

A large graphic of a globe is centered on the slide. The left half of the globe shows a realistic satellite-style view of Earth with green landmasses and blue oceans. The right half of the globe is dark blue and features a white, glowing network of interconnected nodes and lines, representing a digital or virtual space.

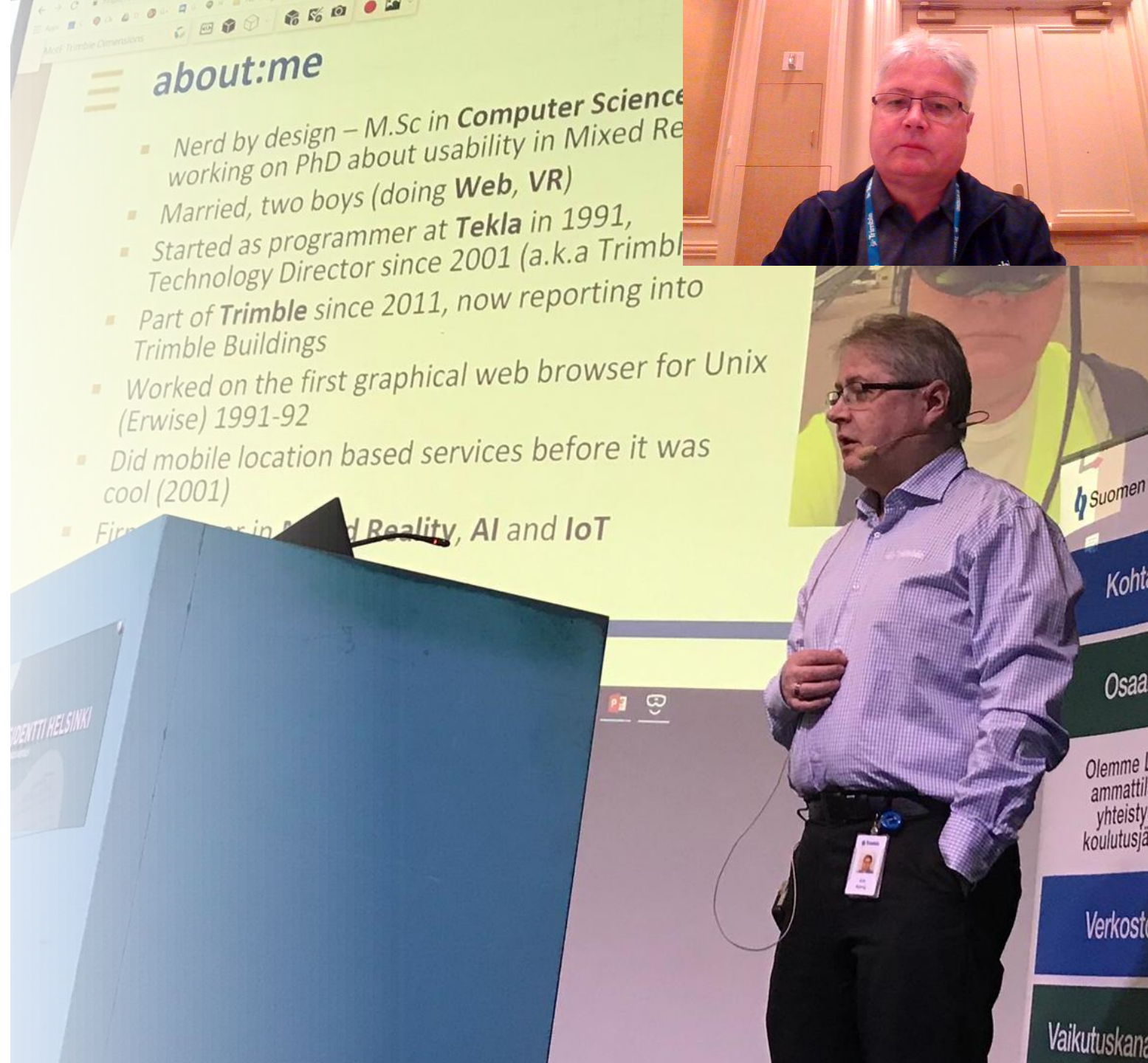
Metaverse – Case Trimble

Kim Nyberg, Teknologiajohtaja, Trimble



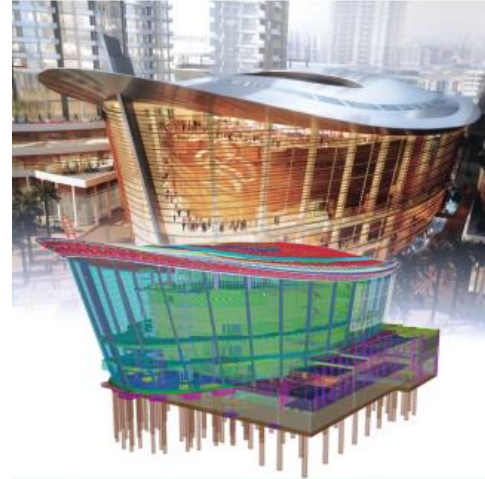
about:Kim

