Project Deliverable C: Design Criteria and Target Specifications

Introduction

This document includes a list of prioritized design criteria, technical benchmarking tools as well as target specifications that will be used and satisfied throughout the course of our virtual reality design process. The design criteria have been broken down into functional requirements, non-functional requirements, constraints as well as metrics, in order to meet every interpreted need that we determined from our first client meeting with Mines Action Canada.

Functional Requirements:

	Design specifications	Relation	Value	Units	Verification method
1	Display virtual objects in a real-world environment to simulate a realistic experience	=	yes	N/A	Testing
2	French option	=	yes	N/A	Testing
3	Works with existing hardware	=	yes	N/A	Testing
4	Provide a lasting emotional impact	=	Yes	N/A	Testing
5	Potential seizure warning	=	1	N/A	Testing

Non-functional Requirements:

	Design specifications	Relation	Value	Units	Verification method
1	Works offline	=	Yes	N/A	Testing
2	Runs smoothly	> or =	30	fps	Testing
3	Support various hardware types	=	Yes	N/A	Testing
4	Volume control	=	yes	N/A	Testing

Constraints:

	Design specifications	Relation	Value	Units	Verification method
1	Technical limitation of hardware and software systems	=	yes	N/A	Testing to see the requirements and limits.
2	Budget constraints	=	50	$	Making sure after tax, the receipt is not > $50.
3	Limitation of time	>	10	minutes	Checking time limit after and adjusting accordingly
4	Quality of graphics and designs	=	yes	N/A	Testing and adjusting
5	VR Size	= or <	1	GB	Making sure total storage < 1 GB

Metrics:

1. User engagement and satisfaction
2. Resolution of images and graphics
3. Accuracy of object tracking
4. Battery life and performance impact on devices
5. User adoption and retention rate

Technical benchmarking:

1. Epic Roller Coasters
   Epic Roller Coasters is a VR game simulating extreme roller coasters in different adrenaline-releasing settings. This game is a technical benchmark because it contains many features that satisfy the client's interpreted needs. This includes virtual objects in a real-world environment, an interaction mechanism so that the user can interact with the simulation, a horror aspect that delivers emotions intended by the creators, and optimal user experience.

- Virtual objects in a real-world environment → The game implements excellent virtual objects, such as the roller coaster, tunnels, and tracks. These objects are portrayed in a variety of places that the user can choose from. Some of the places portrayed are a sequence of scary places that include hospitals, warehouses, and parks. Another setting

portrayed is a mountain range in which the user is riding through mountains in a very realistic environment.

- Interaction mechanism → A variety of interaction mechanisms are represented in this game. This includes the ability to use weapons and shoot at targets while riding the roller coaster. Also, interacting with sounds that come from every direction and looking around. These features ensure that the user is always engaging with the game and makes the experience more enjoyable.
- Horror aspect (delivering emotions) → As stated previously, the game has some horror maps in which the user is able to ride the roller coaster in a haunted area, surrounded by zombie-like creatures. This showcases some of the ways on how to deliver desired emotions to the user and leave an impression after the experience.
- Optimal user experience → The game has a very easy menu system that makes it easy to navigate through the options. This includes different settings to adjust brightness, sound level, and controls. Also, different maps and environments are available for the user to select from which allows for more exploration and keeps the game exciting.

2. Budget Cuts

Budget Cuts is a good technical benchmark since it contains various features that would satisfy the client's needs. This VR game takes place in a modern day office surrounded by robots who are a part of the workforce. The player gets told that the human workers are to be sent to human resources where they are never seen again and that it is now their turn. The player then gets a phone call telling them to escape the building avoiding all armed "supervisor" robots who attack on sight. Like *Epic Roller Coasters*, this includes virtual objects in a real-world environment, an interaction mechanism, a horror aspect and optimal user experience.

- Virtual objects in a real-world environment → This game is excellent for portraying horror in everyday environments since the game itself takes place in an office setting with all the office essentials to make it more life-like and similar to reality. This makes seeing the robots and fighting for your life seem more real.
- Interaction mechanism → The interaction mechanism in this game is more so choosing how to survive. Like *Epic Roller Coasters*, the player is given the ability to use knives to throw at targets as well as enter different rooms and look around to ensure survival, making the game more engaging.
- Horror aspect (delivering emotions) → The horror/triggering an emotional response aspect in this game is similar to the client's need of trying to survive robots that are meant to kill. This means sneaking around and finding the escape all while trying no to get caught by the scary supervisor robots. The sound effects of the game is what makes it truly thrilling, releasing the adrenaline in players and taps into that unsettling aspect.
- Optimal user experience → Like *Epic Roller Coasters,* the menu is user friendly where you can control the difficulty, lighting, sound effects, volume and throw assistance for the

