Basic Technical Document

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Abstract

This is a basic technical document regarding a list of design criteria, technical benchmarking and determination of targets that meet the objectives of the client. The subject is introduced, and the following tables are outlined in the following briefing. The products design criteria and technical benchmarking and specific targets are examined through tables. The first table illustrates a list of the priorities of translated needs from the client's initial statement needs. The second table shows a technical benchmarking which showcase the functional, non-functional and constraints. The third table illustrates the target specifications with the ideal values and measured metrics for the design criteria. Lastly, the report concludes by summarizing project objectives in terms of client's needs through

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1. Introduction:

In the world of rapidly transforming technology today, designing innovative, user-centred solutions is essential to addressing modern problems. This project focuses on key design criteria definition, technical benchmarking, and target specification settings that will enable the development of an effective and functional final solution. Our team prioritizes functional and non-functional requirements, analyzes existing market solutions, and sets measurable performance metrics to ensure that our design meets the needs of the users and the standards of the industry. The client's input is critical in refining these criteria to ensure that our solution meets the expectations and addresses any constraints or limitations identified throughout the design process.

Table 1: Design Criteria

Number	Need	Design Criteria
1	A virtual reality simulation of good quality that flows well.	Ensuring that the simulation program runs smoothly to meet the criteria.
2	A length of time for a virtuality reality simulation of 3 minutes.	Time is measured in minutes for the simulation.
3	Preparing a virtual simulation at a lower cost.	Cost is measured in Canadian Dollars ($).
4	Gathering technical software to run simulation.	Technical and software protocols.
5	Gathering physical equipment that are necessary for the simulation to run.	Inventory and amount of equipment used in the simulation process.
6	Types of copyrighted music and ensuring sound effects are not restricted.	Non-copyrighted sound effects and music.
7	Allowing for creative insights in the simulation.	A simulation that is apart from others and unique in comparison.

Table 2: Technical Benchmarking

Specifications	Apollo 11	Arizona Sunshine	War thunder
Sound Effects	Constains real Nasa Audios, Engine and spatial sounds, inspirational music	Contains zombie audios, gunfire and combat sounds and jumpscare sounds as well as sound triggers	Constains vehicle sounds, explosion and impact sounds, aircraft sounds
Graphics	Requires GTX 970 or greater	Requires GTX 970/AMD or greater	Requires GTX 660 or greater on windows
User Engagement	User has the choice to use the game elements or watch the storyline on its own.	Users are able to maneuver in the game as they desire and have real-life weapon handling. Includes Immersive survival experience	Users can engage in combat mission and includes real historical settings and battle fields
Length of Time	Minimum one hour	Minimum six hours	One match takes minimum ten minutes
Costs	11.49$ CAD	9.08$ CAD	Free

Based on the information found in the technical benchmarking, we found some beneficial features for our simulation. These products included sound effects that related well with the theme of the simulation and its contexts. In our simulation we would like to add sound effects that make sense with the natural disaster chosen but also avoid creating unnecessary fear. To add, these products used sound effects to effectively project what they want the user to feel while in the experience, which is what we will try to achieve. Furthermore, the users would need to have some degree of freedom to make the storyline interactive . For example, in Arizona Sunshine the users can explore different locations without restraints. For our experiment, the degree of freedom would evidently be restricted to the length of the simulation. But in order to make it more interactive it would be helpful to let the users immerse themselves in the storyline by being able to see and engage in the virtual environment.

Table 3: Target Specifications

Number #	Design Specification	Relation (=, < or >)	Value	Units	Verification Method
Functional Requirements					
1	Equipment Used	<	1	#	Estimation
2	Length of time of Simulation	<	3 min	Minutes	Given
3	Virtual Reality Software	=	Yes	Not applicable	Testing
Non-Functional Requirements					
4	Experience of User	=	5	Scale 1-5	Analyzation
5	Originality of Simulation	=	5	Scale 1-5	Analyzation
Constraints					
6	Financial Constraints	<	100	$ CAN	Given
7	Length of time to complete simulation	<	March 27, 2025	Days	Given
8	Equipment Number to Use	=	3	#	Observation

2. Reflections on Client Meeting:

During the client meeting, there were three points made by Professors David Bruce and Aude Nguyen that impacted the development of our design criteria and specifications for our climate change simulation: avoiding sensationalism, the simulation needing to be interactive, and tailoring the experience for a target audience. Firstly, a detail that was heavily discussed during the meeting was to avoid sensationalism and dramatic effects in our simulations and that the consequence of climate change experienced in the project should be based in reality. Prior to this meeting, a leading idea for our project was a virtual reality experience of severe flooding in Ottawa; the thought behind it was to simulate what oceanfront communities would experience due to rising sea levels to garner empathy from participants. This idea was discarded after the meeting due to the unrealistic nature of downtown Ottawa, a city 70 meters above sea level, experiencing large-scale flooding from the ocean. A second point brought up during the client meeting that caused a shift in the relative importance of our criteria was that the simulation needed to be interactive. This new matter of concern in the creation process widened the scope of our project, and thus former priorities, such as including high amounts of detail in the simulation and making it feel like a film the participant was watching, were now less important in lieu of the project featuring interactive elements such as checkpoints and objectives. The last point brought up during the client meeting, which impacted the development of our design criteria, was that the simulation is meant to cater to a specific demographic. Before this, we were considering ideas that could be applied to the largest number of people in our area, but after we received the information that this project was meant to be used by a smaller, more specific group of people, our group is now prioritizing making a more realistic, personalized experience that will foster empathy from the participants who interact with it. These were the points discussed during the client meeting that impacted the development of our design criteria and specifications for our climate change.

