

# Get More out of your Engineering Data by Visualization

IM473688

**Simon Nagel**

**Przemek Sokolowski**

**Melanie Thilo**

Technical Sales Specialists

# Key Learnings

- Discover the benefits and requirements of a good visualization
- Learn how to create a compelling story based on your Inventor data with VRED.
- Learn how to establish a workflow between Inventor and VRED—you can use visualization in your design process without preparation time
- Learn how to use a live link between Inventor and VRED for iLogic Configuration, Geometry Update and Animations

# About the speaker



**SIMON NAGEL**

Simon Nagel is an expert for Visualization for Realtime Rendering, High-quality-image generation and Virtual Reality. Simon is working in the Design industry for 15 years as 3D Artist, Consultant, UX Designer, Product Manager and Technical Sales Specialist. His main focus is the Automotive Industry.



**MELANIE THILO**

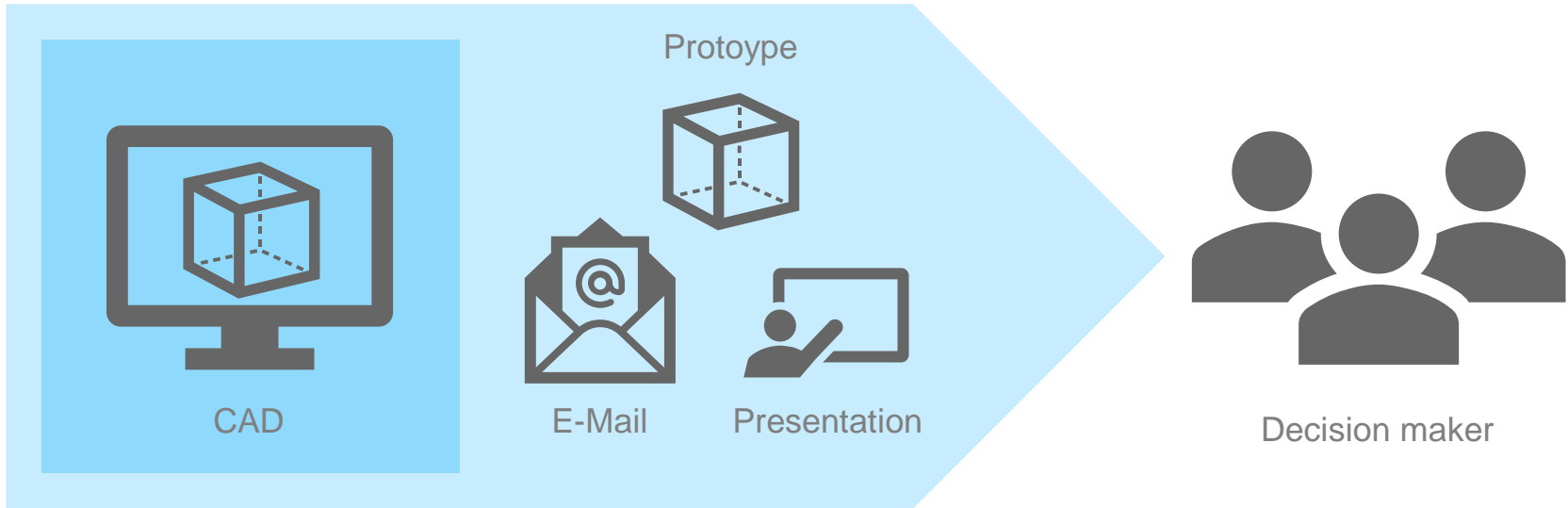
Melanie Thilo has worked for more than 10 years as a mechanical design engineer for different companies and industries. Since 2018 Melanie is a Technical Sales Specialist for PDMC (Inventor) at Autodesk.



**PRZEMEK SOKOLOWSKI**

Przemek Sokolowski works for Autodesk as a Technical Sales Specialist in Poland since 2007. Before Autodesk he worked for several years in Man and Machine (Autodesk distributor in Poland, at that time). He graduated Technical University in Lodz, specializing in robot control system. Przemek is also well known in Poland for running the blog dedicated to Autodesk D&M products: "[Po prostu Inventor](#)". Big fan of iLogic

# How are decisions usually made today in product development?

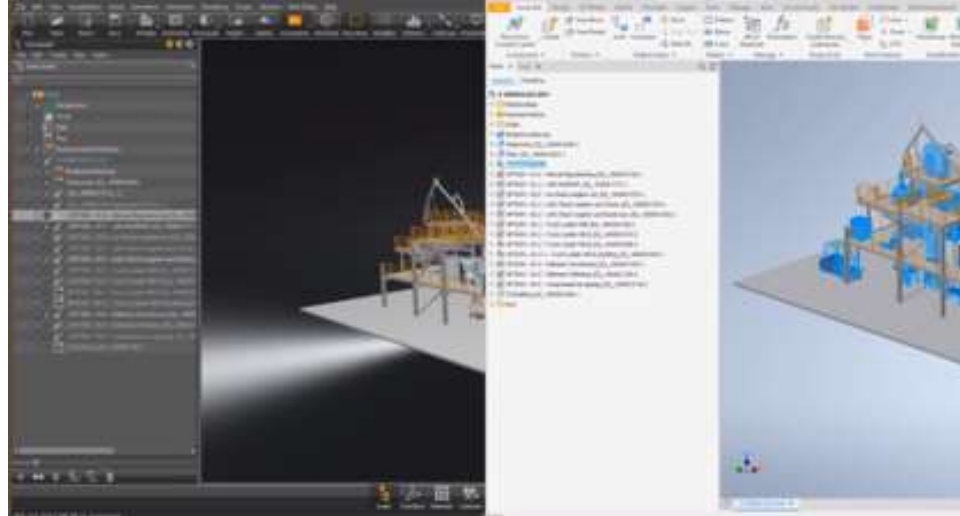




# Confidence in Digital Decision Making

- Replicate Reality to save cost and time
- Quick Design Exploration and Presentation
- Visual Communication and Collaboration improve Workflow
- Early Detection of Design Intent and Quality

