Project Deliverable C - Group 5

Define: Design Criteria and Target Specifications

GNG1103-C01

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Noor Trigui 300350022
Ava Butts 300350306
Luca Chayer 300375838
Dev de Haan-Sharma 300339994

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Introduction

The recent development of autonomous killer robots has sparked ethical and humanitarian concerns. Our client, Mines Action Canada, is looking for a virtual reality experience that can be used to shed light on these concerns and advocate for a preemptive ban on these machines. This report focuses on the design criteria, technical benchmarking, and target specifications based on the three main objectives for this project: design specifications (software and build environment), content specifications (topics addressed in the VR), and overall emotional impact. Combined, these objectives are the foundation for designing a VR experience that resonates with policy makers and inspires advocacy and engagement in the wider population.

Prioritized Design Criteria

Design Specifications can be mainly numerical/quantitative such as time metrics or amount of objects in the VR. However, Content Specifications and Overall Impact require a more qualitative approach such as gathering feedback from a diverse set of users (students, professors, and policy makers if possible) and the client.

Priority Number	Client Need	Design Criteria	Metric	Importance (scale of 1-5)
1	Create a VR curated experience that convinces policy makers	Include relevant and current policy issues / interactive elements	Create/design two interactive elements based around current global, political dynamics	5
2	Convey message of concern but also hope	VR experience should be relatable to a wide variety of users, each with different perspectives	Post experience "interviews" for clients and lead users to track which emotions were invoked throughout the VR experience	5
3	Addresses specific concerns • dehumanization • inability to abide by humanitarian law • technological failures • hacking • bias and morality • arms race • diversion of resources	Choose only 1-2 concerns to streamline VR focus	User surveys and client feedback to gauge how well participants understood chosen concerns.	4

4	Simplicity, VR should show how civilian lives have changed because of robots	Implement locomotion so that users can move around a scene	Ensure that 90-100% of users use the locomotion feature to move around the scene	4
5	30-60 seconds	Aim for maximum of 30 secs (see technical benchmarking)	Time ≤ 30 seconds	4
6	Final product is captivating to a variety of audiences	Use interactive elements to keep the user engaged	Interactive elements should be realistic; Include human faces and background music to make the experience more relatable	3
7	Final product runs smooth enough to be convincing	Specific technical criteria to measure VR performance	Takes under 5 seconds to load VR; 1080p resolution	2

Technical Benchmarking

We have decided to benchmark TV advertisements as they have a similar format and purpose to our final VR product. Several key findings emerged from this technical benchmarking:

Design Criteria	Technical Benchmarking
Short and Captivating	According to Facebook video ad data: ● ideal video advertisement length is 15 to 30 seconds ● allows for a good balance between ad conversion rate and viewer retention
Final product runs smooth enough to be convincing	1080p is the standard resolution for video advertisements and online media; results in high quality demonstration
Final product is captivating to a variety of audiences	According to a study from the University of Salento: ads with faces receive much more attention than faceless ads
	According to Indiana University–Purdue University Indianapolis: ● background music can help make ads more memorable and engaging ● a key component of good background song choice is "music message congruency", a song whose vibe aligns with the intended message of the video

In our previous deliverable we found that political ads are usually unable to change public perception of an issue or candidate. After conducting more research we have found that this remains true but might not matter for our issue. According to Dr. Thomas Schubert from the University of Oslo a person's political ideology is the biggest factor in why they would support a candidate or cause after seeing an ad rather than the persuasiveness of the ad. This is not an issue for us as according to Human Rights Watch 62% of survey respondents are not in favor of killer robots. The bottom line is our product does not necessarily need to be convincing but instead needs to be motivating.

Target Specifications

	Design Criteria	Relation	Value	Units	Verification Method
	FUNCTIONAL REQUIREMENTS				
1	Include relevant and current policy issues / interactive elements	≈	two	Interactive elements	Inspection
2	Implement locomotion so that users can move around a scene	=	yes	N/A	Testing
3	Aim for maximum of 30 secs	<	30	seconds	Demonstration
	CONSTRAINTS				
1	Choose only 1-2 concerns to streamline VR focus	≈	two	Killer Robot Concerns	Demonstration
2	Specific technical criteria to measure VR performance 1. Minimal Loading Time 2. High-Quality Resolution	1: < 2: =	1: five 2: 1080p	1: seconds 2: resolution	Analysis
	NON-FUNCTIONAL REQUIREMENTS				
1	VR experience should be relatable to a wide variety of users, each with different perspectives	=	yes	N/A	Testing
2	Use interactive elements to keep the user engaged 1. Include human faces 2. Use background music	=	yes	N/A	Testing

Reflection

After the first client meeting we were able to determine what the most important and prominent specifications were for our client. It allowed our broad perspectives and ideas to be separated into different priority levels as well as be categorized by certain needs. We knew before the meeting we were to create an experience in virtual reality involving killer robots. However, after project specific questions were answered by the client, it was determined the project had to be a VR curated experience that convinced policy makers that there were issues with killer robots and that they can severely affect a society and the way civilians live. The biggest changes from Deliverable B to Deliverable C involve our metrics. In Deliverable B our ideas are very broad and open ended however, after the client meeting we were able to narrow down our ideas and have project specific requirements. Our benchmarking has also significantly improved from Deliverable B to Deliverable C. We were able to find specific metrics that related to our project requirements instead of simply looking at what makes a video engaging for a viewer. Through research it was determined that certain time lengths and engaging music attracts viewers which we could use in our project to enhance our video and engage our audience.

Conclusion

Our design of a VR experience for Mines Action Canada will highlight ethical concerns about autonomous killer robots by taking into account client needs, target specifications, and technical benchmarking. Defining design criteria quantified some of the client needs whilst highlighting the importance of user testing and feedback for some of the more general components. Technical and user benchmarking guided some of the decisions for possible metrics, which would help identify a successful solution, including the ideal length and resolution as well as the inclusion of human faces and background music.

[Wrike Project Link](#)

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