- Tietotekniikan DI, jatko-opinnot menossa (käytettävyys laajennetussa todellisuudessa)
- Tekla 1991-2011, Trimble 2011->
- Monessa mukana aikaisessa vaiheessa (nettiselain Erwise 1991-92, HoloLens 2014)
- Kiinnostusalueet laajennettu todellisuus, käytettävyys, robotiikka, tekoäly, IoT

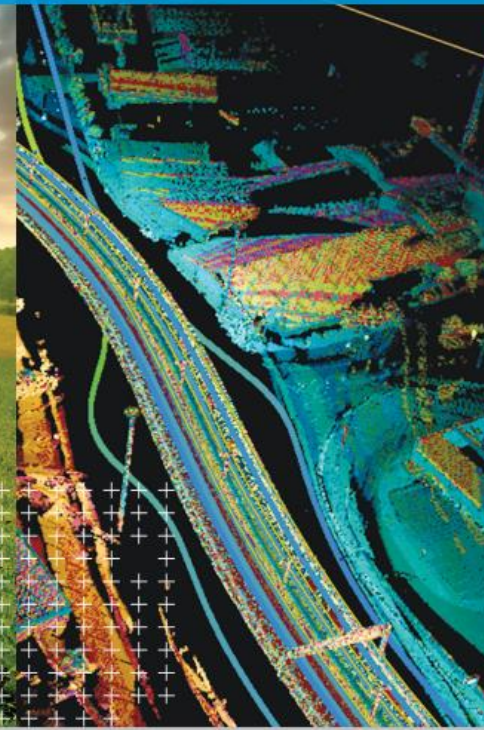
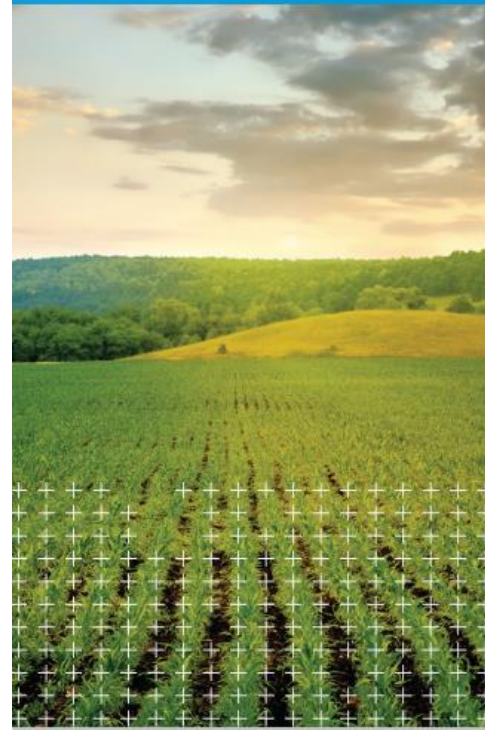


Trimble

- Perustettu 1978
- Liikevaihto \$3.65B
- Henkilöstö 11500+
- Pääkonttori Coloradossa
- Suomessa merkittävä läsnäolo (Tekla, Trimble Forestry)



