assetstore.unity.com/packages/audio/sound-fx/thunderstorms-sfx-pack-149736) |
|  | Total |  |  | $22.59 |  |

Other useful Links and tutorials for assets that cannot be bought/found:

* [Interactive Calendar Creation Video](https://www.youtube.com/watch?v=_QmxWvN0SSM)
* [Proximity Noises Tutorial](https://www.youtube.com/watch?v=md7wCkkv_g4&t=34s)
* [Sound FX Tutorial](https://how.dev/answers/how-to-add-audio-effects-in-unity)
* [How to add images to Unity](https://stackoverflow.com/questions/37774809/add-an-image-to-object-in-unity-editor)

# List of equipment:

Hardware:

|  |  |
| --- | --- |
| Equipment: | Quantity |
| Computers | We each have one (5) |
| VR touch controllers | 2 |
| Charging cables (USB-C) | 1 |
| VR headset | 1 |
| Adapter | 1 |

Software:

|  |  |
| --- | --- |
| Design software | * Unity * Canva |
| Asset sources | * Unity assets store * YouTube (Tutorial) |

# Project risks and contingencies

|  |  |  |  |
| --- | --- | --- | --- |
| Risks | Chance | impact | Contingencies |
| Team member unable to complete their given tasks | Moderate | High | Other group members would have to pick up the slack |
| Team conflict | moderate | moderate | Talk about the conflict during the team meeting and resolve this problem as a group |
| Unable to book VR time | moderate | High | Create a video recording of how the simulation should play out |
| How to set up the VR to Unit | moderate | high | We should resolve this issue ASAP since design day is approaching |

# Prototyping and Test Plan

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test ID** | **Test objectives**  **(Why)** | **What is being figured out**  **(What)** | **Testing method**  **How** | **Attributes to observe / Record** | **Duration (when/ how long)** |
| 1 | Test Interactivity of the simulation | Can the user interact with objects | By using the Oculus and testing if interaction occurs | Response time, accuracy of interactions | 20-30 min per test and will keep enhancing the functionality until criteria is met |
| 2 | Phone Hazzard popping up on the phone | Can we timely input the hazard and date on the phone and know how long for the user to notice the hazard. | System testing and user testing | Accuracy of hazard, display timing precision and calculate time on average for user to notice the hazard | Multiple trials of users trying it |
| 3 | The sound of the Bark of the dog (sound cue) | Can the user understand that when the dog barks louder the user is in very close proximity | Audio cue test in VR, user response | User perception, reaction time, effectiveness of sound cues | Multiple trials of walking towards the dog and away to hear if there is a difference in sound cue |
| 4 | Test scene switching from year 2025 to 2030 to 2050 | If the scene can transition with all its assets intact | User testing | Time taken to transition from 2025 to 2035 | From the user walking up to interacting with the calendar and watching the animation play out. |
| 5 | Transition from finding supply kit to basement | Can the player be transported from the house to the basement with the press of the supply kit | System testing with user input | Testing time taken to transition | Several trials of user clicking on supply box prompt and being sent to basement |
| 6 | Testing interactivity of newspapers and legibility of fonts | Can the user read the newspapers comfortably | Testing at several distances and POIs | Average Reading time and distance from newspapers | Depends on the time it takes to read, which should be about 20 seconds per info slide. |

# Conclusion

Our story highlights the increasing challenges faced by individuals as they navigate daily life in a world where tornadoes have become more frequent due to climate change. To establish a believable and immersive atmosphere, we will be using assets and sounds from various sources mentioned in the bill of materials. These assets will be integrated into the environment, including household interiors, survival supplies, and realistic weather effects, to create an engaging and educational user experience. The assets will also serve to demonstrate how disaster preparedness evolves over time, with increasing supplies and shelter modifications reflecting society’s adaptation to extreme weather events.

When considering risks, feasibility in terms of complexity and time constraints poses a major challenge, which we will address through group meetings to reassess and refine our approach as needed. Additionally, we have developed a structured prototyping test plan that includes six key test criteria to evaluate the effectiveness of interactions, sound cues, scene transitions, and overall user experience. This systematic approach will help us identify areas for improvement and ensure that the final prototype meets our design objectives.

# References

*Unity Asset Store*. The Best Assets for Game Making. (n.d.). <https://assetstore.unity.com/>