

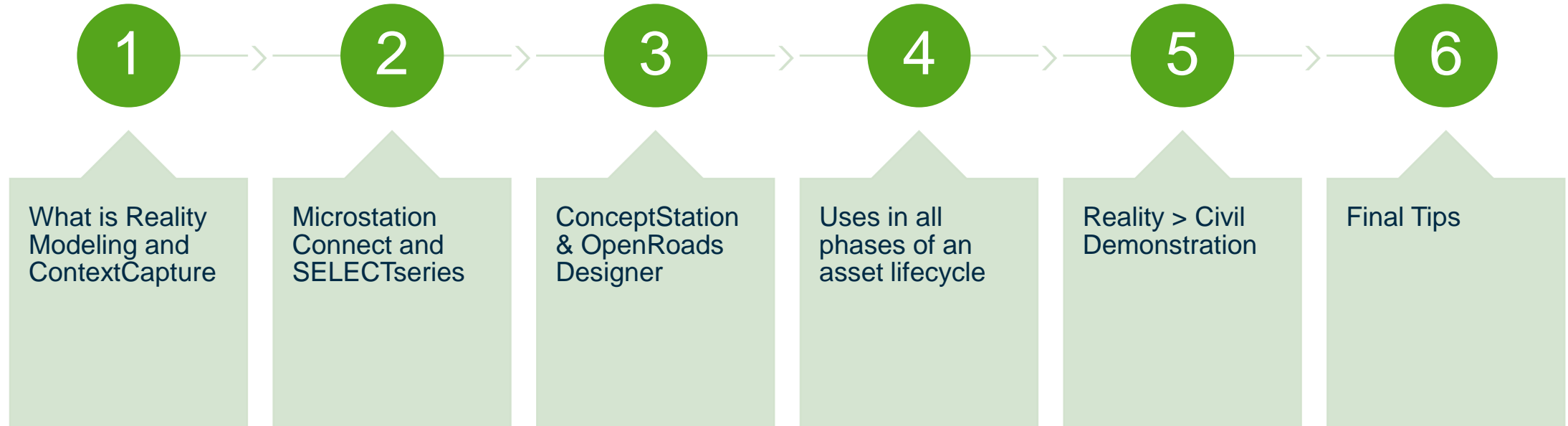


# Reality Modeling for Transportation Projects

Robert Nice – Bentley Systems

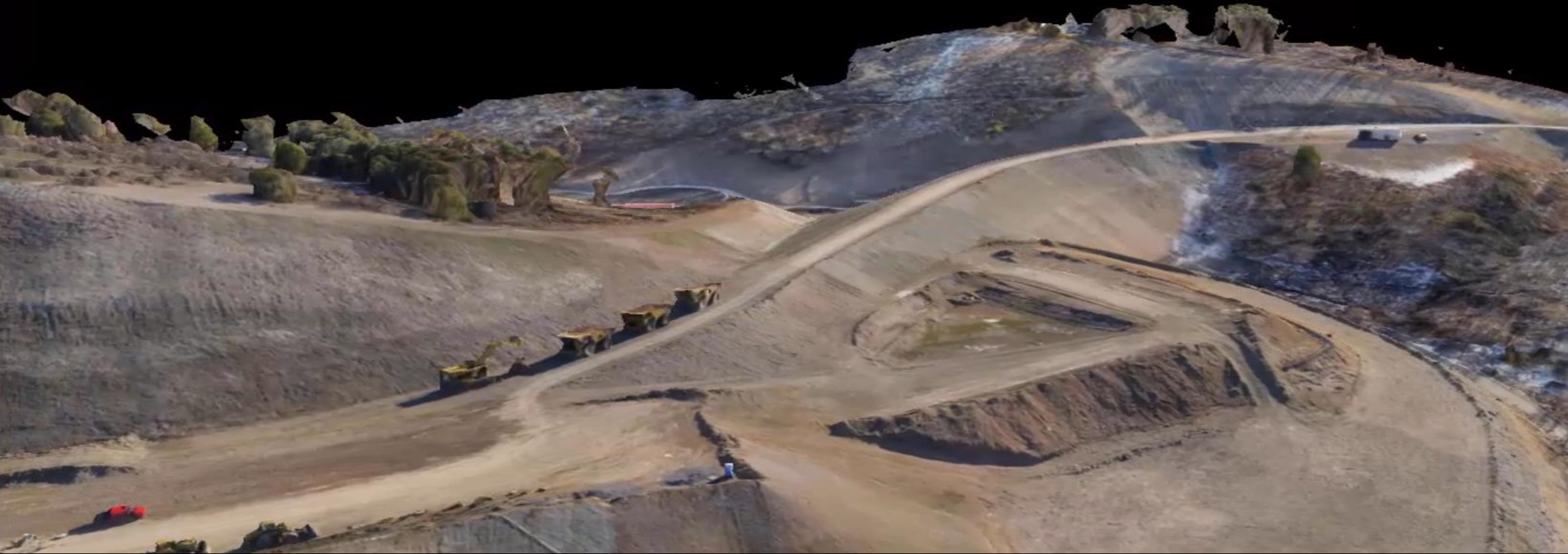


# Reality Modeling and Bentley Civil Design Software



## Reality Modeling

Capturing existing conditions in **3D using one or a combination of devices** (UAVs, Handheld Camera, Laser Scanner) to support different applications such as **Mapping, Design, Construction, Inspection and Asset Management**