Connecting the **Physical**
and **Digital** Worlds



Trimble Technology Expertise

GNSS & Corrections



Laser Distance & Scanning



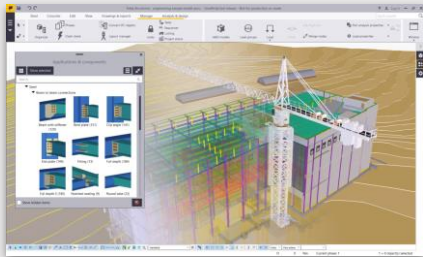
Machine Controls



Cloud Computing



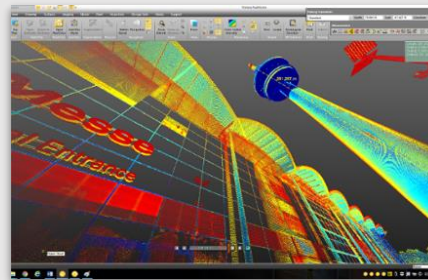
3D Modeling



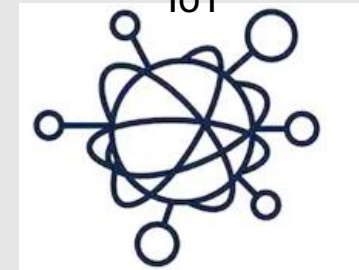
AR / VR



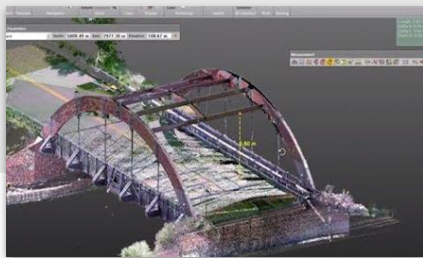
Point Cloud Processing



IoT



Photogrammetry



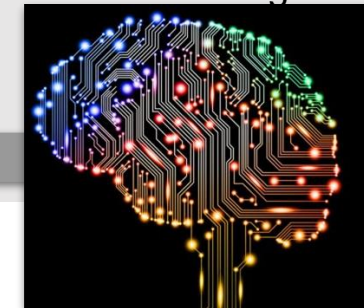
Inertials



Mobile Computing



Artificial Intelligence



Technology Watch List

5G

Robotics



Quantum Computing

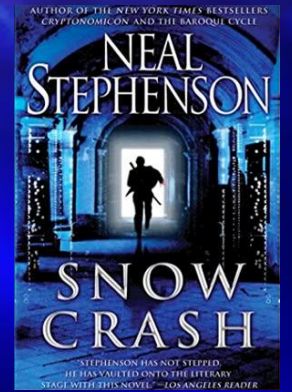
Brain Computer Interface

Neural Processors



metaverse

1. a massive scaled and interoperable network of real-time rendered **3D virtual worlds** which can be experienced **synchronously** and **persistently** by an effectively unlimited number of users with an individual sense of **presence**, and with a **continuity** of data, such as identity, history, entitlements, objects, communications, and payments.
1. the internet, but in 3D
“merging the physical and digital worlds”



1992



The “Industrial Metaverse” aka “Digital Twin”

