Deliverable H - Prototype III and Customer Feedback

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**Group 6**

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Abstract

This report focuses on the third prototype of our DOGNADO project which elaborates on our tests, trials, and tribulations. Based on client feedback, we have added and removed features to streamline the development process in time for Design Day. The new prototype focuses on adding quality of life features and refining the gameplay loop. Using these features, we have produced updated requirements that should finish our project.

# 1.0 Previous Prototypes

## 1.1 Prototype I

Prototype I was a general floor plan of the upper floor of the house. The results were as follows:

1. Client feedback suggested that we spend less time on the upper floor of the home, as it does not provide the user with any educational elements.
2. The prototype was successful in VR. With help from more experienced Unity users, our team was able to navigate through the scene using the Oculus.

The first prototype was somewhat successful. Our team was provided with useful feedback from the client and the prototype was successful in VR. However, our process in creating the prototype was inefficient due to multiple scheduling conflicts within our team.

## 1.2 Prototype II

Prototype II focused on the elements essential to the simulation. The prototype consisted of three parts:

1. The buttons, essential for the simulation to run as planned.
2. The three basements, essential for user education.
3. Proximity audio, essential for the user to progress through the simulation.

The prototype was tested in VR and was also presented to a few potential users. The results to the two tests are as follows:

1. The potential users made a few suggestions regarding the buttons' functionality and loading time.
2. The potential users made a few suggestions regarding the layout and design of the basements.
3. The VR test was successful for the proximity audio; however, the other elements were not input correctly as the scripts were not written for VR.

Prototype II was more successful than prototype I. The prototype was a lot more relevant to the goals of the simulation. This was because our team communicated more during the creation of the prototype.

## 1.3 Application

Our team's plan for prototype III was to create a comprehensive prototype by putting prototypes I and II together in VR. This will further achieve our goal of having an immersive and educational VR experience by design day. Our team will continue to communicate with each other and to ask for help when needed to obtain the best results. We have also been able to learn and adapt from some of the challenges we experienced during the first prototypes (such as knowledge of the software and design thinking) to work more effectively on this prototype.

# 2.0 Prototype III

## 2.1 Prototype III Overview and Analysis

The third prototype’s focus was on combining all the various aspects of our simulation into a cohesive Virtual experience. We have had to combine several models with prebuilt code and test them out rigorously in VR.

