

Project Deliverable B

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Introduction

This document aims to organize customer statements from the first client meeting into their needs, which are considered in order of importance to the customer. This document also contains problems and limitations that were used to formulate the problem statement

List of Client Statements

1. Wants to be a leader in innovation
2. Wants to increase work efficiency with the use use of Virtual Reality(VR) and/or Augmented Reality(AR)
3. VR will take out the struggle of trying to visualize the 2D design on paper and translate it into a 3D product.
4. Wants to eliminate the transition of a 3D model to a 2D sketch and back to a 3D model
5. Wants it to be user friendly
6. Wants the software to work with IOS and Android
7. Wants it to be open source
8. Wants to minimize cost with the use of free plugins in unity
9. Wants interactions with VR to be through direct contact with the device
10. Wants to see all the different types of building(H-Vac, Electrical)
11. Wants to be usable on a construction site(portable, wireless)
12. Want it to Work without Wi-Fi, offline usage.
13. Wants a first-person view
14. Wants it to have many views on the same object or hall
15. Wants there to be a possibility to see the mechanics through the walls
16. Wants the product to be used standing still for safety reasons
17. We should do a short video explaining how to use the product
18. The product can be at the medium quality (video)
19. Wants the product to be like Google map street
20. Wants it to be controllable without hands
21. Must meet the maximum budget of \$100

List of Client Needs

1. Virtual Reality (5)
 - a. Justification: The client asked for this to be the center of the project
2. User-friendly interface (5)
 - a. Justification: Customer satisfaction is crucial to developing a good product
3. User manual (4)
 - a. Justification: Without proper instruction, the product is unusable and not user-friendly
4. View multi-disciplinary layers of the model (4)
 - a. Justification: The client asked for this to be the main focus of the project
5. Usable with IOS and Android (4)
 - a. Justification: Accessibility is crucial to the success and usability of a product

6. Costs kept to a minimum (4)
 - a. Justification: The price must be kept within our set budget
7. Increase worker productivity/efficiency (4)
 - a. Justification: This is the focus of the project, using the needs listed above and below
8. Offline usage (3)
 - a. Justification: Accessibility is crucial to the success and usability of a product
9. Open-source app (3)
 - a. Justification: Allows for future people to further develop and improve upon the project

Problems and Limitations

1. In the current market, manufacturing is far more developed than construction with respect to technology and digitalization.
2. Increasing laboring shortages due to the baby boom era retiring.
3. Currently, the process requires a 3D design to be converted to the 2D draft paper, then executed back in a 3D, real-world setting.
4. Key and intricate details are lost in the translation and interpretation of the different mediums.
5. Lack of cheap alternatives to ease integration
6. Currently, the creation of VR/AR simulations is rather new and the team will experience a learning curve
7. VR requires a lot of computing power, it is unclear how well traditional smartphones will perform
8. Due to VR limiting the user's real-world vision, potential safety risks are relevant at job sites
9. The project is being designed to operate on open job sites. However, it will be developed in a significantly more restricted area. Trials will be restricted.
10. Clients needs may not all be fulfilled as the budget is rather inadequate
11. Instability on older phone models which contain less RAM and weaker graphic processing units (suffered instability running Augmented Reality on iPhone 11)

Problem Statement

Design a system that can assist construction workers and engineers in the development of buildings through the use of Virtual Reality, to visualize three-dimensional spaces.

Conclusion

This Document is an organization of our current status of developing and solving the project at hand. It contains all relevant information, to compiling the client's statements into needs and a problem statement.