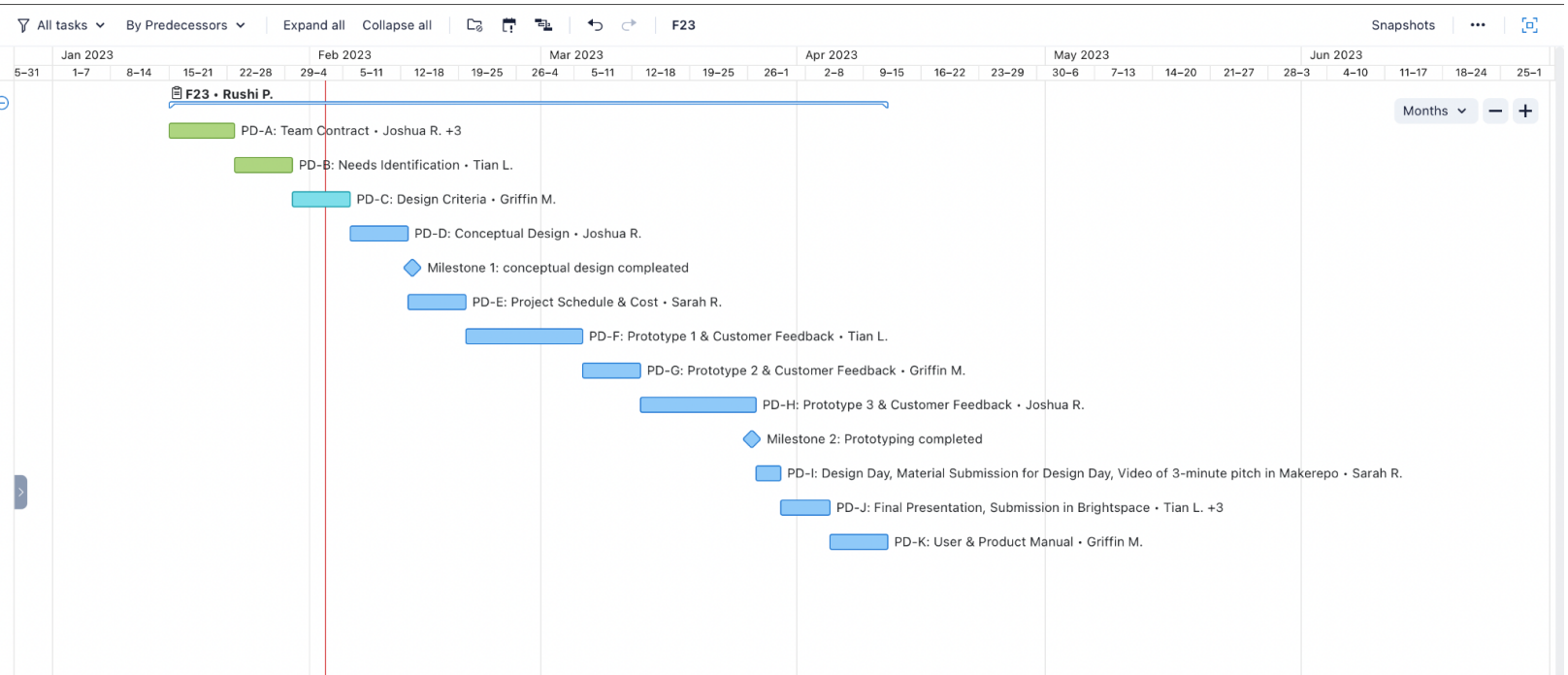
knife-throwing. This makes it easy for beginners to play as well as those with health conditions triggered by lighting and sound.

- Watch the *Budget Cuts* trailer here: https://www.youtube.com/watch?v=P-7bGeU7krI

User Benchmarking Information:

1. User Feedback - The user should have either a changed mindset or a mindset that is clearly conveyed from using the VR. This mindset would be mainly based on being against autonomous weapons. User feedback can be collected through surveys, forums, and social media to gauge the overall satisfaction and mindset of players with the experience. A survey is the most likely method to be used.
2. User reviews - Much like any other screen experience, users should have to feel at ease when accessing the device and also end without doing much work managing the device. To a certain extent, users should also be pleased regarding the severity of the film, having some limitations. Users should not feel conflicted after watching the film.
3. Market research data - Here, we take the user's response and alternative options with the aim of making our product more efficient.
4. User engagement metrics - Volume should be tolerable and not too loud. Can have dramatic loud effects. The conversation rate should be fairly slow and easy to understand. Should not be too long in order to convey the message. The topic should not be easily forgotten after using the VR.
5. User satisfaction metrics - Some of the methods that can be implemented to measure user satisfaction are
   Immersion Score (based on user experience): Measured on a scale from 1 to 10, the immersion score will assess the degree to which players felt absorbed in the experience.
   Recommended Rate: The recommended rate measures the percentage of players who would recommend the experience to others. This shows if the game was successful in delivering the intended message.

Project Task Plan:



Conclusion

In conclusion, this report has properly summarized our prioritized design criteria, target specifications and technical benchmarking tools for our design process, based on client meeting 1. The next step in our design process will be to use our benchmarking tools as well as our design criteria to develop a set of conceptual designs which we will evaluate in order to determine which design we would like to develop.