City Planning in Context to its Current Reality

Ted Lamboo, Senior Vice President, Bentley Systems

Bentley
Advancing Infrastructure

Bentley's mission is to provide ***innovative software and services*** for the enterprises and professionals who ***design, build, and operate*** the world's infrastructure – sustaining the global economy and environment for ***improved quality of life***.


NAVIGATOR | MOBILE APPS: Bentley Map Mobile | ProjectWise WorkSite | Field Supervisor | Navigator Mobile | InspectTech Collector Mobile | ProjectWise Explorer Mobile | ...
BENTLEY'S PROJECT PLAYBOOKS
MINING
MineCycle
OpenPlant
AssetWise APM
Amulet
STAAD
Promis.e
Bentley Map
Descartes
Acute3D
InRoads
GEOPAK
gINT
CAMPUSES
Bentley Map
AECOsim
Descartes
RAM
STAAD
GEOPAK
InRoads
MXROAD
gINT
SITEOPS
WATER & WASTEWATER
WaterGEMS
SewerGEMS
OpenPlant
AutoPLANT
STAAD
RAM
OpenPlant Support Engineering
gINT
OpenUtilities
Subsurface Utilities Engineering
CITIES
Bentley Map
Descartes
InRoads
AECOsim
GEOPAK
Subsurface Utilities Engineering
SITEOPS
Acute3D
NUCLEAR POWER
AutoPIPE
OpenPlant
STAAD
AssetWise APM
Acute3D
COMMUNICATIONS NETWORKS
OpenUtilities
Bentley Fiber
Bentley Coax
Bentley Map Mobile
Bentley Inside Plant
ROADS
InRoads
GEOPAK
MXROAD
LEAP Bridge Steel
RM Bridge
gINT
InspectTech
SUPERLOAD
Exor
Descartes
SITEOPS
BUILDINGS
AECOsim
RAM
STAAD
ProStructures
Hevacomp
speedikon
gINT
Subsurface Utilities Engineering
SITEOPS
SUBSURFACE UTILITIES
OpenUtilities
WaterGEMS
SewerGEMS
Exor
GEOPAK
InRoads
MXROAD
gINT
Subsurface Utilities Engineering
BRIDGES
RM Bridge
LEAP Bridge Steel
InspectTech
SUPERLOAD
GEOPAK
InRoads
MXROAD
gINT
ProStructures
POWER PLANTS
OpenPlant
AutoPLANT
AutoPIPE
Promis.e
STAAD
ProStructures
OpenPlant Support Engineering
AECOsim
AssetWise APM
gINT
Descartes
Acute3D
GEOPAK
InRoads
Amulet
CONSTRUCTION
Navigator
ConstructSim
PW Construction Work Package Server
ProStructures
Field Supervisor App
AECOsim
Descartes
InRoads
PROCESS PLANTS
OpenPlant
AutoPLANT
AutoPIPE
OpenPlant Support Engineering
Promis.e
ProStructures
STAAD
AssetWise APM
Amulet
gINT
GEOPAK
InRoads
SITEOPS
Acute3D
UTILITY NETWORKS
OpenUtilities
Substation
WaterGEMS
SewerGEMS
STAAD
Descartes
AssetWise APM
Amulet
Acute3D
RAIL & TRANSIT
Bentley Rail Track
Optram
GEOPAK
InRoads
MXROAD
RM Bridge
LEAP Bridge Steel
gINT
Promis.e
WIND FARMS
SACS
MOSES
MAXSURF
ProSteel
OpenPlant
gINT
AssetWise APM
Amulet
Acute3D
OFFSHORE STRUCTURES
SACS
MOSES
MAXSURF
AutoPIPE
ProSteel
ConstructSim
OpenPlant
AssetWise APM
Acute3D
Amulet
New Products
BENTLEY'S COMMON PLATFORM: MICROSTATION | PROJECTWISE | ASSETWISE
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Bentley's 2014 Annual Report | 15

"A coordinated set of processes, supported by technology, that adds value through creating, managing and sharing the properties of an asset throughout its lifecycle."

