

OSBEELS 2018 SYMPOSIUM

VR for Structural Design and Coordination



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- BIM Director / Associate kpff Consulting Engineers
- Been with kpff for 23 years.
- Prior to kpff I worked as a contractor for intel doing fab layouts.
- I started my career at the bottom designing garbage cans.
- I was in the USN as an Operation Specialist controlling Air Craft
- Instructor at Autodesk University
- Instructor at BiLT (Building, information, Lifecycle, Technology) (RTC)

VR for Structural Design and Coordination

2014 kpff started this journey into the VR world
We wanted a better way to review and coordinate our models with clients rather than the 3 hour Navis meetings

Limited resources:

Equipment: Video / Processing power

Software: Unity, Unreal, Stingray

Static: Always having to start over after a change



UNREAL ENGINE



Where it all started for us



VR for Structural Design and Coordination

Oculus Generation 2

- Reduce motion sickness
- Tracking sensors
- Controllers vs. xbox controls



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Going this push button way we also knew that we had to upgrade our computers to handle the new tech.

We called Oculus to find out what they use to test their equipment:

17 overclocked

Water-cooled

Extra large power supply

Just 32 megs of ram

SATA Hard Drive

Dual GeForce 1080 video cards



VR for Structural Design and Coordination

Push Button VR

Ability to go straight from program into VR

We needed to beta test a few programs to decide which one worked best for us

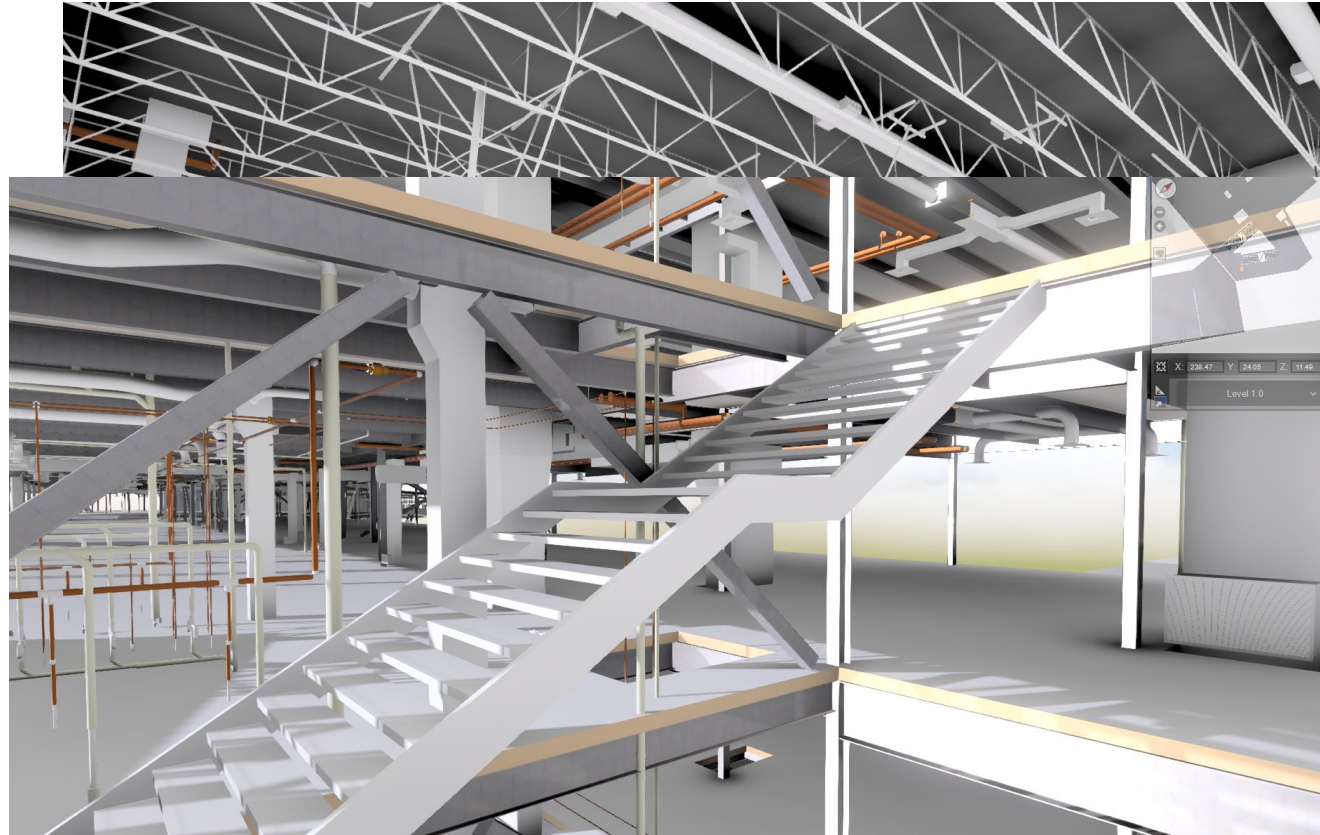


VR for Structural Design and Coordination

Using VR in the company

Implementing VR

- Immersion

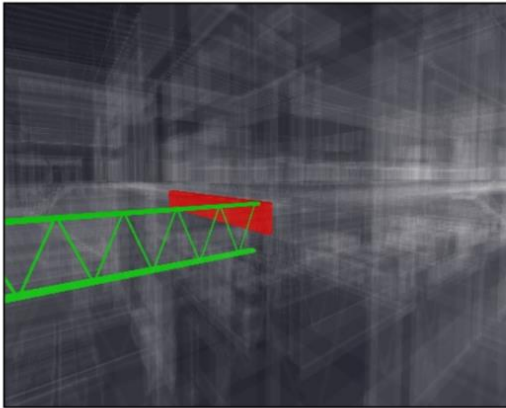
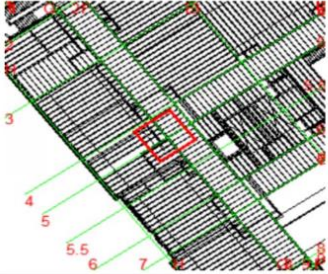


VR for Structural Design and Coordination

Using VR in the company

Implementing VR

- Immersion
- Coordination

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Description		Location Floor	-1											
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Design Consultant														
Client Project Team														

