



Riga, 2018-09-13
Vilnius, 2018-09-21
Tallinn, 2018-09-25

Constructioneering the digital future ...in a Connected Data Environment

Stefan Sigvardsson

Business Development Manager

Project Delivery

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*.





MINING

- OpenPlant
- eB Information Manager
- AssetWise APM
- STAAD
- Raceway and Cable Management
- promis*e
- Bentley Map
- Descartes
- InRoads
- GEOPAK
- gINT
- topoGRAPH

ROADS

- InspectTech
- SUPERLOAD
- Exor
- InRoads
- GEOPAK
- MXROAD
- LEAP Bridge
- RM Bridge
- topoGRAPH
- gINT
- Descartes

CAMPUSES

- Bentley Map
- AECOSim
- Descartes
- Geospatial Server
- RAM
- STAAD
- Raceway and Cable Management
- GEOPAK
- InRoads
- MXROAD
- gINT

UTILITY NETWORKS

- Utilities Designer
- ProjectWise
- Substation
- Raceway and Cable Management
- STAAD
- InRoads
- GEOPAK
- Descartes
- AssetWise APM

BUILDINGS

- AECOSim
- GenerativeComponents
- RAM
- STAAD
- ProStructures
- Hvaccomp
- speedikon
- gINT
- InRoads
- GEOPAK

CONSTRUCTION

- Navigator
- ProjectWise
- Construction Work
- Package Server
- ConstructSim
- ProStructures
- Field Supervisor App
- SpecWave Composer
- Transmittal Services
- AECOSim
- MicroStation
- Descartes
- InRoads
- Geospatial Server

RAIL & TRANSIT

- Bentley Rail Track
- Optram
- eB Information Manager
- InRoads
- MXROAD
- RM Bridge
- GEOPAK
- LEAP Bridge
- gINT
- topoGRAPH
- promis*e

WATER & WASTEWATER

- WaterGEMS
- SewerGEMS
- OpenPlant
- AutoPLANT
- STAAD
- RAM
- gINT
- Utilities Designer

SUBSURFACE UTILITIES

- WaterGEMS
- SewerGEMS
- Exor
- GEOPAK
- gINT
- Utilities Designer
- MXROAD
- InRoads

WIND FARMS

- SACS
- MOSES
- MAXSURF
- ProSteel
- OpenPlant
- gINT
- AssetWise APM

CITIES

- Bentley Map
- Geo Web Publisher
- Descartes
- InRoads
- AECOSim
- Geospatial Server
- GEOPAK
- RM Bridge
- LEAP Bridge

COMMUNICATIONS NETWORKS

- Bentley Fiber
- Bentley Coax
- Bentley Map Mobile
- Bentley Inside Plant
- Communications
- PowerView

POWER PLANTS

- OpenPlant
- AutoPLANT
- AutoPIPE
- eB Information Manager
- Data Quality Server
- promis*e
- STAAD
- ProStructures
- Raceway and Cable Management
- AECOSim
- AssetWise APM
- gINT
- Descartes
- InRoads

OFFSHORE STRUCTURES

- SACS
- MOSES
- MAXSURF
- AutoPIPE
- ProSteel
- ConstructSim
- OpenPlant
- Data Quality Server
- gINT
- AssetWise APM

NUCLEAR POWER

- eB Information Manager
- Data Quality Server
- AutoPIPE
- OpenPlant
- STAAD
- Raceway and Cable Management
- AssetWise APM

BRIDGES

- InspectTech
- SUPERLOAD
- RM Bridge
- LEAP Bridge
- GEOPAK
- InRoads
- MXROAD
- gINT
- ProStructures

PROCESS PLANTS

- OpenPlant
- AutoPLANT
- AutoPIPE
- Raceway and Cable Management
- promis*e
- AutoPIPE
- ProStructures
- STAAD
- AssetWise APM
- Data Quality Server
- eB Information Manager
- gINT
- InRoads
- GEOPAK