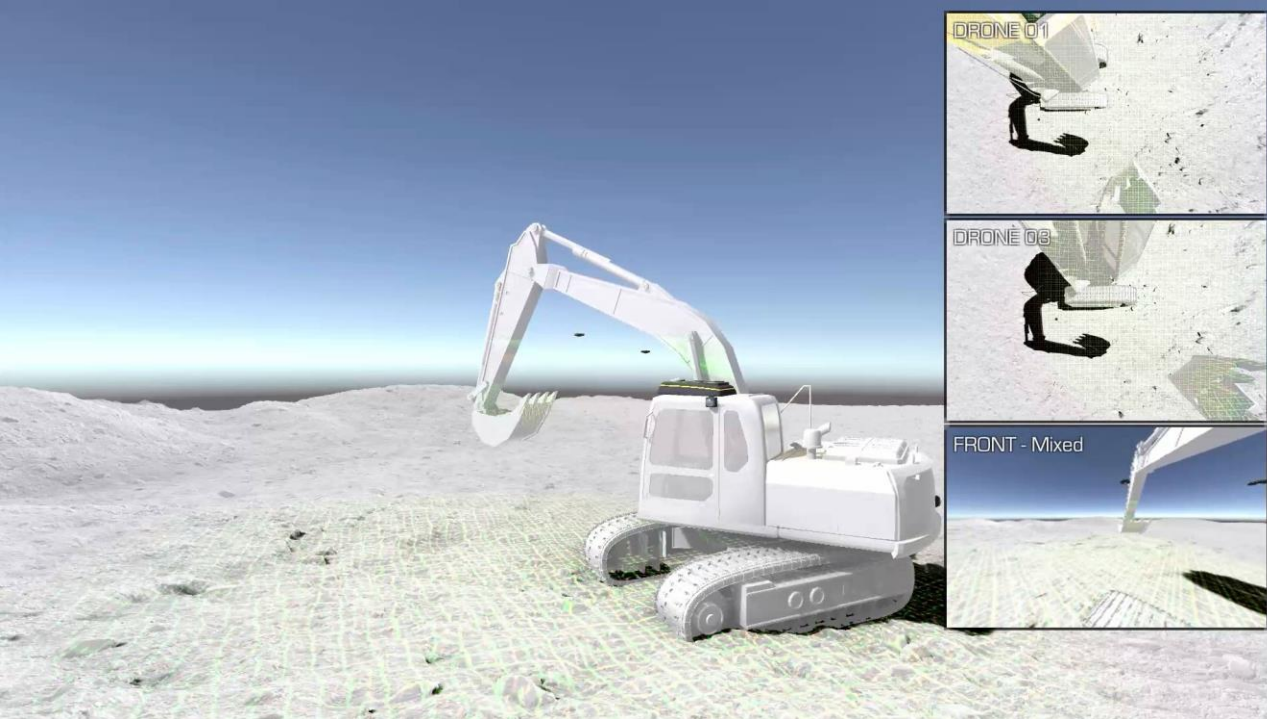


- We’ve had the makings of a metaverse in AEC (Architecture, Engineering & Construction) for a while
- The push to centralize data in the cloud and make solutions extensible are complementary
- XR is *one* means to access it; today a siloed experience, but in the future very collaborative
- Examples:
 - Overlaid navigation and instructions
 - 3D annotations / RFI’s left for others
 - Teleporting to a digital replica of “onsite” with reality capture data