VR for Structural Design and Coordination

Using VR in the company

Implementing VR

- Immersion
- Coordination
- Design Intent

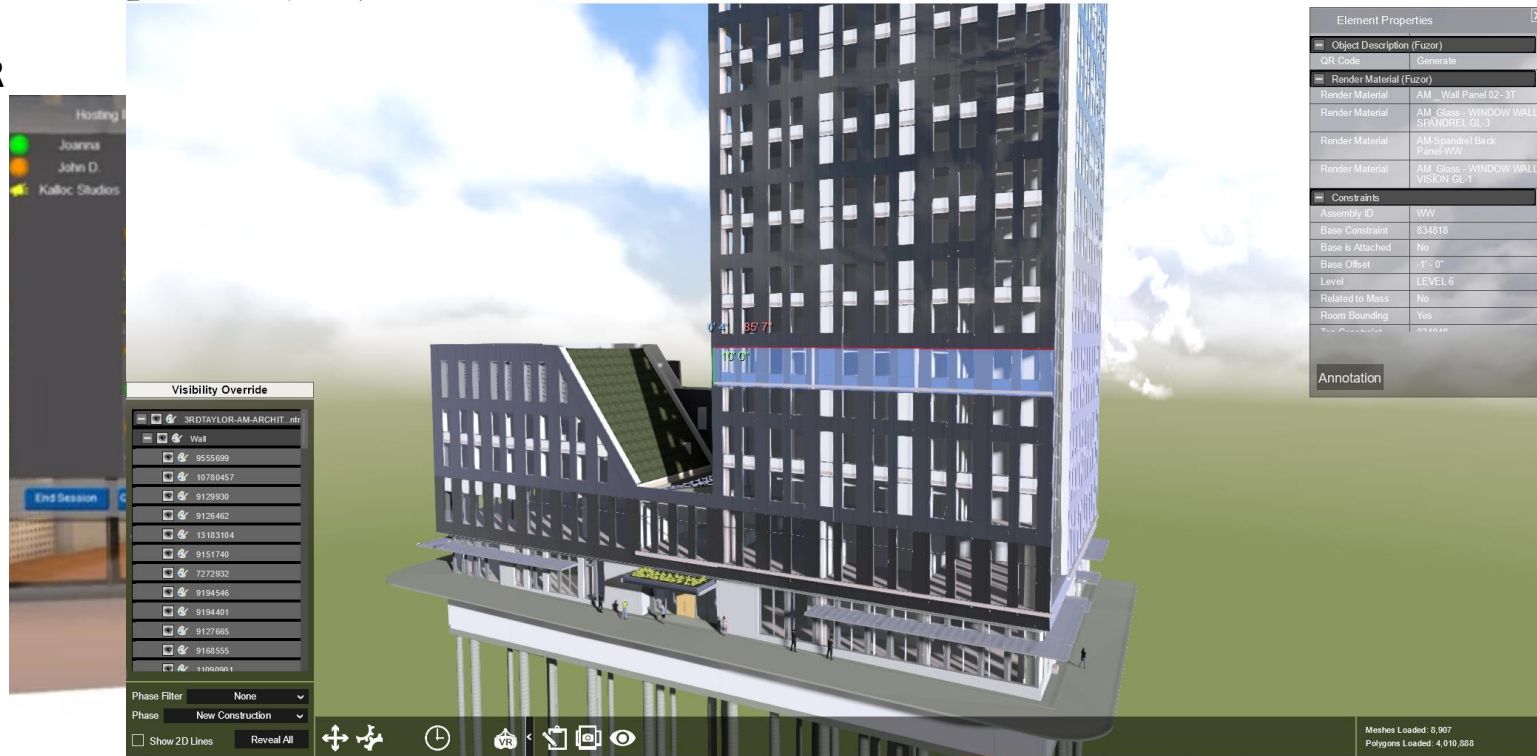


VR for Structural Design and Coordination

Using VR in the company

Implementing VR

- Immersion
- Coordination
- Design Intent
- Sharing



VR for Structural Design and Coordination

Using VR for Presentations