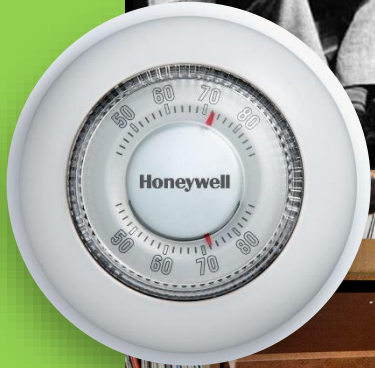
Bentley's Project Playlists

MicroStation • ProjectWise • AssetWise

eB Information Manager • i-models • Bentley CONNECT
Mobile Apps

Bentley
Advancing Infrastructure

Home



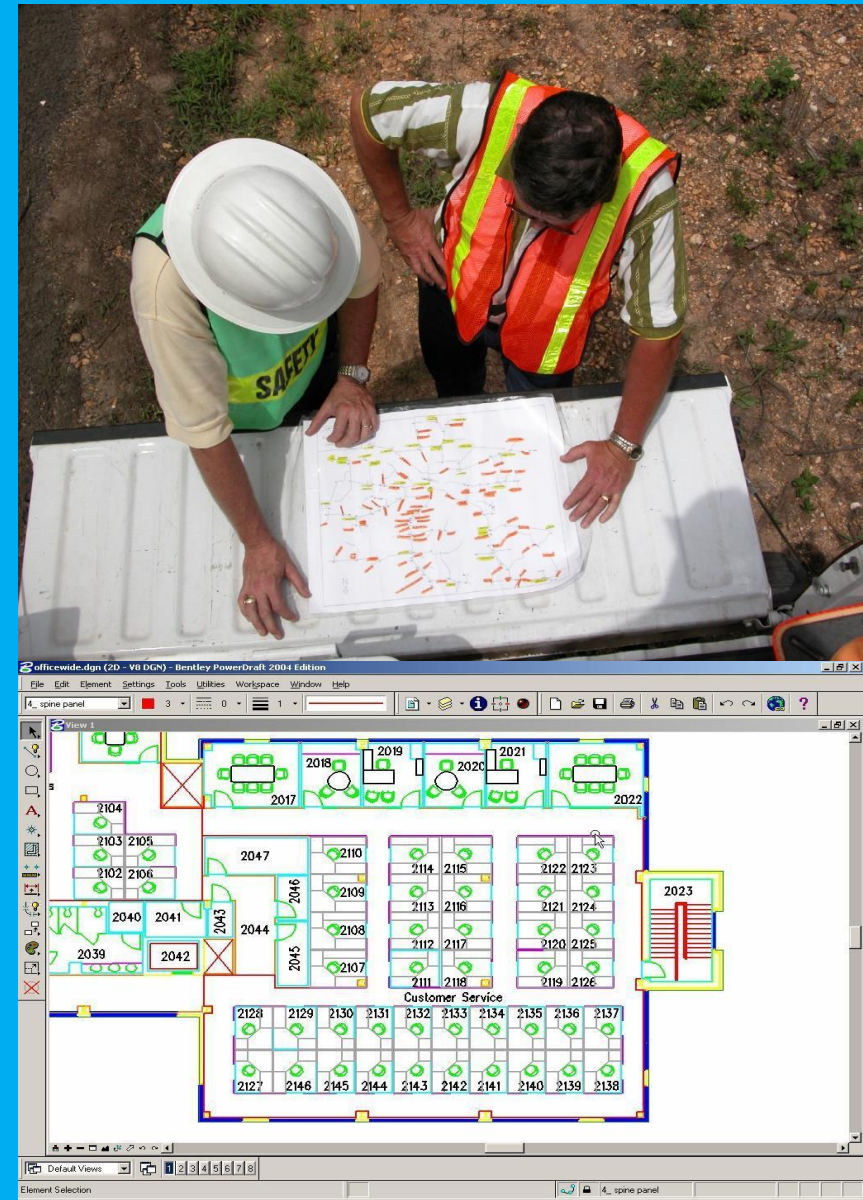