Good Visualization



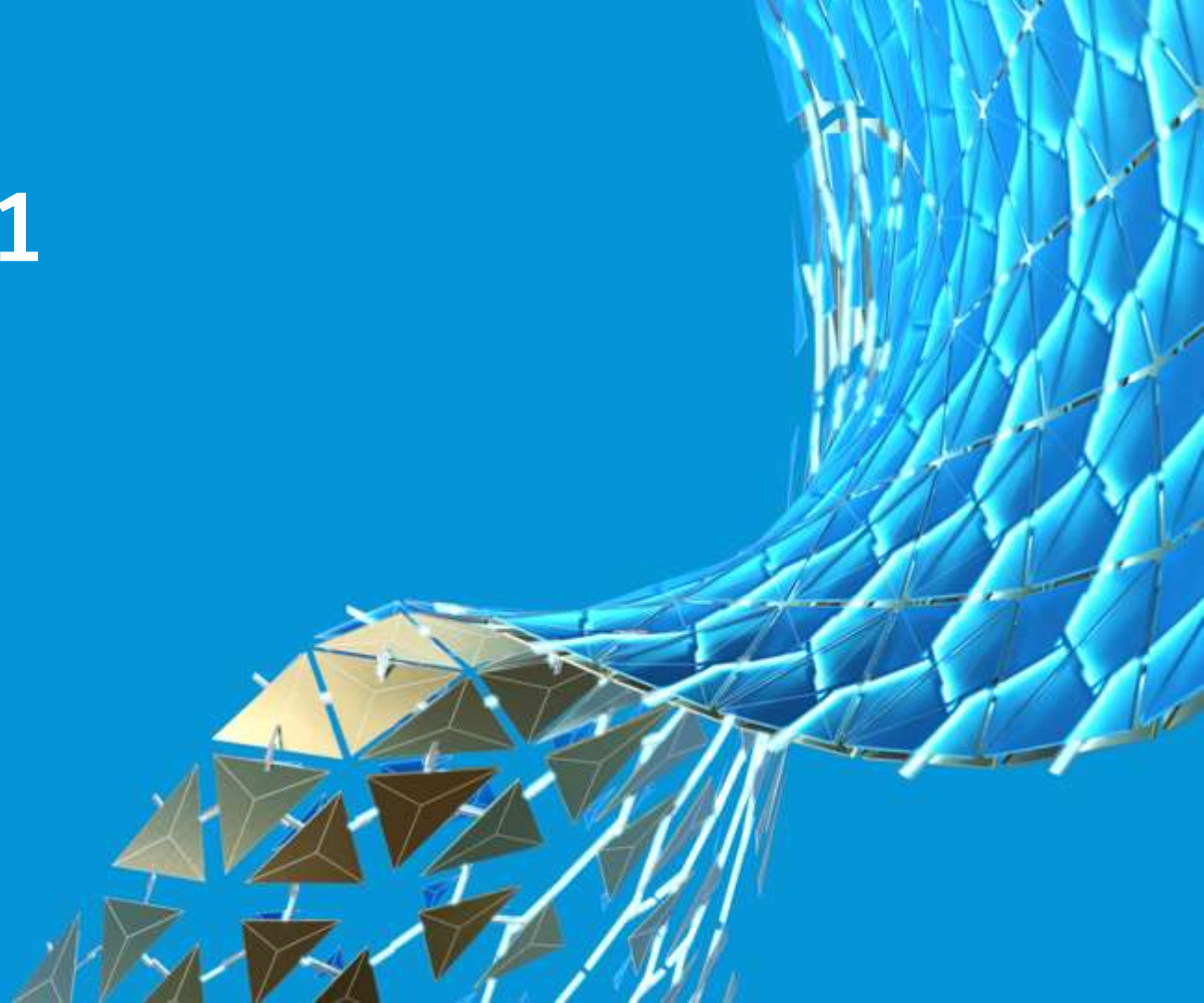
## Use Case 1

Create a easy to use configurator for sales and marketing by reusing engineering data to present your product to external stakeholders.

## Use Case 2

Access engineering data in a seamless and interactive workflow for design reviews with internal stakeholders.

# Use Case 1





# Re-use engineering data in VRED

1.

EASY IMPORT

2.

APPLY LOOK

3.

IMPLEMENT RULES

4.

DEFINE OUTPUT

# Import your IAM in VRED

- 1.