BIM

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BIM

=

Infrastructure Information Modeling

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Sustaining Infrastructure

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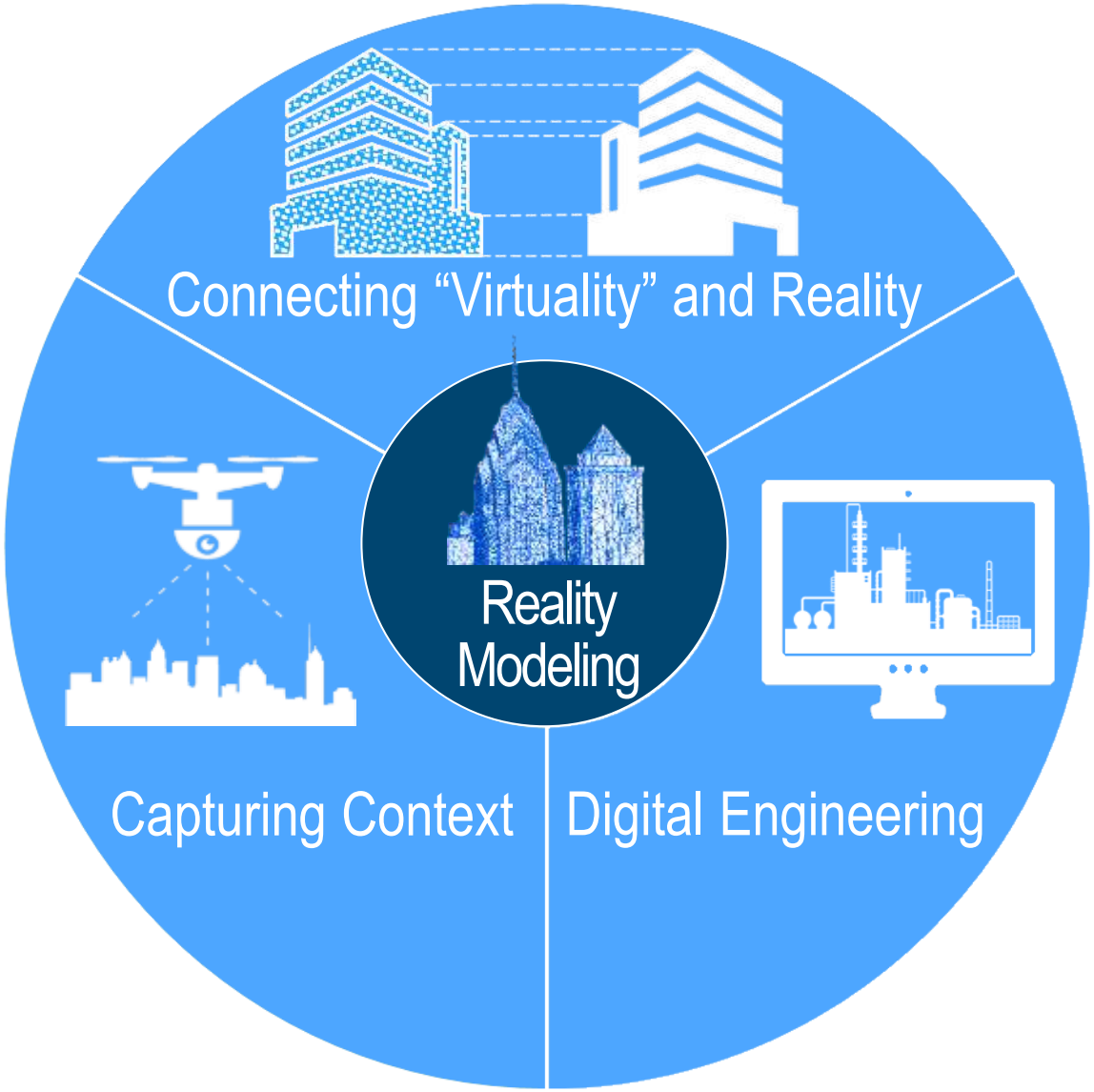
Bentley Acquires Acute3D to Advance *Reality Modeling*

To Align Design Modeling *and* Construction Modeling *with Existing Conditions' Context – for Every Infrastructure Project and Asset*

ORLANDO, Fla., U.S.A. – 19th Annual ARC Industry Forum – Feb. 10, 2015 – Bentley Systems, Incorporated, the leading company dedicated to providing comprehensive software solutions for *sustaining infrastructure*, today announced that it has acquired France-based Acute3D, provider of *Smart3DCapture* software for *reality modeling*. Through *reality modeling*, observations of existing conditions are processed into representations for contextual alignment within *design modeling* and *construction modeling* environments. Rapid technology advancements in scanning and photography – and especially the burgeoning application of unmanned aerial vehicles (UAVs) for these purposes – are making the capture of such observations broadly and continuously

Converging…!