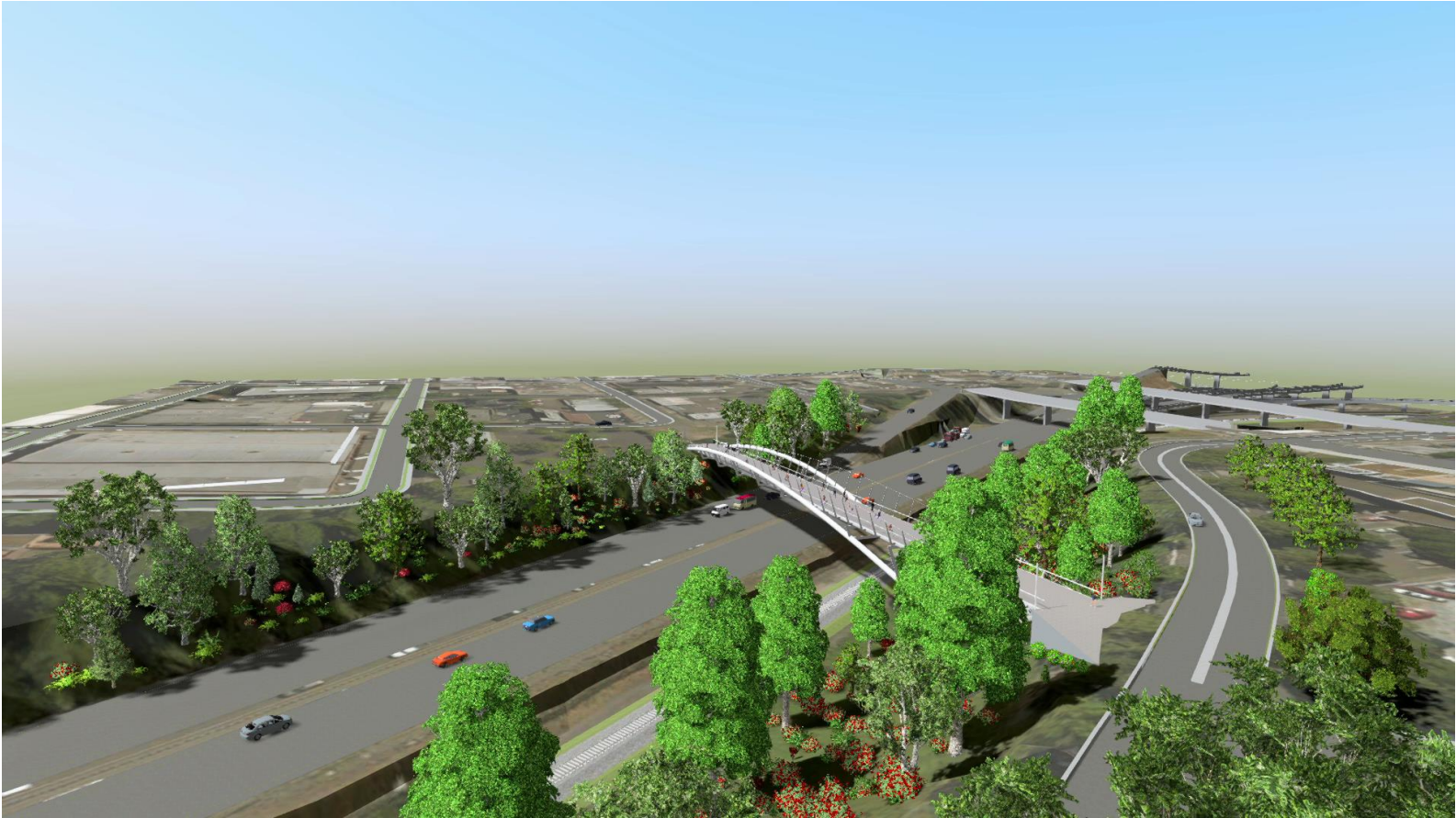


VR for Structural Design and Coordination

Using VR for Presentations
Community Involvement



VR for Structural Design and Coordination



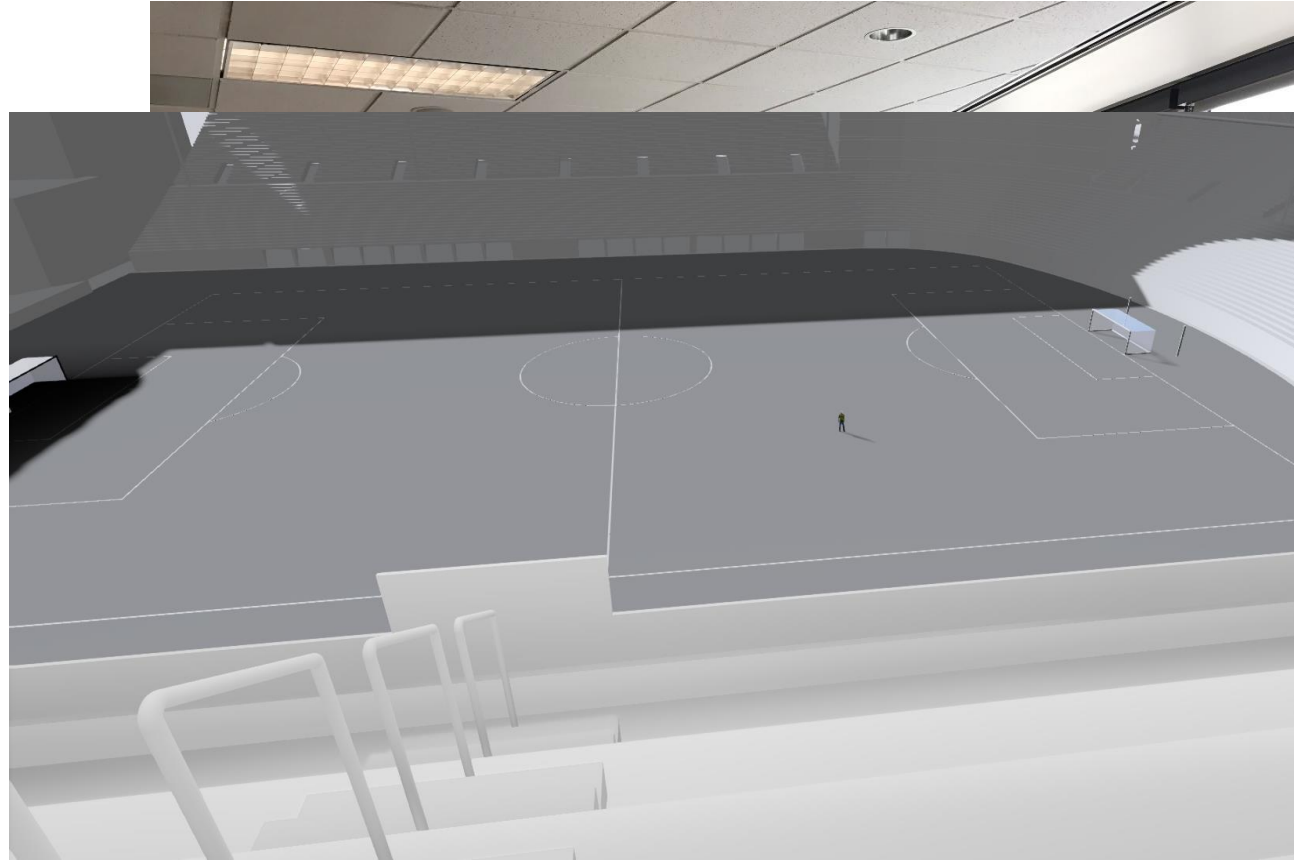
VR for Structural Design and Coordination

Using VR for Presentations
Community Involvement
Client buy off



VR for Structural Design and Coordination

Using VR for Presentations
Community Involvement
Client buy off
Arch Team Coordination



VR for Structural Design and Coordination

VR vs. AR

With **virtual reality**, you can swim with sharks. And with augmented reality, you can watch a shark pop out of your business card. While **VR** is more immersive, **AR** provides more freedom for the user, and more possibilities for marketers because it does not need to be a head-mounted display.