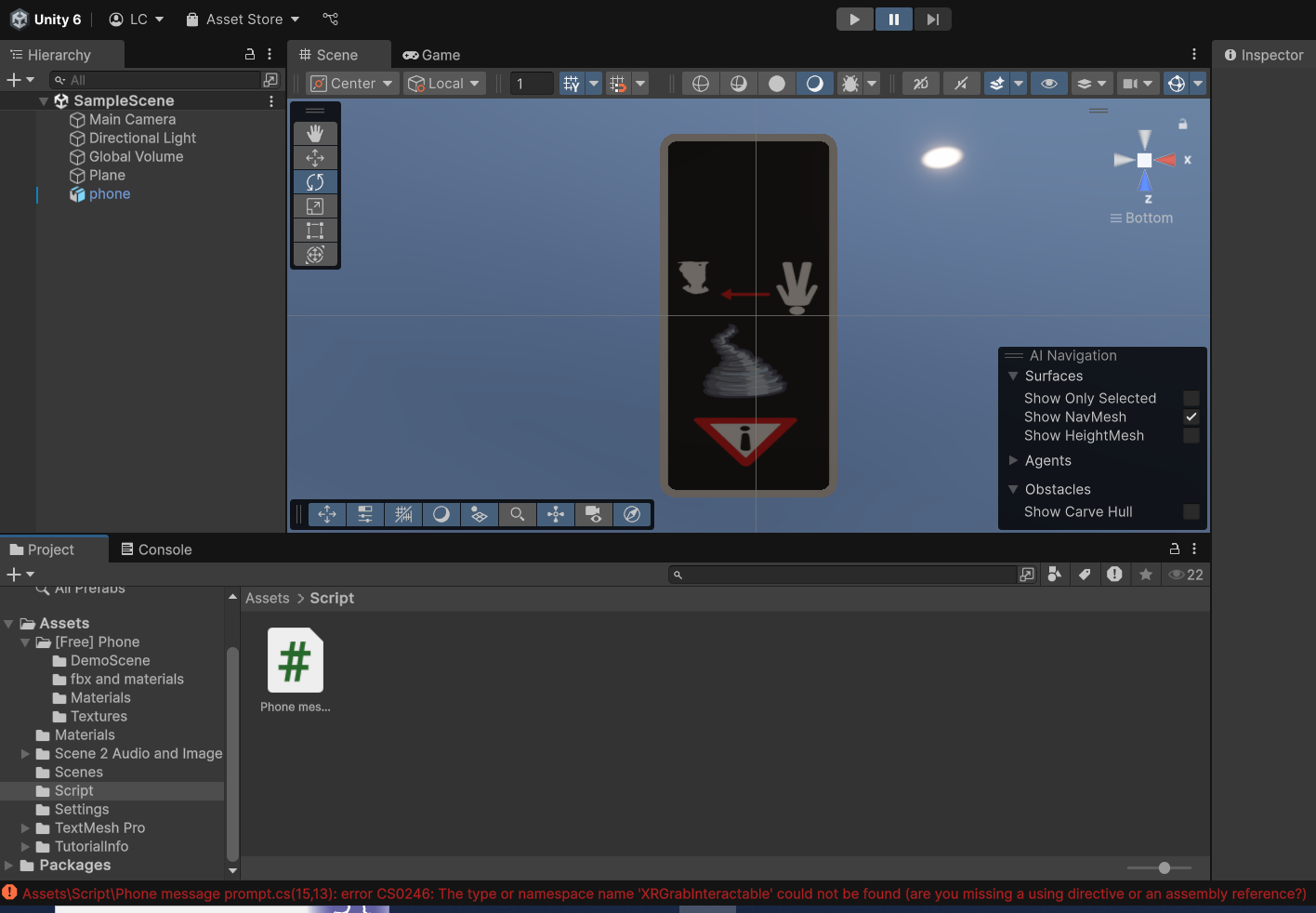
## 2.2 Prototype III Test Plan

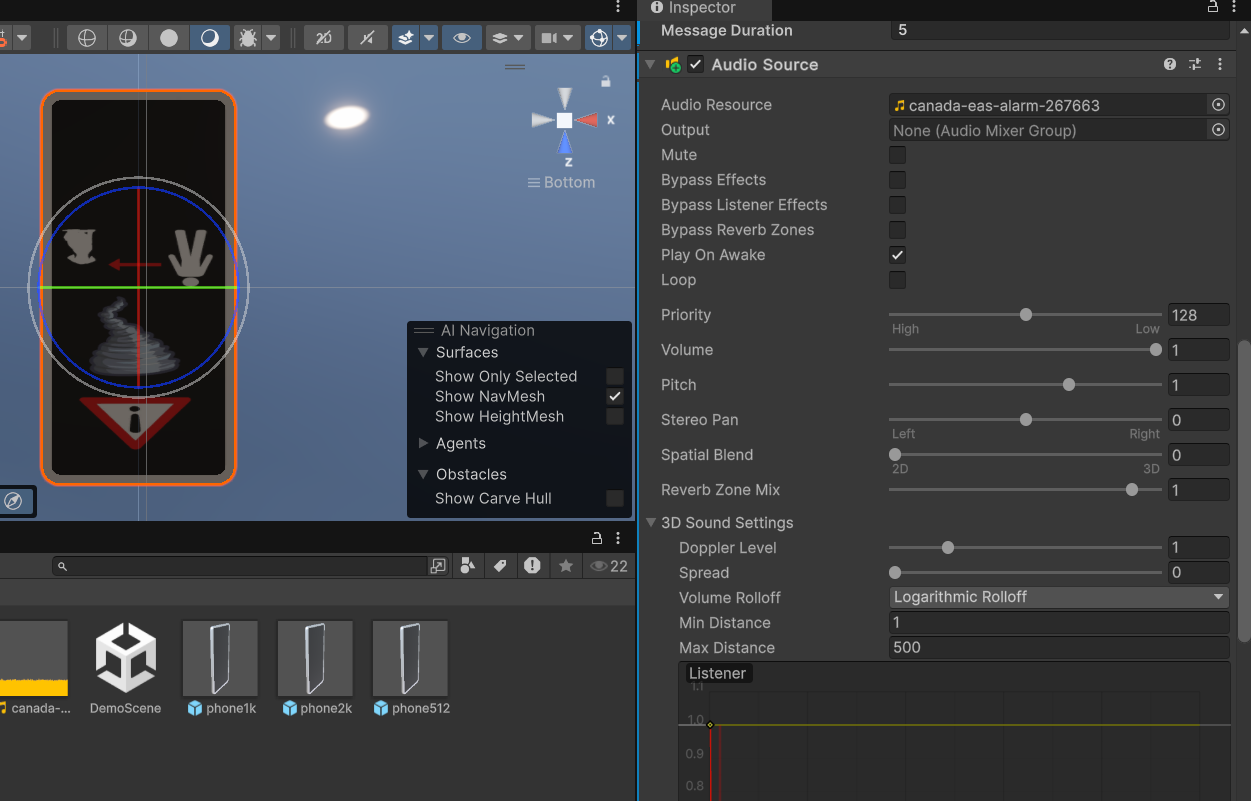
Please note that the following tables outline comprehensive testing areas of the DOGNADO simulation.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Test ID** | **Test** | **Testing Method** | **Results** | **Pass/Fail** |
| **1** | Test if the different components upload without bugs | We uploaded all the files into one project | Several corrupted or incompatible files that required days of debugging | Conditional Pass |
| **2** | Test if the pointer click works on the clock | We tested out the VR oculus and used it on the clock | The scene switch worked after using XR simple interactable | Pass |
| **3** | Test Proximity sounds coming from dog | We tested out the VR oculus and walked closer to the dog | The dog sounds vanished after importing tornado sound effects | Fail |
| **4** | Test if survey collects data accurately | We used google forms | They can sort out the data | Pass |