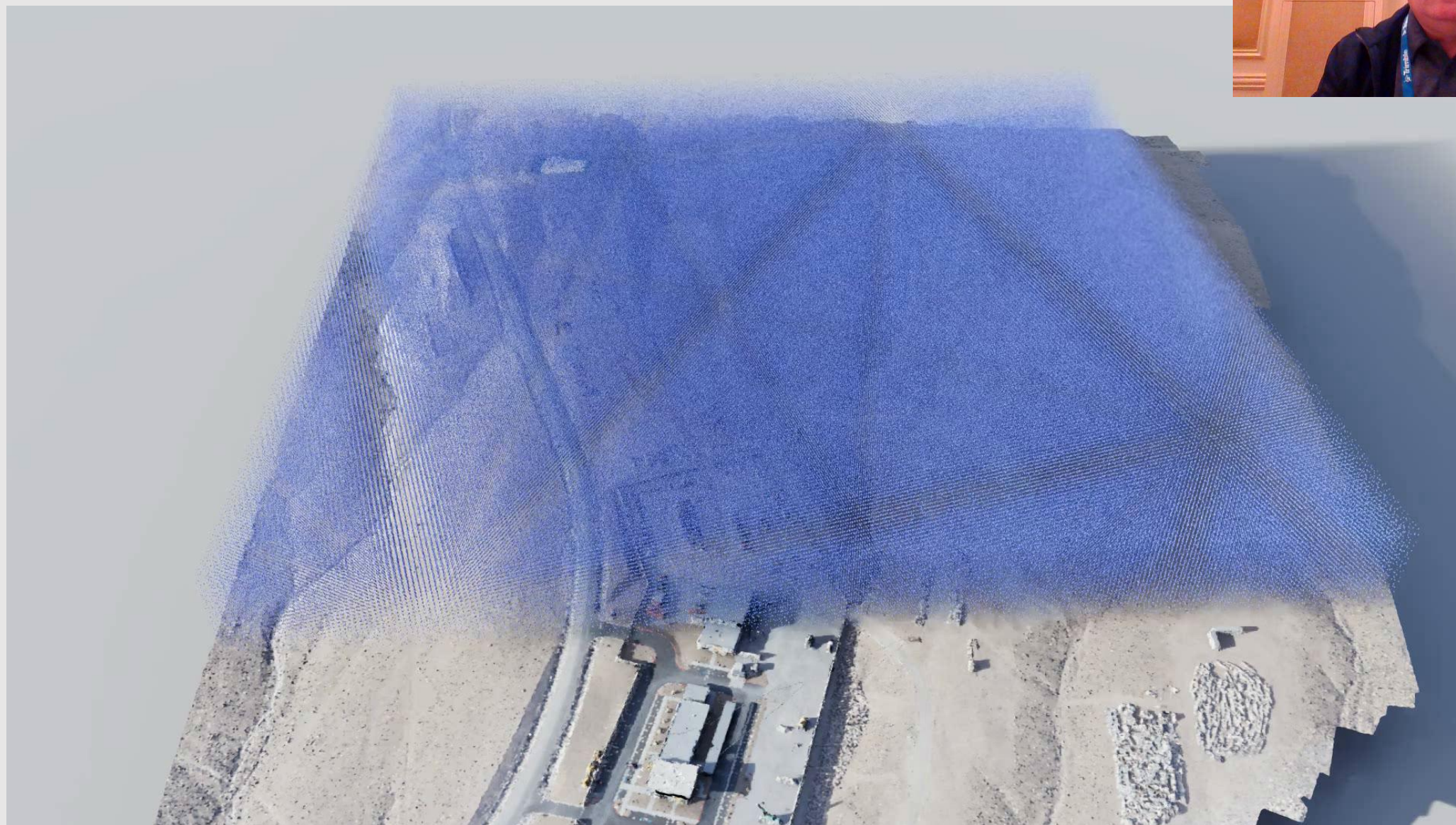




The Construction Metaverse



