

Detailed Design, Prototype 1, BOM, Peer Feedback and Team Dynamics

GNG 2101 Group A4.4

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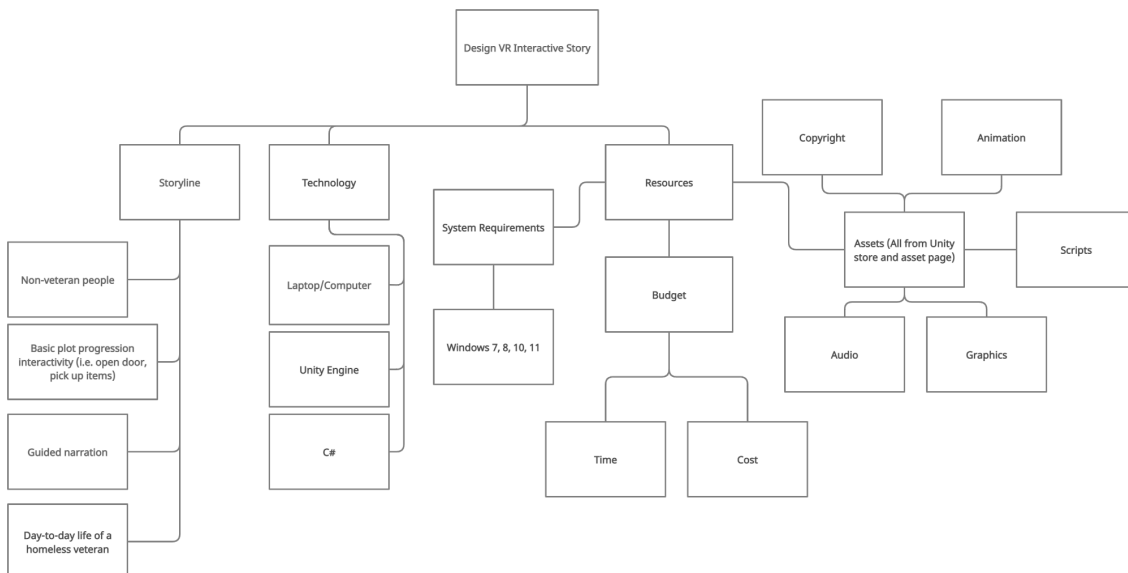
1. Introduction

For this deliverable, we summarized our client’s feedback and updated our product design with the newly acquired feedback. We then came up with our first prototype, which is the main storyline of our experience. For this prototype, two detailed scenarios were created for our main plot. From this prototype, we developed a testing plan to ensure we meet all of our clients' needs. Finally, we expect to present these scenarios to our client for our third meeting and gain insight on the concepts we came up with.

2. Customer Feedback and Updated Product Design

After our second client meeting discussing our proposed concepts from PD C, the main feedback received for our group concept was to focus on building empathy rather than sympathy, all while creating respect and understanding towards the targeted group. Our client highly emphasized this by advising our group to focus on one specific issue rather than multiple at once; this is due the fact that we were initially planning to put users in the perspective of a homeless, physically impaired veteran with PTSD. Furthermore, PTSD is often overlooked amongst the numerous other issues that veterans are plagued with. When asked about story design preference, our client felt strongly that the day in the life idea could foster genuine empathy in users for people with PTSD as it would uncover the challenges people with PTSD have to endure on a daily basis.

In terms of product design, our client had a strong preference for an immersive virtual reality experience rather than a game, again due to the emphasis on creating empathy rather than sympathy. Once we have our storyboard set, we will then look for feedback from veterans who are comfortable enough to share their opinions as well as from people who do not identify as veterans who can share their thoughts and emotions about our story. Some metrics to record from these people can be the level of empathy, sympathy and respect they express after reading our story. These metrics would allow us to ensure that our story is respectful and empathetic. So overall our product design has evolved to a 3rd/1st person virtual reality experience which puts users into the perspective of a homeless veteran with ptsd.