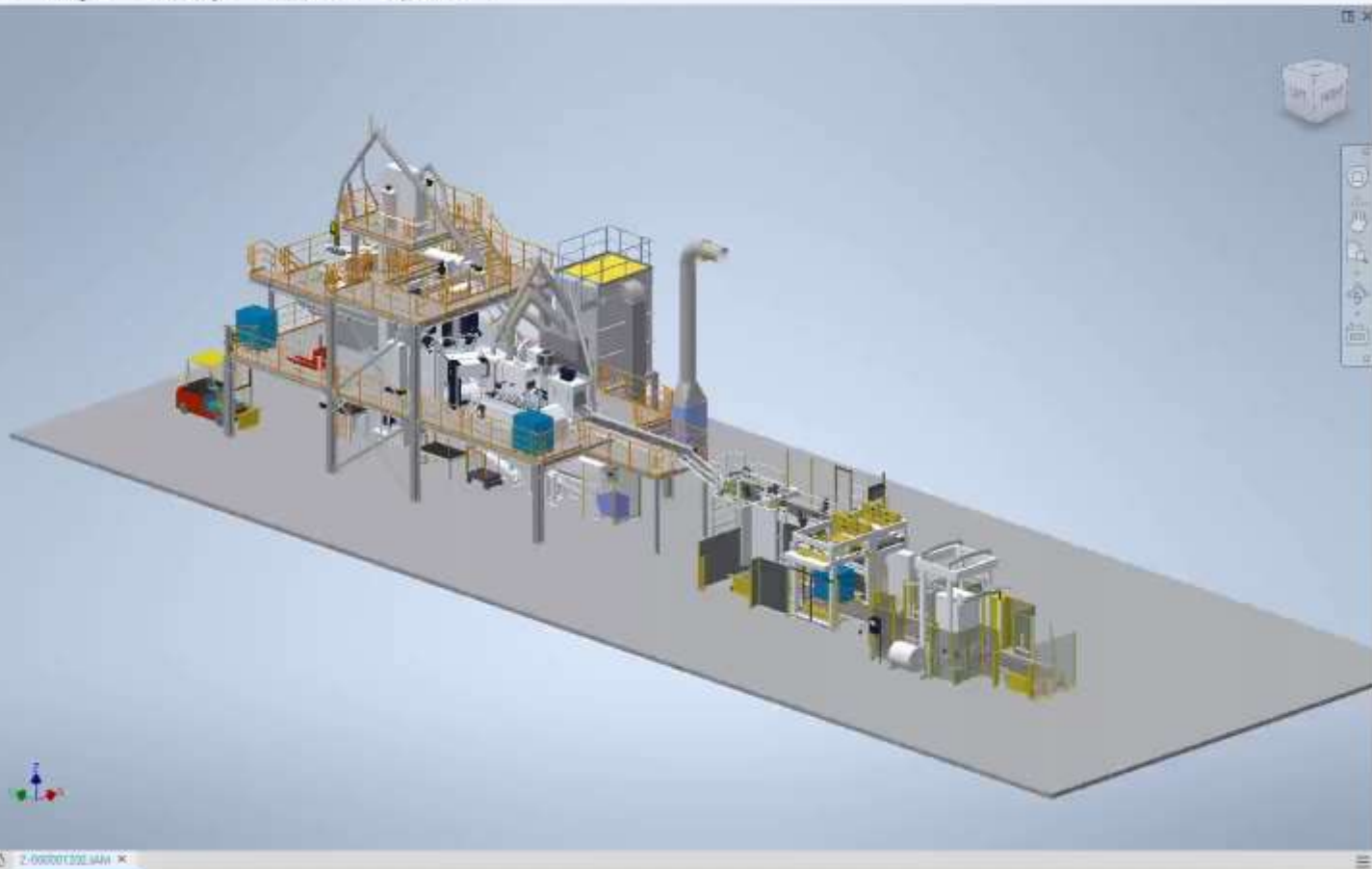


Model X: 3D

Assembly | Modeling

Z-000012021AM

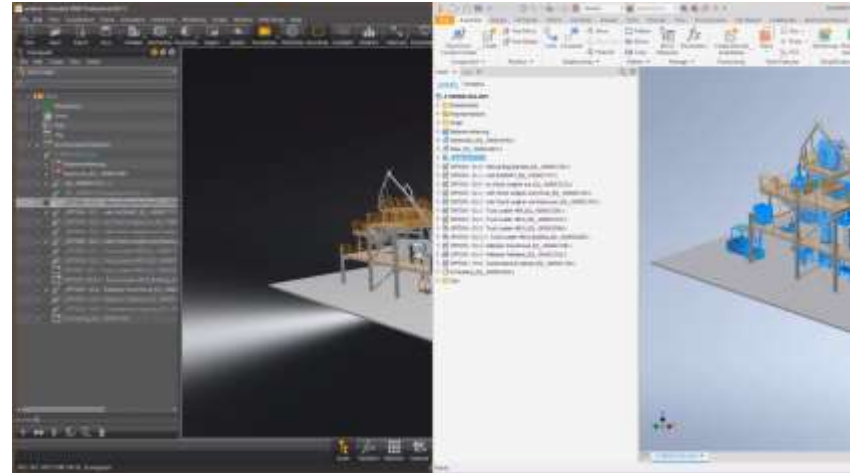
- Relationships
- Representations
- Origin
- External Reference
- Steelwork\_BQ\_000001840:1
- Pillar\_BQ\_000001897:1
- Equipment PLO-2
- OPTION - 01.0 - Manual Bag placing\_BQ\_000001718:1
- OPTION - 01.1 - with RADIUMAT\_BQ\_000001717:1
- OPTION - 02.0 - no Check weigher ext\_BQ\_000001723:1
- OPTION - 02.1 - with Check weigher and Chute\_BQ\_000001724:1
- OPTION - 02.2 - with Check weigher and Destroyer\_BQ\_000001725:1
- OPTION - 02.3 - Truck Loader H810\_BQ\_000001726:1
- OPTION - 02.4 - Truck Loader H810\_BQ\_000001727:1
- OPTION - 02.5 - Truck Loader H810\_BQ\_000003298:1
- OPTION - 02.5.1 - Truck Loader H810\_Building\_BQ\_000003305:1
- OPTION - 02.4 - Palletizer Shredhood\_BQ\_000001728:1
- OPTION - 02.5 - Palletizer Palletize\_BQ\_000001729:1
- OPTION - 04.0 - Compressor at pelage\_BQ\_000001729:1
- CS Building\_BQ\_000002182:1
- End



