

Project Deliverable C – Group 12
Design Criteria and Target Specifications
GNG 1103 - Engineering Design
Faculty of Engineering – University of Ottawa
Tuesday January 30, 2024

Ella Siegner

Zahra Atrakchi

Zhaojie Bao

Fred Ma

Mohammad Abu Khater

Introduction:

At this stage in our design process, we have had the opportunity to speak with the team from Mines Action Canada. They introduced their needs about the task at hand. We were informed that we were creating a non-distinguishable place for important world leaders and decision makers to see the aftereffects of autonomous weapons. We are entrusted with the crucial responsibility of creating a virtual reality experience aimed at promoting a prohibition on these weapons. Since we have already heard our clients' needs and have been able to come up with a problem statement, we will now dig into the most important aspects of the design such as constraints, similar products, and target specifications.

Prioritized Design Criteria:

1 – highest priority

4 – lowest priority

Priority Number	Client Need	Design Criteria	Metric
1	Create a VR scenario where policy on weapons can be restricted and raised awareness upon for universal decision makers.	Showing the consequences of autonomous weapons on the virtual world.	Halfway through designing it let outsider watch video and take their input on effectiveness.
2	Create a city or area unidentifiable so that everyone can resonate with where it could be happening.	A very basic layout as if it doesn't feel like any specific location.	Show layout to people outside of group and see if they familiarize the location.
3	Tell a story about how people would react and feel during the impact	Evoking emotions of viewers by showing them the danger and	Get client feedback to see if the conditions are suitable.

	of autonomous weapons.	horrible conditions from autonomous weapons.	
4	60 seconds long	Close or approximately a minute long.	Keep evaluating time build up as working on project.

Technical Benchmarking:

1. Fallout 4 VR:

Fallout 4, the legendary post-apocalyptic adventure from Bethesda Game Studios and winner of more than 200 ‘Best Of’ awards, including the DICE and BAFTA Game of the Year, finally comes in its entirety to VR. Fallout 4 VR includes the complete core game with all-new combat, crafting, and building systems fully reimagined for virtual reality. The freedom of exploring the wasteland comes alive like never before.

As the sole survivor of Vault 111, you enter a world destroyed by nuclear war. Every second is a fight for survival, and every choice is yours. Only you can rebuild and determine the fate of the Wasteland. Welcome home

System requirements:

Minimum:

- OS *: Windows 7/8.1/10 (64-bit versions)
- Processor: CPU: Intel Core i5-4590 or AMD FX 8350 or better
- Memory: 8 GB RAM
- Graphics: Nvidia GeForce GTX 1070 / AMD RX Vega 56 or better
- Storage: 30 GB available space
- VR Support: SteamVR. Standing or Room Scale

RECOMMENDED:

- OS *: Windows 7/8.1/10 (64-bit versions)
- Processor: CPU: Intel Core i7-6700K or AMD Ryzen 5 1600X
- Memory: 16 GB RAM
- Graphics: Nvidia GeForce GTX 1080 / AMD RX Vega 64
- Storage: 30 GB available space

User reviews:

Positive	Negative
----------	----------

Good experience in survival environment	Cost: expensive (\$79.99+tax)
Support 10 languages	Too many bugs
Learn a lot of skills to survive	

2. The Forest

The Forest is a survival horror video game developed and published by Endnight Games. The game takes place on a remote heavily forested peninsula, where the player character Eric LeBlanc must fight off cannibalistic monsters, while searching for his son Timmy after a plane crash. The game features nonlinear gameplay in an open world environment played from a first-person perspective, with no set missions or quests, empowering the player to make their own decisions for survival. Following a four-year long early access beta phase releasing in 2014, the finished game was released for Windows in April 2018, and for the PlayStation 4 in November 2018. The game was a commercial success, selling over five million copies by the end of 2018. A sequel game, Sons of the Forest, was released in Early Access for Windows on February 23, 2023.

System requirements:

Minium:

- OS *: Windows 7
- Processor: Intel Dual-Core 2.4 GHz
- Memory: 4 GB RAM
- Graphics: NVIDIA GeForce 8800GT
- DirectX: Version 9.0
- Storage: 5 GB available space
- Sound Card: DirectX®-compatible
- VR Support: SteamVR or Oculus PC

RECOMMENDED:

- OS *: Windows 7
- Processor: Quad Core Processor
- Memory: 4 GB RAM
- Graphics: NVIDIA GeForce GTX 560
- DirectX: Version 9.0
- Storage: 5 GB available space
- Sound Card: DirectX®-compatible

Positive	Negative
Education for building base and survive	it is scary
the movement is smooth	getting a high reprojection
Support 16 languages	

Target Specifications:

Design Criteria	Relation	Constraints	Units	Verification Method
Functional Requirements				
1) Visualization (360 visuals of the city and what it looks like when the user walks around)	=	No disturbing images. No disturbing brightness or colour scheme.	N/A	Testing
2) Interaction (Being able to walk through the city smoothly)	=	No excessive movement. Includes warning.	Interactive elements	Testing
3) Video Length (Video is a length of 60 seconds)	>	Doesn't surpass time limit.	Seconds	Demonstrations
Non-Functional Requirements				
1) Information (Storyline of what is happening and why certain things are they way they are)	=	Is clear and is able to evoke emotion	N/A	Demonstrations
2) Audio/Music/Sound effects	=	Is able to capture the feelings surrounding the city	N/A	Testing
3) Perspective	=	360, view is all around	Degrees	Testing/ Demonstration

Reflection:

After meeting with Mines Action Canada, our VR project changed; they helped us see others' ideas in a new light, leading to a better understanding. We are creating a VR experience that could speak to anyone, anytime, and anywhere, which means we had to rethink our design to make it more general, simpler, and still impactful. We, as a team, realized the importance of focusing on showing the changes that would occur in life if these weapons were part of it, making it easier for people to understand. We learned a lot by looking at existing VR games, such as Fallout 4 and The Forest. From these games, we learned what is needed to create a virtual world. We understand how to ensure everything from the game's storyline to the technical details is just right, always keeping the audience in mind. In the end, we took these lessons and carefully chose our project's features.

Conclusion:

Our VR design process, guided by Mines Action Canada's needs, led to a clear problem statement and prioritized design criteria. Technical benchmarking of games like Fallout 4 and The Forest provided valuable insights. We established target specifications for both functional and non-functional requirements. Reflection on our collaboration emphasized the need for a universally relatable VR experience. We simplified our design to convey the consequences of autonomous weapons effectively. By incorporating lessons from existing VR games, we aim to deliver a compelling experience aligned with our client's mission.

Resources:

- [https://en.wikipedia.org/wiki/The_Forest_\(video_game\)#:~:text=The%20Forest%20is%20a%20survival,Timmy%20after%20a%20plane%20crash.](https://en.wikipedia.org/wiki/The_Forest_(video_game)#:~:text=The%20Forest%20is%20a%20survival,Timmy%20after%20a%20plane%20crash.)
- https://store.steampowered.com/app/611660/Fallout_4_VR/