VR for Structural Design and Coordination

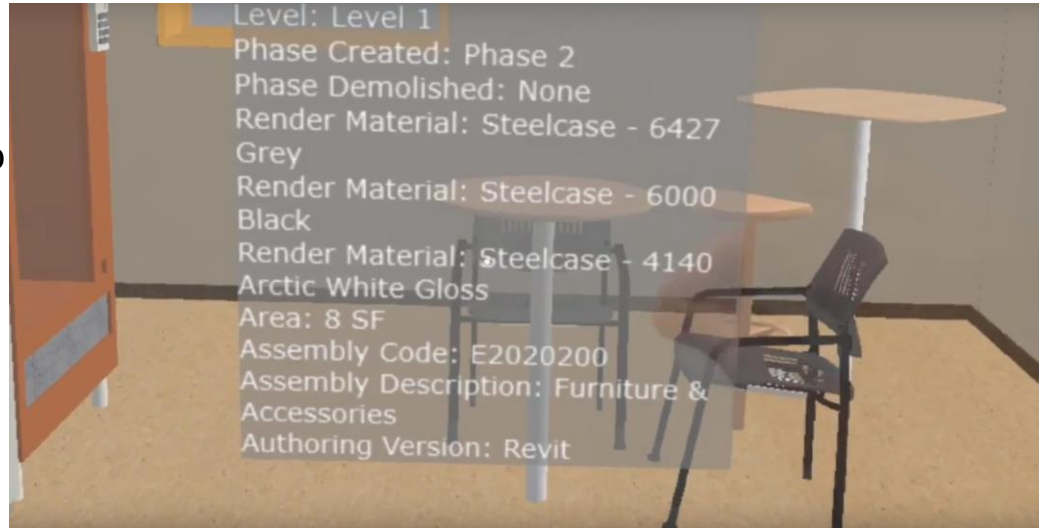
AR is currently used more in Construction where VR is used more in the design.
From simple AR with your phone or tablet
To point and mechanical layouts



VR for Structural Design and Coordination

Can AR be used in the Design world?

New Tech coming out allows HoloLens AR to be used With voice commands and hand / finger movements, allowing for accurate design and placement.

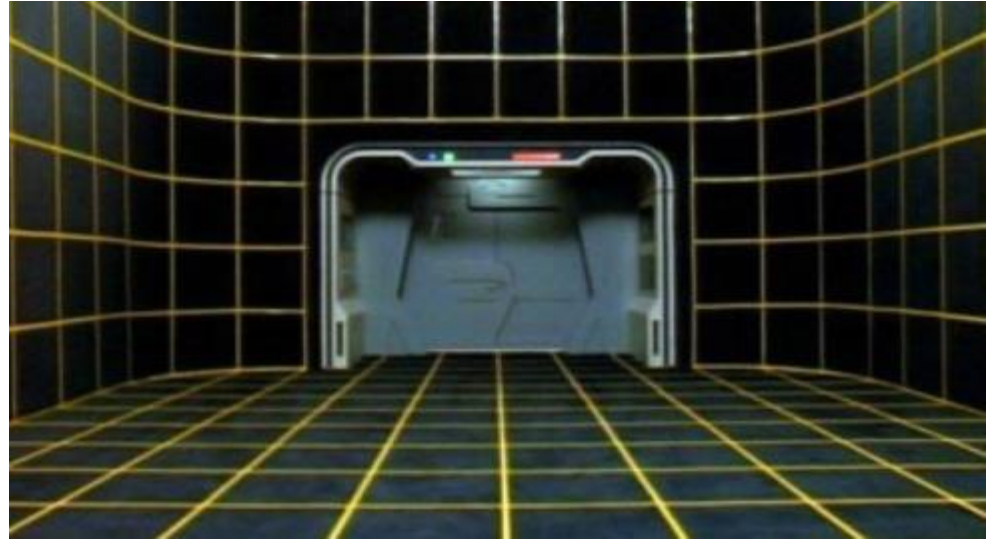


VR for Structural Design and Coordination

What does the future hold?

We are looking into applying physics to our VR models and adding true weights to mech. Units, Fall Protection, and other aspects to simulate real life for training purposes.

Holodeck?



QUESTIONS?