Virtual Reality Check: The State of Immersive Design in the AEC Industry

Agenda
- About Extended Reality
- IMEG’s Virtual Reality Solution
- Case studies
- What’s next?

About Extended Reality

An umbrella term for the technologies that add to or supplement a person’s conventional reality

Extended Reality

- Virtual Reality
- Mixed Reality
- Projection Technology
- Holographic Technology

Virtual Reality

- Totally immersive
- Transports the user to a totally different environment
- Requires hardware
  - Oculus Rift
  - HTC Vive
  - Google Cardboard
Virtual Reality

AEC Applications
- Stakeholder Engagement
- Owner Buy-In
- Internal/Team Coordination

Mixed Reality

Inclusive
> See current environment and add information to it

Requires Hardware
- Microsoft Hololens
- Tablets with a front facing camera
- Google Glass
- Pokemon Go App

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IMEG’S VIRTUAL REALITY SOLUTION

Oculus Rift
- Relatively portable
- Bring walkthroughs to the user
Tools Required for Virtual Reality

**Short Path**
- Revit → Virtual Reality Add-In Tool (Enscape, IrisVR, Revisto, etc.)
- Quick – what you see is what you get (for better or worse!)

**Long Path**
- Revit → 3Ds Max → Unity / Unreal
- Slow – take more time to add detail and interactivity

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CASE STUDIES

**Stakeholder Engagement: OR Renovation**
- We invited doctors and nurses to review the design for a new Operating Room in Virtual Reality before it was constructed.

**Stakeholder Engagement: OR Renovation**
- Virtual Reality walkthroughs are much quicker and less costly to build than physical mockups.
- Virtual Reality walkthroughs better capture design intent for stakeholders that are not trained to read engineering plans.
- Virtual Reality walkthroughs can be completed multiple times through the life of the project.

- Your equipment solution matters (RAM and graphics cards!)
- Jittery walkthroughs make people ill 😥
- Poor lighting and shading can pull people out of the experience.
Case Studies

Owner Buy-In: New Long Term Care Facility
• We invited the owner to review the design before it was constructed

Details and materials matter – and you can get stuck on them
• Have specific talking points to drive the conversation
• Lock down areas that you do not want to people to enter

Internal Coordination: A New College Arena
• Where we put an IMEG engineer into a VR headset for the first time on a project that had a deliverable the next day
### Case Studies

#### Internal Coordination: A New College Arena
- Engineers notice things that they might not catch in Revit.
- Engineers notice things that might not report as a clash.

#### Team Coordination: Team Project Design Meetings
- Where we take the entire AEC team and review the project in VR.
- We focus on small elements that we notice in reality but not always on plans that make the project better.
- It’s all about seeing the details that matter to the users of the space over the life of the facility.
- We had fun doing it.

### SHINY PRESENTATIONS

*Seed Processing Plant Video for Owner Review*
### Shiny Presentations
- QR Codes

### Overall Lessons Learned
- All members of the design can benefit from Virtual Reality
  - Stakeholders, Owners, Designers
- Virtual Reality should be used for what it’s good at
  - Immersive visualization
  - Details and Materials Matter
  - You get out what you put into it
- Backup your backups
  - When doing live demos, prepare for the absolute worst: extra batteries, failed exe files, no wi-fi to log into, sweaty people touching your equipment, people getting dizzy
- The technology is changing constantly
  - It’s work to keep up with it. Find someone who is passionate about it and let them become a subject matter expert

### WHAT'S NEXT?

#### Animation
- Large Medical equipment as it moves in a space

#### Acoustical Analysis
- Sound in the facility – now + potential

#### Mixed Reality
- Visualize existing utilities below grade
- Demonstrate new equipment in existing spaces
- Internal Training Applications