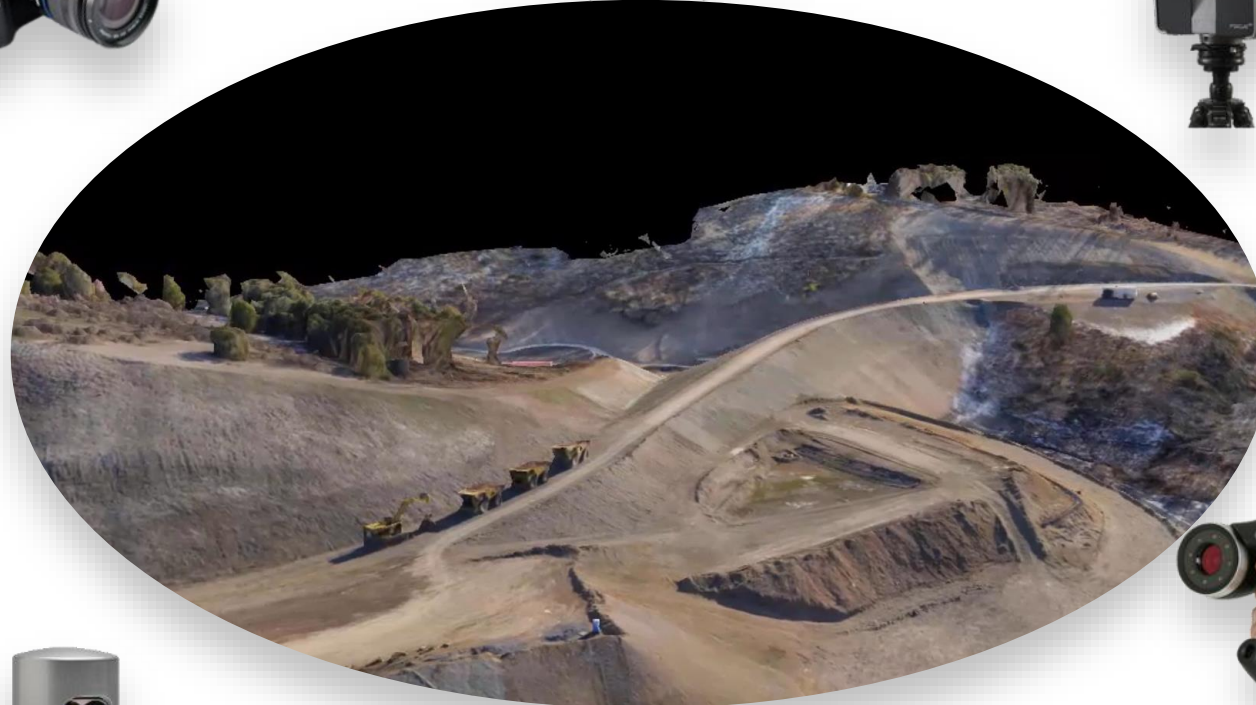




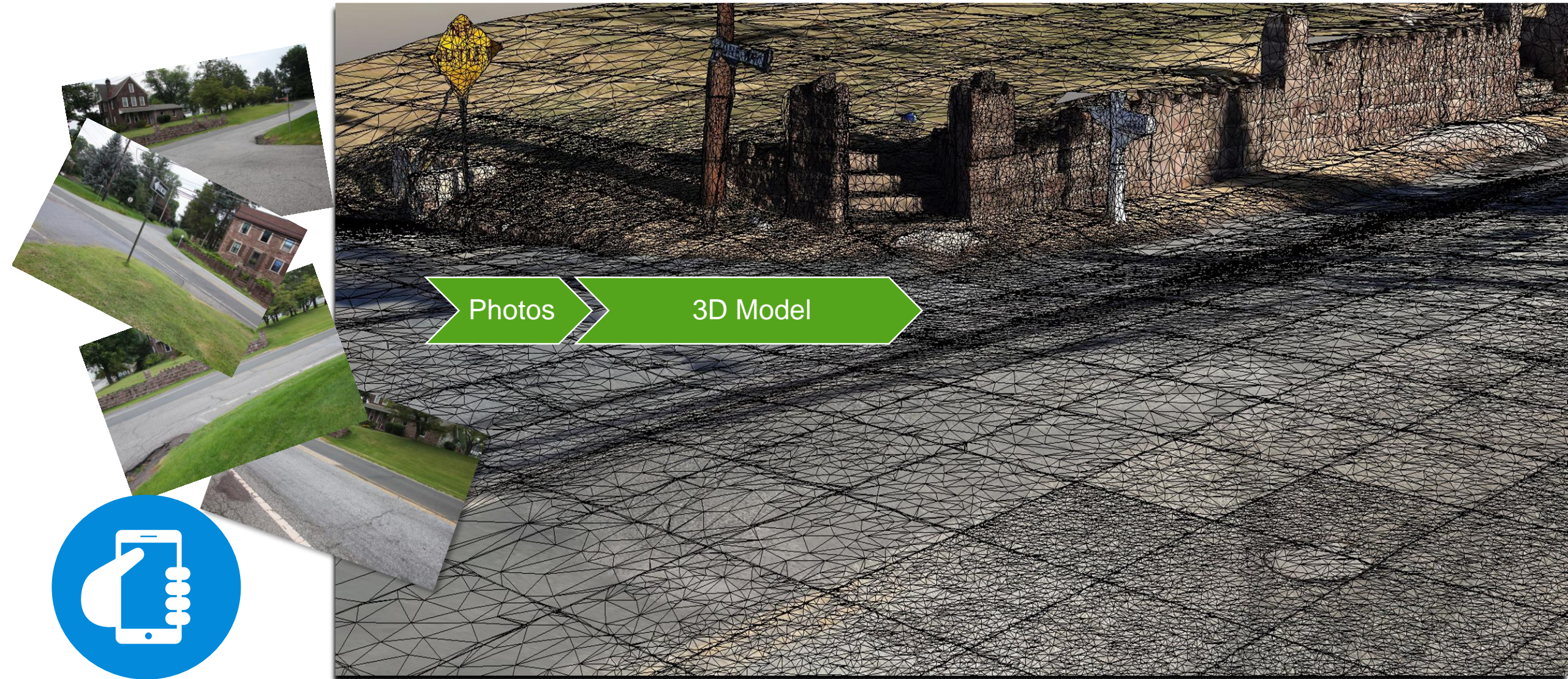


# ContextCapture Technology

Digital Photos + Cloud-Based Combination of Computer Vision and Photogrammetry  
Photogrammetry