Z-000012021AM X

# Import your IAM

- **Direct import of IAM and IPT**
  - Choose what to import
- **Access to same scene structure**
- **Adjust tessellation - on demand**
  - Change Polycount for either quality or performance
- **Optimize scene structure for Storytelling and Performance**
  - Attach/detach/merge Surfaces
  - Adjust normal
  - regroup
- **Add multiple file formats**
  - ATF and more
- **Access Assets**



# Adjust Materials and Look

2.



# Adjust Materials

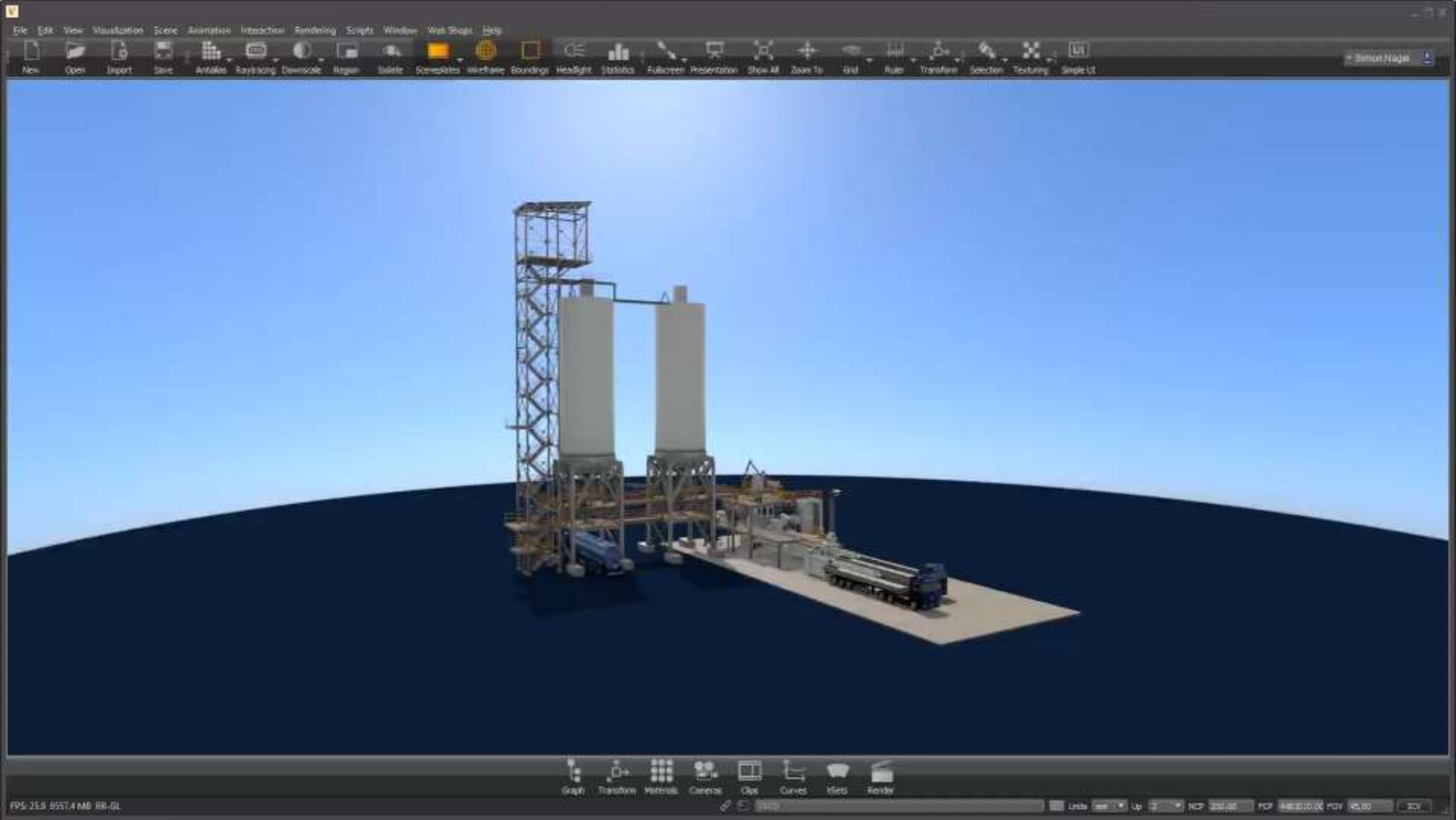
- **Material Assignment used from Inventor**
- **Adjust Materials to VRED Shaders**
- **Load Photorealistic Substance Materials**
- **Load Textures and adjust in Realtime**
- **Add Environment Material**
  - Skylight
  - HDR 360 Panorama
- **Enable Shadows**
  - Realtime Shadow from Sunlight
  - Realtime Screenspace Ambient Occlusion
  - High-Quality Baked Ambient Occlusion
- **Process can be automatized**



