Proceedings of International Conference on
Novel Innovations and Sustainable Development in Civil Engineering (NISDCE'22)
31st March and 1st April 2022

Implementation of Augmented/Virtual Reality Technologies in BIM

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ABSTRACT

Visualization and immersive interaction are an integral element missing in the construction process. In this era of remote working, BIM coupled with AR/VR is the game changer in the construction industry. The wide ranging applications of AR-BIM have tackled the many inconsistencies and flaws in the field usage of BIM. In the times of faster and efficient construction or Construction 4.0, integrating BIM with AR/VR will facilitate Lean Construction, which is the need of the hour.

Some of the lucrative applications are:
- Simulation of project for presentation to client
- Safety training for new recruits/labour will determine if approval to work on site is given.
- 3D Visualisation for design phase
- Tracking of progress of project
- Locating structural/building components

For the purpose of understanding the shortcomings in the current industry workflow, an onlinesurvey was developed to understand the grassroots level expectations from this concept of an individual. Also, a projectoriented survey of 2 different sites of L&T were obtained to get a clearer picture of the current scenario. Intent of survey is to understand the most practical use case scenario of BIM integrated with AR/VR. The paper found that Revit and Unity were the most utilized BIM AR/VR software and Progress Monitoring/Tracking was found to be the most suitable Use Case. The major challenge perceived was the Reluctance/Non-Adaptiveness to new technology. There are many industry relevant Workflows available. Many of them have certain gaps or flaws caused due to challenges such as cost, non-adaptiveness, lack of expertise etc. The intent of this thesis is a creation of Workflow to bridge those gaps using existing solutions and innovate new processes utilizing integration of BIM with AR/VR.

Keywords: *BIM (Building Information modelling), AR (Augmented Reality), VR (Virtual Reality), Lean Construction.*

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