GNG2101 Report

Project Deliverable B – Needs, Problem Statement, Metrics, Benchmarking and Target Specifications

Submitted by

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September 23, 2022

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Abstract

This report summarizes the project's needs, problem statement, metrics, benchmarking and target specifications. The information in this report is sourced from our meeting with Hanan Anis, two team brainstorming sessions, and multiple individual brainstorming sessions. The goal of this report is to inform any reader of the structure we plan for our project to take.

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List of Acronyms

Acronym	Definition
VR	Virtual Reality
AR	Augmented Reality

1 Introduction

“Empathy is the ability to emotionally understand what other people feel, see things from their point of view, and imagine yourself in their place.” (Cherry, 2022) Empathizing with someone’s life experiences is one of the best ways to connect with someone and truly understand their perspective. Developing empathy in a work environment encourages cooperation and innovation, as a higher level of trust in a relationship allows for more unconventional and free thinking. As our society becomes increasingly diverse over time, more and more people must have access to tools that can heighten their empathizing abilities – which is where this project comes in.

The most basic requirement for any user using our project is that they are interested in understanding the daily activities of someone living with schizophrenia. Specifically, they are looking to experience a fully immersive VR experience with aural and visual components simulating several interactive story-type experiences a person with schizophrenia might encounter.

Currently, many available schizophrenia VR experiences offer one-off, exaggerated scenarios that gamify the disorder and attempt to wow the user. This approach to simulating schizophrenia can be found in the popular “GOLIATH: PLAYING WITH REALITY”. One key aspect of what makes our product’s design better than the competition is that it will focus on simulating interactive, realistic, story-type experiences a schizophrenic person might encounter in their daily life. A second key aspect that makes our design superior to the competition is that instead of trying to entertain the user with special effects, we focus on the fundamental user experience, meaning immersive storylines, easy-to-understand controls, and simplistic user interfaces.

This report discusses the structure of our project’s design, implementation, and final form. The report outlines the customer’s needs, a list of metrics, the benchmarks of similar projects, and our target specifications.

2 Main Subject Body of the Report

Client Interview Notes

- Client prefers to have a library of storylines for the user to choose from
- Sees it as an educational tool (ties to future plans for the product)
- Examples of technology/equipment we can use: Google Cardboard, VR headsets, AR
- Interactive story (user gets to make choices while playing through the storyline)
- Ensure that it is as immersive as possible. Focus on user experience
- Examples of less common topics: mental health or indigenous storylines
- Focus on creating an engaging storyline, rather than spending all the time and effort on complex technology
- Ensure that the storyline does not lack depth (client prefers we focus on the story rather than the technology)
- Conduct as much research as possible to formulate the storylines and make them accurate
- Quality over quantity: Client prefers that we choose 1 topic and go in depth with the storyline/storylines, rather than choosing multiple topics

Customer needs

Need #	Customer needs	Importance (1-5)
1	Interactive	5
2	Immersive experience	5
3	$50 budget	2
4	Viral cases/stories	4
5	Educational significance	4
6	Library of storylines	3
7	Story depth	5

Table 1: Client needs

Problem Statement

Our project will be a library of simulated experiences designed to instill empathy for the user. Each experience will simulate a particular scenario to allow its user, who are looking to learn more about the experiences of a person living with disabilities, to develop a better understanding of the life of a person who experiences these situations daily. This project's foundational goal is to help solve the general lack of empathy many individuals have towards people who live with disabilities with an immersive experience that gives users a first-person perspective of the problems many people experience.

List of Metrics

- Cost
- Total Combined Length of all Experiences
- Programming and Design Platform
- Programming Language
- Number of Headsets
- Playing Style (Number of players)
- VR Headset (Type)

- Implementation Platform
- Educational

Benchmarking

Last year, the client began this project with other groups of students. Those groups each created VR experiences to address a variety of issues such as mental health and disability. The client hopes that this year we will be able to take what has been done and improve it with an idea that was addressed last year or with a new idea. During our first client meeting, the client mentioned that a problem that she had to address with multiple teams was to ensure that they were putting enough time into creating the story of the simulation since a lot of teams were focusing all their attention on the technology side of the project. Thus, we will need to ensure that we do not repeat the same mistake while creating our product.

