Project Deliverable F

Prototype I and Customer Feedback

Team 1

March 3, 2024

Abstract

The document outlines the creation of our first prototype, the testing process, and the gathering of feedback from potential users. A careful analysis of our first prototype leads us to cater for a test plan for our next prototype and amending changes where necessary.

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1 Introduction

This document will showcase our groups first prototype displaying our chosen idea. It also includes how we plan on testing the success of our prototype, our stopping criterion, and our results, as well as images and feedback on how the prototype looks. Using this feedback, we updated our target specifications, detailed design and BOM. We finally included a test plan for our second prototype.

2 Prototype I

2.1 Prototype I Test Plan

The goal of this test plan is to analyze critical subsystems that we established at the beginning of the deliverables and assess how they fit into the first prototype of our VR game. This test plan does not represent the entire project but rather the simplest form of our VR game. Its purpose is to ensure that the base of our environment is well-constructed to present our first prototype to the client during our third meeting (this upcoming Thursday).

On the right side of the table, there is a result scale where everything in green indicates that the test objective has been successfully met to expectations, everything in yellow indicates successful accomplishment close to expectations, and red indicates that we have not yet had the chance to successfully accomplish these test objectives.

Test ID	Test Objective (Why)	Description of Prototype used and of Basic Test Method (What)	Description of Results to be Recorded and how these results will be used (How)	Estimated Test duration (When)	Stopping criterion	Results
1	Analyse critical subsystem: Wall/Ceiling/ Floor	Analytical, Specific	Subsystem aligns properly or it does not Room size	20 mins	Satisfies design scale	Successful to expectations
2	Verify feasibility: Window/blinds	Analytical, Specific	Window size, light shining	10 mins	Satisfies design scale	Not yet accomplished
3	Analyse subsystem: Furniture	Analytical, Specific	Positioning, size	10 mins	Satisfies design scale	Successful to expectations
4	Analyse subsystem: Posters	Analytical, Specific	Positioning, Size	10 mins	Satisfies design scale	Not yet accomplished
5	Analyse critical subsystem: Dog	Analytical, Specific	Positioning, Size	10 mins	Satisfies design scale	Successful close to expectation
6	Verify feasibility:	Physical, Comprehensive	Length for walkthrough, easy to use,	20 mins	2-3 times and until	Successful close to expectation

	Length and Learning curve		emotional impact		length is 1 minute	
7	Communicating and Getting Feedback: Friends	Physical, Comprehensive	Feedback/ideas Improvement suggestions	20 mins	2-3 times	Successful to expectations
8	Communicating and Getting Feedback: TA	Physical, Comprehensive	Feedback/ideas Improvement suggestions	20 mins	Until suggestions implemented	Successful to expectations

2.2 Analysis of concepts (Prototype I)

The room size:

To accommodate for the simplicity of the scene as desired by the clients, we have created a room in Unity. The room comprises of several subsystems that are aligned with our design criteria. During our first testing, we analysed the wall, the ceiling and the floor of our room according to our prototype test plan. The results obtained were positive since the size of our room was enough to cater for our sub system and not much movement is required from the user.

Feasibility of windows/blinds:

Due to a lack of time, this subsystem testing has been postponed to our second prototype. The presence of the window can be distinguished in our first prototype but additional action on this subsystem has not been undertaken, since referring to our design criteria, our main focus was on our critical subsystems for Prototype I.

Positioning of furniture:

We deemed it critical to position our furniture in our Prototype I to test for the room size and assess if there is enough space for elements on the adaptability of civilians to autonomous weapons. The furniture used is the usual paraphernalia that can be observed in a normal household. The furniture also shows that our room is in fact a living room. The results were successful since we have been able to add the necessary furniture and the size of the room was ideal to cater for them.

Posters:

To demonstrate the adaptability of civilians and the threat of autonomous weapons, we plan to use posters to warn the residents. This subsystem has not been implemented in Prototype I yet since it has been evaluated as an element to be added in Prototype II.

