Dimensions+

Mixed Reality Best Practices, Tips & Tricks and Advanced Features

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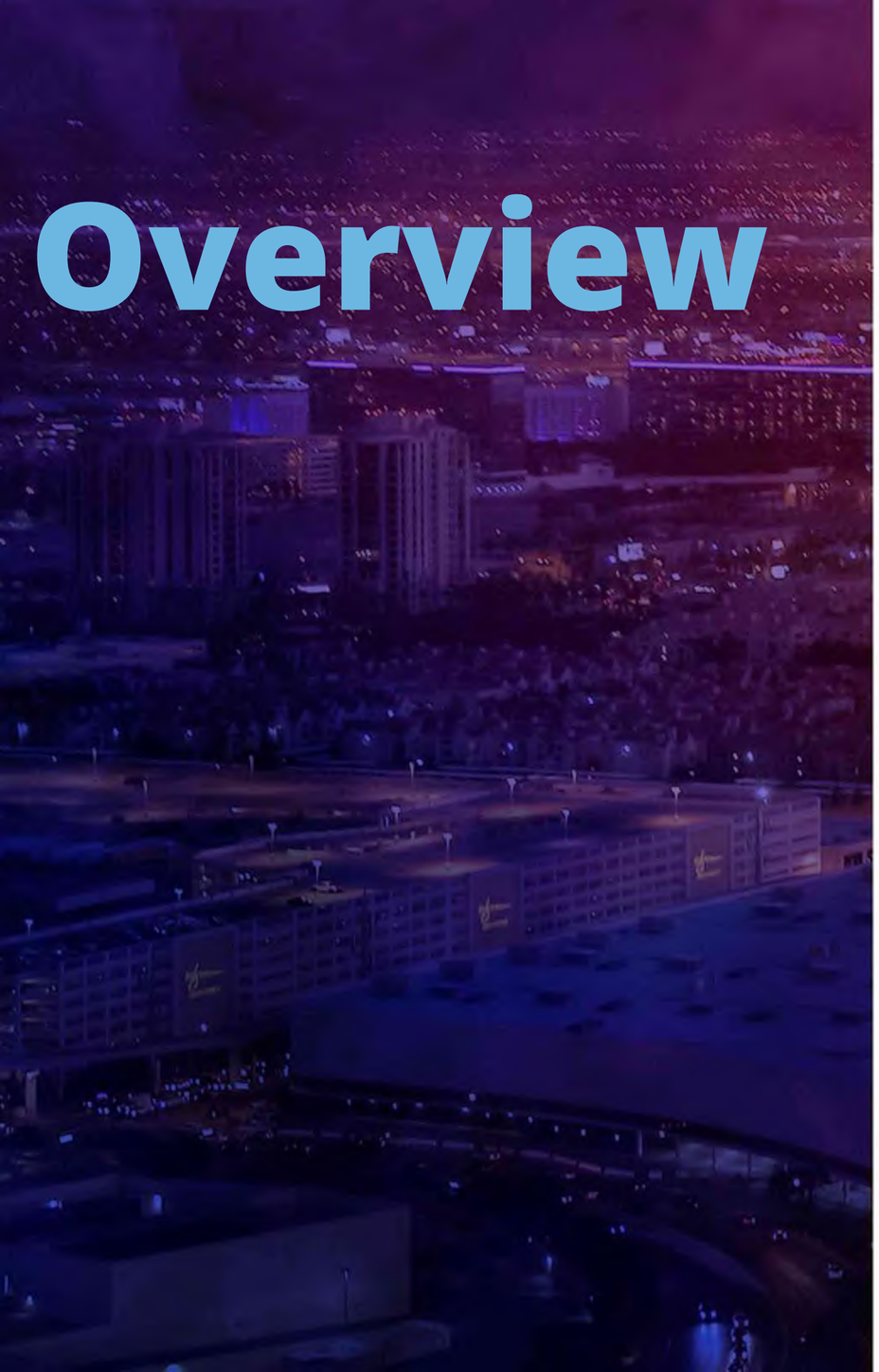
Emerging Construction Technologies Business Leader



Overview

- XR10 Hardware
- HoloLens Windows Software
- Model Preparation and Organization
- Alignment and Drift

XR10 (Hardware)

Battery Management

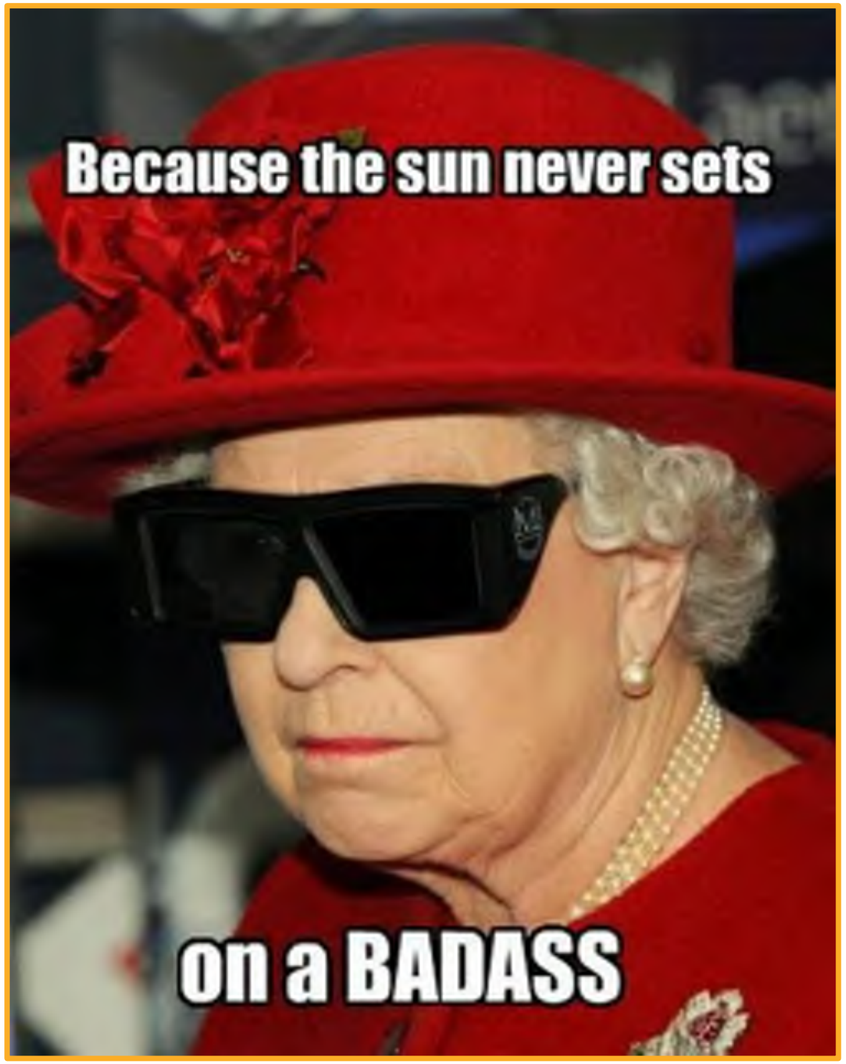
- Charging Both Devices
  - Short (6 inch) USB-C cable
  - MobiWAN constantly charged
  - Just charge XR10
- Extending Use with Power Bank
  - Requirements
    - TRY.SRC compatible
    - At least 5V/1.5A
    - Up to 27W
  - Negates intrinsic safety
  - Decreases ergonomics
  - Potential for overheating
    - Start at full internal battery
    - Limit to 1.5A