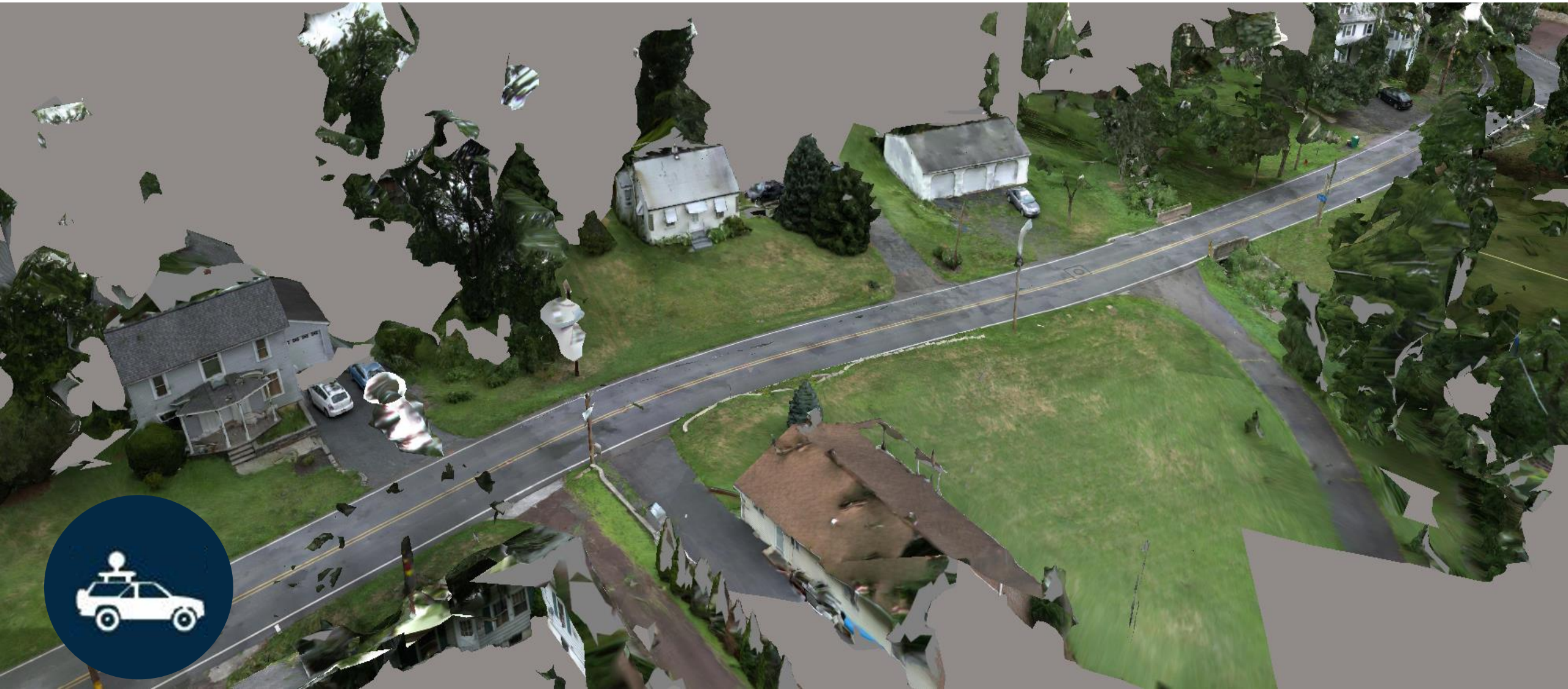
# Scalable3D Models - Handheld Camera



# Site Models – Drone w/ Camera

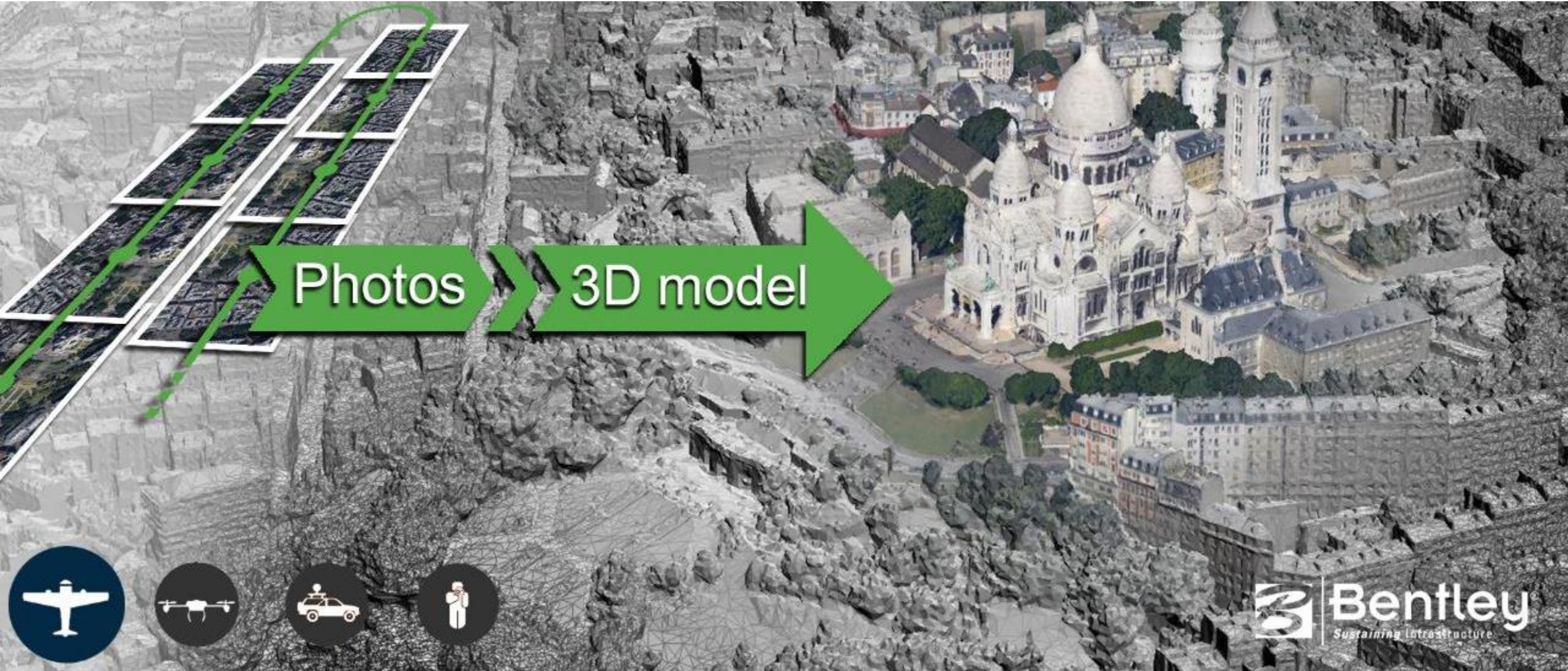


# Linear Models - Vehicle w/ Camera



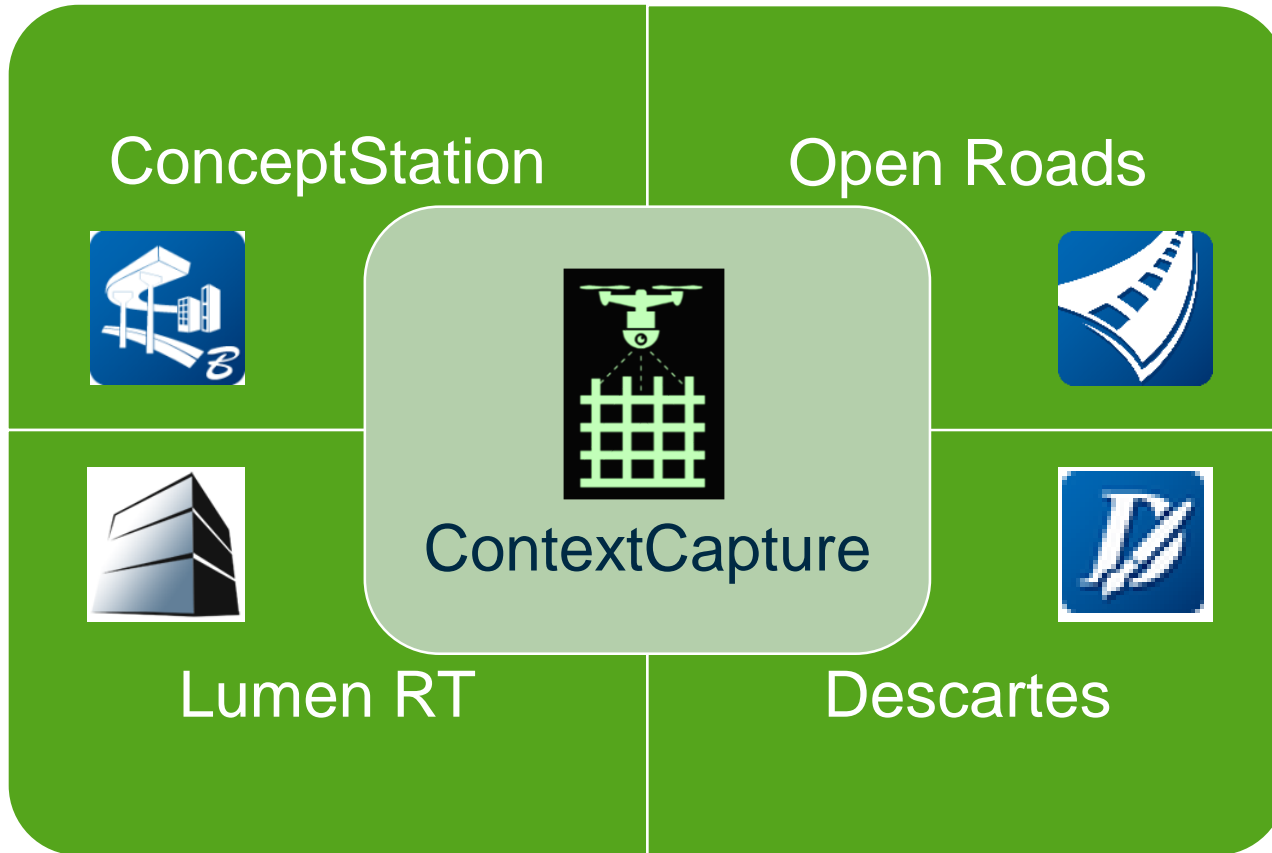


# ...to a whole city!



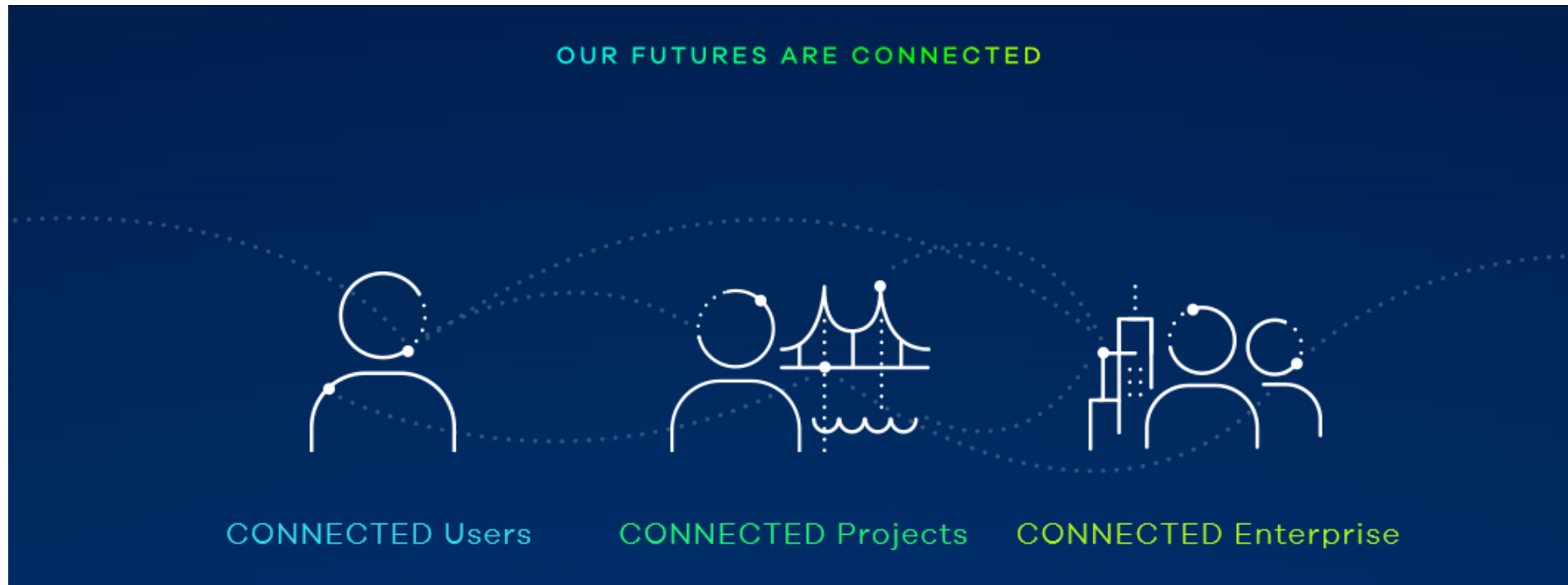


# ContextCapture and Civil Interaction



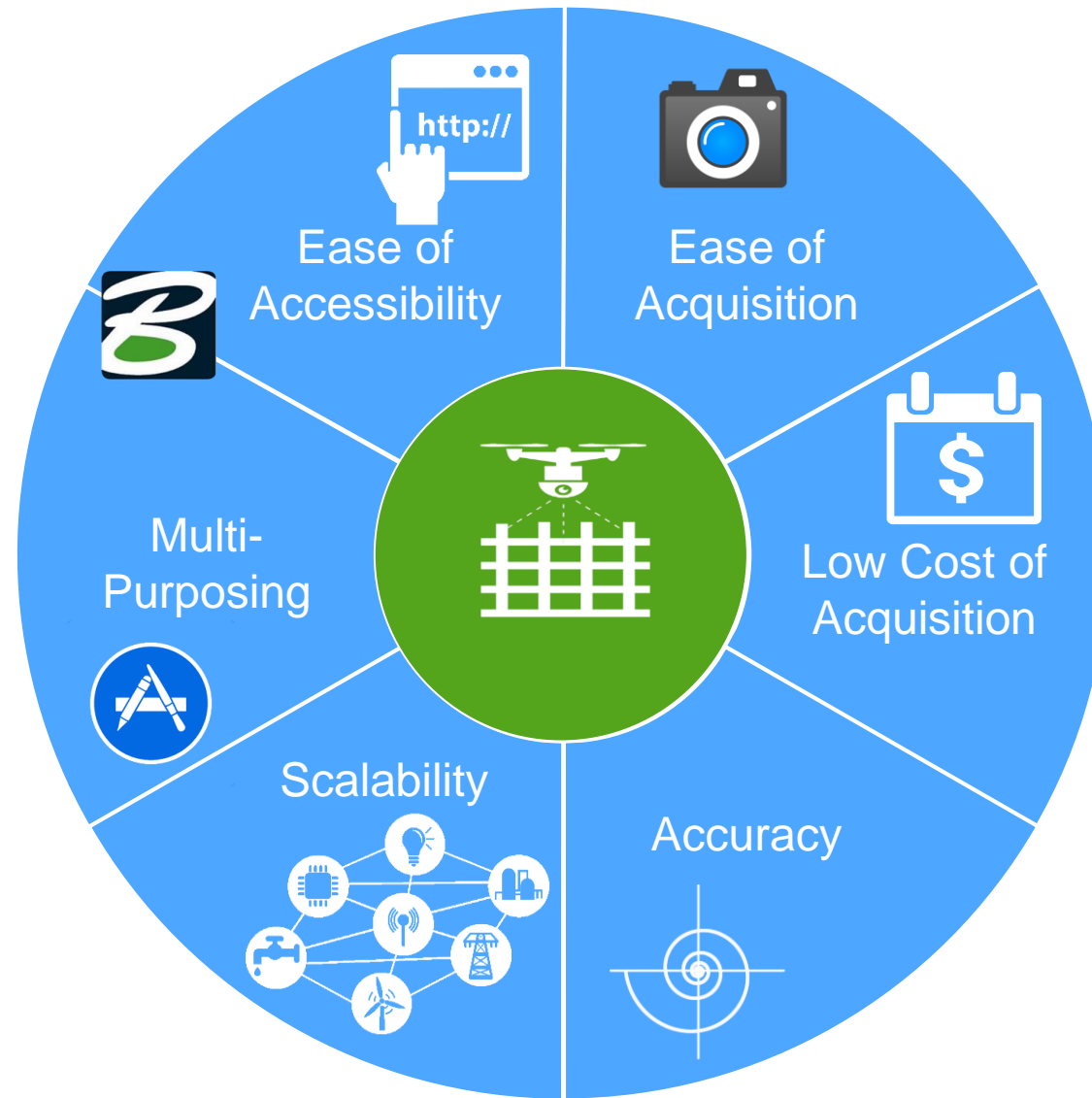


