Project Deliverable C: Design Criteria and Target Specifications

GNG 1103 – Engineering Design

Faculty of Engineering – University of Ottawa

Objective:

Define a list of prioritized design criteria, do technical benchmarking and determine target specifications which can be used in the development of your final solution.

Instructions:

- ☐ Based on the team's list of interpreted needs, teams will define a list of prioritized design criteria, including functional and non-functional requirements, as well as constraints (and metrics, where appropriate).
- ☐ Teams will perform technical benchmarking (i.e. researching existing products that already satisfy one or many of the interpreted needs) and update user benchmarking information (user perceptions of similar products).
- ☐ Teams will determine target specifications (numerical values or a range of values which represent reasonable product attributes) such as minimum or maximum weight, dimensions, amount of time needed for a user to become familiar with the product (ease of use), number of items on an interface, etc. This will aid in evaluating potential solution ideas and provide measurable design goals which can be fulfilled by the final solution.
    - ☐ Remember: Target specifications are just design specifications with ideal or marginal values and metrics are measurable design criteria, as explained in the lectures. The same list of metrics must be used in each step of this deliverable (prioritized list, benchmarking and target specifications).
- ☐ Reflect on how the client meeting impacted the development of your design criteria and specifications, when deciding on the relative importance of your criteria and explicitly state any updated needs that have changed from deliverable B.

Ensure that each identified need has at least ***one*** design criterion which can be used to measure the ability of different solutions to satisfy that specific need. Note that one design criterion can be used for multiple needs. A comprehensive set of design criteria must be generated to avoid missing key or critical design parameters. The tables developed in the lecture can be used as a guide for doing this. This should be a maximum of 5 pages.

Task Plan Update:

- ☐ Update your Wrike task boards to include any changes in estimated task duration, missing tasks, task responsibilities, milestones, or dependencies, based on your better understanding of the project or based on feedback that you have received from your PM/TA.

- ☐ Include more detailed sub-tasks for the tasks that will need to be completed over the next few weeks.
    - ☐ *Important note*: It should be possible for ONE person to complete each identified task or sub-task in the allotted time. The allotted time should also be *reasonable*, based on the task owner's availability. Everyone should be doing their fair share of the work.
- ☐ Verify and update the task start dates and end dates for each task, based on your project progress.
- ☐ Ensure that you have taken into account each team member's *actual* availability over the next two weeks, as well as significant events, such as particularly high course loads, exams or travel, which might be going to limit actual project work progress.
- ☐ For *each* person in your group, it should be possible to determine:
    - ☐ What was completed last week (i.e. "**Completed**" tasks),
    - ☐ What will be done next (i.e. "**In Progress**" tasks)
    - ☐ If tasks are going to be put "**On Hold**" or "**Cancelled**" altogether
- ☐ Any and all group "Issues" should be discussed and dealt with, ideally with the assistance of your Project Manager (PM). This should happen during **each** of your lab sessions or can happen earlier, using your defined communication methods. As already explained, it is essential to keep your PM/TA "*in the loop*" throughout the term. It is usually *not* a good idea to ignore conflicts between team members. Instead, you should deal with them in a constructive way.

Makerrepo example 1

Makerrepo example 2

1. Introduction

This report will cover the design criteria, target specifications, and design constraints for the product. The design criteria and target specifications listed below are derived from the user needs from Deliverable B after the client meeting.

2. User needs → Design Criteria

User Needs	**Priority**	**Design Criteria (based on need)**	**Relation (>, <, =)**	**Metrics (value)**	**Target Specifications**
User Needs	Priority (of design criteria)	Functional requirements	Relation (>, <, =)	Metrics (value)	Target Specifications
1. Presentation is memorable to the user and provokes deep concern, with a desire to avoid such a reality.	5	Unsettled, concerned emotions Emotionally-charged environment	=	Yes	
2. Presentation is interactive.	4	Interactable environment accessibility + ease of use	=	Yes	2-5 Movement choices (can look right to left, up or down etc)
3. Presentation is in a landscape that is familiar and relatable to the users.	4	Easily recognisable geography appropriate region/time, taking into account diversity of users	=	Yes	
4. Project presents a scenario that is fictional, yet resemblant of	5	Environment uses optimal time to resonate with wide variety users	=	Yes	

a realistically possible future		uses optimal region to resonate with wide variety users (As client didn't specify in interview of where or to whom they would be presenting this to, so aim to keep it general) includes various other elements rooted in reality to resonate with users			
5. Presentation is simple and not reliant on extensive graphic imagery, characters or plotlines.	5	Follows client's aversion of complexity from interview) Minimal assets (limit of NPC's) Reliance on location changes/atmosphere	=	Yes	- MAX 2-5 assets - Max 3-5 locations
6. Presentation is easy to understand and follow for the user.	4	No language barrier or intensive storyline	=	Yes	-
User Needs	Priority	Non functional Requirements		Metrics (value)	Target Specifications
7. Presentation should be around one minute.	3.5 (Increased priority by .5 as client specified in interview clear maximum limit of a minute)	Comfortable yet effective time duration for the user	<	Seconds	60 seconds MAX in length
User Needs	Priority	Constraints		Metrics (value)	Target Specifications

8. Presentation accounts for users with disabilities such as motion sickness, epilepsy, physical immobility.	3	Doesn't exceed flashing threshold to cause a seizure	<	Hz meters	- range 3-30 Hz, MAX 30 - Stay within 1m radius - Closed Captioning
		No extensive movement required (can remain seated, no reliance on physical strength)			
		Bilinguality			
		includes seizure/motion sickness warning			
9. Environment is adequately immersive while maintaining a reasonable cost.	3	Limited number of assets	<	$	- Max 2-5 assets
		Doesn't require any further equipment			
		Reasonable scale for project; does not go overboard			

3. Technical Benchmarking

Comparison to other VR simulators that were successful based on our design criteria (like Epic roller coasters etc.) Create a table that judges VR simulators based on our criteria such as cost, interactivity, incorporation of disabilities, memorability, and the ability to provoke emotion. Contrast our project to similar weaponry that were victorious in acquiring the pre-emptive ban (ie blinding laser campaign, landmines). Weigh media campaigns, journals, articles (such as https://www.hrw.org/news/2018/08/22/why-we-need-pre-emptive-ban-killer-robots)and their reasoning/beliefs for ban on the use of autonomous weapons.

4. Conclusion

List of needs were compiled based upon clients requirements and desires. Next, design criteria was amassed subject to client needs and the problem statement to aid in pinpointing and measuring progress to a successful design.