3. Conclusions and Recommendations:

Well-defined design criteria and target specifications are paramount in an engineering design. By integrating user feedback, technical benchmarking, and quantitative performance metrics, there is a structure provided to test and evaluate a potential solution effectively based on predefined needs and/or wants. These specifications will help as measurable goals to which the development and iteration of our final design should be aimed. This is further substantiated by the fact that knowledge from direct clients and research studies will keep our solution updated yet practical at the same time. Finally, our team will present the design concepts that fit best with these specifications, keeping in mind the right balance between feasibility, functionality, and user experience.

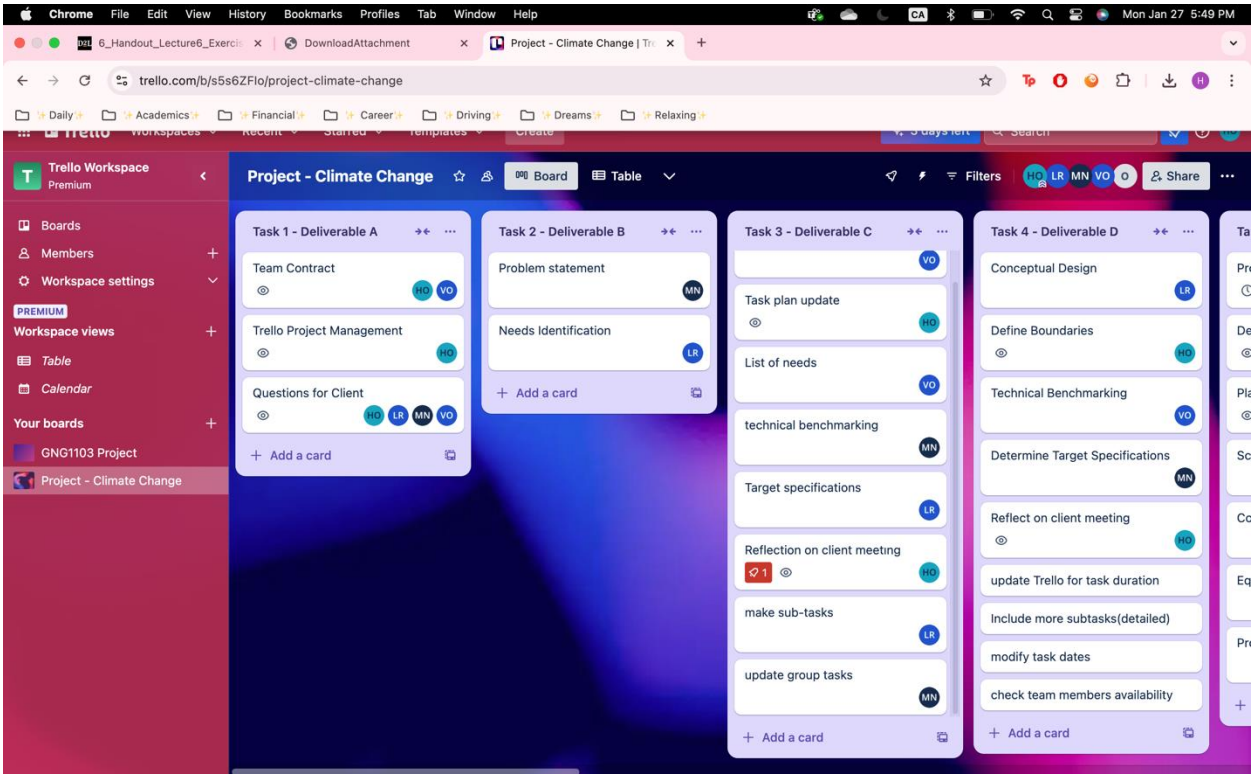
References

Apollo 11 - https://store.steampowered.com/app/953840/Apollo_11_VR_HD/

Arizona Sunshine - https://store.steampowered.com/app/342180/Arizona_Sunshine/

War Thunder - https://store.steampowered.com/app/236390/War_Thunder/

Trello Management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Task 1 - Deliverable A
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Trello Project Management
Questions for Client
Add a card
Task 2 - Deliverable B
Problem statement
Needs Identification
Add a card
Task 3 - Deliverable C
Task plan update
List of needs
technical benchmarking
Target specifications
Reflection on client meeting
make sub-tasks
update group tasks
Add a card
Task 4 - Deliverable D
Conceptual Design
Define Boundaries
Technical Benchmarking
Determine Target Specifications
Reflect on client meeting
update Trello for task duration
Include more subtasks(detailed)
modify task dates
check team members availability
Add a card