# SELECTseries 4 and CONNECT



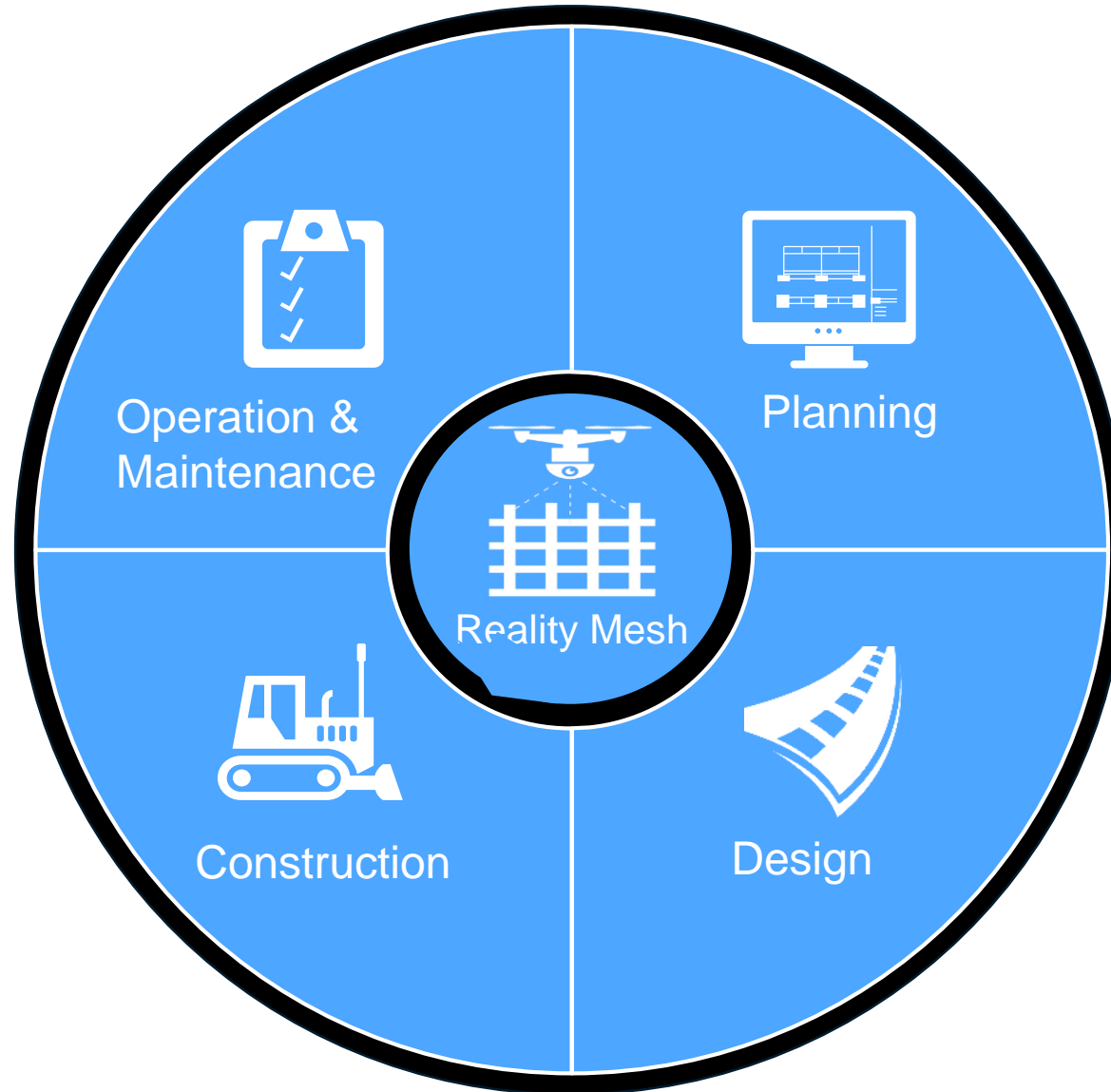


# Reality Modeling Advantage



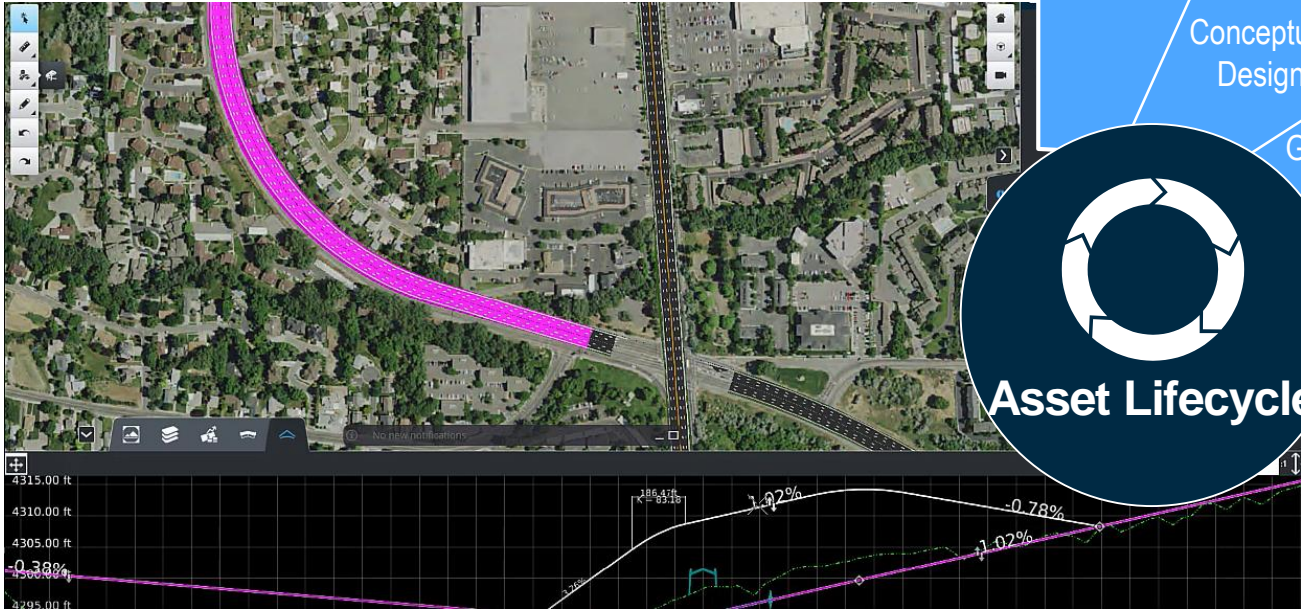


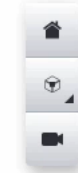
# Reality Modeling Use





# Planning





Top



Select item with mouse click or tap. Select multiple items by holding down CTRL key. X