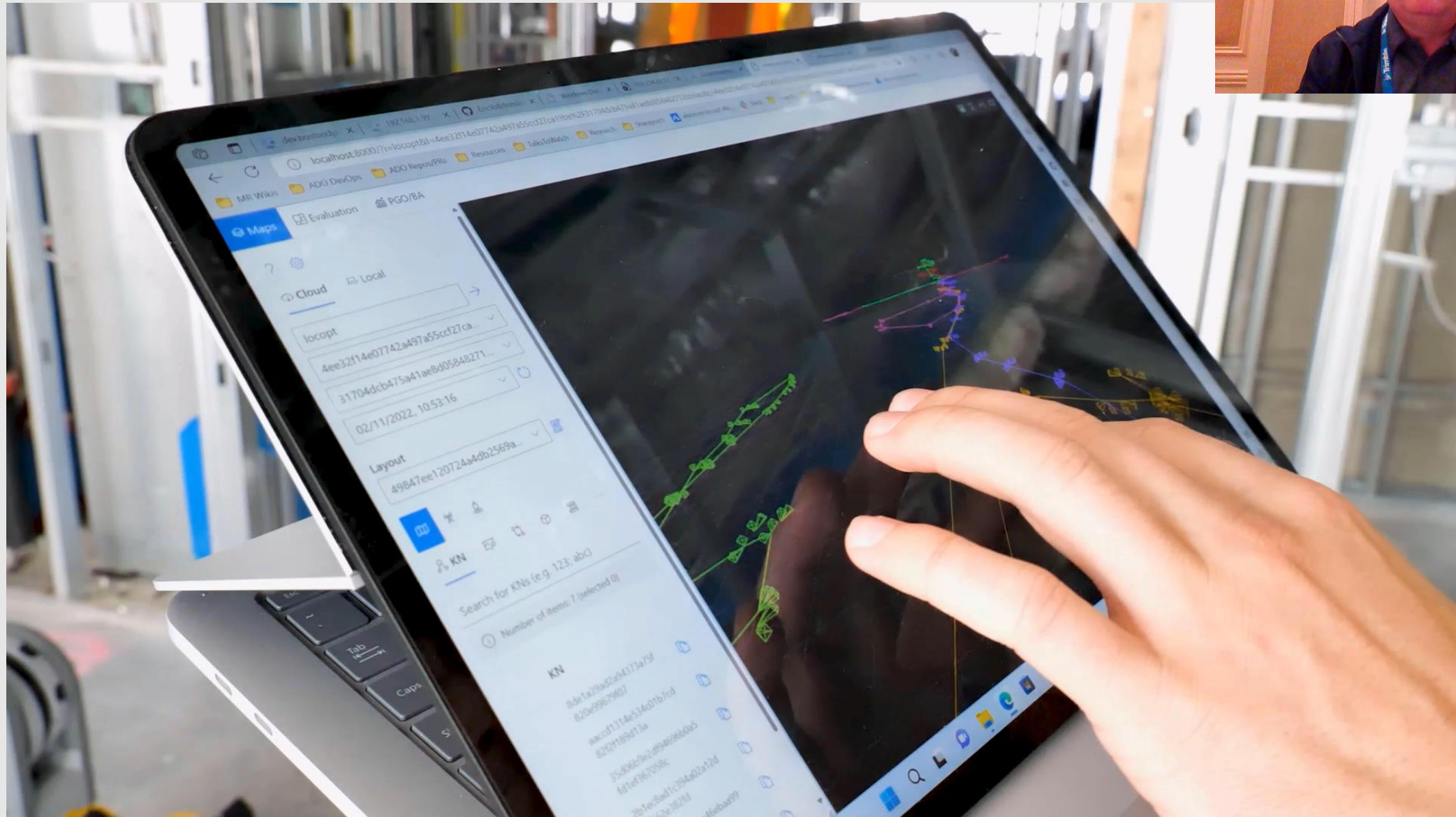
Trimble & Nvidia (Omniverse)