# Create Story

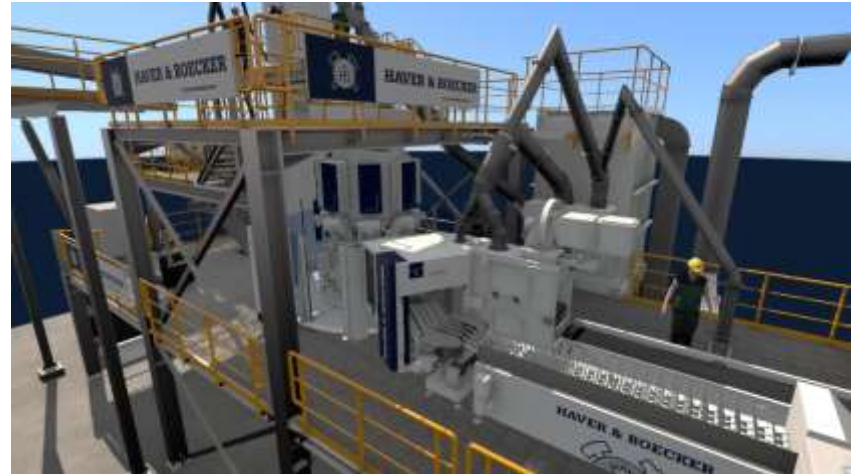
3.





# Storytelling

- **Create Viewpoints**
  - Fast access to key positions in your 3D scene
- **Create Sceneplates**
  - Enrich 3D Scene with Metainformation
- **Create Variants**
  - Define Access to Configurations
- **Create Touchsensors**
  - Make your scene interactive



# Define Output

4.

