Deliverable B- Needs Identification and Problem Statement

Needs Identification

EllisDon is a company with over 5000 employees worldwide who help build, maintain and furnish buildings. They are nearly 100% employee-owned and are currently seeking to develop and maintain a leading edge on any competition through technological innovation. One way they are looking to innovate is by coupling BIM(Building Information Management) software with either Augmented Reality (AR) or Virtual Reality(VR) to help increase efficiency and precision within the construction process. Initially, the only identifiable use for AR and VR systems has been within the gaming and social sector. In more recent years however, this technology is being implemented within schools and developed for use in the workplace. After speaking with the client in a recent interview, our team has organized and prioritized several of the client's needs and wants that will be used when creating a satisfactory software, all of which have been listed below.

Ranking	Customer Need	Interpretation of Need
5	View existing models using AR or VR	The program can display the internal mechanical, electrical and structural systems of the building
5	Phone or Tablet compatible	The program can be used on a phone or tablet
5	Access anywhere	The program can be accessed from any location
5	Offline mode	The program can be accessed without an internet connection
4	2D drawing access/Ability to annotate	The program includes an overlay layer upon which users can draw or write on
5	Navigation/Orientation-based site location	The program is capable of shifting its view of the building based on tablet/user movements
4	Method of moving from floor to floor	The program switches between floors of the building with the use of either an on-screen button or gesture
5	Safety Compliant	Users can maintain awareness of themselves and their surroundings.

5	Comprehensive guide/tutorial	Includes a video detailing simple and easy to follow instructions to help users navigate the program with ease
4	Multi-device access	Multiple devices can connect to the same session at the same time
3	Headset independent	The program does not require a headset
1	View extended properties	The program displays properties such as material type, pipe size, cable size etc.

Problem Statement

A need exists for skilled construction workers to better streamline their tasks and increase their productivity to help meet the numerous challenges faced by the construction industry. These include, but are not limited to: increasing project complexity, skilled labour shortages, construction details lost in translation from 2D drawings and the potential for competitors to gain an edge. For these reasons, Patrick from EllisDon is now looking to develop an AR or VR program that is cheap, accessible and versatile.

Conclusion

Creating a program that accomplishes the needs while achieving as many of the client's wants will be a key factor in the project's success. To accomplish this, our team will use Unity or similar software to develop an interactive 3D environment capable of both simulating the design environment in an overlay for the worker while tracking the changing conditions of the job site. It is crucial that we focus on the aspects of most importance in favour of the more optional features. As such, there are still some unknowns in terms of design specifics as more research will have to be conducted to ascertain the viability of various solutions. Therefore, our team will continue to explore various designs, conduct the appropriate research and discuss with the client how best to proceed.