GNG1103 Deliverable D

Conceptual Design

Team 1.2

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# Introduction

In the previous parts of this project, we used the initial client meeting to determine their needs and interpreted them in technical terms. We ranked these interpreted needs in importance from 1 to 5, and used the most important requirements to form our problem statement for this project. This allowed us to come up with design criteria that includes functional and non-functional requirements, as well as constraints. These design criteria helped us identify target specifications for our requirements and we assigned metrics and ways to measure their effectiveness. After identifying our target specifications and our important requirements, we were then able to benchmark our ideas to existing products in the market that relate to our future product and compare our design criteria. In this deliverable, we will be taking our design criteria to form subsystems that can allow us to tie together all of our concepts into a final conceptual design

# Subsystems

## The Virtual Environment

* Concept 1: completely made through assets in Unity, the scene will be built manually in Unity, so the user may have a freer perspective, but it will not be as realistic as the VeeR, and it will take a lot of time to create the scene
  + Concept by Leo & Yasen
* Concept 2: made from images in VeeR. Using a camera to capture the usage scene will be more realistic, but the viewing angle will be limited, and objects may also become distorted due to the panoramic camera angle. But it doesn't take time to create the scene
  + Concept by Leo & Yasen

|  |  |  |
| --- | --- | --- |
| Criteria | Unity | VeeR |
| The application must be centered around showing more about others than the user | Unity is impersonal, being a virtual world completely generated through assets. | VeeR uses images, so showing the world we live in and describing it from a different point of view is possible and more easily accomplished than on Unity. |
| Can show users the situations where having a disability can be a setback.  Can show users with disability where they can get a more adapted service. | Can create extensive games, and is not limited to images taken. | Buttons and scenes can be imported into the environment. |
| Needs to have a simple mode of operation, small download package. | Uses C# for scripting, with pre-programmed assistance. | Requires the use of a VR camera to create the scenes. |
| Affordable cost ($) | Free | Free |
| Instructions available in various languages | Requires a specific asset to allow multiple languages. | Available in three languages: English, Japanese, and Chinese simplified. |
| Result | 3.5 | 4.5 (best) |

Table 1: Comparison Board of Design Criteria Between Concept 1 and Concept 2 in the Virtual Environment

## Interaction

* Concept 1: Not interactive but contains visible signs. With this, any written information would already be displayed in the environment as a default as a sign. This wouldn’t need the user to interact with something or activate a trigger for the information to come up, as everything is already shown.
  + Concept by Leo & Yasen
* Concept 2: Buttons for moving and information, for example a button to go up stairs but instead gives you a message, signifying the limited access. The user would have to explore the environment to discover the prompts for the information to show up. This would be more engaging than the first concept.
  + Concept by Leo & Yasen

|  |  |  |
| --- | --- | --- |
| Criteria | Visible Signs integrated to the environment | Button accessed menus for information |
| The application must be centered around showing more about others than the user | Signs can be integrated to the environment, making everything seen a part of the experience. | Can be more easily ignored, or even missed. However, this could also make the user take interest in “hidden content.” |
| Can show users the situations where having a disability can be a setback. | Visually rich environment would not be limited with the message it could pass but would be incredibly on the nose. | The need to take an interest in the button already promotes a certain level of empathy |
| Can show users with disability where they can get a more adapted service. | An environment with signs and information integrated to its surface would have no trouble indicating what is possible. | This would require sifting through the menus to find the correct location/service. |
| Needs to have a simple mode of operation, small download package. | This could potentially require more detail on the graphics, but the operation would be simpler. | This concept would possibly smooth out the download size, and would make the operation far more interactive. |
| Result | 4 (best) | 3 |

Table 2: Comparison Board of Design Criteria Between Concept 1 and Concept 2 in the Interaction Component

## Information and Research

* Concept 1: Interviews. We could use interviews with the clients to gain a more personal statement/information about each of the experiences that we include in our environment. Instead of adding a text popup when a user interacts with a certain part of the environment, we could include a short video of an interview with either the clients or another source to talk more about their experience.
  + Concept by Yahia
* Concept 2: Short text paragraph with information taken from various internet sources. So when the user interacts with the environment, a text pop up would have all the information needed on it so the user can read at their own pace. This would decrease storage needed, but might be an issue for weaker readers.
  + Concept by Jiacheng

|  |  |  |
| --- | --- | --- |
| Criteria | Interviews | Text paragraphs from various sources |
| Can show users the situations where having a disability can be a setback. | This would use experiences specific to certain people that could be more, or less, relatable and could require more empathy to understand. | This sort of information would be more “objective” as it would be taken from academic studies on discrimination and social issues. |
| Can show users with disability where they can get a more adapted service. | This information would rely on the interviewee’s experiences, and as such could describe locations/services that have provided good service. | This sort of information is not always announced on company websites and can be harder to find than just asking a person with a firsthand experience. |
| Affordable cost ($) | Interviews could be done with people that we know. | Access to articles is provided through the University library. |
| Result | 3 (best) | 2 |

Table 3: Comparison Board of Design Criteria Between Concept 1 and Concept 2 in the Information and Research

# Conclusion & Final Conceptual Design

Our final conceptual design comprises of 3 separate processes to be able to meet as many of our design criteria as possible. Firstly, we will use VeeR (or Unity) to build the foundation and environment. Our second subsystem is the Interactive system, the interaction between the user and the product can be realized by automatic pop-up text or manually triggered by the user. The last subsystem will be the Text that interacts with system information, it will be possible to provide effective information to users through video interviews or short text messages on the Web.

In conclusion, using comparison boards to compare the concepts we came up with for each subsystem, we are now able to analyse each concept individually, but also in relation to the other concepts. Due to Unity being a less personal experience for the user, the use of VeeR is the leading concept for our Virtual Environment subsystem. For a more user-friendly approach, visible signs integrated into the environment appears to be more helpful for our interactive component of this project. Moreover, interviewing people to get their first-hand experience as a disabled person would make our information in this project more personal and therefore more likely to promote empathy.

# Wrike Snapshot

<https://www.wrike.com/frontend/ganttchart/index.html?snapshotId=3LFgoMMOJR6Fa77KtIVzh4ULcu68nTfc%7CIE2DSNZVHA2DELSTGIYA>

# References

VeeR: Discover. VeeR.TV, 2016, ([VR/360 Videos, Photos and Experiences, Global VR Content Community | VeeR VR](https://veer.tv/discover)) Accessed Sunday February 13th, 2022.

DeaneHD: Make Interactive 360 Scenes for Free (2019). Retrieved 13 February 2022, from <https://www.youtube.com/watch?v=x8yz-3znCH0&list=PLiacuRqMJ67k4C3FJLq7vQzE0F-od76YH&index=5>