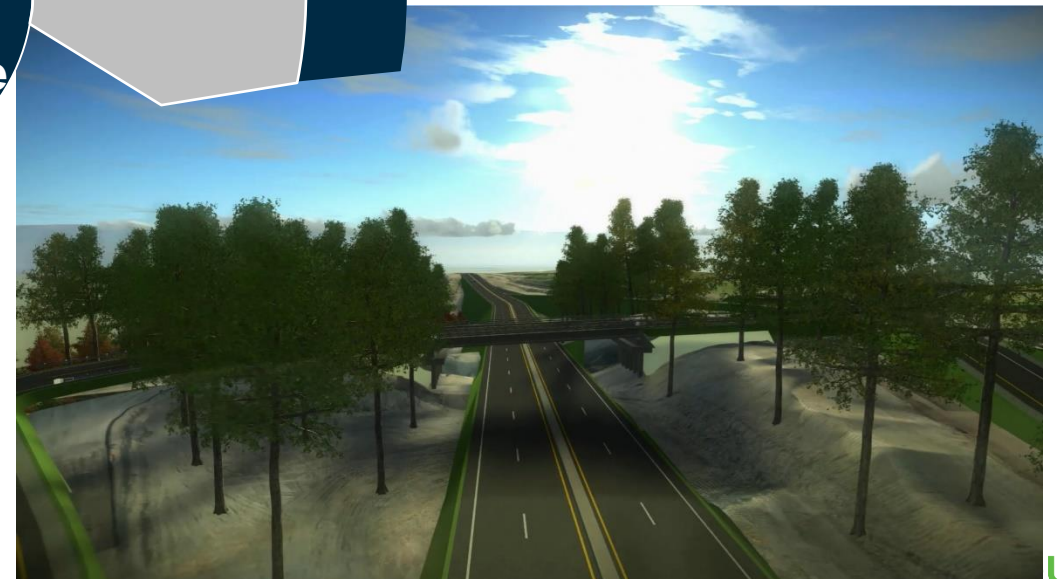
No new notifications -



# Why Reality Modeling?

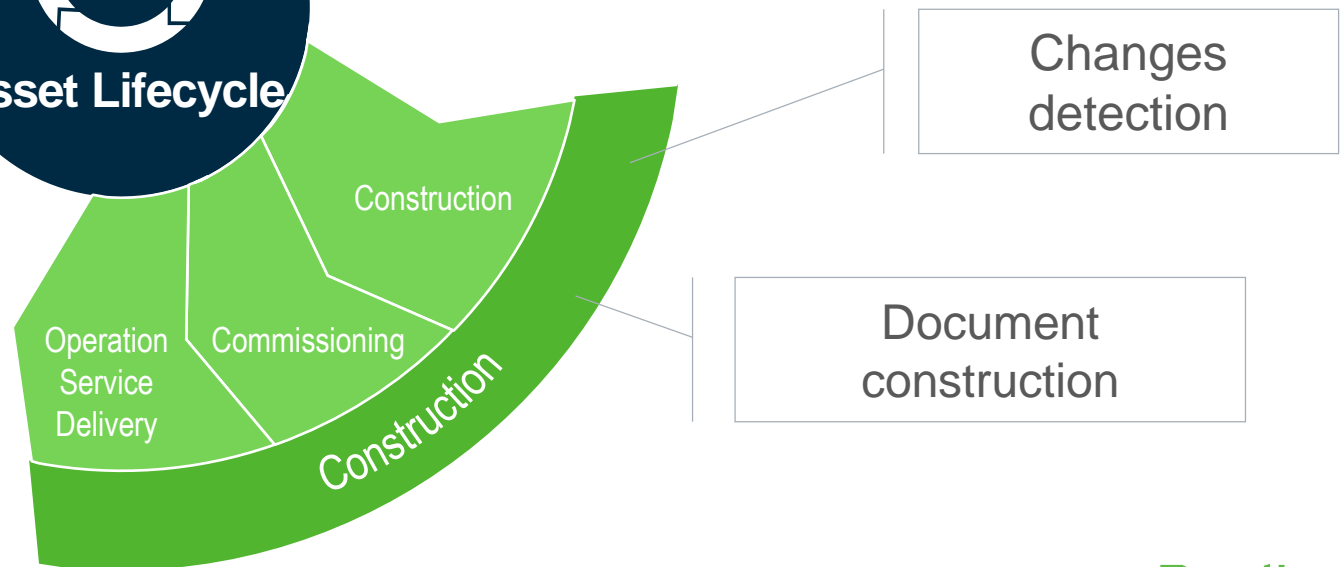
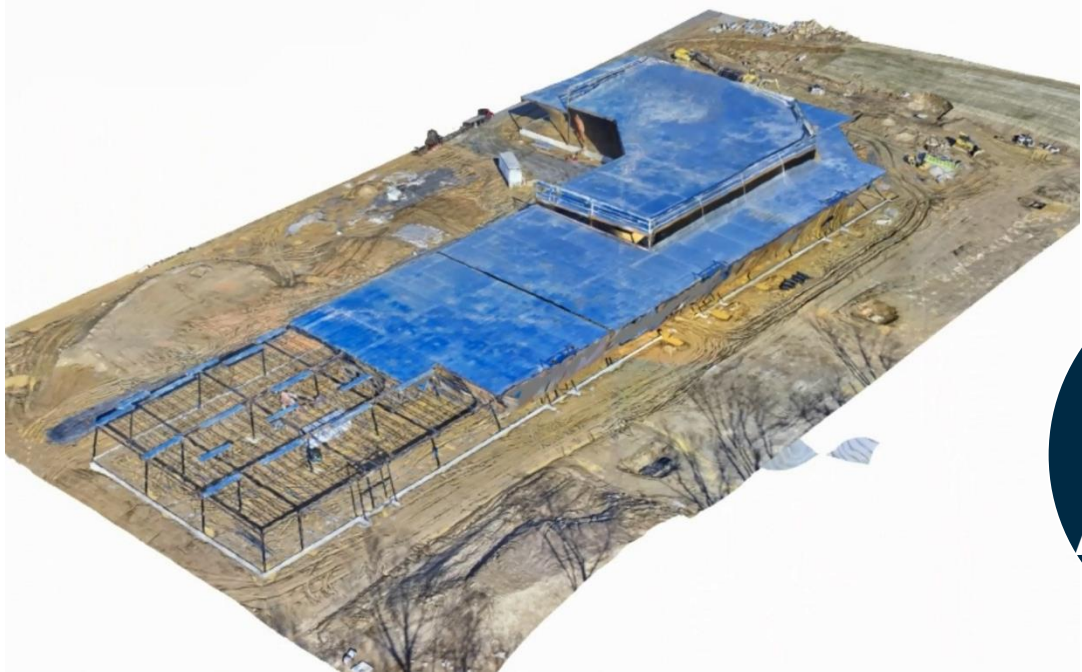
Understand the existing conditions