3. Bill of Materials

Item name	Description	Units of measure	Quantity	Unit cost	Extended cost	Link
Unity Student Plan	An environment for creating cross-platform VR games	Unit	1	\$0	\$0	https://store.unity.com/#plans-individual
Unity Free Assets	Graphics (characters, environments), background music, special effects, and sound effects	Unit	1	\$0	\$0	https://assetstore.unity.com/top-assets/top-free

4. Critical Product Assumptions

For our product, we will assume that the client will have a medium-end computer or laptop that isn't necessarily intended for video games and is used casually. Therefore the following are the acceptable system specifications in order to execute the software:

- Operating System: Windows 7, 8, 10, 11
- Processor with QuadCore and 2.0 GHz+
- 4GB of RAM
- 1GB of VRAM
- 2GB of Storage

Note: These specifications were benchmarked from the game "A Story About My Uncle"

The materials needed to create our product will all be available on the Unity assets store. Any documentations and tutorials on how to use Unity and C# will also be available on Unity's website as well as the internet. As for the core functionality of the game, we assume that the user will be able to freely roam the given world as well as interact with the specific items and dialogues given. Furthermore, we will assume to have appropriate functioning audio cues, background music and graphics.

5. Prototype Design I

5.1 Scenario 1: Bystander Donates Homeless Veteran Food



Scene 1:

POV: Third Person

Characters: Bystander and Homeless veteran

Setting: Street

Description: Bystander walks toward a homeless veteran

Scene 2:

POV: Third Person to first person

Characters: Bystander and Homeless veteran

Setting: Street

Description: POV changes to Bystander



Scene 3:

POV: First person

Characters: Bystander and Homeless veteran

Setting: Street

Description: Gives homeless veteran food

Scene 4:

POV: Third Person

Characters: Bystander and Homeless veteran

Setting: Street

Description: Bystander walks toward a homeless veteran

Scene 5:

POV: Third Person to first person

Characters: Bystander and Homeless veteran

Setting: Street

Description: POV changes to Veteran



Scene 6:

POV: First person

Characters: Homeless veteran

Setting: Street

Description: Goes to sleep on bench



Scene 7:

POV: First person

Characters: Homeless veteran
Setting: Battle Scene nightmare
Description: Experiences a nightmare of the war



Scene 8:

POV: First person
Characters: Homeless veteran
Setting: Street
Description: Veteran wakes up from the nightmare



Scene 9:

POV: First person

Characters: Homeless veteran

Setting: Street

Description: Veteran wakes up and eats donated food



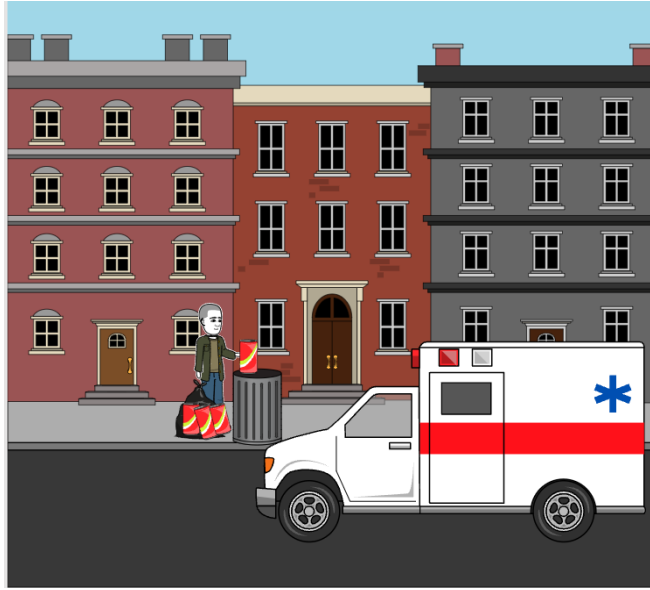
Scene 10:

POV: First person

Characters: Homeless veteran

Setting: Street

Description: Veteran wakes up and starts collecting cans



Scene 11:

POV: First person

Characters: Homeless veteran, ambulance

Setting: Street

Description: Ambulance drives past veteran triggering a PTSD event



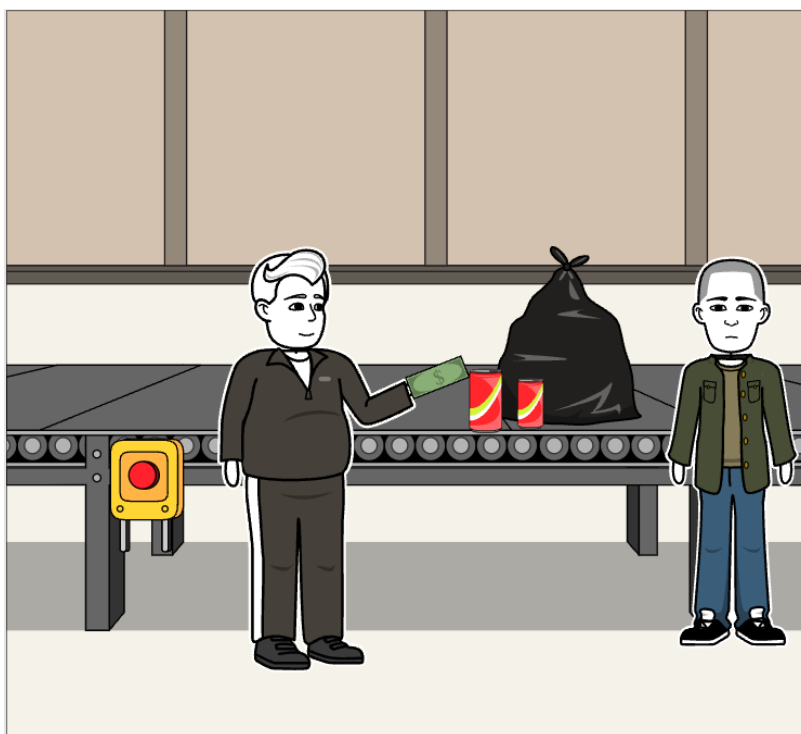
Scene 12:

POV: First person

Characters: Homeless veteran

Setting: Street

Description: Recovers and keeps collecting cans



Scene 13:

POV: First person

Characters: Homeless veteran

Setting: Can Collection Building

Description: Homeless Veteran Delivers cans and in exchange \$2



Scene 14:

POV: First person

Characters: Homeless veteran, store manager

Setting: Convenience Store

Description: Homeless Veteran buys Meds



Scene 15:

POV: First person

Characters: Homeless veteran

Setting: Street

Description: Homeless Veteran takes meds



Scene 16:

POV: First person

Characters: Homeless veteran

Setting: Street

Description: Homeless veteran goes to sleep

5.2 Scenario 2: Bystander Does Not Donate Homeless Veteran Food

Scene 1:



POV: Third Person

Characters: Bystander and Homeless veteran

Setting: Street

Description: The bystander walks toward a homeless veteran

Scene 2:

POV: Third Person to first person

Characters: Bystander and Homeless veteran

Setting: Street

Description: POV changes to bystander



Scene 3:

POV: First person

Characters: Bystander and Homeless veteran

Setting: Street

Description: Bystander does not give homeless veteran food

Scene 4:

POV: Third Person

Characters: Bystander and Homeless veteran

Setting: Street

Description: A bystander walks toward a homeless veteran

Scene 5:

POV: Third Person to first person

Characters: Bystander and Homeless veteran

Setting: Street

Description: POV changes to Veteran



Scene 6:

POV: First person

Characters: Homeless veteran

Setting: Street

Description: Goes to sleep on bench



Scene 7:

POV: First person

Characters: Homeless veteran

Setting: Battle Scene nightmare

Description: Experiences a nightmare of the war



Scene 8:

POV: First person

Characters: Homeless veteran

Setting: Street

Description: Veteran wakes up from nightmare



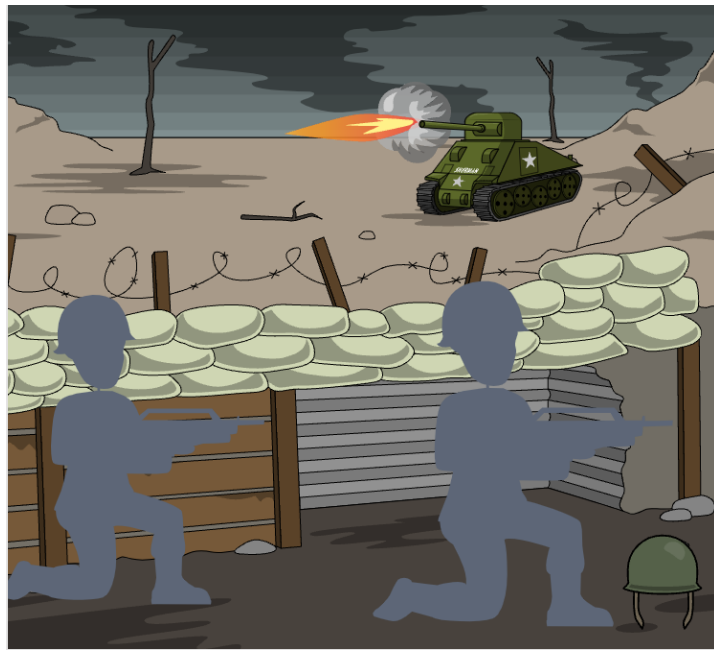
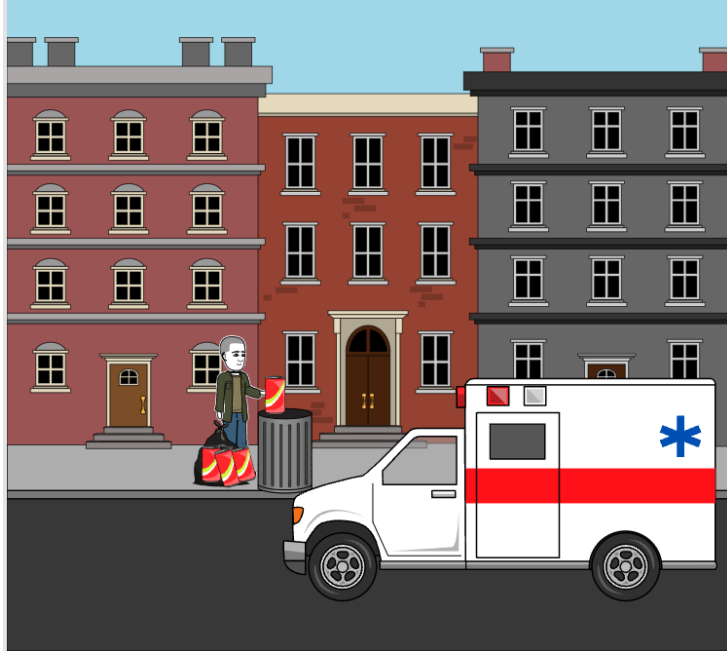
Scene 9:

POV: First person

Characters: Homeless veteran

Setting: Street

Description: The veteran wakes up and starts collecting cans



Scene 10:

POV: First person

Characters: Homeless veteran, ambulance

Setting: Street

Description: Ambulance drives past veteran triggering a PTSD event



Scene 11:

POV: First person

Characters: Homeless veteran

Setting: Street

Description: Recovers and keeps collecting cans



Scene 12:

POV: First person

Characters: Homeless veteran

Setting: Can Collection Building

Description: Homeless Veteran Delivers cans and in exchange \$2



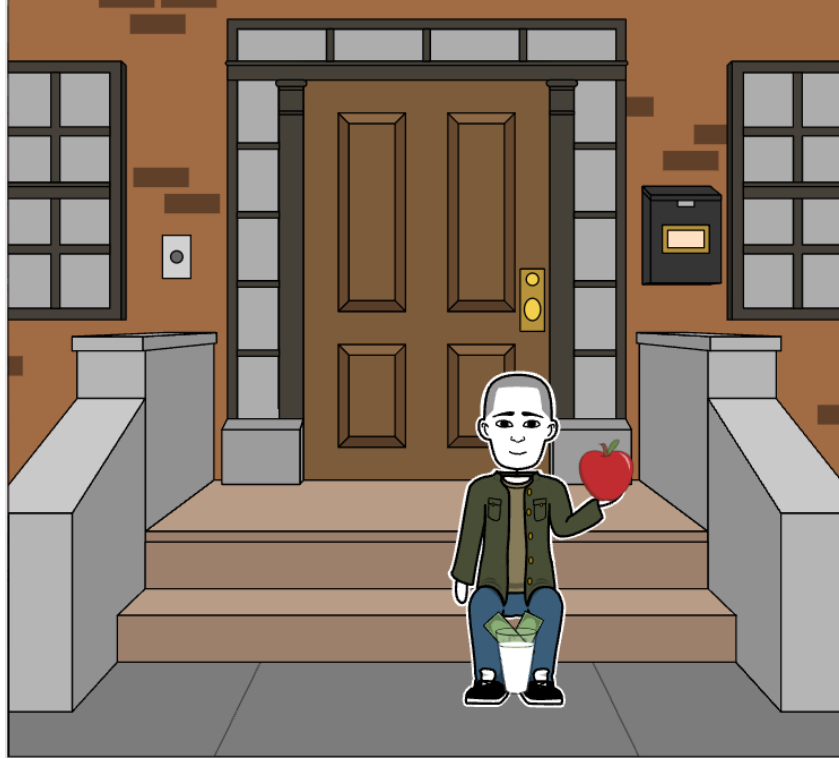
Scene 13:

POV: First person

Characters: Homeless veteran, store manager

Setting: Convenience Store

Description: Homeless Veteran buys an apple



Scene 14:

POV: First person

Characters: Homeless veteran

Setting: Street

Description: Homeless Veteran eats the apple



Scene 15:

POV: First person

Characters: Homeless veteran

Setting: Street

Description: Homeless veteran goes to sleep



Scene 16:

POV: First person

Characters: Homeless veteran

Setting: Battle Scene nightmare

Description: Experiences a nightmare of the war

5.3 Gameplay Prototype

Based on some of our gameplay concepts, we came up with the following basic video demo of how the game will look and feel like: <https://www.youtube.com/watch?v=hK80OFdbGe4>

The following are a couple snapshots taken from the video demo, including the main menu page and the setting of the game:



6. Prototype Testing

The following table tests the target specifications for our gameplay prototype and compares its tested values with our target values. The table also includes the tested value for a measure of ratings out of 5 (1 being poor, 5 being excellent) from a survey conducted involving 20 students, with which they rated our storytelling given our scenarios and the empathy they felt.

Target Specifications	Tested Value	Target Value
Development Cost	\$0	< \$50
Frame Rate	120 FPS	≥ 90 FPS
Loading Time	7s	≤ 5 s
VRAM Memory	660 MB	≤ 4 GB
RAM Memory	160 MB	≤ 4 GB
File Size	112 MB	≤ 3 GB
Duration	Unlimited	5 minutes
Storytelling/Empathy	~3 out of 5	~4 out of 5

Full Name	Story Telling	Empathy
Amer Ammari	3	3
Maxim Koprivica	3	2
Anonymous	2	2
Joyce Lu	4	3
Nick Yeong	3	3
Kayden Zeeman	3	2
Anonymous	4	4
Tracy Xie	2	2
Omar Abdul-Ghani	3	2
Adham Radwan	4	3
Jade Hall	2	2
Lana Al-Adra	1	1
Anonymous	3	2
Anonymous	3	3
Anonymous	4	4
Connie Wang	4	3
Sabrina Tochkob	2	1
Gabriel Piquette	5	4
Reem Ewais	2	2
Hayden Benjamin	5	5
	3.1	2.65

It is important to note that these tests were not done in VR as we did not have access to it yet. This explains the great discrepancy between our tested values and target values for our gameplay prototype. To begin, since it is our first gameplay prototype, we tried to spend the least on development as possible. As such, we utilized low poly graphics and assets provided for free in Unity’s student plan, resulting in a development cost of \$0. The average frame rate of the game was 120 FPS, tested on several computers including a home desktop, Windows laptop, and a MacBook. However, the tests were not done in VR so an accurate depiction of a high average frame rate throughout various devices cannot be done, hence the overachievement of the target value by a large margin. A large discrepancy could also be seen between our tested and target values for VRAM memory and RAM memory as our gameplay prototype did not need to render or process as much graphics, since a minimal number of assets were being used. In addition, file size and loading time may slightly increase as more assets are added. Lastly, after conducting a survey among students, we tabulated their ratings out of 5 for our storytelling given scenarios and the empathy they felt, which we averaged out to be roughly 3 out of 5. Compared to our target value of 4 out of 5, this discrepancy is due to the fact that the story has yet to be implemented into the game, hence the lack of empathy invoked to our surveyors. For future prototypes, we plan on polishing our storyboard, implementing it to our gameplay, and adding more interactive events, which in turn will limit the duration of our game to our target value.

7. Future Prototype Testing Plan

When testing a future prototype, we will make sure to analyze and evaluate its performance with respect to our target specifications. The following table outlines our testing plan for our target specifications:

Target Specification	Details of Plan
Development cost	<ul style="list-style-type: none"> Analyze the total cost of developing the prototype and evaluate its value with respect to how well it fits our client’s needs Determine whether it meets budget of \$50
Frame rate	<ul style="list-style-type: none"> Analyze the frame rate of the game by evaluating its frames per second displayed on the VR headset Determine whether it meets ideal specification of 90 fps
Loading time	<ul style="list-style-type: none"> Time how long it takes for the game to load Determine whether it meets ideal specification of 5s
Memory	<ul style="list-style-type: none"> Determine how much memory the game uses by looking at task manager Determine whether it meets ideal specification to use less than 4 GB of memory
File size	<ul style="list-style-type: none"> Look at the file size of the game Determine whether it meets ideal specification of less than 3 GB