Presenting to Others

- Wireless Display Adapter
- HDMI coupler
- USB wall charger

Trimble HoloTint

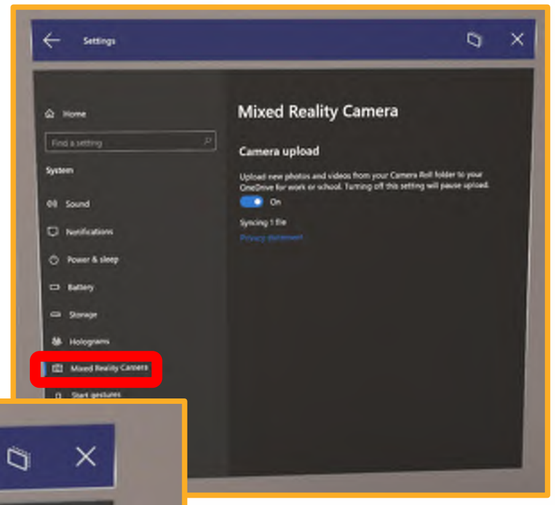
- Improves Hologram Contrast in Bright Environments
- Photochromatic Lens
  - Automatically Adjusts Based on UV Rays
  - Not Instantaneous
- Easily Removable



Miscellaneous

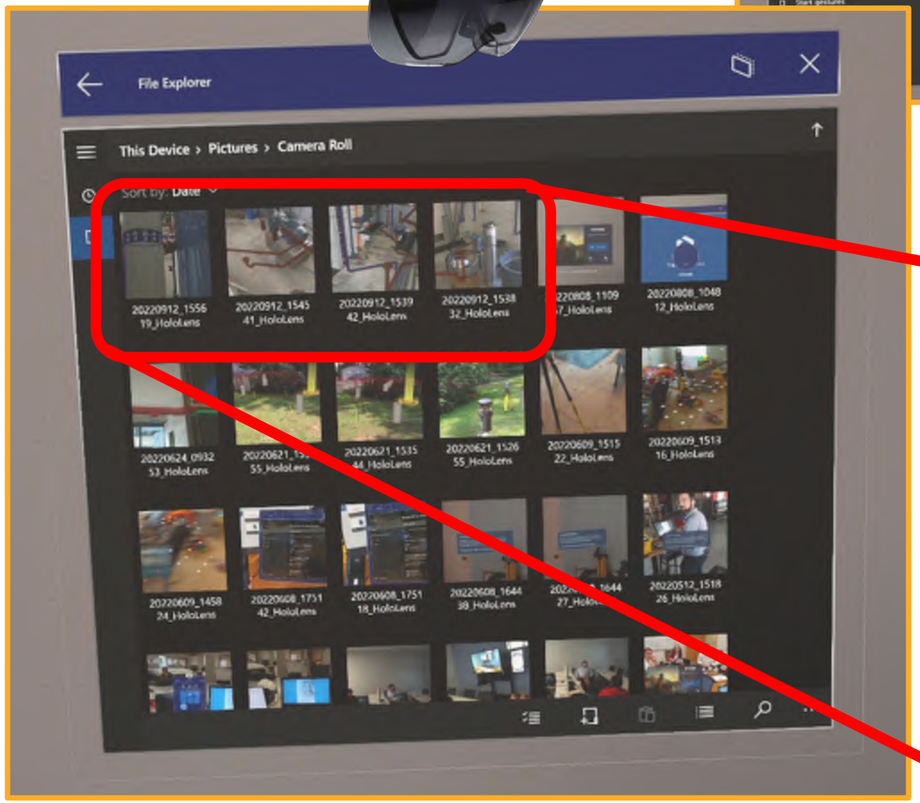
- Cleaning
  - Keep sensors sensing!
  - Microfiber cloth for visor
    - 70% isopropyl alcohol
  - USB-C cap or can of air
- Bluetooth Keyboard
  - Quick data input on site
  - Near touch keyboard is slow
  - Cortana is unreliable