Metric #	Need #s	Metric	Importance	Units	GNG1103-F32- Immersive Experience Tool [6]	GNG1103 F21 - A Tale of Two Students [4]	Equal Reality VR Experience [3]
1	3	Cost	4	CAD$	0	34.17	-
2	2,4,6,7	Total Combined Length of all Experiences	3	min	-	4.5	-
3	1,2	Programming and Design Platform	5	-	Unity	Unity	-
4	1,2	Programming Language	4	-	-	-	-
5	1	Number of Headsets	2	#	-	1	1
6	1	Playing Style (Number of player)	3	#	-	1	1
7	1	VR Headset (Type)	5	-	Oculus Rift, HTC Vive	Oculus Rift, HTC Vive	Oculus Quest
8	2	Implementation Platform	3	-	-	-	-
9	5	Educational	5	Y/N	Y	Y	Y

Importance: 1-Less important, 5-More important

Table 2: Comparing our Metrics with those from Previous Projects

During our research, we found an article describing a similar project that had been created to allow its users to experience events from the point of view of someone else. The projects that were created by groups at the university used a video with characters to display events for the user; however, the project, “The Machine to be Another”, which was created by Philippe Bertrand uses live performers who talk and recreate the users' actions [1]. This allows the simulation to feel less like a simulation and more like a real series of events. Our group found this project to be interesting since it seems to be very successful in creating an environment that allows the users to better understand certain struggles that they might not experience in their day-to-day life. While we will not be able to have live performers depicting all the events in our simulation, we hope to be able to build on some of the ideas that were used in this project such as incorporating voices and sounds to make our simulation feel more real for the user.

Furthermore, it was discovered that VR helped health care professionals develop new skills to better communicate and interact with their patients [5]. This was due to the fact that the VR experience allowed the user to develop a better understanding of patients compared to the education that they gained through in class lessons and textbooks. Similarly, to how we, as Software Engineering students, complete CO-OP placements to be able to gain knowledge and experience that we would not necessarily be able to gain in school lectures. The article “Tech Can Push Us Apart, but These Games and VR Build Empathy” also discusses a project that aimed to help share the stories of people who have survived sexual assaults. It explains that not only does it help share information and stories, but often while utilizing the product, the users will become so entranced by the experience that they fail to remember that it is in fact a simulation [5]. Thus, we hope to be able to create a quality VR experience that will allow its users to develop a better understanding of the events that a person with schizophrenia might have to go through during their day in similar ways to the products described above.

Target Specs

Target Spec	Ideal	Marginal	Why?
Budget (CAD)	50	100	This is the limit we were given for our project.

Storage Size (GB)	5	10	We chose 5 GB so that the game can be easily loaded up on our VR headsets.
Combined running length (min)	5	10	We believe we can make meaningful simulations with a combined running time of 5 minutes.
Instills empathy (results from the form that will be completed by those who test the product)	100% positive response	85% positive response	We want our product to be an effective method of instilling empathy.
Number of Headsets (#)	1	2	We want users to be able to experience the simulation individually.
Type of Headset (Compatibility)	Oculus Quest and HTC Vive	Oculus	Our immersive experience will support both the Oculus Rift and the HTC Vive to make it more accessible to all users.

Client Meeting Reflection

The client meeting determined the general direction on our project design process. Here are some idea changes after the client meeting:

- More than just a single scenario. Be comprehensive.
- The targeting of customers should be wide. The product does not need to be complex, but it should be easy for most people to find and play with.
- Try best to make stories(scenarios) as fascinating as possible to hold the users completing the whole experience.
- Immersive experiences are emphasized. Therefore, AR and VR implementations are important. Since VR could only provide a fictional experience. Hence, AR becomes a better choice for users to substitute in the character by seeing the texture of realistic surroundings.

Unknown information:

- The explanation of schizophrenia.
- Deep background of schizophrenia.
- Cases of schizophrenia.

3 Conclusions and Recommendations for Future Work

Ultimately, schizophrenia is a chronic mental disorder that is often stigmatized due to the accompanying drastic personality changes. Our project aims to tackle this issue using the technology of VR. Our goal is to help others understand, learn, as well as have empathy with those who have schizophrenia. We will also ensure that the experience is interactive with viral cases or stories as well as an immersive experience for the user. As a result, many obstacles arose, such as cost, accessibility, research, and technology. Therefore, we have limited our cost to $50 and our maximum storage to 5GB. Moreover, our team is conducting extensive research on schizophrenia to ensure that the information conveyed in the storyline is accurate and displays no social stigma that is often overlooked. We also aim for the experience to be accessible for people of all ages. As technology is readily available to the public, we anticipate that our project will have a broad community of people who are eager to learn as well as empathize with those who have schizophrenia.

Overall, we have gained thorough knowledge about schizophrenia and similar VR products currently available to the public while conducting our research. Furthermore, we have learned how VR experiences could be used in such a way that it allows the user to understand and learn more about other people's lives.

4 Bibliography

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