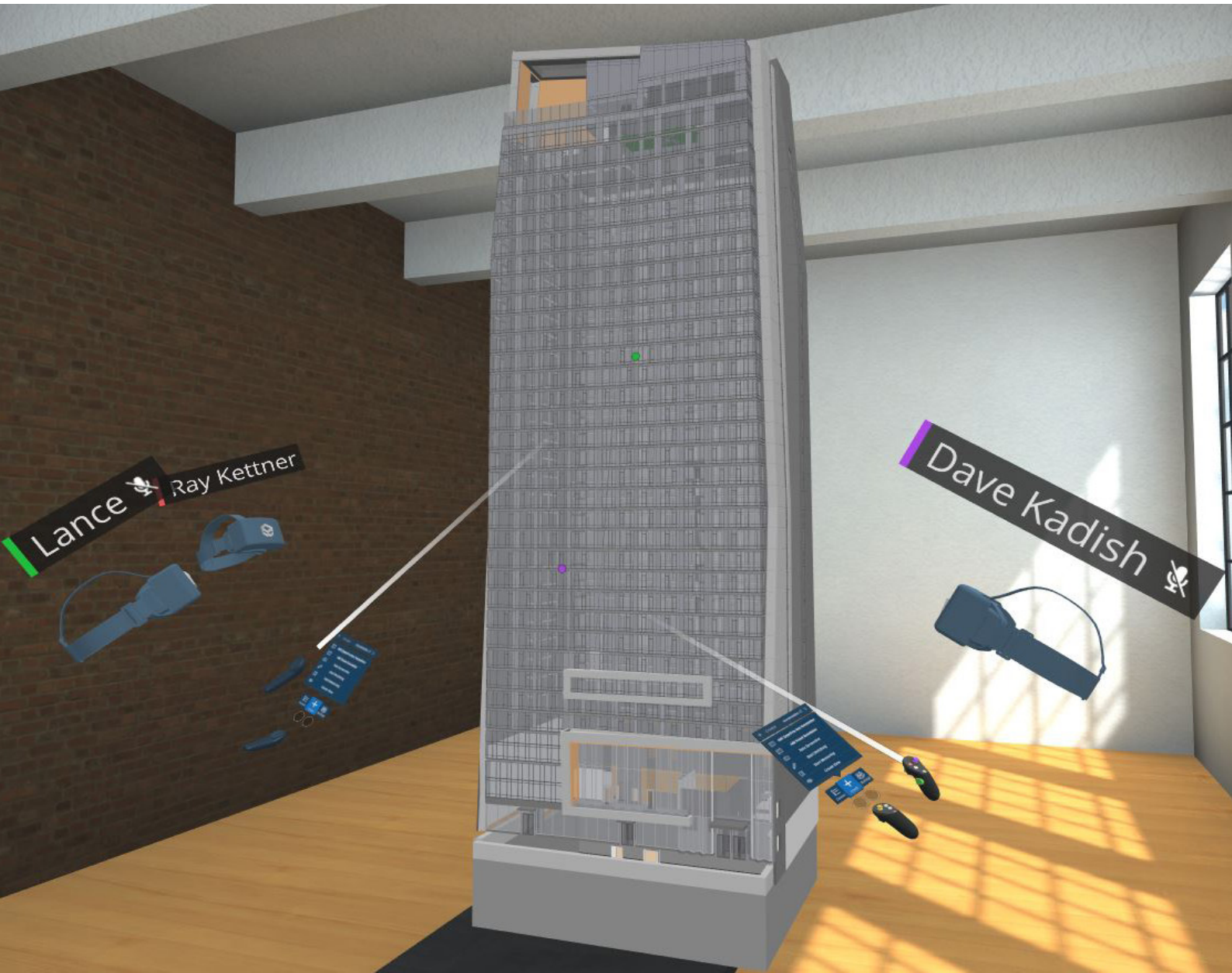
InsiteVR Stantec

Using VR Meetings to Reduce RFIs and Improve Design Coordination for High End Residential Tower Projects

High End Residential Design | Stantec | Case Study



Using InsiteVR, a Stantec Architecture team used VR meetings to improve communication with structural engineers, prevent design RFIs, and save on travel time on a 32-story residential tower project in the Boston metro area.

Participants

Senior Associate, Associate, 2 Design Coordinators, Designer, Structural Engineer PM, Senior Structural Engineer.

Goals

Ray Kettner (Senior Associate) and Dave Kadish (Associate) decided to use InsiteVR to achieve the following:

- Find and resolve potential design issues not made apparent on 2D plans.
- Speed up review with the structural engineers.

Challenges

Balancing Requirements For Unit Layouts

On a large residential tower project there are a lot of compromises and trade offs among comfort, utility, privacy and luxury. Stantec needs to balance these tradeoffs with the owners requirements.

In a high-rise, critical design choices on one floor can get copied and duplicated on many more. Making sure project teams are confident in these tradeoffs is essential.

