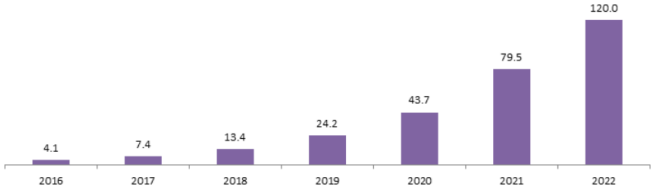
Future of Augmented and Virtual Reality in Construction

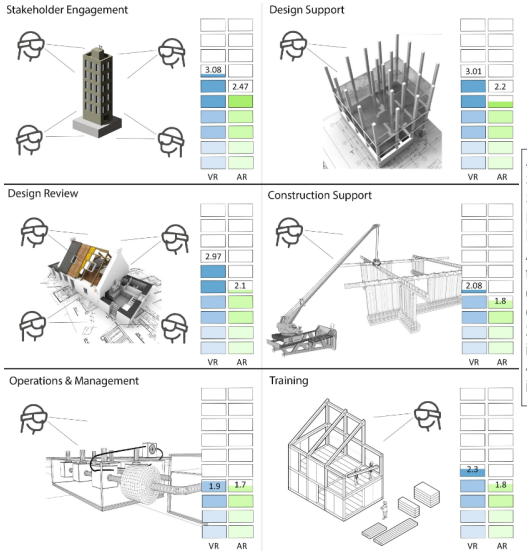
Abstract: A series of virtual design contractors were interviewed regarding the future involvement of augmented and virtual reality software integration with construction processes. Within the construction industry, VDC specialists rely on Building Information Modeling (BIM) and Computer Aided Design (CAD) to create digital models that can be used to analyze the design of a building from all points of view. The interviewees responded to questions about software implementation advantages, and related user experiences. Six interviews were conducted, amongst three industry leading companies. Their assumptions of future AR and VR usage in construction were based on learned knowledge and prior field exploration. Interviewees determined that construction companies can gain more security in their day-to-day tasks through rigorous software implementation. Software adoption within a company carries minor costs, while paying off tenfold in years to come. More precision and efficiency will translate to increased cost savings. An interviewee mentioned, “VR visualization allows us to gain a comprehensive view of how the project will appear when complete, and how to handle it successfully”.

Key Works: Augmented reality, Virtual reality, construction, architecture, software.

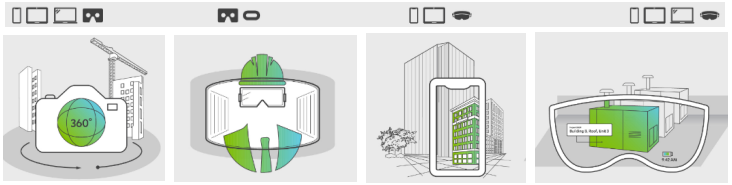
Global AR and VR Revenues In the Construction Industry (billions)



Source: ARtillry, Beroe Analysis



AR vs. VR Usage
Study from ScienceDirect.com by J. Delgado, L. Oyedele, P, Demian, and T. Beach. A 1 to 5 scale measuring the level of adoption into different use-cases of construction (1=not used, 2=early testing, 3=basic implementation, 4=partially used, 5=fully implemented).

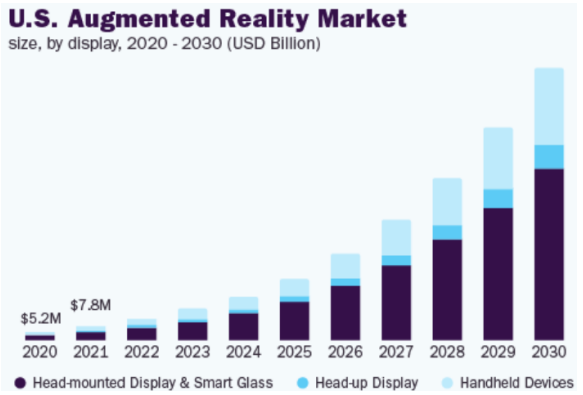


360 Camera: captures panoramic footage of the real-world environment in a single shot

Virtual reality: immerses users in a fully artificial digital enviornment

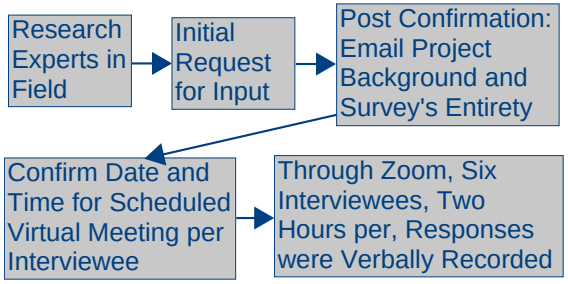
Augmented reality: overlays virtual objects on the real-world environment

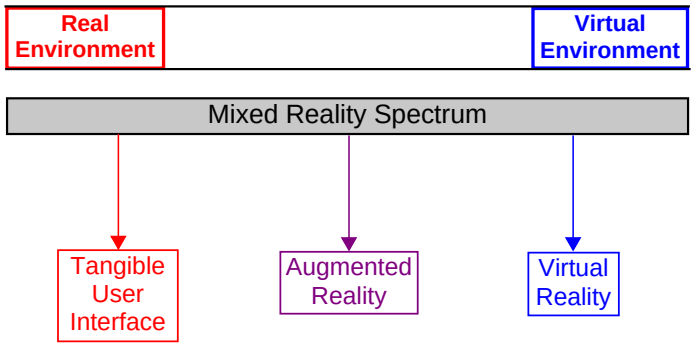
Mixed reality: not just overlays but anchors virtual objects in the real world



Expected Compound Annual Growth Rate of 40.9% from 2022 to 2030 (source: www.grandviewresearch.com)

Methodology





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