Work



Home



Work



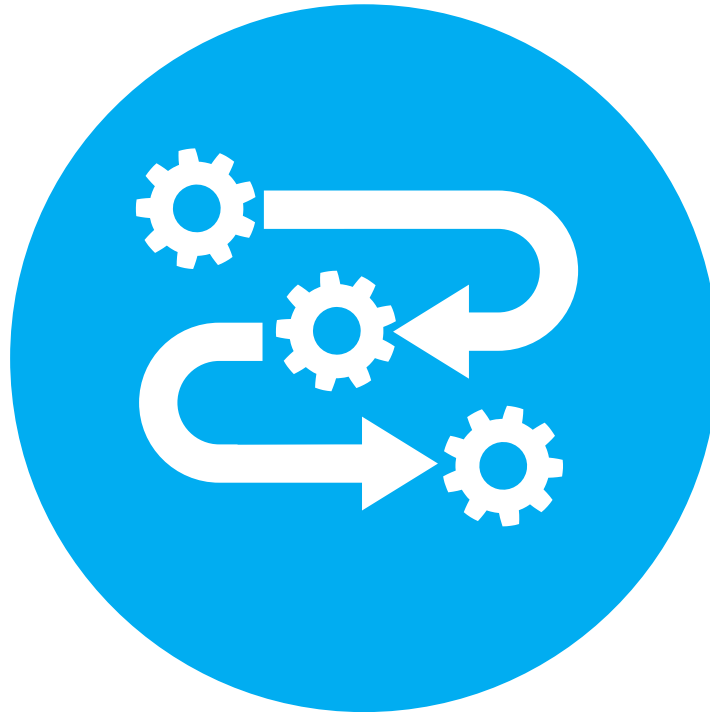


Digital Transformation

Technology



Process



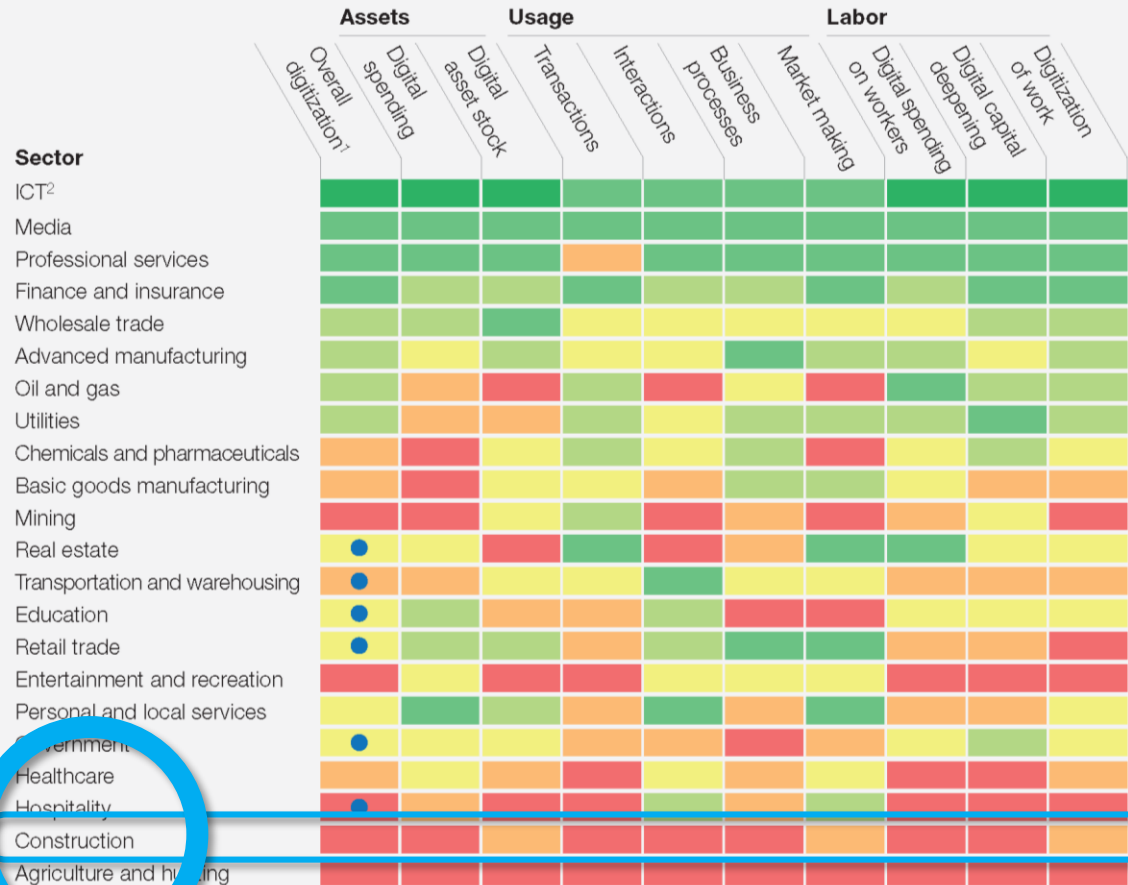
People



The construction industry is among the least digitized.