Slow Coordination and Communication Between Discplines

Communication between disciplines in different offices is often limited to screenshots, back and forth emails, or live screen-shares that are inherently slow and introduce miscommunication. Reviewing 3D models on 2D screens compresses information that can be recovered in VR.

Travel Time Between Offices is Costly

Maintaining a high level of communication and work with remote teams can be challenging. Travel time between the structural engineer and Stantec requires a 6 hour roundtrip train ride and is a full-day affair. However, many of the benefits of in-person meetings can be simulated in VR.

ENHANCED UNDERSTANDING

“Beyond using VR to identify and resolve issues more efficiently, it also helps younger staff get into the space and get more familiar with the design and Revit model.”

- RAY KETTNER, ARCHITECT, STANTEC

IMPLEMENTATION

Remote Multi-user VR Meetings with InsiteVR

The Stantec team used InsiteVR to host 3 weekly VR review meetings between different members of the project from September 5th to October 7th 2019. Participants were not all co-located and joined the meeting from 2 different locations:

1. Stantec Boston office
2. Odeh Engineers Rhode Island Office

Ray Kettner would host the meeting from the office and all participants would easily join from an Oculus Quest using a 6 digit meeting ID.

Easy VR Setup with Oculus Quest

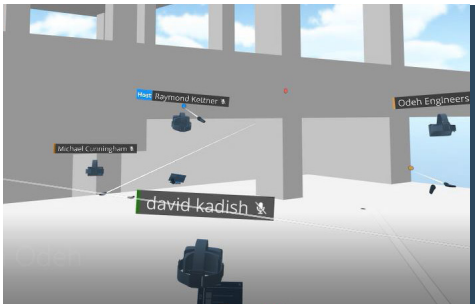
The team used 5 Oculus Quests to host the VR meetings. Because meetings were held weekly with only an hour scheduled, speed and ease of setup was critical. The standalone Oculus Quest meant the team did not need 5 different computers to power the VR meetings. Without much instruction, the structural engineer who was not part of the initial training meeting was able to start reviewing the virtual models with the architect in under 2 minutes.

BIM 360 to VR in Seconds

Using the InsiteVR for BIM 360 integration, Revit models were directly pulled from BIM 360 docs into multi-user VR meetings. This allowed the Stantec team to confidently host VR meetings in the latest published version of the Revit model without the need for additional exports or game engine conversions.

Training

Before using InsiteVR with the structural engineer, the Stantec team underwent a hands on training session with InsiteVR. By first using InsiteVR internally the team was able to become proficient in VR meetings and ensure they were ready for conducting a cross-office, cross-discipline meeting with the structural engineer.



MAJOR SLAB CHANGE ORDER AVOIDED

Ray Kettner is pictured here at the moment he "bumped his head" on a cross-beam in VR. This eventually lead to the discovery of a potential change order that was overlooked in the drawings.

RESULTS

RFIs and Design Issue Avoided on Upper Floors

During a unit review walkthrough of the model with the Stantec team, they found that the windows on the upper floors did not provide adequate privacy for occupants.

Had the design not been modified during DD it could have meant extra glazing would be needed during construction. If not, the tenants might decide to keep their curtains closed, an undesireable result. The team said this issue only revealed itself once they went into VR. By having a virtual avatar stand in front of the windows they were able to see the windows in-context, revealing the privacy concerns.

Without VR this concern would have gone on to affect a large number of the units on the upper floors. But because the team found it early, the resolution was quite simple, cheap and fast.

TOTAL

20

Floors impacted and improved with VR Reviews

TOTAL

6

Hours of travel time saved / meeting

Major Slab Change Order Avoided

A issue was discovered during the first VR coordination meeting with the structural engineers that could have caused contractors on-site to pour concrete only to be demolished later.

While discussing the transformer vault and waste disposal rooms with the structural engineers, architect Ray Kettner accidentally “hit his head,” virtually, on a horizontal beam dividing two floors, quickly realizing the room is too small. This would be a code violation for facility workers. The structural team took a quick look at it in VR and left a note to “up-turn the beam.” Had this not been caught, the contractors could have begun pouring concrete for a room that was too small, resulting in stopped work, demolition and rework. When reviewing a 3D model on a computer you cannot simply discover issues by “hitting your head” on it. In VR you comprehend and move through the space as you naturally would.

Simulating an in-person meeting

By using VR, the project is able to simulate an in-person meeting between two remote teams and avoid a 6 hour loss of time due to travel. The team is able to achieve a similar working relationship in the VR environment that would occur if they were in the same room in-person. However, in VR you’re able to view the model at a full scale, human perspective, and manipulate the model in ways that are still not possible in-person.

FULLY COORDINATED BIM MODEL

"In addition to the structural engineer, we'd also like to use VR with MEP and even the General Contractor. We think using VR across discplines can go a long way in helping guarantee that the project delivers a fully coordinated BIM Model. "

- DAVE KADISH, ARCHITECT, STANTEC