**Featured Innovation:**
Enhancing client engagement through Virtual Reality

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Perhaps no single technological innovation in recent years has the capability to transform the construction industry quite like virtual reality. At Balfour Beatty, we’re exploring the ways VR can improve the design and building process to the benefit of our clients and partners. Recently, our Florida teammates demonstrated just how powerful high-end visualization and real-time simulation of unbuilt spaces can be on a large-scale hospitality project.

**Context/Need**
The project team wanted to find ways to maximize a mockup program for their client, Encore Capital Management, with minimal costs. A typical practice on hospitality projects is to build full-scale mockups of hotel rooms to give operations managers, designers and contractors the opportunity to understand the fit and finish of a particular room before it is replicated and built hundreds of times. However, only a few room types actually benefit from this process, leaving many rooms out of the equation for the sake of limiting costs. We decided to leverage the already produced BIM models to create a soft cost technological solution that expanded the mockup program to other areas of the project.

**Solution**
We utilized project BIM models and our own in-house VR capabilities to develop two VR environments for the owner to walk through. The owner’s representatives immediately grasped the size and scale of the spaces they were walking and began to engage in meaningful discussions about the design. It took our team two business days to produce a walkable environment and five days to build a detailed environment with accurate materials, furniture and outdoor views. All who attended the demonstration agreed that it offered tremendous value and applicability to the project.

**Is it Right for Our Project?**
VR was the right solution for our challenge, because we used soft costs instead of hard cost to understand the fit, scale and spatial planning of a specific environment without the need to build it. It didn’t eliminate the brick and motor mockup program but simply expanded the mockup program we already had to other spaces on the project that wouldn’t have been built under normal circumstances. The client was easily able to recall design details from the physical mockup and intuitively apply them to the space being observed through the VR headset.

**Challenges**
Our biggest challenge was convincing those unfamiliar with VR technology that it could be a viable solution for mockups. This value was quickly made transparent once the owner’s reps were virtually transported into the design via the VR headset. VR still isn’t viewed as an industry standard, but we successfully showcased our capabilities while building excitement about the project.

**Want to Implement on Your Project?** Here are some facts and stats to guide you:
**VR Hardware Costs:**
- HTC Vive VR Headset ($800)
- In-house custom-built VR machine with NVidia 1080 graphics cards and 1 terabyte solid state drive ($3,500)

**VR Software Costs:**
- Fuzor annual cost per license ($3,500)

**BIM Investment:**
- It took approximately 40 hours to produce a two-bedroom mockup unit, which includes modeling time as well as the incorporation of realistic elements such as natural carpet, tile, stainless steel and glass.