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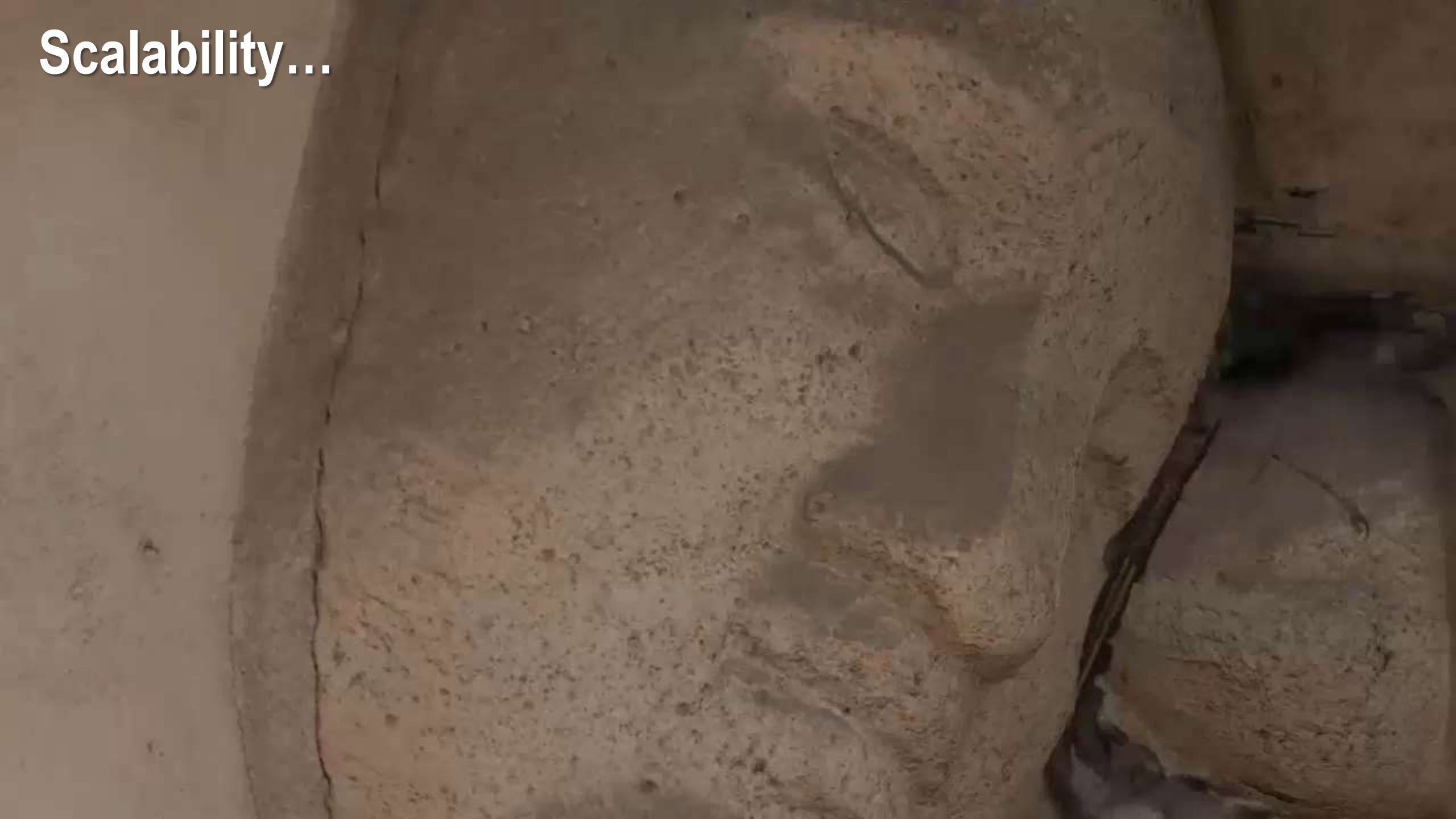
Reality Modeling…

With what?

