GNG1103

Design Project User and Product Manual

PANDORA’S BOX

Submitted by:

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List of Acronyms and Glossary

Table 1. Acronyms

|  |  |
| --- | --- |
| **Acronym** | **Definition** |
| AWS | Autonomous weapon system |
| VR | Virtual Reality |

Table 2. Glossary

|  |  |  |
| --- | --- | --- |
| **Term** | **Acronym** | **Definition** |
| Unity | (None) | Program used to create games. |
| Unity Asset Store | (None) | Online store for assets to be imported into Unity projects. |

# Introduction

Autonomous weapon systems (AWS) are weapons that can independently search and initiate combat without any human intervention. With the rise of AI in recent times, the development of these weapons is getting faster.

Mines Action Canada wants a video in a VR environment that will convince politicians to ban autonomous weapons, by showing how non-combatants will be affected by these weapons. The video should be 1 minute long and ideally be showing the ethical standpoints of the conflict.

Pandora’s Box was made by Team 8 to convince these politicians to ban AWSs.

This User and Product Manual (UPM) provides the information necessary for users to effectively use Pandora’s Box and for prototype documentation.

# Overview

Mines Action Canada wants a video in a VR environment that will convince politicians to ban autonomous weapons, by showing how non-combatants will be affected by these weapons. The video should be 1 minute long and ideally be showing the ethical standpoints of the conflict.

Our product, Pandora’s Box, is a VR experience that is driven by a unique story. Our focus was to primarily show how not only civilians, but a person with disability could be affected by AWSs. Additionally, we added elements of moral accountability, including a character who once worked for the development of these AWSs and is now facing the consequences.

A video game of a train station

Description automatically generated

A video game screen with a person sitting on a bench

Description automatically generated

A person pushing a wheelchair

Description automatically generated

A train tracks in a building

Description automatically generated

A neon sign with white and orange letters

Description automatically generated

Key features:

* Story driven experience.
* Exploration of conflict from perspective of person with disabilities.
* Themes of moral accountability and ethical standpoints of AWSs.
* Character animations.
* Minimal input required.

## Cautions & Warnings

Do not use a VR headset when you are suffering from lack of sufficient sleep or under the influence of alcohol or drugs.

A VR headset should be safely used away from any animals, sharp objects, tripping hazards, stairs, open doors, wet surfaces, other items you may bump into or trip over during use.

If you experience motion sickness related symptoms, stop use and do not use the VR headset.

People sensitive to vertigo or motion sickness are discouraged from using the VR headset.

# Getting started

1. Download the zip folder “Pandora” from MakerRepo.
2. Extract the folder.

A screenshot of a computer

Description automatically generated

1. Open the folder and run the .exe application.
2. Once the game is loaded, use the VR controllers to trigger the start button to start the VR experience.

A video game screen with a circular sign

Description automatically generated

## Configuration Considerations

Connect the VR headset to the computer before running the .exe application. When connecting, make sure the headset is setup, and run any external software that is needed, so that the headset is ready to be used.

Make sure the devices have enough battery.

## Exiting the System

To exit the VR environment, press Alt+F4 to quit the game. To run the game again, start from step 3 of section 3.1.

# Using the System

## Movement

To move around in the VR environment, use the left controller joystick to walk. To pan the view side to side, use the right controller joystick to turn.

## Waypoints

To activate events during the VR environment, the player will be prompted to walk towards a waypoint.

A video game screen capture

Description automatically generated

Use the movement function to walk inside of the white ring to continue the VR experience.

# Troubleshooting & Support

## Error Messages or Behaviors

If the VR experience is frozen, wait for it to load. If it is taking too long, the computer hardware may not be suitable for running a VR game.

If the VR experience is choppy, the computer hardware may not be suitable for running a VR game.

## Support

For support, email [ejung072@uottawa.ca](mailto:ejung072@uottawa.ca) for help regarding the use of the VR environment.

# Product Documentation

## Environment

### BOM (Bill of Materials)

|  |  |  |
| --- | --- | --- |
| Asset | Link | Price |
| Low Poly - Apocalypse Metro Station | https://assetstore.unity.com/packages/3d/environments/low-poly-apocalypse-metro-station-123203 | $8.99 |
| Low Poly Fire | https://assetstore.unity.com/packages/vfx/particles/fire-explosions/low-poly-fire-244190 | Free |
| Free Stylized Skybox | https://assetstore.unity.com/packages/2d/textures-materials/sky/free-stylized-skybox-212257 | Free |
|  |  |  |

### Equipment list

1. Unity Asset Store

### Instructions

1. Buy the asset “Low Poly – Apocalypse Metro Station” from Unity Asset Store.
2. Buy the asset “Low Poly Fire” from Unity Asset Store.
3. Buy the asset “Free Stylized Skybox” from Unity Asset Store.
4. On Unity, click Window -> Package mangager.