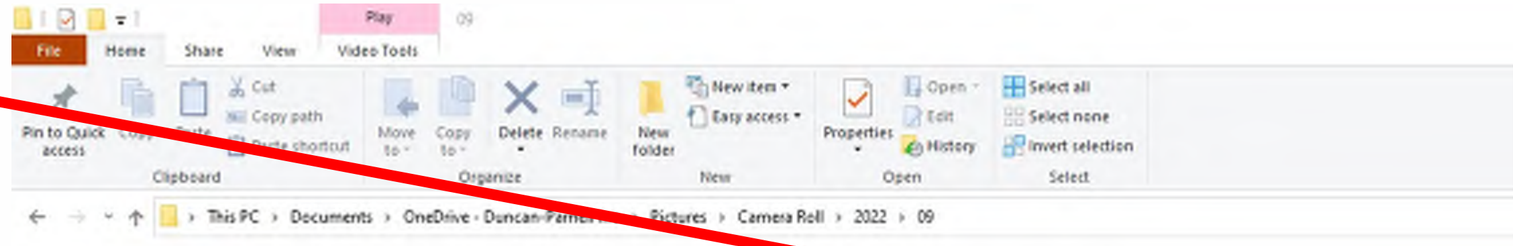
HoloLens Windows (Software)



Images & Video

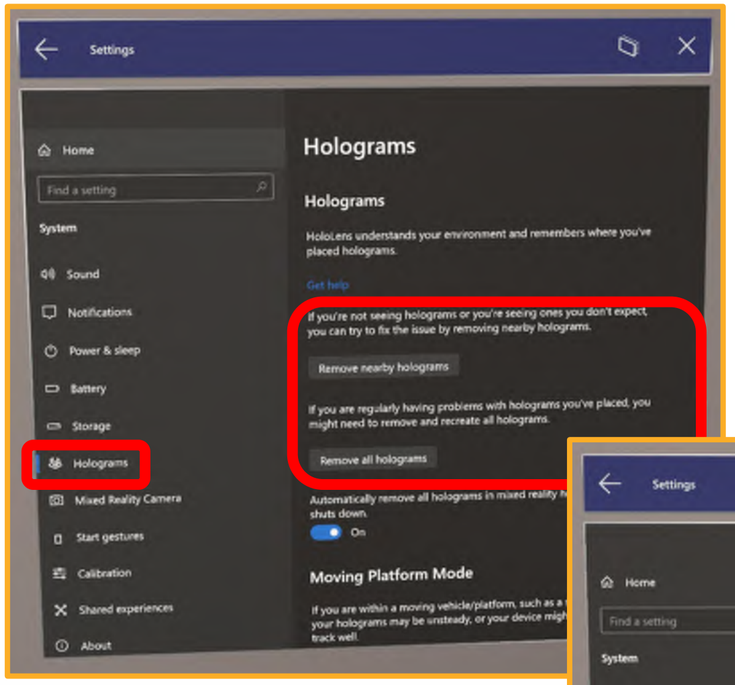
- Snapshot and Recording with Volume Buttons
- Auto Sync Photos/Videos through OneDrive

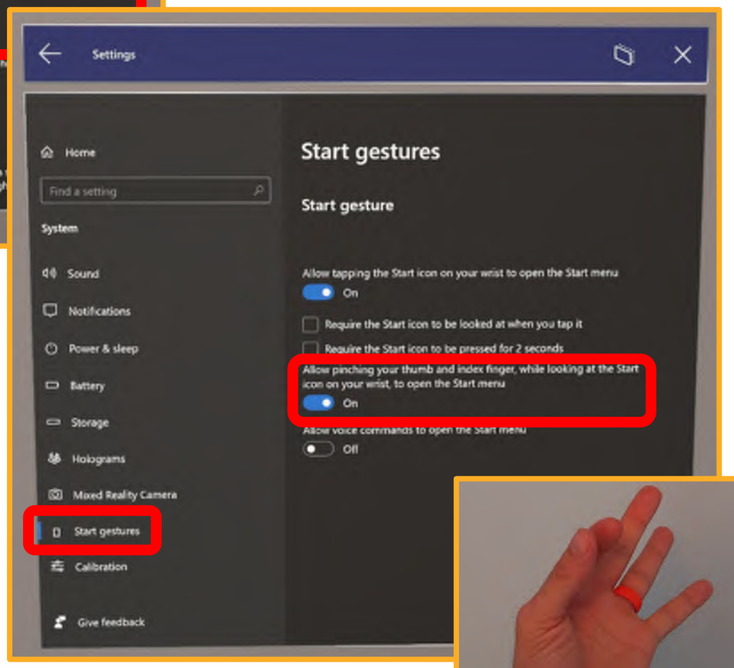


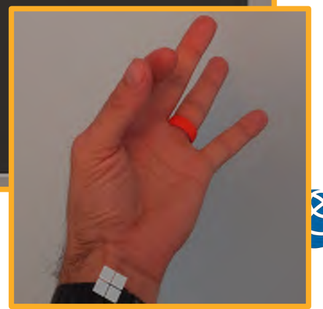


Miscellaneous

- Always Check for Windows Updates!
- Clear Out Holograms/Spaces in Settings to Clean Up Device
- One Handed Home Screen Call Up
- Screen Share and Keyboard Via iOS App called HoloCapture and HoloKeyboard