Solution	Advantages	Limitations	Value of information
Total Station 	Reliable – Widespread - Price	Only distance and angle measurement Work disruptive	Low: distances & angles
Laser Scanner 	3D – High local precision – instantaneous	Monochromatic – Requires calibration & training – Limited density - Price	High: 3D point clouds
Depth field camera 	3D – Real time – Price - Texture	Low precision – Indoor only – Proximity to the scene	Very High: colored point cloud (→textured mesh)
Camera / Photogrammetry 	3D – Texture – Precision – Price – Widespread – No training – No calibration – highly portable	Not real time	Very high: georeferenced textured mesh (→ 3D colored point clouds, DSMs, Orthophotos)

Scalability…



Philadelphia prepares for mega event: hosting Pope Francis

Mary Beth McCauley | April 20, 2015 | 11 Comments

“Context Capture”

Street View Capture

Aerial Capture


PHILADELPHIA
SEPTEMBER 26-27, 2015


Courtesy of Comcast and Foster + Partners


Courtesy of Comcast and Foster + Partners

The City of Helsinki – 3D+

- 3D city modelling since the 1980's
- Over 50,000 digital images taken
- Combined with their city information model
- Built on cityGML standards
- Data shared internally and externally
- Continuously surveyed

Be Inspired 2016 Winner:
Reality Modeling

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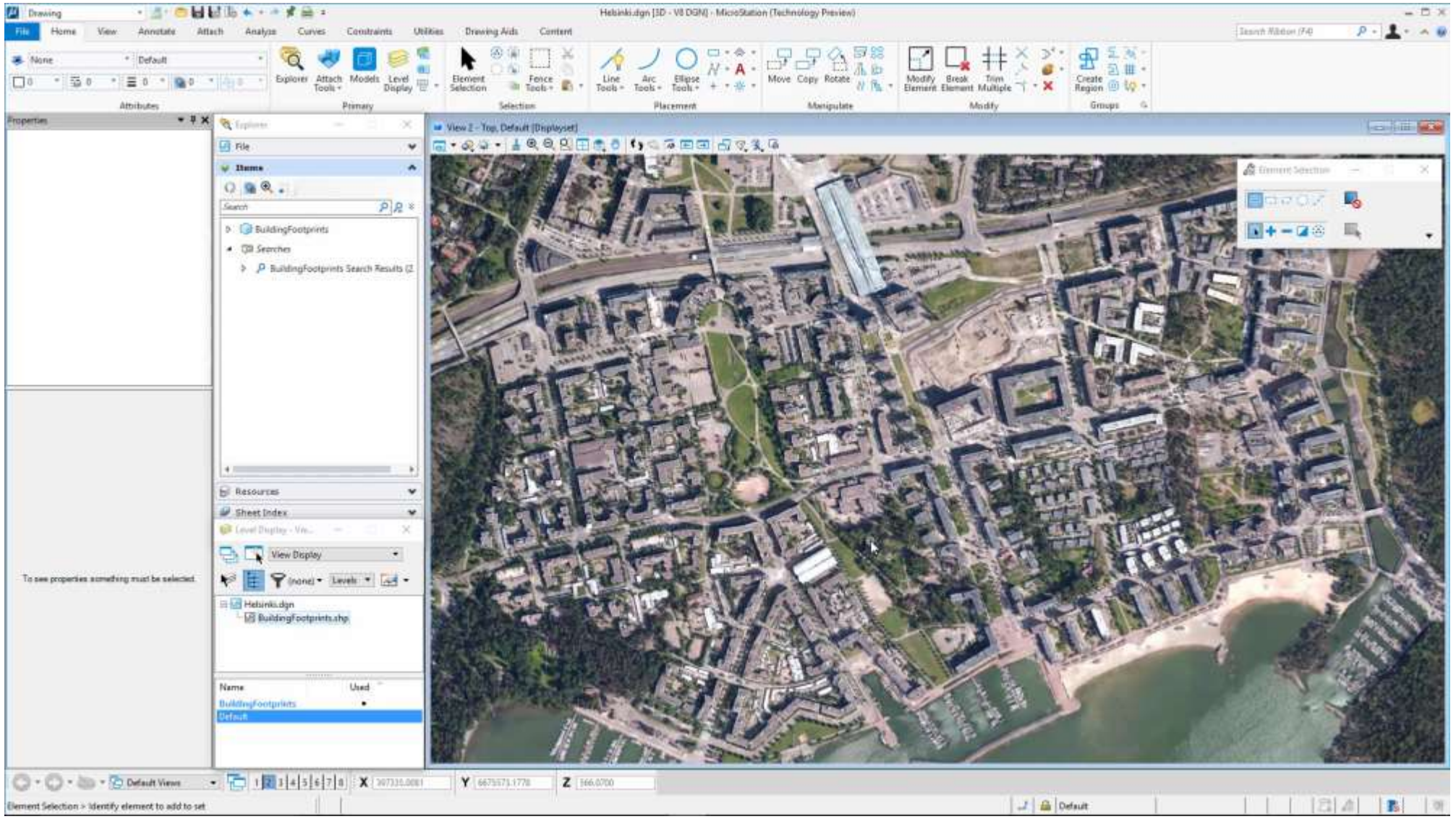
Combining Reality and Virtual Reality with GIS