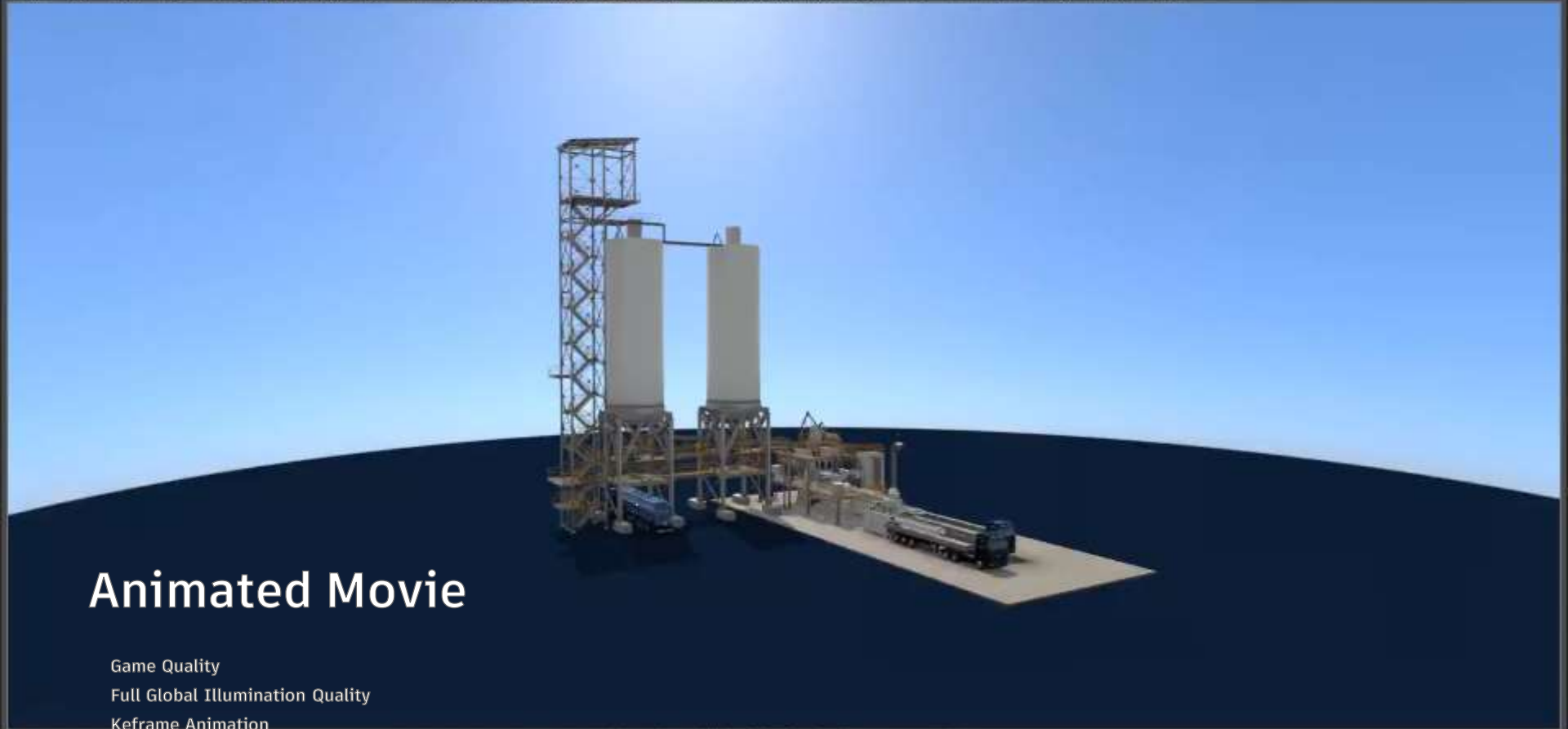


# Stillframe Image

Game Quality

Full Global Illumination Quality

Graph Transform Materials Camera Clip Curves VSets Render



# Animated Movie

- Game Quality
- Full Global Illumination Quality
- KeFrame Animation





# 360 Panoramas

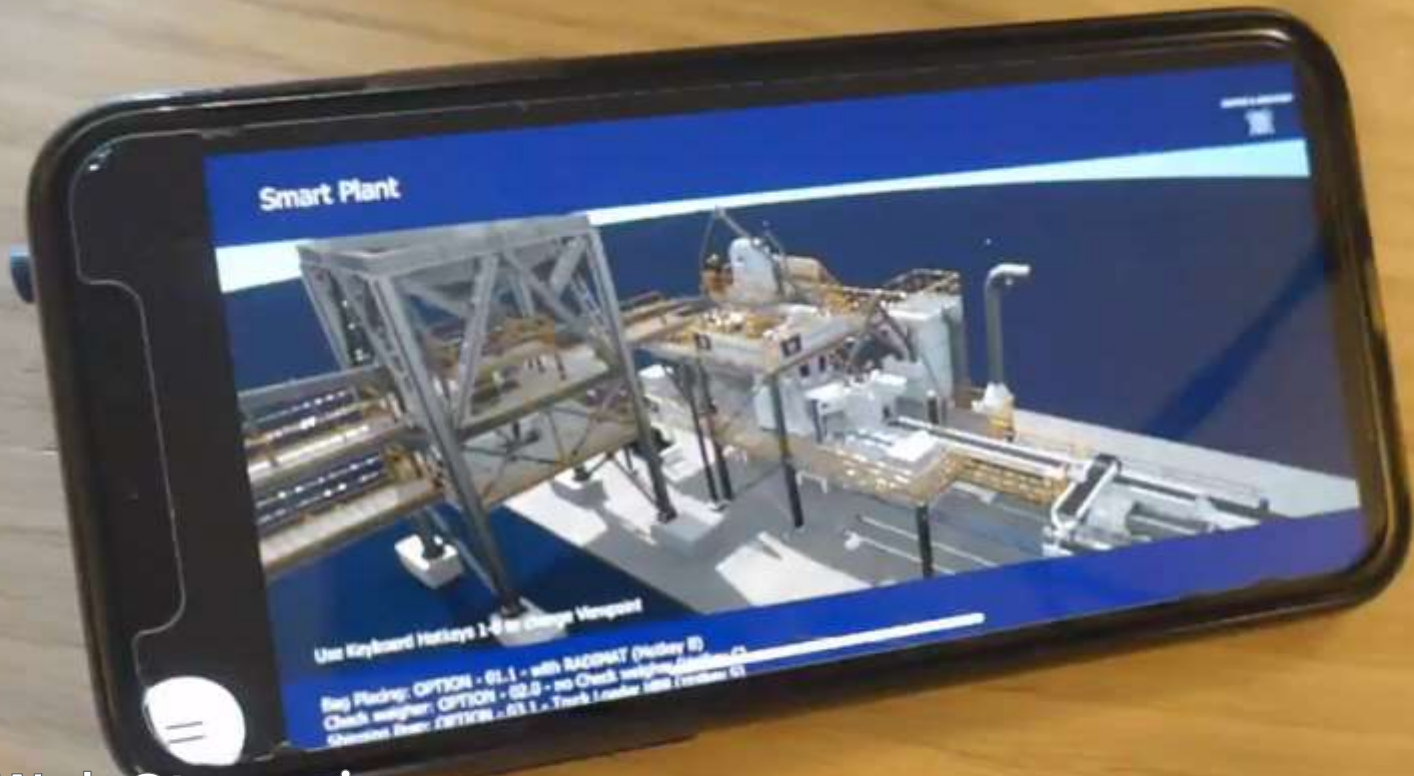
Embed in Webpages for wide distribution