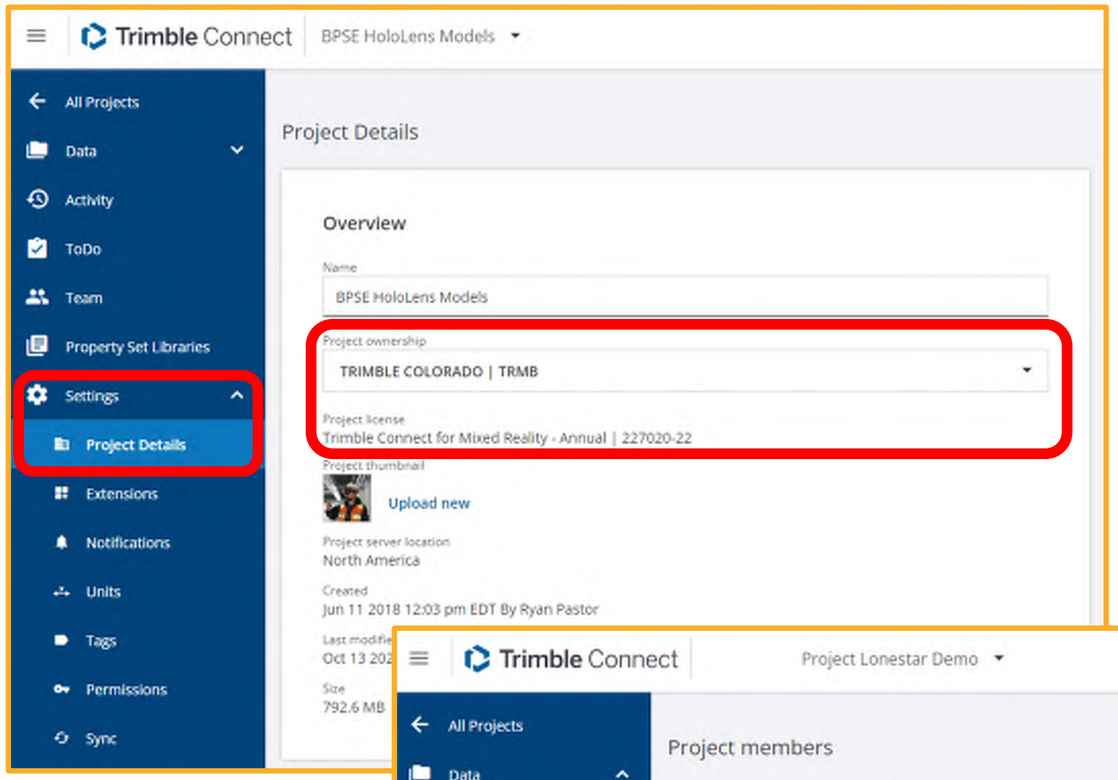


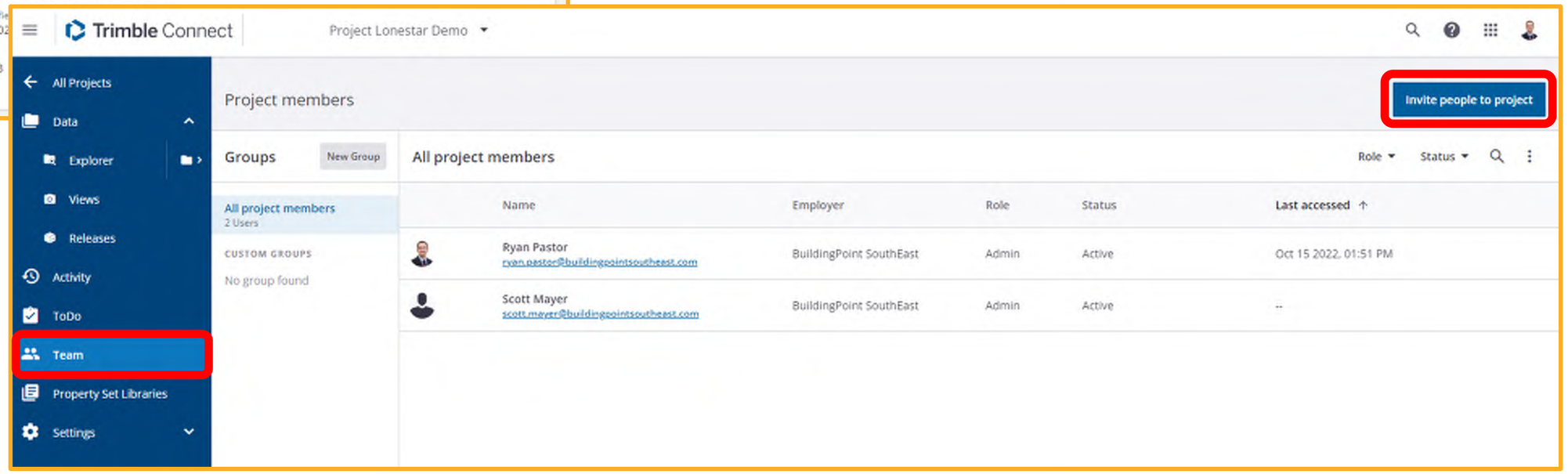


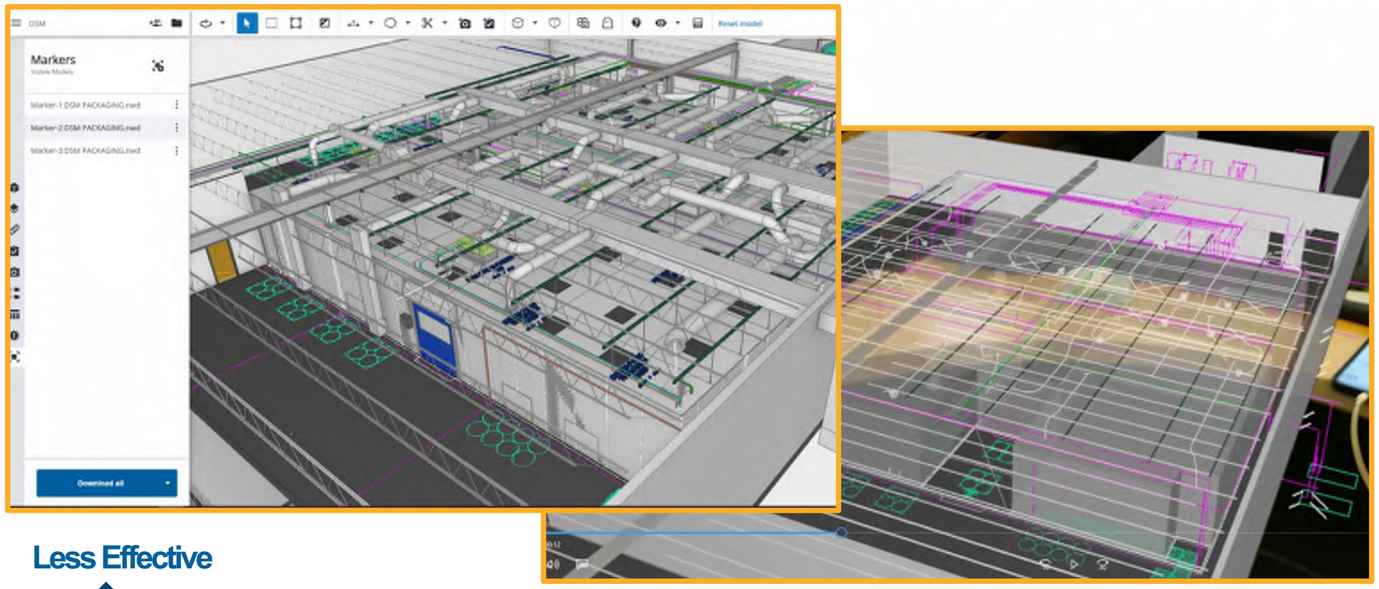
Model Preparation and Organization

Trimble Connect

- Project Set Up
  - Always create project from MR & AR entitled account!
  - Invite others to the project





