The Future Is Now: How Augmented Reality Is Benefiting Construction

Written by: InEight Blog Editors

Anyone who has ever experienced the video game Pokémon GO is already familiar with augmented reality (AR). Played on a smartphone or tablet, the use of AR transforms such video games by superimposing a virtual world on top of the real-life one. The end result? Computer-generated objects are brought into the players' physical environments. All of this is done through widely available mobile apps and other smart devices.

This type of technology that enhances our play has also been gaining traction in our work lives, including within capital projects, positively transforming the construction experience for better project outcomes.

As our industry continues its adoption of technology to improve project management, advanced technologies such as augmented reality are also seeing an uptick in serious investment. In fact, while this investment may have been in a decades-long infancy in the construction sphere, it's now in the middle of a full-on growth spurt, following in the footsteps of, and even enhancing its increasingly popular cousin, building information modeling (BIM).

And as the technology continues to become more fine-tuned and realistic, the possibilities just keep expanding. Here are some of the areas where AR is currently being used and where it holds the most promise for the future.

Planning And Designing Using Augmented Reality

AR's value can be realized as early as the design stage. AR allows architects and engineers to superimpose digital models of buildings onto the real-world site, providing a realistic view of how the finished structure will look and fit into its surroundings. Being able to fully visualize a project in all its augmented 3D glory allows the client and stakeholders to understand, interact with, and assess it while it's still in development. Think of this as virtually fine-tuning and inspecting the project before it's built. The benefit is in envisioning design alternatives, tweaking adjustments, and identifying mistakes and potential issues to collectively address prior to actual construction — all to help create a more

accurate version of its initial iteration, not to mention how it's aligning with client requirements.

And it is especially promising if used in tandem with BIM, taking the 3D replica created using BIM's linked structural data and layering it over an image of the jobsite. Going forward, augmented reality is likely to continue to benefit construction in this way, and may end up depending on the interaction between BIM and AR.

Promoting Safety And Training On Heavy Equipment

Safety has no start or end date — it's always at the top of the list. In recent years, there has been a lot of focus on safety in construction, as well as on improving the efficiency of equipment training. Augmented reality is starting to play a role in both of these areas. Through a mobile device or wearables like AR headsets, glasses, or watches (a technology category that continues to evolve), it can serve as a real-time visual guide to identify and notify workers as they get close to hazards to avoid on jobsites.

But safety isn't just about navigating around site hazards. It's also about being properly trained in how to operate machinery. Think back to when you learned how to drive a car. With some observation, hands-on tips from a parent or driving instructor, and trial and error in an empty parking lot, you learned enough to get your license. That fairly casual approach doesn't work as well for construction vehicles, heavy machinery, and complex equipment, though. With AR it's a safer, more controlled training experience. So, for example, through realistic virtual simulations new forklift and crane operators are able to grasp how to maneuver these specialized vehicles safely and effectively once they're out on the jobsite and learning to use them in person. There's no chance of injury to the novice equipment operators and no damage to any expensive equipment.

Controlling Costs With Augmented Reality

Costs are high on the list of ways to evaluate project health and progress, now and far into the future. This is where all the above augmented reality benefits become more measurable.

A sizable portion of cost overruns involves rework, with much of it preventable from the very beginning. Let's go back to that early phase of a capital project. One thing that AR-enabled walkthroughs accomplish is bringing to light both obvious and hidden defects that can be corrected during the design process — before they wind up as expensive repairs incurring associated labor and material costs. Those same early AR walkthroughs also help deliver a fully explored and hashed-out design resulting in a more accurate virtual model to build from. Not only does everyone have a better understanding of the jobsite and the project before work begins but can help to prevent expensive mistakes from being made that require reconstructive work later on.

Secondly, augmented reality can help rein in costs related to safety and training. AR-supported equipment and safety training provides an immersive experience that allows workers to make mistakes without the repercussions. That means fewer equipment damage incidents, less chance of worker injuries, and reduced workers comp and insurance claims. And it can reduce the need for lengthy, in-person training sessions.

Augmented reality is a rapidly emerging technology with a wide range of potential applications in construction. Yes, it's quite the leap from the 2D blueprints the industry has long relied on — and probably a bigger jump technology-wise from what construction companies today are adopting. Although it is still in its early stages of development, AR is beginning to make its mark on the construction industry, with the potential to revolutionize the way that construction projects are planned and executed.

About the Article

This article is republished from the InEight Behind the Build online blog. InEight provides field-tested construction project management software for the owners, contractors, engineers and architects who are building the world around us. Customers worldwide rely on InEight for real-time insights that help manage risk and keep projects on schedule and under budget across the entire life cycle.