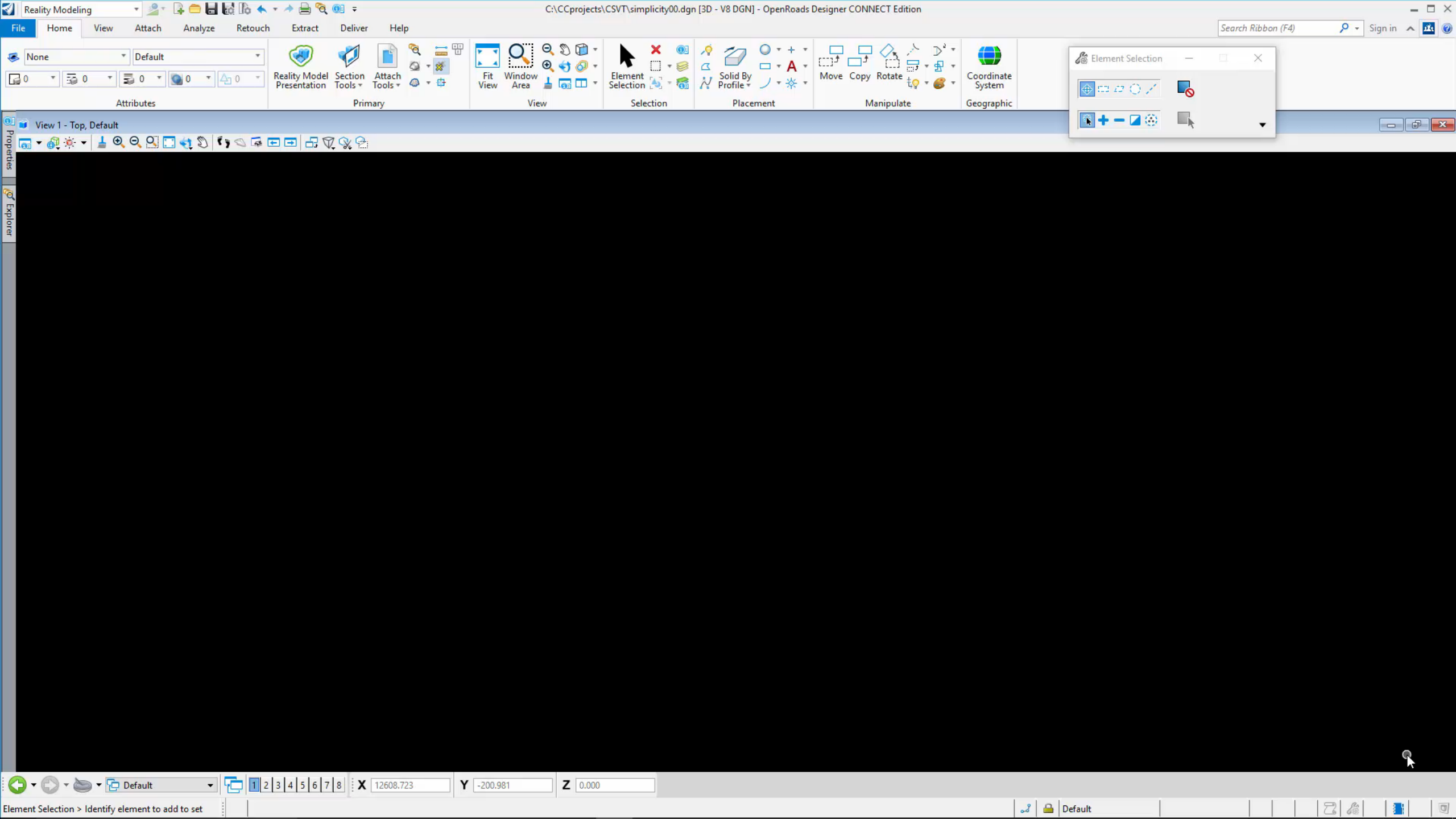
Risk management



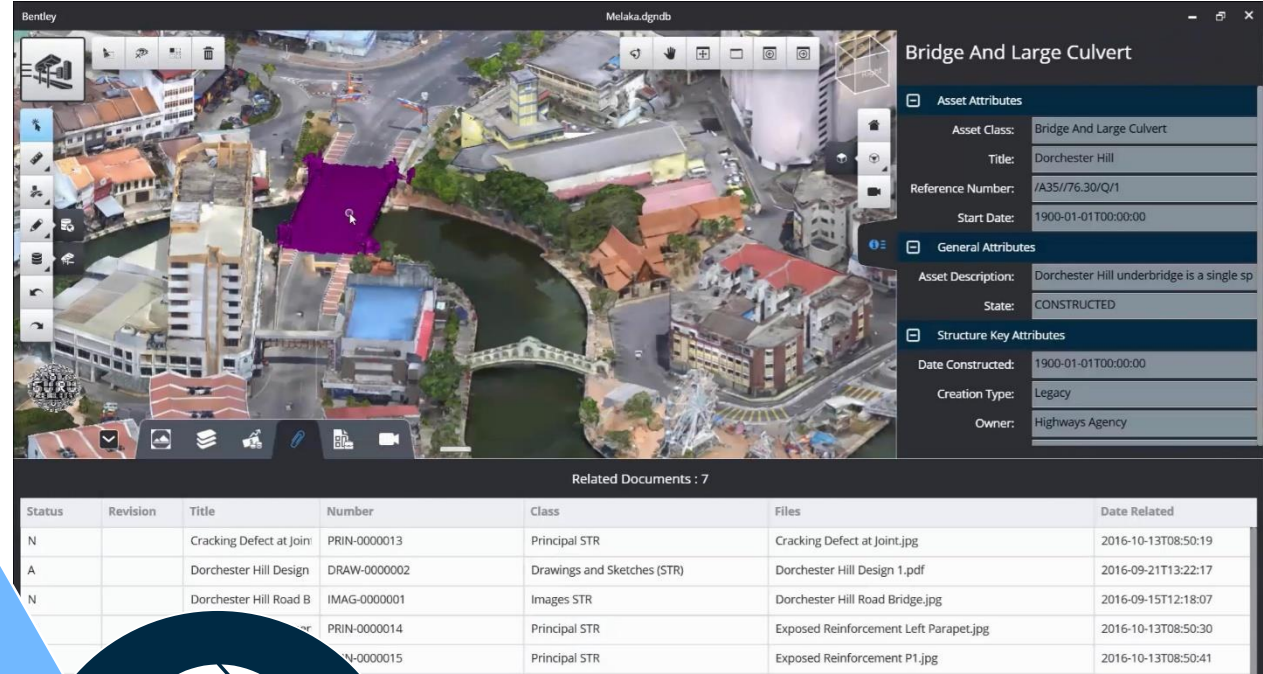


# Why Reality Modeling?



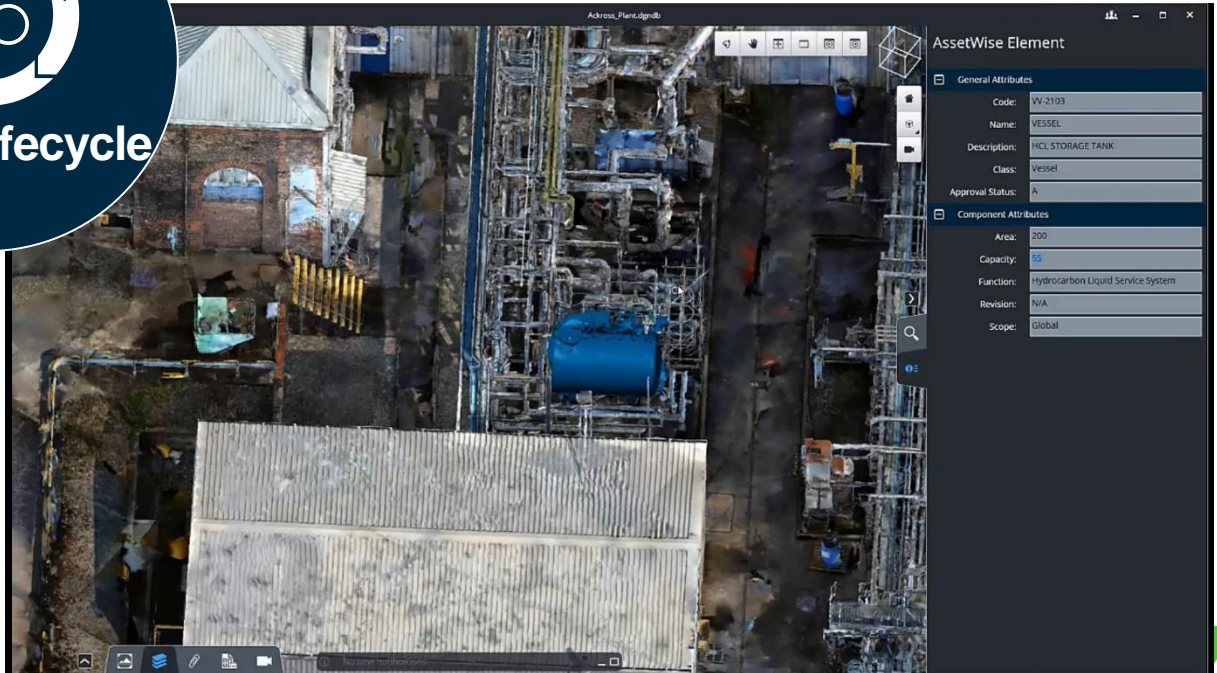
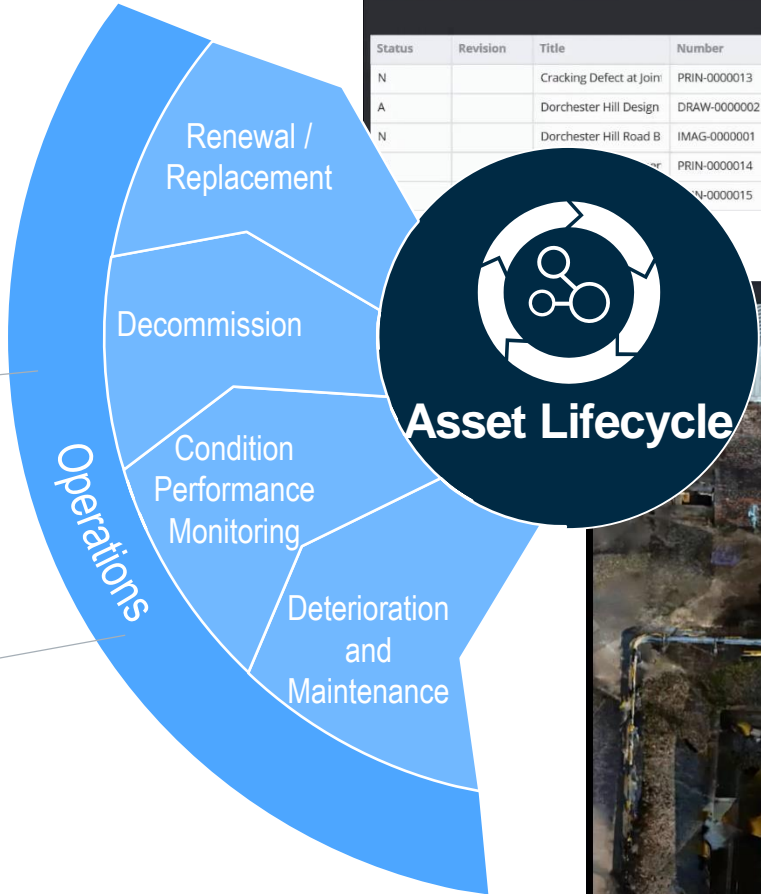