Duration	<ul style="list-style-type: none"> ● Measure the duration of the game ● Determine whether it meets ideal specification of 5 minutes
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It is also important to test the objectives of the game. The following table outlines how we plan to meet our product objectives for future prototypes:

Test ID	Test Objective	Description of Prototype Test	Description of Results and its Usage	Estimated Test Duration
1	Interactivity <ul style="list-style-type: none"> ● How will the user interact with the virtual experience (i.e: type of controls, responsiveness, accessible)? ● Can different choices be made by the user? What kind of choices? How many different paths will there be? 	This test will depend on a high-fidelity physical and focused prototype required for enhanced interactivity testing.	We will test the prototype on users and survey, on a scale of 1 to 5 (1 being poor, 5 being excellent) how it measures in terms of movement, responsiveness, smoothness, accessibility, and overall interactivity.	This test will start as soon as a working focused prototype for the game has been created. Per user, it should last for the whole game's duration, ideally 15 minutes per our target specifications.
2	Accuracy of Veteran's Perspective <ul style="list-style-type: none"> ● Does the game properly depict the overall experiences that veterans go through on a day-to-day basis (i.e. symptoms of PTSD, flashbacks, negative emotions)? ● To what extent does it cover a veteran's experience with PTSD? 	This test will depend on a high-fidelity physical and focused prototype required for extensive user experience testing.	We will test the prototype on users, preferably those who can relate to the experience, and survey, on a scale of 1 to 5 (1 being poor, 5 being excellent) how accurately it portrays a veteran's experience.	This test will start as soon as a working focused prototype for the game has been created. Per user, it should last for the whole game's duration, ideally 15 minutes per our target specifications.
3	Empathy <ul style="list-style-type: none"> ● How does the game make the user feel once they have completed it? ● To what extent does the user feel empathy? 	This test will depend on a focused analytical prototype that is designed to make the user follow the story and make choices based on	We will test the prototype on users, preferably those who can relate to the experience, and survey, on a scale of 1 to 5 (1 being	This test will start as soon as a working analytical prototype for the game has been created. Per user, it should last for the whole game's

		their experience, allowing them to potentially develop empathy.	poor, 5 being excellent) the extent to which the user feels empathy from the experience.	duration, ideally 15 minutes per our target specifications.
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8. Conclusion

In conclusion, based on our client’s feedback from our last meeting, we updated our product design and came up with two detailed storylines for our first prototype. Our team plans on presenting to the client these two storylines, the first being about a bystander donating food to a homeless veteran and what the positive outcomes of that decision may be. The second story being a bystander not donating food to a homeless veteran and what the negative outcomes of that decision may result in. We plan on gathering information to make both scenarios more realistic by speaking with local veterans to get their opinions and perspectives about the story idea. After presenting these scenarios to our client, we expect to gather their opinions on the stories and the emotions invoked. Furthermore, we hope to gather improvements as well as what our client enjoyed from our prototype.

9. Updated Project Plan Wrike

Updated end date of prototype 1 and detailed design as we wanted to complete these tasks before the end date previously specified in our wrike project plan. Doing so gave us a better idea of what to put on the bill of materials and what our prototype testing plan would be. As a result of this, we also updated the start dates of the prototype testing and bill of materials to be at the end dates of prototype 1 and detailed design (we also added prototype 1 and detailed design as dependencies of prototype testing and bill of materials). In addition to changing existing tasks, we also added a new task in PD E to conduct interviews to ensure the story elicits empathy. This was to hit on a piece of feedback that our client provided which advised us to interview people who could potentially relate with our story and get their thoughts, opinions and feedback on it. Lastly, since our virtual experience is going to aim to foster empathy, it is imperative that the user has some freedom to explore the world we create rather than following a set in stone path. This led to the creation of a new milestone in PD F which aims for the user to be able to roam the game freely.

<https://www.wrike.com/workspace.htm?acc=4975842&wr=20#folder/967004210/list?filters=&showInfo=0&sortOrder=11&spaceId=-1&viewId=-1>

9. References

[1] Steam. “A Story About My Uncle”, *Steam*, May 28, 2014. Accessed from: https://store.steampowered.com/app/278360/A_Story_About_My_Uncle/