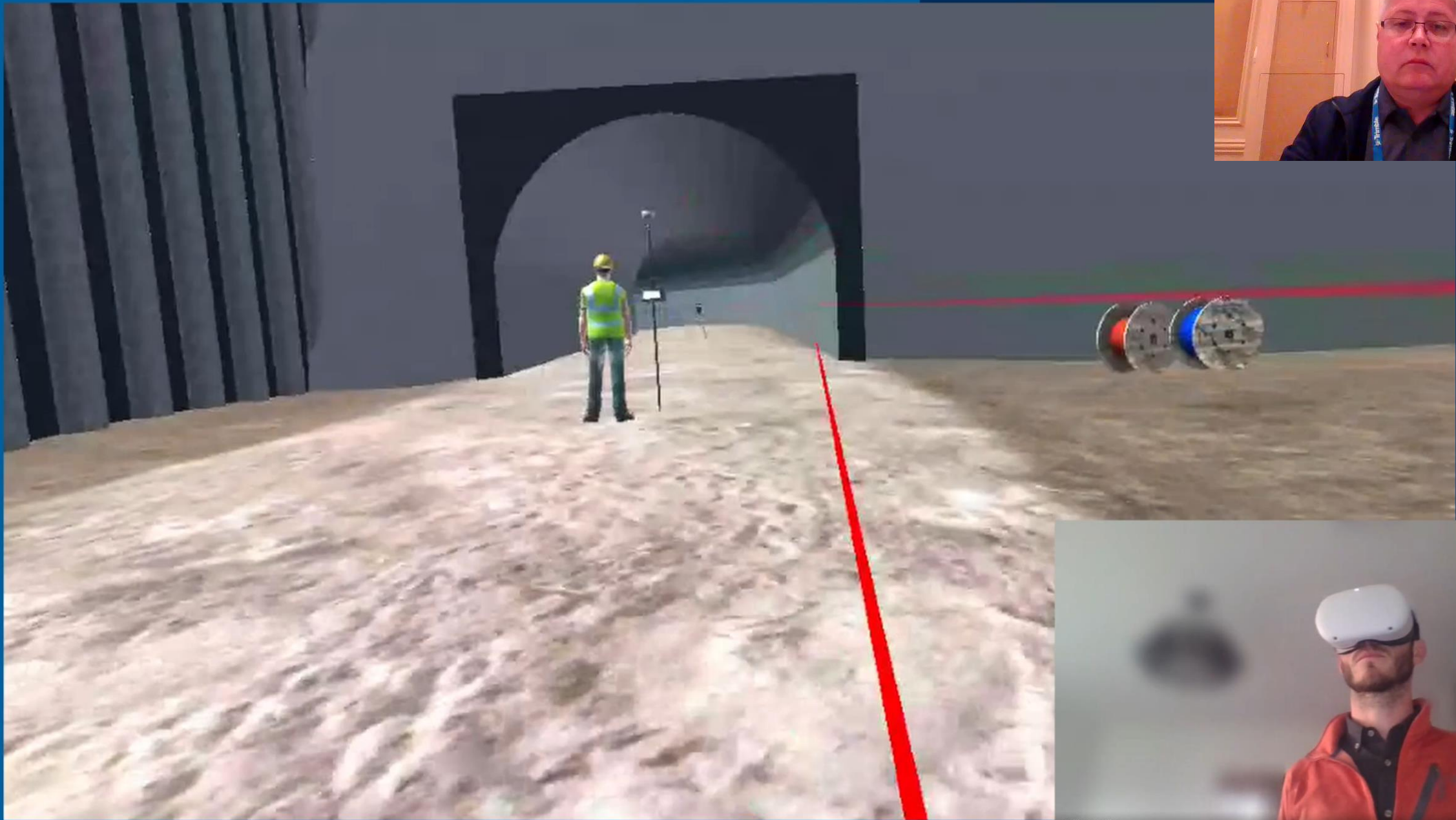


Trimble & Exyn Technologies



Trimble & Microsoft





Quadri Binder 1 [Connected Project UK] Eivind Quadri

HOME VIEW INSERT MODELLING CONNECTORS PRESENTATIONS OUTPUT

Receive Share Topics Live Sharing Distance Area Property Set Collection Classification Attachments Project Rules

Model Sharing Measure Process

Live Sharing Session: Bridge Collaboration

Live Sharing

Leave Follow Clear All Share All

Bridge Collaboration

- Tekla Wessman [dc53]
- Frank Connect [3f51]
- Bob Builder [bdde]
- Eivind Quadri [02be] (me)

DEV

Switch Environment

Cloud Environment: Staging 287,796.257 m 68,787.329 m 0 m

Trimble Connect 3D Viewer - Co x

https://3d.connect.trimble.com/?projectId=KXdLMIKI2Y&...

Connected Project UK

Live Sharing

Bridge Collaboration

- Tekla Wessman [dc53]
- Bob Builder [bdde]
- Frank Connect [3f51] (me)
- Eivind Quadri [02be]

Models

- RAC_basic_sample_project.rvt
- Bridge Area_989f.trb
- CornerBar.skp
- DevonCurvedBridge.tekla

Clear All Share All

Bob Builder [bdde]

Tekla Structures - C:\TeklaStructuresModels\DevonCurvedBridge - Unofficial test release - Not for pr... Tekla Wessman

STEEL CONCRETE REBAR EDIT VIEW DRAWINGS & REPORTS MANAGE ANAL Quick Launch

Column Beam Plate Bolt Weld Bolted parts Assembly

Column Beam Panel Slab Window

Steel column

numbering series

Part number	p	1
Assembly number	c	1

Position

Vertical	Middle	0.00 mm
Rotation	Front	0.00
Horizontal	Middle	0.00 mm
Top		23200.00 mm
Bottom		16200.00 mm

Deforming

Warping	0.00	0.00
Cambering	0.00 mm	
Shortening	0.00 mm	

IFC export

IFC entity

Show fewer properties

Modify

Model origi Search in model

Pick a point to create the col... 0 Pan Current phase: 1, Phase 1 0 objects and 0 handles selected

Live Sharing

Bridge Collaboration

- Bob Builder [bdde]
- Tekla Wessman [me]
- Frank Connect [3f51]
- Eivind Quadri [02be]

General (Trimble Live Sharing) | x

https://teams.microsoft.com/_/tab::f3779eda-644e-4ca9-9297-174ae22a42f4/General?threadId=19:qSiQqGLbd8kLX0UmS-VrnAg...

Microsoft Teams

Search

General Posts Files Bridge Collaboration

Meet

Connected Project UK

Live Sharing

Bridge Collaboration

- Bob Builder [bdde] (me)
- Tekla Wessman [dc53]
- Frank Connect [3f51]
- Eivind Quadri [02be]

Models

- Bridge Area_989f.trb
- CornerBar.skp
- DevonCurvedBridge.tekla

Frank Connect [3f51]

Join or create a team





What to do about the metaverse today

- Invest in data foundations; constructible BIM + reality capture
- Invest in jobsite connectivity, centralize data
- Give XR technology a try
- Follow consumer “guiding light”
 - Likely to be 3 main players:
 - Apple
 - Meta (Facebook)
 - Microsoft
- Read industry publications (e.g. most recent [Geospatial World](#))