# Why Reality Modeling?



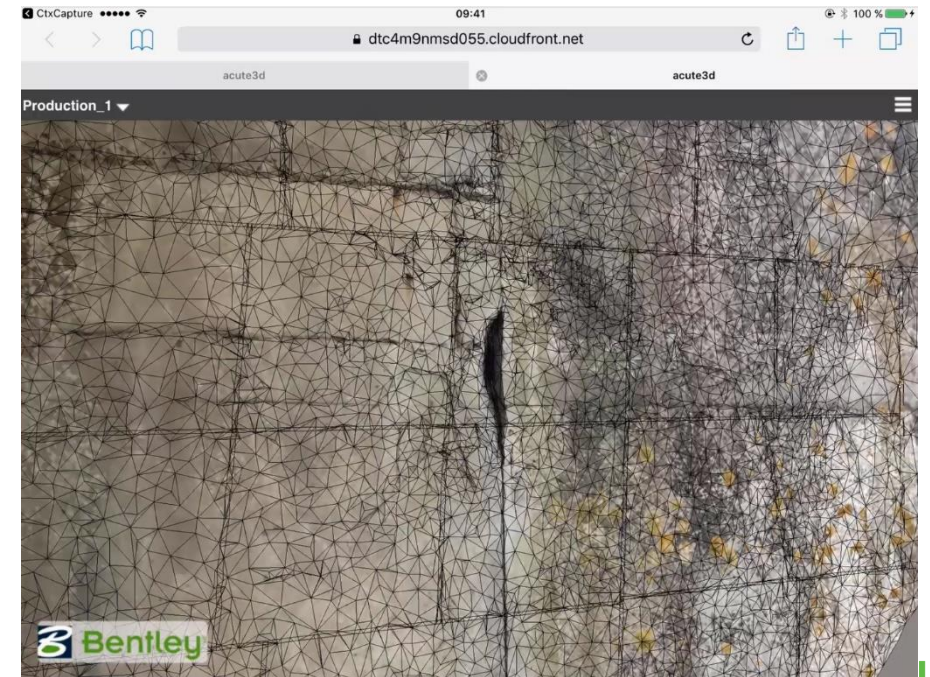
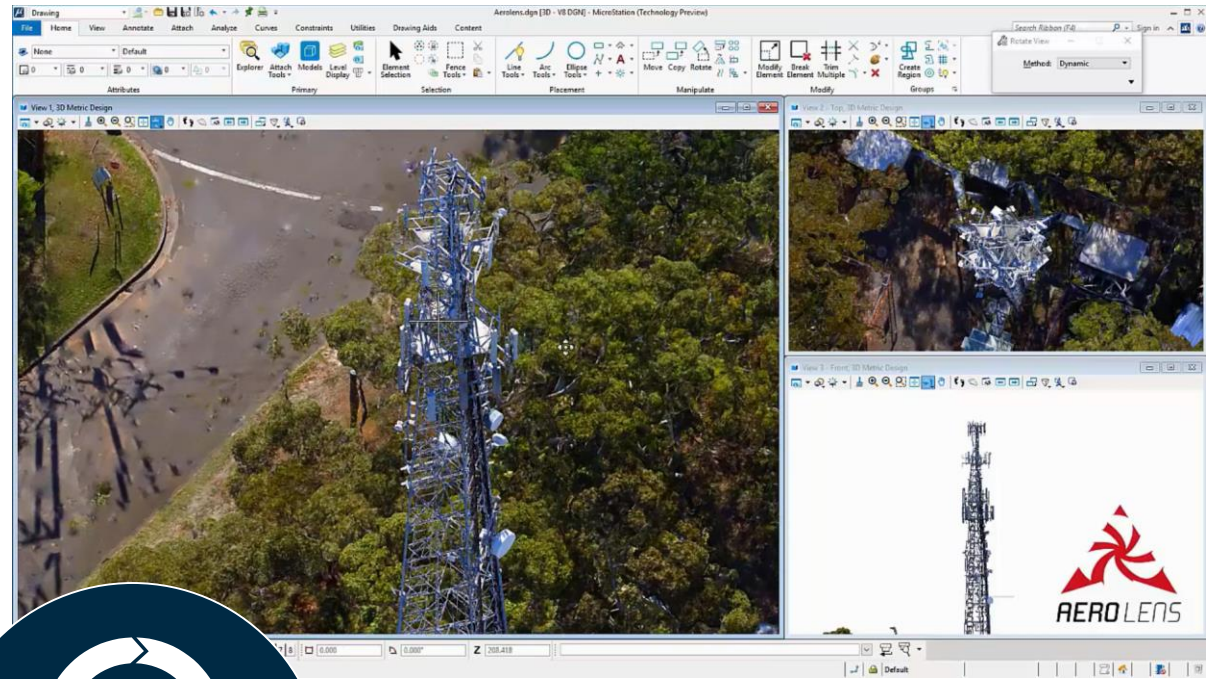
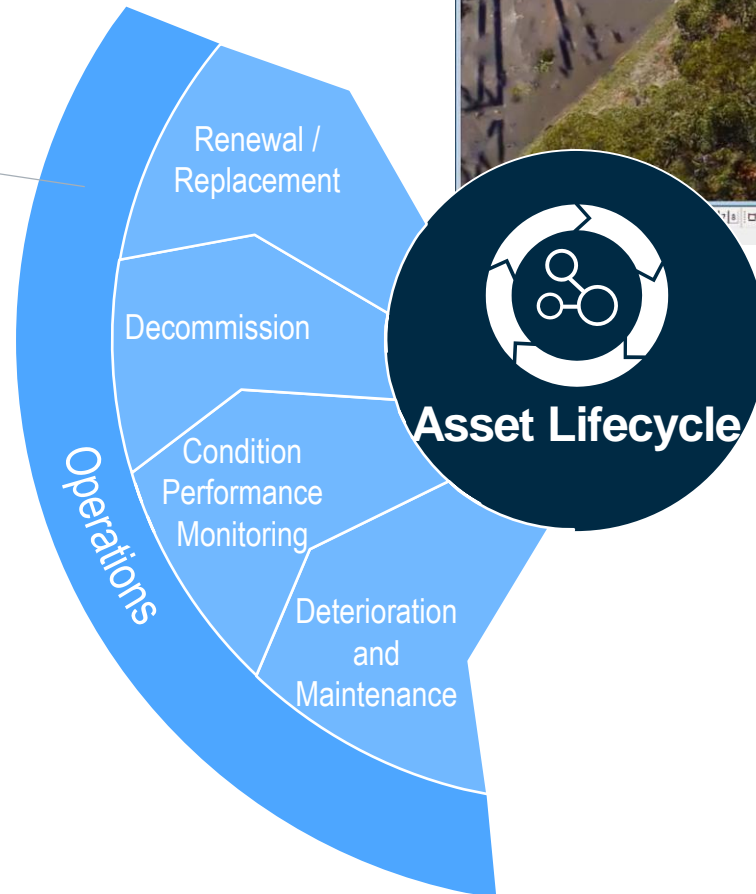
Visual Operation

