Project Deliverable C: Design Criteria and Benchmarking

University of Ottawa

GNG 1103: Engineering Design

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1.0 Introduction

In this deliverable we look into the second step in the design process which is define. Below we start by exploring the needs and design criteria again. We applied the criteria to the needs in which it applied to, such as a short and concise need must be a certain length. Next we included specifications and constraints to our experience. Things like the time must be under 60 seconds but still show things like a barren and dehumanized but still recognisable environment. Under that we looked into benchmarking, which was the newest and main part of this deliverable. We looked at 2 different VR environments that already existed and compared them. We compared the specifications and the importance of them in the table shown below. We included a little write up about each of the environments, which included the type of environment and the context of the simulation. In section 4.0, we listed all the specifications needed for the simulation. Things such as video length, sounds, and what should be included in the picture in order to get a better idea of what our project should look like. We ended with a reflection on the client meeting and concussion.

2.0 Design Criteria and Design Specifications

Design Criteria

#	Need	Design Criteria	Unit
1	Experience should be simple and straightforward	Complexity of Experience	N/A
2	Experience should show dehumanization caused by robots.	Depiction of Environment	N/A
3	Experience should have users feel concerned but also a sense of hope	Strength of Message Delivery	N/A
4	The experience should be short and concise	Length of experience	Seconds
5	The environment should be recognizable and realistic	Similarity to Real World	N/A
6	The experience shows just the environment without people or robots	Amount of NPCs	N/A
7	The experience should run smoothly	Framerate	Frames per second

Design Specifications

#	Design Specification	Relation	Value	Units	Verification
	Functional				

	Non-Functional				
1	Simple and straightforward	=	yes	N/A	Test
2	Show dehumanization caused	=	yes	N/A	Test
3	Invoke a sense of concern and hope	=	yes	N/A	Test
5	Recognizable and realistic environment	=	yes	N/A	Test
6	Show barren environment	=	yes	N/A	Test
	Constraints				
4	Length	<	60	Seconds	Analysis
7	Frames per second	>	24	FPS	Analysis

3.0 Benchmarking

Specification #	Importance (Weight)	Benchmark 1	Benchmark 2
Company		[Encore VCS](#)	The right choice https://apps.apple.com/us/app/the-right-choice/id1388332027
Simple and straightforward	5	4	5
Show dehumanization caused	5	2	5
Invoke a sense of concern and hope	5	2	3
Length	4	3	2
Recognizable and realistic environment	3	5	4
Show barren environment	3	5	2
The experience should run smoothly	2	4	4
Total		90	93

Benchmark 1:

The Encore "Virtual Cockpit Simulation" (VCS) is a realistic 2D virtual cockpit environment which can provide highly-detailed training sessions. It can create real time flight performances including interactive buttons and screens and emergency procedures such as identifying targets and air-to-air / air-to-ground combat training. In addition, it represents the environment of the aircraft parts by the use of photo-realistic images making it as realistic as possible. Although the VCS is a very realistic and helpful simulation, the "Out the Window View" feature will be the most similar to this project's specific design specifications as it is more simple and straightforward than the VCS. As interactions are not required in this product and the design should focus more on the environment's atmosphere rather than what is in the environment (i.e. the robots, other people), Encore's Out the Window View demonstrates the simplicity of the exterior environment while also capturing the realism of a city. This is something this product design should include as simplicity was very heavily encouraged in the previous client meeting.

Benchmark 2: The Right Choice https://apps.apple.com/us/app/the-right-choice/id1388332027

        "The Right Choice" is a VR experience designed for the IPhone. It places the user into the room with a Syrian family which is getting targeted by the army. It is a 2 minute experience and it requires user interaction, and it uses real experiences from people in the Syrian civil war to create an authentic environment. It shows the dangers of war to try and show people why it is not good. In our design we should try and create the same type of feeling you get when playing this VR experience but instead of it being about the Syrian civil war it shows the dangers of killer robots. It is also very simple and requires very little interaction, which was encouraged by the clients.

4.0 Reflection on Client Meeting

        The client meeting was very insightful in letting us know what to expect our VR environment to look like. We learned all the specifications that they were looking for in the simulation, the emotions that they were looking to convey, and some other information that could be used to elevate our project. One of the major takeaways from the meeting was the idea of simplicity. The speakers were very specific about keeping our designs simple and not to overcomplicate things. They spoke on how the simulation should invoke a feeling of concern but also hope. All this information that was found in the video call with the client was really helpful and will allow us to create a much better environment. Meeting with the client and getting raw data will be our biggest tool and source of information for this project.

5.0 Conclusion

        By using our design criteria, design specifications as well as the information collected via technical benchmarking, we have created a better idea of what our final product must include. Now that our needs have been transformed into design criteria such as complexity of experience, depiction of environment, framerate, etc, the creation of the final product will be much more streamlined, as we will have specific criteria to follow in order to ensure that the needs are being met. The other VR experiences that we have benchmarked will also be very helpful in the development of our experience. The Virtual Cockpit Simulation is a very good example of how an experience can be fulfilling with essentially just an environment. Although we will not be able to create an environment as realistic as the VCS, it will still be useful to have an example of an excellent VR environment. The format of "The Right Choice" is also an excellent example of a powerful VR experience. While we should not depict explicit violence like in The Right Choice, it still shows how the family had to adjust to the Syrian war. They had dedicated hiding spots for when soldiers would enter their homes, which is one example of an adaptation someone may make to their life to adjust to a threat (killer robots). With a combination of the powerful emotions of The Right Choice, the excellent environment design of the Encore Virtual Cockpit Simulation, as well as our determined design criteria, we can create a more clear path of what our final product should look like.

Wrike links:

[Wrike Gantt Snapshot](#)

[Wrike Calendar](#)