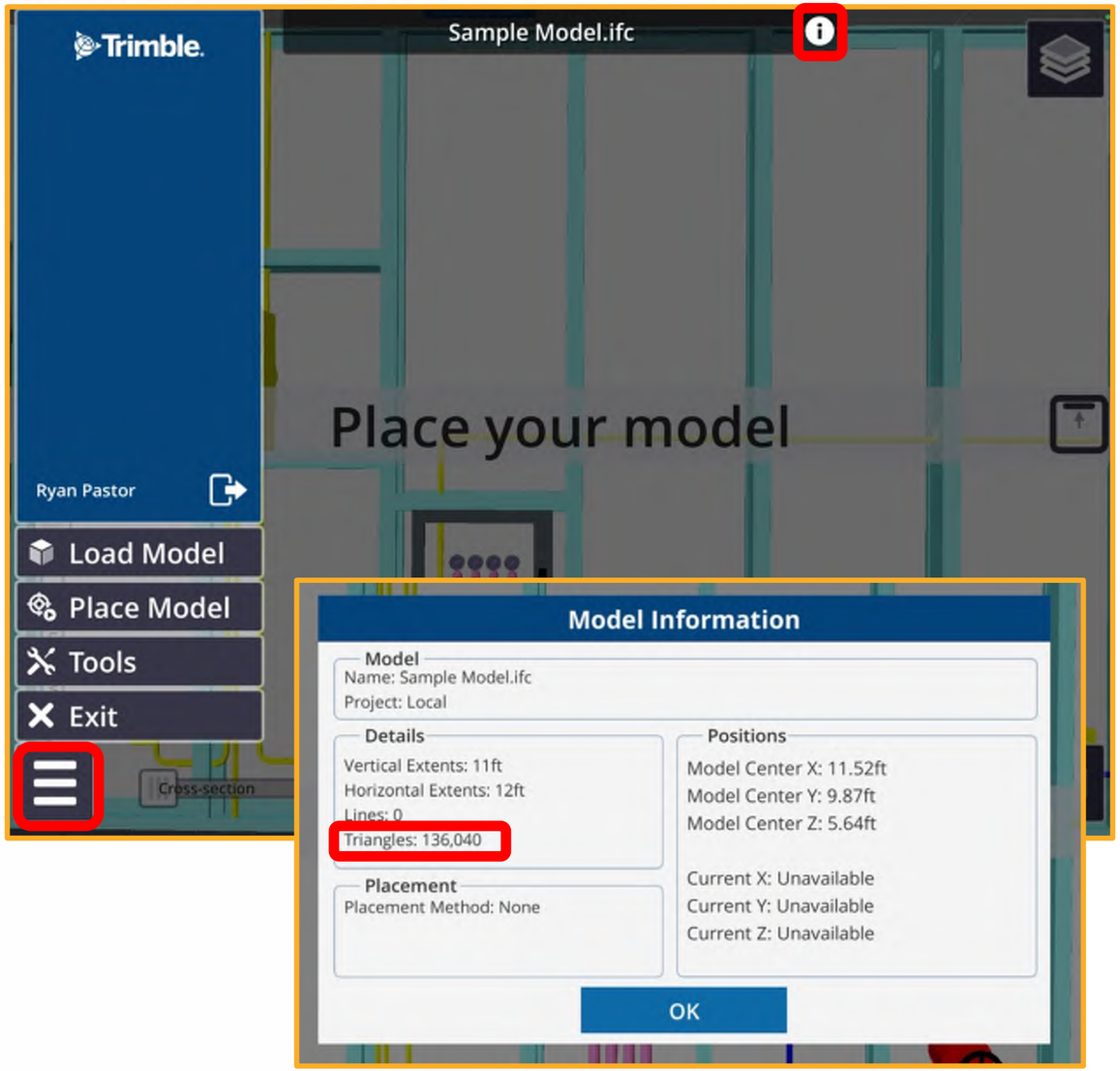


Less Effective

- Fish Bowl
- Performance/Detail
- Section Box
- Turning Off Models/Layers
  - AR App will show you polygon (triangle) count