Once we got these tests finished, we developed a few more to test more elements, listed below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Test ID** | **Test** | **Testing Method** | **Results** | **Pass/Fail** |
| **5** | Test the audio triggers to see if the sirens/phone calls/news audio would trigger | Individually inputted every script and every audio in, before testing with the headset to see if they began at the proper time (See Fig. 2) | While some of the audio components work well, some of the scripts do not allow a pause to be put between others, so the audio is talking over itself at times. | Fail |
| **6** | Test if the phones can be picked up and viewed normal to the player’s hand | Same as above (practical testing with the headset repeatedly) (See Fig. 1) | At first the phone could be grabbed but was not easy to view. After some tweaks, we were able to force the object to always be normal to the user’s hand. | Pass |
| **7** | The main menu implementation | Insert the main menu into the simulation and run the game to see if it was able to be used | The first round of testing revealed that the menu was not designed for VR, but instead for a 2D game. After revising, there are a couple coding bugs that need to be worked out before it can be used. | Fail |
| **8** | Timed appearances of exclamation marks for clarity of goals | Repeatedly input various codes and tested with the headsets to make sure users were pointed in the direction the story should take. | When tested, buttons appeared when the “wait time” expired, but did not disappear when the object being led to was interacted with. | Pass (primary function was accomplished) |

Fig 1. The initial phone in the incorrect orientation with a script that does not properly compile and run.

Fig 2. Audio incorporation for the EAS siren (sourced from a free database online)

## 2.3 Prototype III Test Results

Our prototype passed 3 out of 4 tests after several days of development. This stage was the most hectic out of all our prototypes as it was when we were all scrambling to learn as much unity as possible to work out the prototype. This stage saw the most work done and serves as a solid base for the next steps of our project.

Many challenges were presented during the development of prototype III.

The first was scripting. Since none of our group members have any experience with C# coding, we rely on AI (specifically ChatGPT) to generate codes for specific purposes. Unfortunately, often the codes do not function properly, and on multiple occasions, the wrong script has stopped all progress, since Unity will not allow new scripts when one is present that does not compile properly. So, we have been quite restricted in our coding capabilities and usually require outside help to get the right result. ChatGPT uses a script on its own that is to be inserted into the game object, but VR requires specific commands with scripts built inside. These two things (at this point) do not seem to be compatible with one another, so we are looking for other ways to proceed.

We struggled with audio cues, as they repeatedly cut each other off, or do not cue at the proper times. Scripts are not always able to directly take them, so implementation got complicated quite quickly, and tutorials are not too helpful for VR.

We also had issues with the basements, since there seemed to be invisible box colliders that were forcing the user to be “teleported” forward and then become unable to move throughout the scene. After rigorous diagnostic testing, we discovered the source of the issue was the small water bottles on the basement's shelves. Since then, we have been able to delete some of these colliders to eliminate the issue.