The dog:

The dog is a critical subsystem of the room. The keen hearing of a dog and its proactive reaction to the danger that autonomous weapons pose, is used as an alert system for the civilians. There is no language barrier as well, the dog's reaction and sensitivity has been analysed as ideal to ensure that the global community will feel concerned and understand about the threat looming in the background.

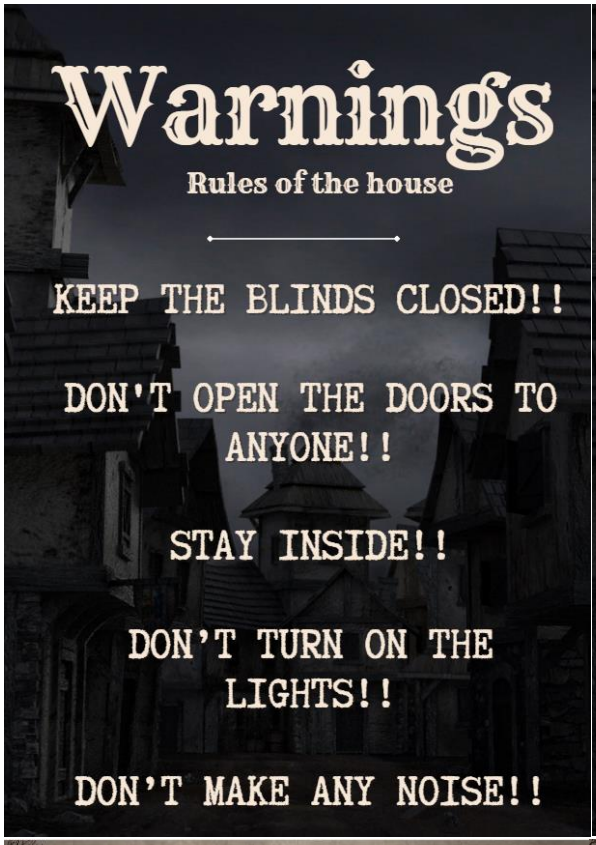
The results obtained are close to our expectations but not nearly what we were looking for. The dog seems out of place in the room, and we plan to address this for Prototype II. The dog whines were successful and coincides with our story.

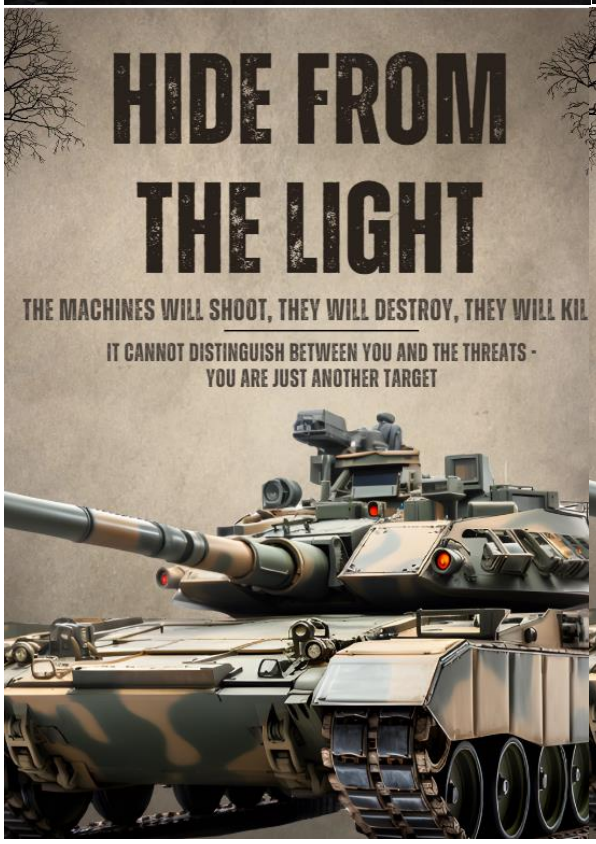
The sandbags:

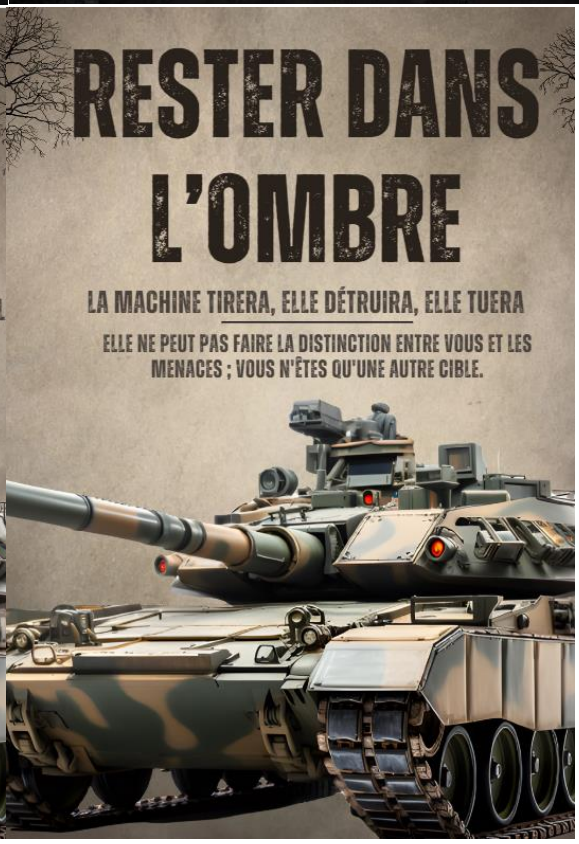
The sandbags are another critical subsystem opf our concept, to demonstrate the adaptability of civilians to autonomous weapons. The number of sandbags used is to justify about the threat and their out of place presence shows that there is something abnormal going on. The results were great, enough space was allocated for them.

2.3 Prototype I Images

2.3.1 Posters in FR and EN







2.4 Feedback

This is a summary of the feedback we received from Saif on Saturday, March 2nd, and our reflection on that feedback.

Feedback Received	Reflection
Dialogues - Having subtitles at the bottom of the screen in both languages for accessibility purposes.	To ensure inclusivity, we will implement dialogues and all audio elements in both languages to capture to a wider audience (users).
Audio features to our critical subsystems - The dog, the television, as well as the broken glass.	We will enhance the immersive experience by adding audio features to the dog, broken glass, and background. Additionally, a video will be incorporated into the television to highlight the dangers of AW.
Having a proper dog in the second prototype with movement and sounds attached to it. The dog that we have inserted in the VR game does not reflect the quality of the other subsystems and stands out.	While our first prototype utilized free subsystems, we recognize the importance of maintaining consistent quality. Therefore, we will invest in purchasing a dog model from the Unity store for future iterations.
The atmosphere seems good in our first prototype.	To further enhance the atmosphere of our VR game, we plan to augment the background music to evoke specific emotions in users. Additionally, we intend to include a picture of the outside world, depicting destruction visible through the cracked window, to heighten the immersive experience.
The game is dizzying to the users.	In response to user feedback regarding dizziness, we will explore adjustments to the camera movement within the simulation to mitigate this issue and improve overall user comfort.

3 Updated Target Specifications

No updates were made to the target specifications.

4 Updated Target Detailed Design

No updates were made to the detailed Design plan.

5 Updated Target BOM

Item	**Links**	**Price**
Digital unity textures		
18 high resolution wall textures	https://assetstore.unity.com/packages/2d/textures-materials/brick/18-high-resolution-wall-textures-12567	$ -
Wooden Floor Materials	https://assetstore.unity.com/packages/2d/textures-materials/wood/wooden-floor-materials-150564	$ -
Digital unity assets		
5 animated voxel animals*	https://assetstore.unity.com/packages/3d/characters/animals/5-animated-voxel-animals-145754	$ -
Apartment Kit	https://assetstore.unity.com/packages/3d/environments/apartment-kit-124055	$ -
Ceiling Fan	https://assetstore.unity.com/packages/3d/props/tim-s-assets-old-ceiling-fan-103789	$ -