McKinsey Global Institute industry digitization index;
2015 or latest available data

Relatively low digitization  Relatively high digitization
● Digital leaders within relatively undigitized sectors



¹Based on a set of metrics to assess digitization of assets (8 metrics), usage (11 metrics), and labor (8 metrics).

²Information and communications technology.

Source: AppBrain; Bluewin; Computer Economics; eMarketer; Gartner; IDC Research; LiveChat; US Bureau of Economic Analysis; US Bureau of Labor Statistics; US Census Bureau; McKinsey Global Institute analysis

McKinsey&Company

The productivity opportunity in construction



Construction matters for the world economy ... but has a long record of poor productivity

Construction-related spending
accounts for
13% of the world's GDP

...but the sector's annual productivity
growth has only increased
1% over the past 20 years

\$1.6 trillion of additional value added could be
created through higher productivity,
meeting half the world's infrastructure need

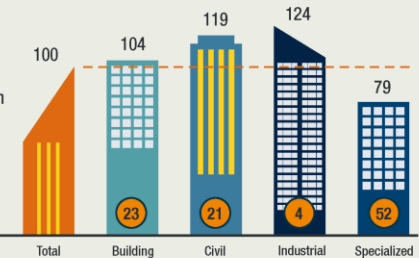
Construction is a sector of two halves

Fragmented specialized trades drag down
the productivity of the sector as a whole

Construction productivity by subsector

Value added per employee, indexed total sector=100, 2013

● % of construction value added



Action in seven areas can boost sector productivity by **50–60%**

- Reshape regulation
- Rewire contracts
- Rethink design
- Improve procurement and supply chain
- Improve onsite execution
- Infuse technology and innovation
- Reskill workers

5–10x productivity boost

possible for some parts of the industry by moving
to a manufacturing-style production system



McKinsey Global Institute

McKinsey&Company

Bentley®



Exhibit 4: Five trends will shape construction and capital projects.
Source: McKinsey analysis