# Smart Plant



## 3D Interactive Realtime

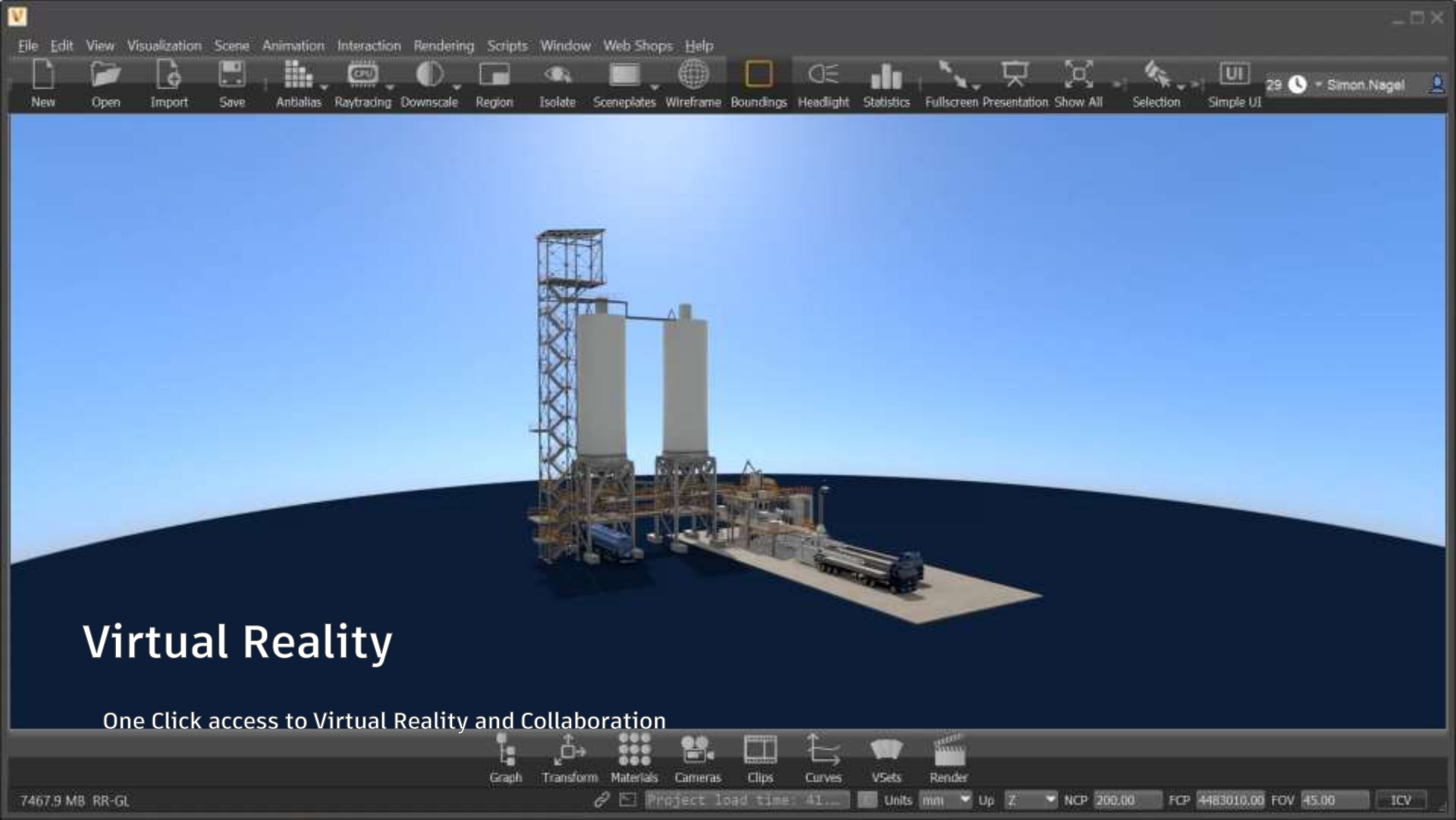
Embed in Webpages for wide distribution



## Web Streaming

Streaming for Mobile Device Access and Realtime Navigation



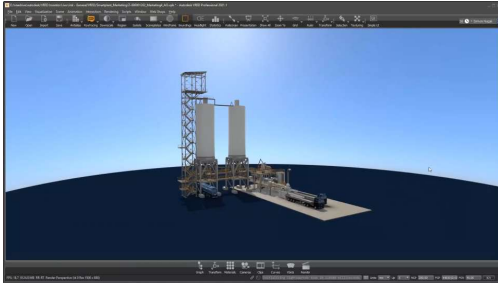


# Virtual Reality

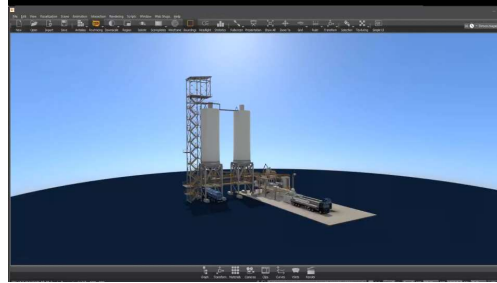
One Click access to Virtual Reality and Collaboration