More Effective

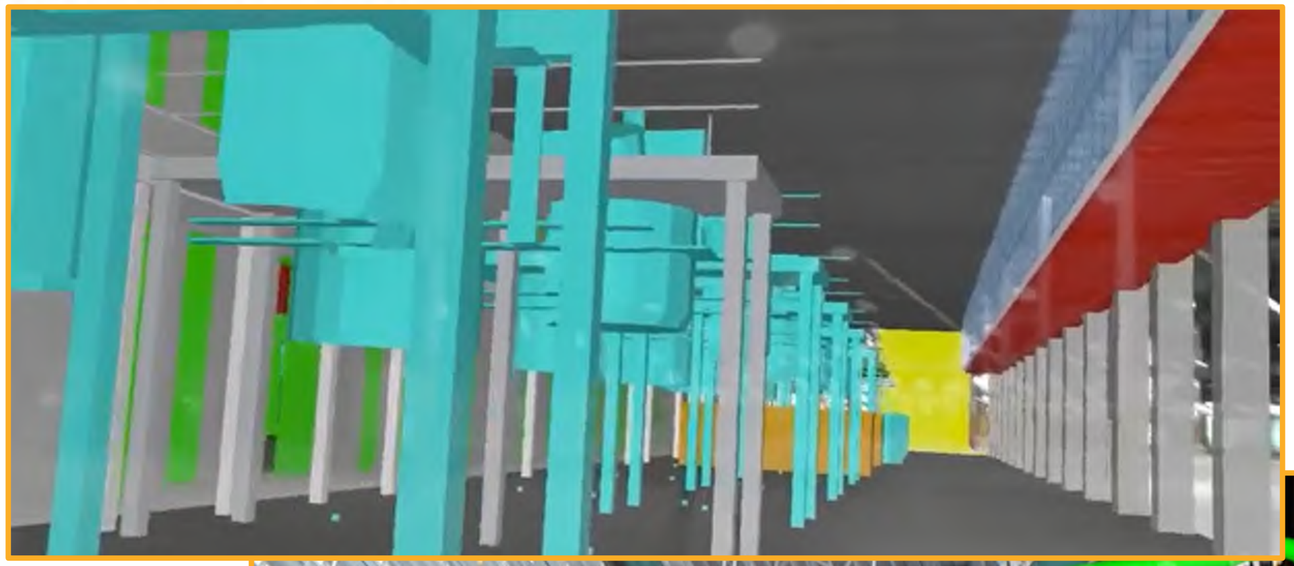
TC-MR ~370,000 triangles
TC-AR Millions of triangles

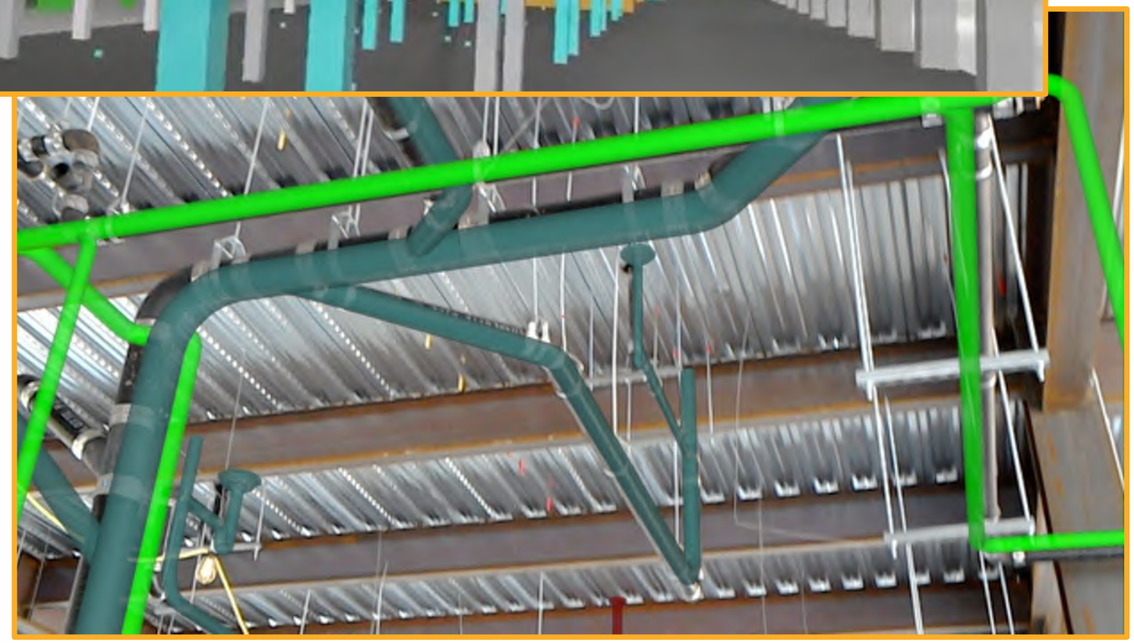


Polygon Management

Models & Layers

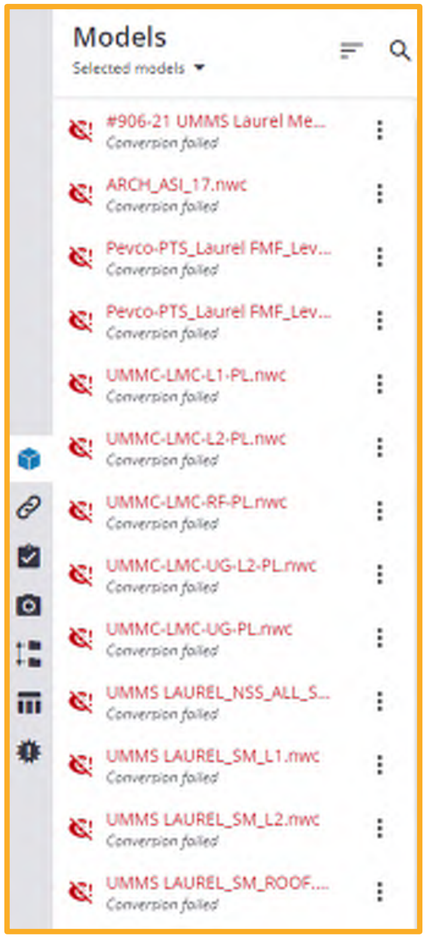
- Where Do You Want Your Time Spent?
- Layers are Hard to Manage. Models are Easier
- Break Out Geometry with Large Surfaces
  - Prevents washing out the view
  - Floors, Ceilings, Walls
- Break Out Geometry Inside/Behind Other Geometry
  - Rebar in Concrete. Pipes in walls. Duct above ceilings
  - By level so you don’t see geometry above/below
- Best File Types? DWG / RVT / IFC / NWC?
  - Geometry Color
  - Geometry Transparency
  - Metadata