A screenshot of a computer

Description automatically generated

1. For each asset, download the asset from the package manager and import into the project.

A black rectangular object with a black border

Description automatically generated

A black rectangular object with white text

Description automatically generated

1. Place all assets into scene.

## Movement

### BOM (Bill of Materials)

|  |  |  |
| --- | --- | --- |
| Asset | Link | Price |
| XR Interaction Toolkit | (Inside Package Manager) | Free |

### Equipment list

Unity Package Manager

### Instructions

1. Open Package Manager.
2. Download “XR Interaction Toolkit” and import it.

A screenshot of a computer

Description automatically generated

1. Search for “XR Interaction Setup” in project assets.

A black rectangular object with a black border

Description automatically generated

1. Drag and put it into the scene.

## Animations

### BOM (Bill of Materials)

|  |  |  |
| --- | --- | --- |
| Asset | Link | Price |
| FREE Low Poly Human – RPG Character | https://assetstore.unity.com/packages/3d/characters/humanoids/fantasy/free-low-poly-human-rpg-character-219979 | Free |
| Mixamo - Waking | https://www.mixamo.com/#/?page=1&query=waking | Free |
| Mixamo – Sad Idle | <https://www.mixamo.com/#/?page=1&query=sad+idle> | Free |
| Mixamo – Nervous | https://www.mixamo.com/#/?page=1&query=nervous | Free |
| Mixamo – Right turn | https://www.mixamo.com/#/?page=1&query=right+turn | Free |
| Mixamo – Start walk | https://www.mixamo.com/#/?page=1&query=start+walk | Free |
| Mixamo – Walking | https://www.mixamo.com/#/?page=1&query=walking | Free |
| Mixamo – Stop walk | https://www.mixamo.com/#/?page=1&query=stop+walking | Free |
| Mixamo - Crouch | https://www.mixamo.com/#/?page=1&query=crouch | Free |
| Mixamo – Crouch to stand | https://www.mixamo.com/#/?page=1&query=crouch+to+stand | Free |
| Mixamo - Running | https://www.mixamo.com/#/?page=1&query=running | Free |

### Equipment List

Unity Asset Store, Unity Package Manager

### Instructions

1. Download animations as .fbx files and import into Unity project assets.

A screenshot of a computer

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1. Create a Timeline in unity.

A screen shot of a computer

Description automatically generated

1. Import the animation files into timeline and organize to create an animated character.

A screenshot of a video editing program

Description automatically generated

## Testing & Validation

1. Testing was done to ensure stability of the animated character (offset position + smooth transitions between animations).
2. Testing was done to confirm that the subtitles and animations followed the overall story line of storyboard (separate file – deliverable e (Final).pdf).

# Conclusions and Recommendations for Future Work

To summarize, we, as Team 8, learned a lot about teamwork and designing thanks to this project. Firstly, it is important to organize everything within your team, so everyone knows what to do. Achieving this by assigning a leader is a good choice. Second, its okay to give up on some ideas. We weren’t too attached to one specific plan, so we were very flexible with our ideas, which allowed us to explore the side of persons with disabilities more freely.

If we had more time, we would ultimately polish up our work by cleaning up the animations and the timelines. Also, with more time, we could’ve had more time to find more realistic assets instead of low poly style assets. What held us back was improper team management. A lot of us were not doing work simply because the work was not properly distributed among the team. Due to this, we had to give up work on our final scene, where we wanted to implement another cinematic cutscene, but we had to settle for a simple animation.

APPENDICES

# APPENDIX I: Design Files

Table 3. Referenced Documents

|  |  |  |
| --- | --- | --- |
| **Document Name** | **Document Location and/or URL** | **Issuance Date** |
| Pandora.zip | https://makerepo.com/RonanThomas/2005.gng1103-group-8-pandoras-box- | 4/10/2024 |
| deliverable e (Final).pdf | https://makerepo.com/RonanThomas/2005.gng1103-group-8-pandoras-box- | 4/10/2024 |