Axolotl Industries

Team B03-2

Deliverable B - Needs Identification

Engineering Design - GNG1103

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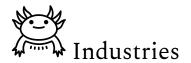
Industries

ABSTRACT

The purpose of this project is to develop an augmented reality mobile application for the client EllisDon to allow them to pursue digitization of the construction industry. They specified seven overall needs, and they have been rated in terms of their importance. The problem statement was identified as such: to design a user-friendly app for the client EllisDon to be used on and off-site and to view different parts and structures of a BIM in real-time.

1.   Introduction

In this day and age, the construction industry is a representation of how a lack of digitization can often lead the industry as a whole to lag behind the rest. While manufacturing, for example, is almost fully automated and experiencing increasing productivity, construction is experiencing a downtrend. As a solution, the client EllisDon has proposed to integrate building information modelling (B.I.M) with augmented or virtual reality technologies to offer those in the industry more representative 3-D models of their designs. With users being able to collaborate and have the ability to view multiple layers of the construction, the entire process becomes significantly streamlined. The purpose of this project is to offer the client a mobile application that will allow them to pursue such digitization. The contents of this deliverable are divided into two sections: the client's needs and the problem statement. The first section will focus on outlining what the mobile application should offer and the importances of each, and the second section will define the problem that must be solved.

2.   Client Needs

The client needs an easy to use AR/VR application that can work on any iOS or Android smartphone and tablet. The app will put the model of a BIM (Building Information Model) in real-time on the construction site location using AR (Augmented Reality) technology. It will also work outside of the building site, which is where the VR (Virtual Reality) portion of the application comes in. The app will need to run offline and online, and when it's online, any changes done to the BIM can be saved on the cloud. The software will be free to use, have a user friendly interface and feature a tutorial guide to help the users, such as the engineers and workers, to understand the basics of the app. Navigating through the software is going to be done on the mobile device and the workers will be able to see the different layers of the BIM, such as mechanical, electrical or structural views. The budget limit for this project is 50$ and the deadline cannot be prolonged (as specified in the syllabus). If possible or needed, the app can be compatible with google cardboard.

The table below (Table 1) is an overview of the overall needs of the client, and is rated by their individual importances (5 stars being most important, and 1 star being the least).

Number	Needs of the client	Importance
1	Ability to view B.I.M. in 3D space	★★★★★
2	Compatible with mobile devices (iOS and Android)	★★★★★
3	Training and implementation documentation must be provided.	★★★★★
4	Navigation and interface has to be user friendly	★★★★
5	Ability to see different layers of the building	★★★★
6	Wireless, on site and off site work capabilities with cloud saving	★★★
7	Utilize a free to use Software (Unity)	★★

Table (1) Table for the Client Needs

3.   Problem Statement

The task at hand is to design a user-friendly app for a construction company (EllisDon) to be used on and off-site and to view different parts and structures of a BIM in real-time.

4.   Conclusion

We concluded that the client requires us to come up with an application that can project a 3D model of a building (BIM) in real-time with a user-friendly interface and easy navigation.