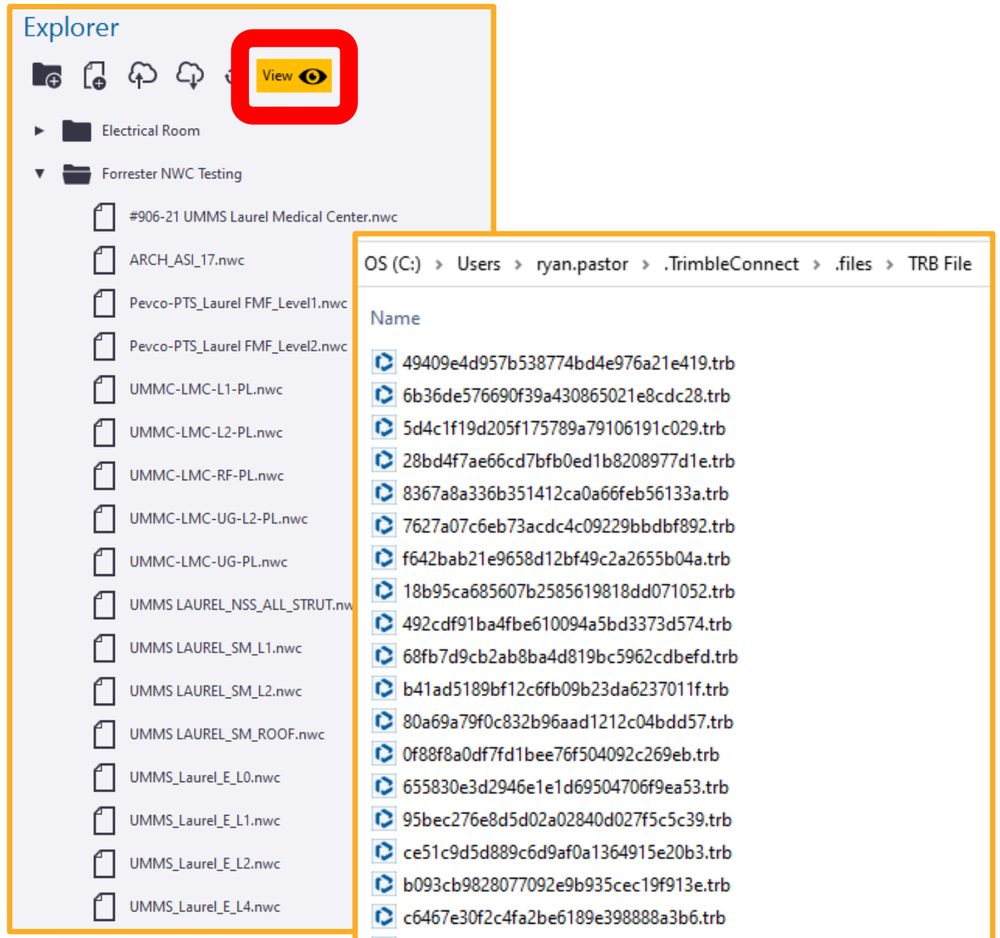


NWC/NWD Conversion

Web



Windows

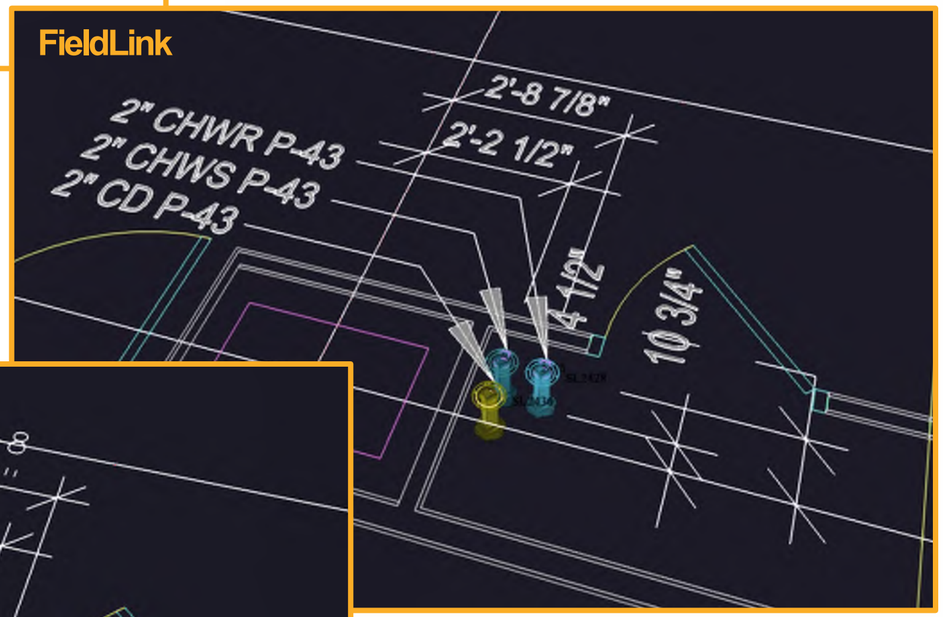


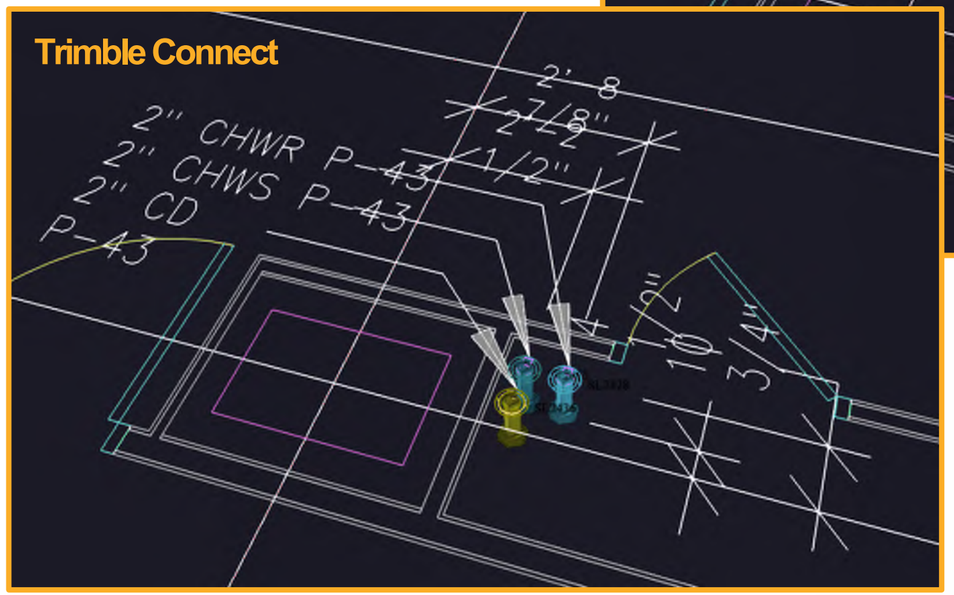
Web

FieldLink › Plumbing Sleeves › Models › Cache

Name

- Plumbing Sleeves Floor Plan.dwg.trb
- Plumbing Sleeves Penetration Plan.dwg.trb
- Plumbing Sleeves.nwc.trb





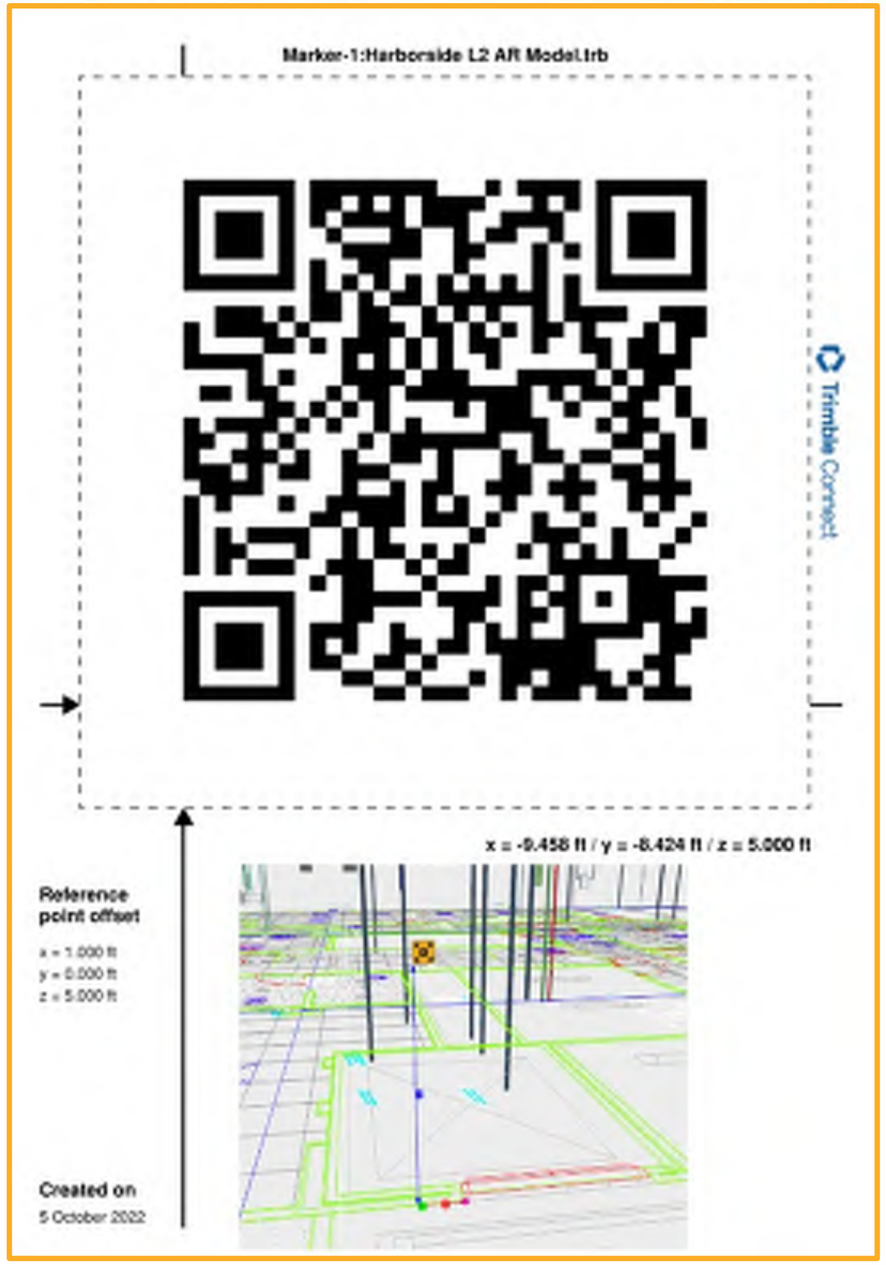
.TRB Files

- Break out models for MR but bind them in TC Windows to a .TRB for AR viewing
  - Sectioning does not hold, but hiding geometry does
- Take Advantage of (And Help) Other Trimble Workflows Too!
  - Bring in 2D drawings as DWG
- Rendering .TRB files
  - FieldLink v6.3 creates a .TRB and caches it in the models folder
  - DWG text shows differently from the same file

Alignment and Drift

Working Environment and Alignment

- Importance of Environment Lighting
  - Structured Light Sensors
  - Too much light is as bad as too little light
- Ideal Working Space from Alignment Point
  - ~150' for XR10 According to White Paper
  - ~30’–45’ from Alignment Point for AR
- Rotational Alignment is Most Crucial
  - Hardest to achieve accurately
  - Importance of stabilization planes



Markers

- Placing Marker in the Model
  - Place on individual structural model
  - Can bind to other models in TC Windows to a .TRB and scan in AR as well
  - 5 feet high is best practice
  - Don’t place the marker on the floor or slanted surface
- Printing the Marker
  - Copy and paste a screenshot into your marker PDF
  - Print at 100% Scale (A4 vs Letter Paper Size)
    - Use thick / laminated paper for reliable results
  - Don’t Cut of the Dotted line
    - Minimum space needed to reliably scan the marker
- MR Marker Improvements Coming Soon!
  - Load model from marker
  - Place model from any marker