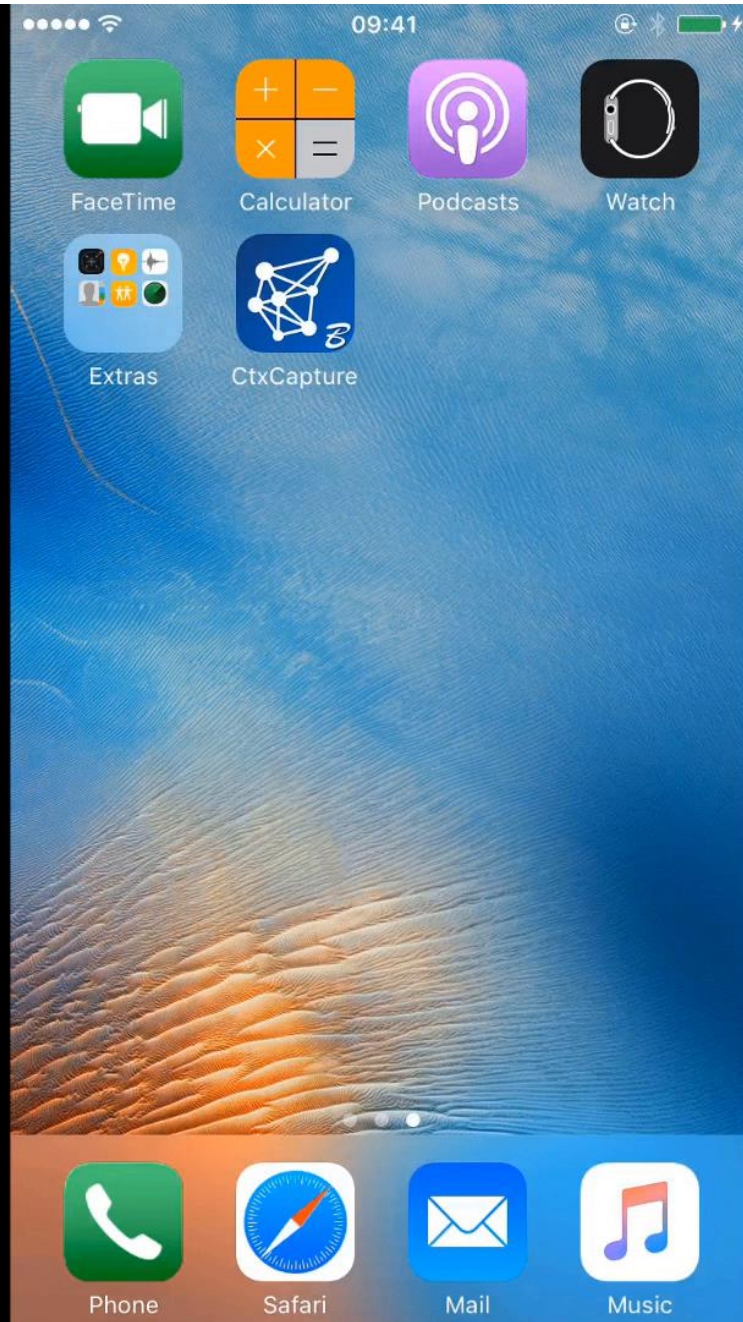
Training and simulation



# Why Reality Modeling?

Virtual Inspection





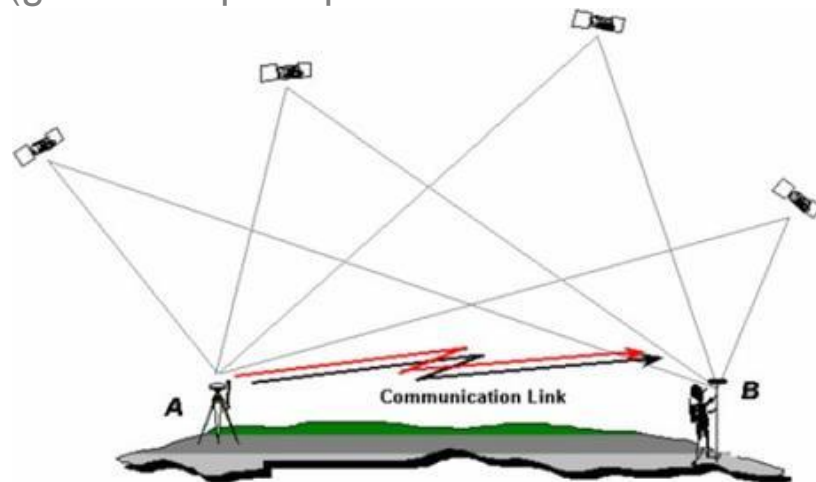
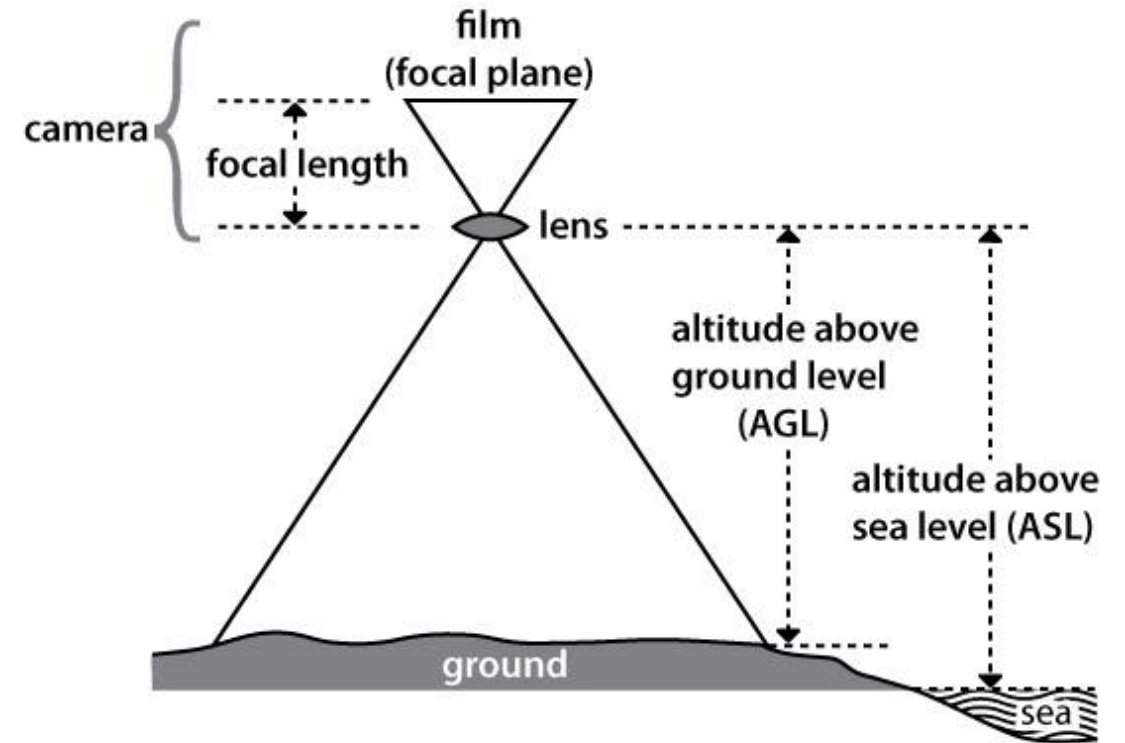
# Accuracy and Precision

- Spatial Accuracy
  - Measurement of How close a Point or position comes to a true value
- Precision / Scale
  - Measure of how close a series of measurements are to one another



# Accuracy and Precision

- Direct relation to image resolution and number of angles viewing the scene
- 2X Pixel resolution
- GPS allows for a high degree of accuracy and scale
- Highest spatial accuracy achieved through ground control
- Deviation between laser and photos is typically within the error ranges of the different sensors (given adequate pixel resolution)





Thank You

[connect.bentley.com](https://connect.bentley.com)