We have struggled with moving projects from individual computers to the central one, since all team members have different operating systems, asset packs, and templates for the project. For this reason, most of the individual prototypes that were made had to be abandoned or heavily adapted to even be able to be used. The main menu for example, (as indicated above), had to be completely redone to work with XR.

Despite all these challenges, at this stage of the design process, Prototype III shows immense potential for the project as it approaches its end. If the essential components can be polished, the result will have all the desired parts and will run as intended.

# 3.0 Customer Feedback Analysis

## 3.1 The Chosen User

A potential user Cloe (Phil's girlfriend) is studying in environmental science, and she has some feedback to give us on our topic. Also, another potential user is Ben (Phil’s friend), and he is studying to be a teacher in the science field.

Two more potential users are Amy and Jason.

## 3.2 User Feedback

Cloe loves the overall idea of our story and likes how it will play out. The implementation of the dog was well needed in her opinion since it makes the game more fun. She recommended that we should include more furniture in the house since there is a big empty spot right outside the Livingroom. She finds that it would make our simulation more realistic. She also suggests that we add more windows around the house because she feels like it is just like a box.

Ben loves the design of the house, and he suggests that we implement it like a timer for the user to find the dog. He also thinks that we should make the user do tasks during the simulation. The reason for this is that he feels that it is not really a game but like a virtual book. Ben also suggests that we implement a distance meter from the user to the tornado so the user can know how close the tornado is to them. This can ensure that our simulation is more realistic since this will add pressure to the user to try and find their dog as fast as possible.

Amy said she really liked the idea and the look of our project. But she also felt that the beginning of the game was a bit too slow. She suggested adding something exciting right after the player enters the house, like thunder outside or things shaking, to make the game feel more serious right away. She also said we could use lighting, like where the light is shining, to help players know about the emergency.

Jason focused on how the game feels emotionally. He liked the idea of finding the dog, but he wanted more choices for the player. For example, the player could choose to take valuable things first or look for the dog right away. These choices would make the player feel more involved. He also said we could add surprises, like a loud noise from something falling or the power going out. These changes would make the game feel more real and more intense.

## 3.3 User Feedback Analysis and Application

Cloe and Ben’s feedback are considered, and we decided to implement some tasks for the user during the simulation. This will ensure that the user will stay occupied and in the game. Also, we will make the first floor more filled by adding more furniture around the house and more windows so the user can feel like they are in a home and not a box. Lastly, we might add a distance meter from the user to the tornado. This will ensure that the user will feel like the simulation is more realistic and will force the user to spend less time upstairs, which we want. Due to time constraints, I am not too sure how possible that will be; however, we will try our absolute best to implement these features.

Amy’s feedback helped us realize that pacing is important in the game. So, if we have extra time, we can add sounds or visual effects, like thunder in the distance or shaking windows, to create tension quickly. And Jason’s ideas made us think more about player choices. Even though our game is mostly linear, we can add one or two small but meaningful decisions, like “look for the dog or find the key first," if time permits.

# 4.0 Updated Requirements

The table below features our final requirements and testing for the final prototype

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Test ID*** | ***Test Objective***  ***(Why)*** | ***What is being figured out***  ***(What)*** | ***Testing Method (How)*** | ***Attributes to Observe / Record*** | ***Duration (When/How Long)*** |
| 1 | Test for phone notification | If the phone animation plays when clicked | Using VR controls to click on the phone | If the phone animation plays without bugs | Until the animation plays out |
| 2 | Test for XR simple Interactable | If the XR controllers work with all interactable | Using VR controllers | If object physics are working properly | Until all available physics objects work as intended |
| 3 | Test for missing hitboxes | If there are any spaces where the payer phases through boundaries | By moving the in-game character through every nook and cranny | If players phase through the ceiling or the floor | Until all scenes have been checked |

While we have had to refine our design to make it reasonable, we have been able to stay true to the original target specifications indicated in previous deliverables.

# 5.0 Conclusion

Overall, the third prototype was a significant leap forward in our project with the user feedback streamlining the rest of the design process. We still have a significant amount of work to do before design day and most of it is required before releasing the final product. Our concerns are mostly focused on completion dates and bugs. User feedback suggested adding more to the environmental design and transitions between scene switches. The next tests involve adding more features and fine tuning before the 27th but we should be able to get it done by then.