# Multiple Output Option

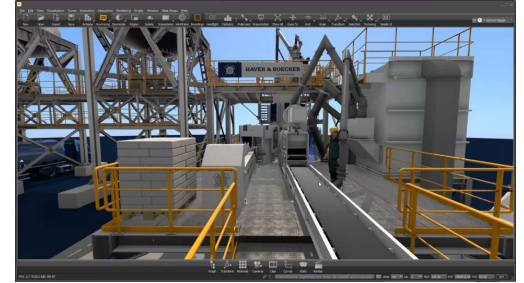
offline



Images

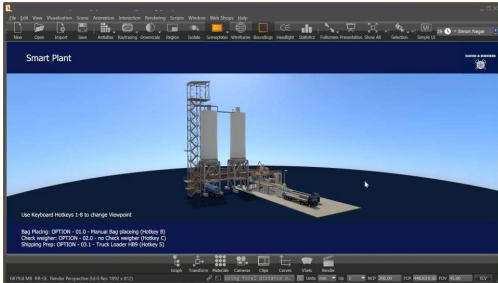


Animation



360 Panoramas

online



3D Interactive Realtime

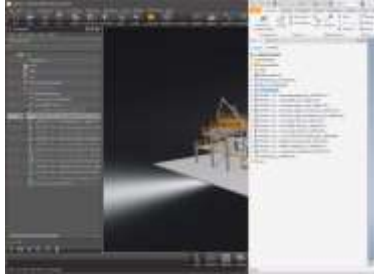


Mobile Device



Virtual Reality

# What we have seen in Use Case 1



Easy Import



Apply Materials



Implement Rules



Define Output

**How can I reuse this for the  
Development Process?**

# How are design reviews usually made today?



PRESENTATION



PROTOTYPE



CAD DATA

# What are the challenges of a virtual design review?

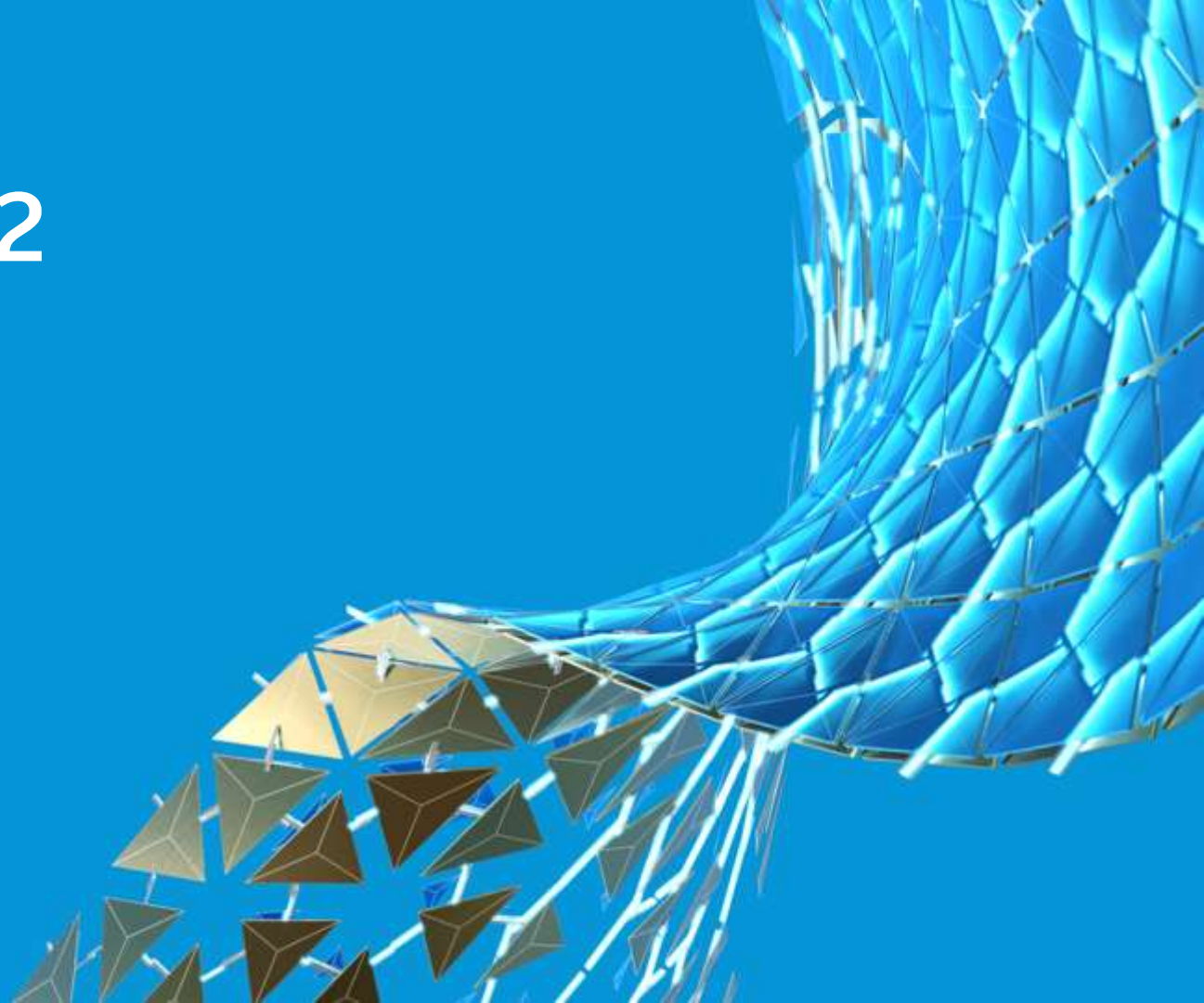
- Hard to judge dimensions/proportions
- Expensive, as it needs to be prepared for review
- Hard to access CAD expert and Decision maker
- 3D required to detect issues early

# Confidence in Digital Decision Making

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Good Visualization

# Use Case 2

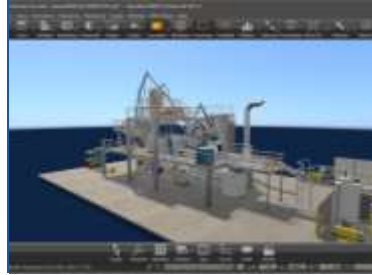




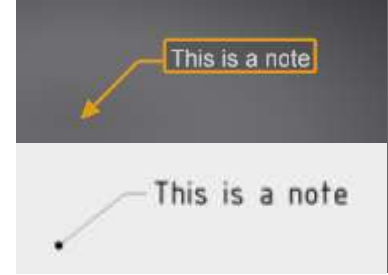
# What we have seen in Use Case 2



Real time Connection



Collaboration



Annotation

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