Free Rug Pack	https://assetstore.unity.com/packages/3d/props/interior/free-rug-pack-118178	$ -
Husky dog	https://assetstore.unity.com/packages/3d/characters/animals/husky-dog-160906	$ 9.99
Realistic Sandbags	https://assetstore.unity.com/packages/3d/props/exterior/realistic-sandbags-95964	$ -
Steel Window	https://assetstore.unity.com/packages/3d/props/industrial/steel-window-650	$ -
TV set	https://assetstore.unity.com/packages/3d/props/electronics/tv-set-26193	$ -
Baby bottle	https://assetstore.unity.com/?q=feeding%20baby&orderBy=1	$ 4.99
Applications		
Audacity		$ -
Canva		$ -
GitHub		$ -
Musescore		$ -
Unity		$ -
Visual Studio		$ -
Total		**$ 14.98**
Maximum		$ 50.00
Budget available		$ 35.02

6 Prototype II test plan

The goal of this test plan is to analyze critical subsystems that we established at the beginning of the deliverables and assess how they fit into the second prototype of our VR game. This test plan represents something that is close to our project's idea of our VR game. Its purpose is to ensure that the visual subtitles are present in our second prototype.

On the right side of the table, there is a result scale that will be complete in the next deliverable.

Test ID	Test Objective (Why)	Description of Prototype used and of Basic Test Method (What)	Description of Results to be Recorded and how these results will be used (How)	Estimated Test duration and planned start date (When)	Stopping criterion	Results
1	Analyse critical subsystem: Poster on the wall, dog, broken glass on the floor, windows.	Analytical, Specific	-Poster is readable and not too messy for the eyes -Poster is in two languages -Dog looks distress and makes sounds of fear. - Broken glass has sounds attached to it – shattering sounds. - window fits perfectly and there is a picture showing the outside world to the users.	20 min	Satisfies design scale	TBD
2	Analyse critical subsystem: Background music	Analytical, Specific	Fearful music playing in the background	20 min	Satisfies design scale	TBD
3	Verify feasibility: Camera movement and dizziness effect	Analytical, Specific	Users does not feel dizzy after entering the simulation.	20 min	Satisfies design scale	TBD
4	Analyse critical subsystem: Video on the television - about AW warnings.	Analytical, Specific	Video is audible and plays only when the camera is facing the TV, stops playing when the camera leaves the screen	20 min	Satisfies design scale	TBD

5	Analyse critical subsystem: Subtitles for the video in both official languages (FR and EN)	Analytical, Specific	The message is clear and follows the video.	20 min	Satisfies design scale	
6	Communicating and Getting Feedback: Friends	Physical, Comprehensive	Feedback/ideas Improvement suggestions	20 mins	2-3 times	TBD
7	Communicating and Getting Feedback: TA	Physical, Comprehensive	Feedback/ideas Improvement suggestions	20 mins	Until suggestions implemented	TBD

7 Conclusion

With our predetermined testing plan for prototype one we were able to carry out intended tests and found that most of them yielded satisfying results. There is room for improvement with the windows/blinds, as well as the posters. Other two aspects that could need improvement are the dog, as well as the learning curve and length of the entire experience.

This week we also worked on the posters, which will be crucial to convey the message of moral and ethical concerns.

Part of the prototype testing was to gather feedback from peers and our TA. The feedback we received was mainly concerning the dialogues on the issue of accessibility. We will incorporate subtitles in both French and English. Further feedback mentioned the noises of the environment, so while the atmosphere is adequate, we will add some background music, as well as sound effects to the dog, the glass, and the television. Another concern was the quality of our dog asset, which was planned to be improved by purchasing a better one from the Unity Asset Store. A last concern addressed was provoked dizziness while playing the VR game. We will try to make changes to the camera movement to mitigate this.

The last thing we did was developing a test plan for the prototype II in a similar fashion to the test plan I. Our focus for the next prototype is incorporating most of the feedback that we received.

8 References

At this stage in our report, our research is complete. As references, we consulted with one of the TAs, Saif, during one of his planned office hours on March 3rd, 2024, to assist us in building our Unity project. He provided valuable feedback on our project and was a great help throughout the process. Additionally, we utilized the Unity website and links to critical subsystems from the Unity store, which were incorporated into our virtual reality game.

References for the images on the posters on another document on the Teams channel.