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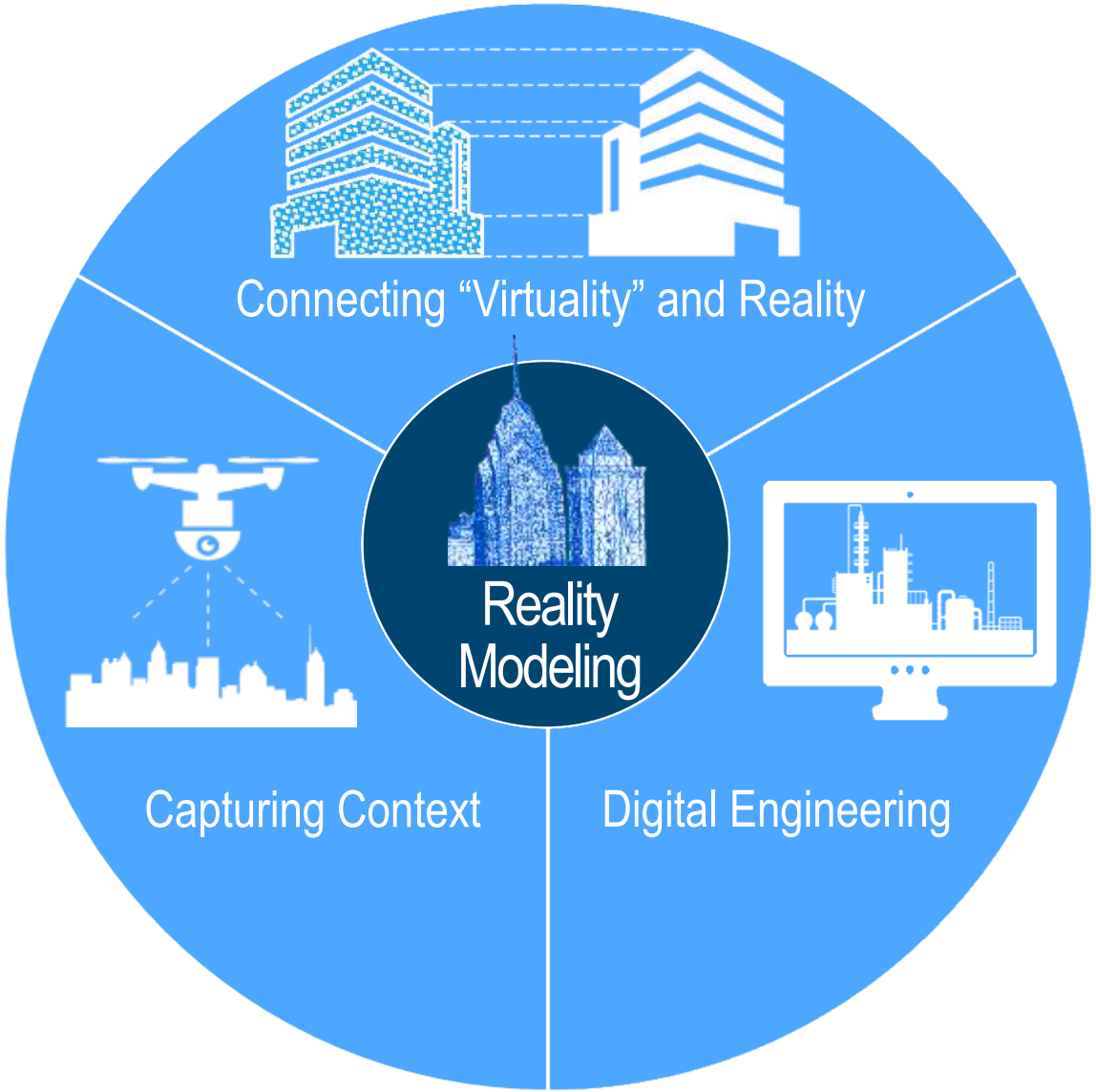
City Alive – Continuous Survey & Modeling



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Resilient sustainable cities and buildings

Ted Lamboo, Senior Vice President, Bentley Systems

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