

# **Deliverable B - Needs Identification and Problem Statement**

Teena Zheng - 300350624

Ryanne Khan - 300417383

Mateo Barbosa - 300430368

Oluwafemi Oshomoji - 300448029

Joud Dergham - 300420166

**Group 01**

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## **Abstract**

*In this document we will define the project objectives and requirements. It looks over the needs wants, and the desired outcome based on the first official client meeting. This is not a final plan but a tentative document that outlines requirements for the client project.*

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## **1.0 Introduction**

In this document we will define the project objectives and requirements. It looks over the needs wants, and the desired outcome based on the first official client meeting. This is not a final plan but a tentative document that outlines requirements for the client project. What if you could see and feel what climate change is doing to our world? This VR experience submerges you right into the middle of a natural disaster; caused my climate change. The VR is built to make you think and feel differently about climate change. With quick surveys before and after, we'll see how much it changes your perspective and hopefully inspires you to act to help stop

## **2.0 Problem statement:**

The goal of this project is to create an immersive XR experience that vividly demonstrates the effects of climate change, showcasing the devastating impacts of intensified natural disasters. By leveraging XR technology, we aim to inform, engage, and inspire users to better understand the urgency of climate action.

### **2.1 Client Needs**

Using 1–3-minutes storytelling as a core mechanic, the project aims to immerse users in specific real-life climate change scenarios and experience the consequences of natural disasters to raise awareness and personal responsibility. Designed for audiences aged 16 and above, the final product needs base on the facts and allow users to directly experience the impact of climate change on people and the environment. The XR will include a pre- and post-simulation survey to measure changes in awareness, attitudes, and accountability, supported by visually compelling 3D modeling, coding and clear demonstrations of real-world impacts like flooding, water scarcity, or environmental displacement. The success of the project is can it let people realized the importance of the climate change and empower users to make personal changes for a sustainable future.

### **2.2 Design Criteria**

The design criteria for the XR experience focus on creating an immersive, fact-based simulation that fosters empathy and personal accountability for climate change. The simulation must integrate realistic 3D modeling, storytelling, and using intuitive navigation and interactive elements to maintain participant focus. It should be

accessible to audiences aged 16 and older, ensuring clarity and emotional resonance without sensationalism. The XR must balance educational content with user experience, pre-and post-simulation surveys will be employed to measure the effectiveness of the experience, with questions designed to evaluate changes in awareness, attitude, and understanding.

### **2.3 List of concepts and why we chose this**

- Flooding

- Split world (past and present)

- Interactive information signs

- At the end of the experience add a prompt that states that if we do not do something about climate change it will only keep getting worse.

Our project involves detailed research about the effects of climate change (sinking cities, natural disasters, etc.) and user psychology to ensure a realistic and impactful experience. We will create a comparison of two situations: one before a natural disaster and the other after the natural disaster. This idea will invoke the user to reflect upon the differences from before the vs after the natural disaster and how the impact they had caused for this to happen. The user can thus think about how their future actions can prevent this from re-occurring or slow down the process of this event to happen again.

### **3.0 Conclusion**

Based on what the client asked of us in the meeting our project proves that virtual reality mixed reality and Extended reality systems help people understand climate change better through touchable real-world experiences. Virtual reality clearly gives people the image that they have not experienced in the past, the project's success could improve through functional expansions that let multiple players play together and show educational topics the main development problems involve making technical systems easier to use while adapting hardware systems to meet everyone's needs. Successfully tackling these challenges will help improve our work while persuading people to take climate action.

## 4.0 Appendices

We discussed using global warming as a theme, telling the story of how climate change caused the Rideau Canal to not freeze—it was open for only one day last year. Imagine not even being able to skate in Ottawa! We considered creating a scene of falling through the ice, which would have been interesting, but since it is not classified as a natural disaster, we decided not to pursue this concept.

## 5.0 Task Separation Table

Sections	Author(s)	Editing
Introduction	M.B.	-
Problem Statement	J.D.	-
Client Needs	T.Z.	J.D., R.K.
Design Criteria	T.Z., J.D., R.K.	O.O., M.B.
List of concepts and why	R.K., J.D.	T.Z.
Conclusion	O.O.	-
Appendices	T.Z.	-

- T.Z. (Teena Zheng)
- J.D. (Joud Dergham)
- M.B. (Mateo Barbosa)
- R.K. (Ryanne Khan)
- O.O. (Oluwafemi Oshomoji)