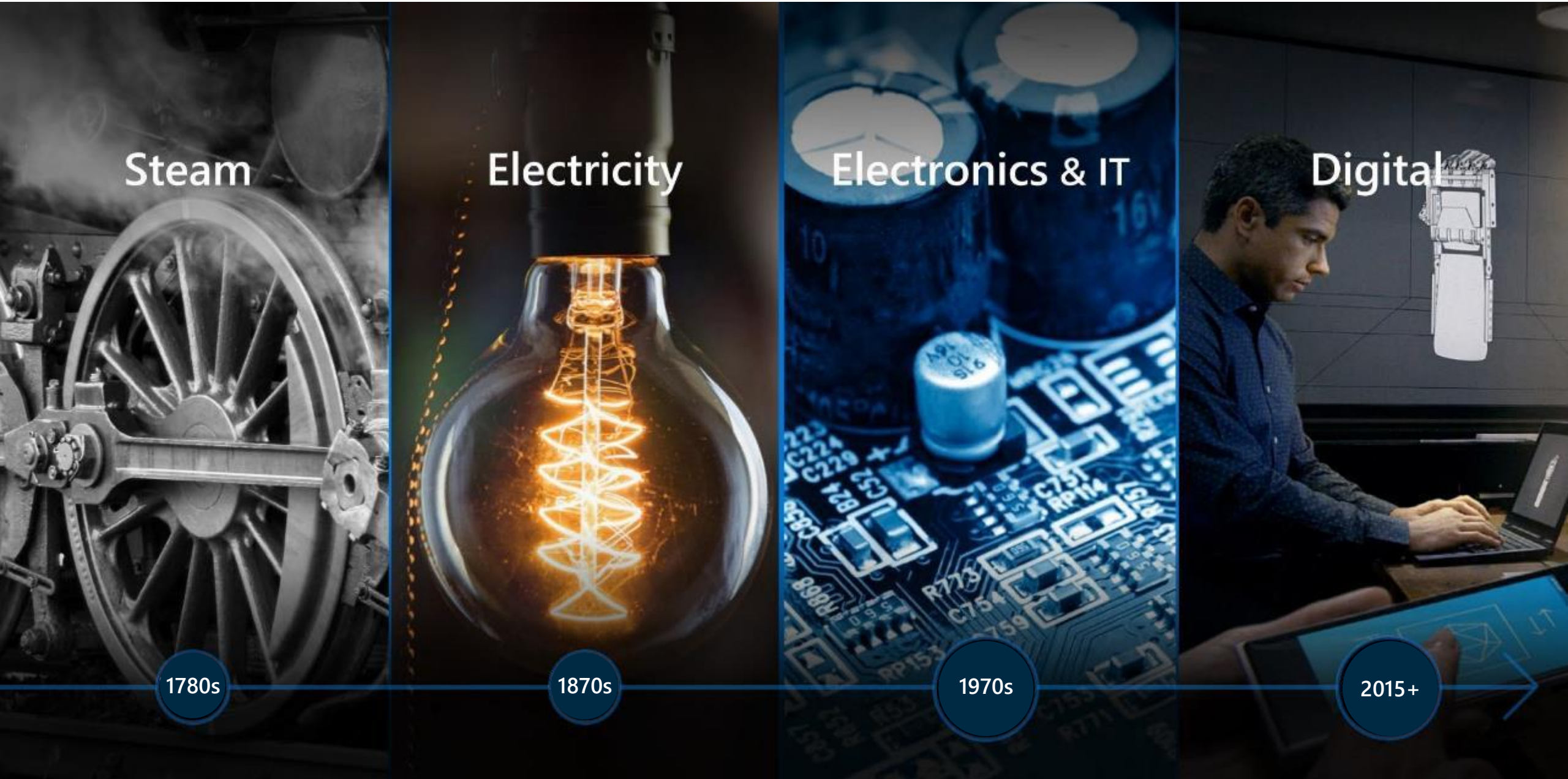


It is all about **Better Information Modelling**



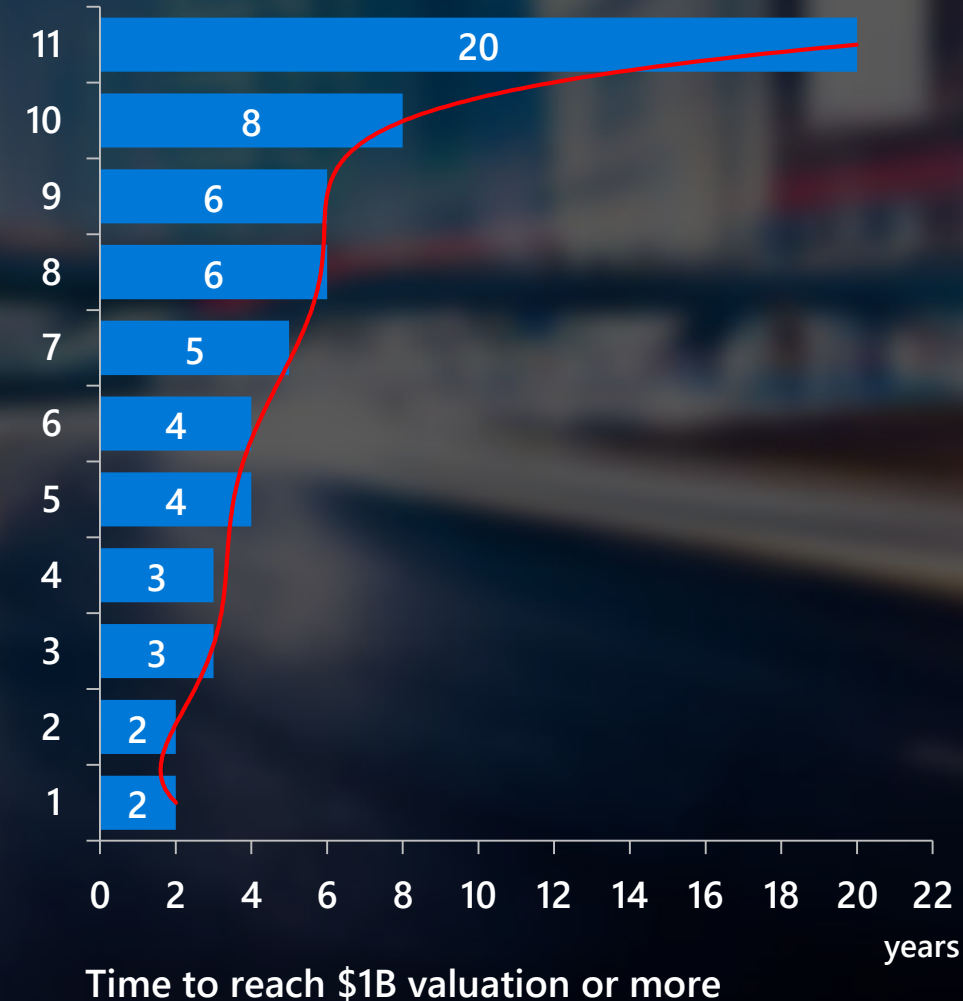
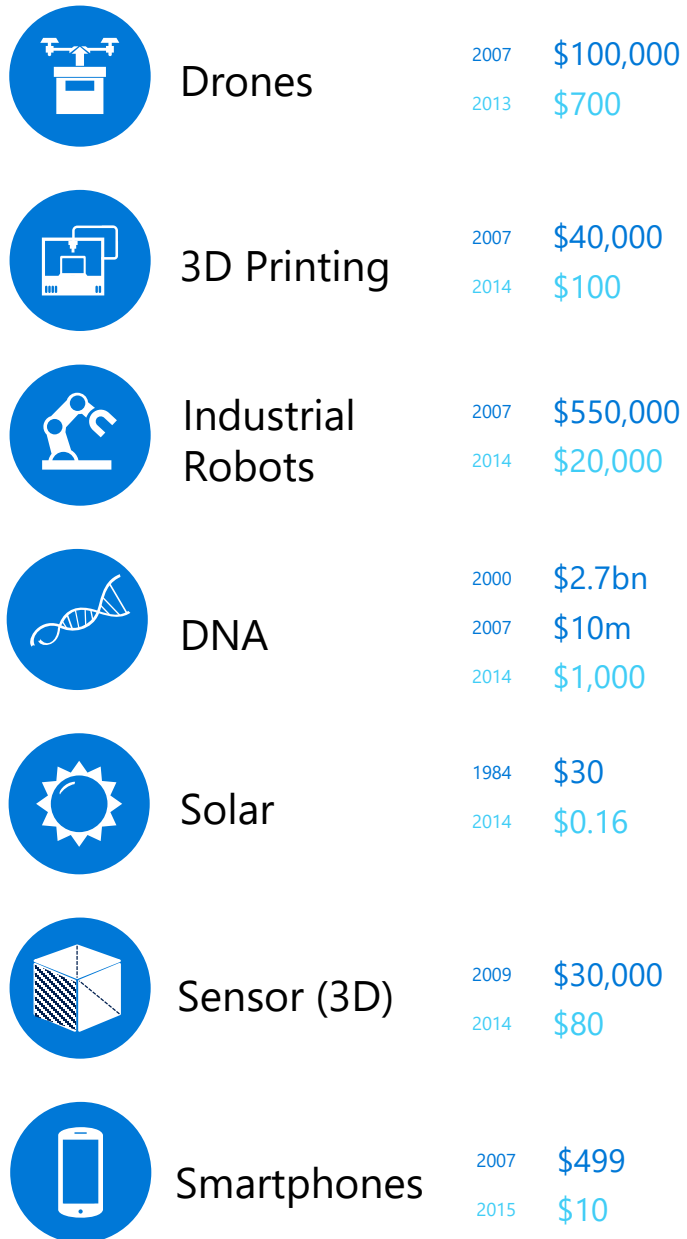
“Every part of the supply chain has a different piece of the information puzzle that goes together to answer the clients requirements. Each piece, no matter how small, is important because without it the puzzle is incomplete.”

Digital Disruption and the 4th Industrial Revolution



The scale and pace of change

An astonishing pace of change is accelerating transformation. Technology is more affordable and accessible than ever before.



Source: World Economic Forum

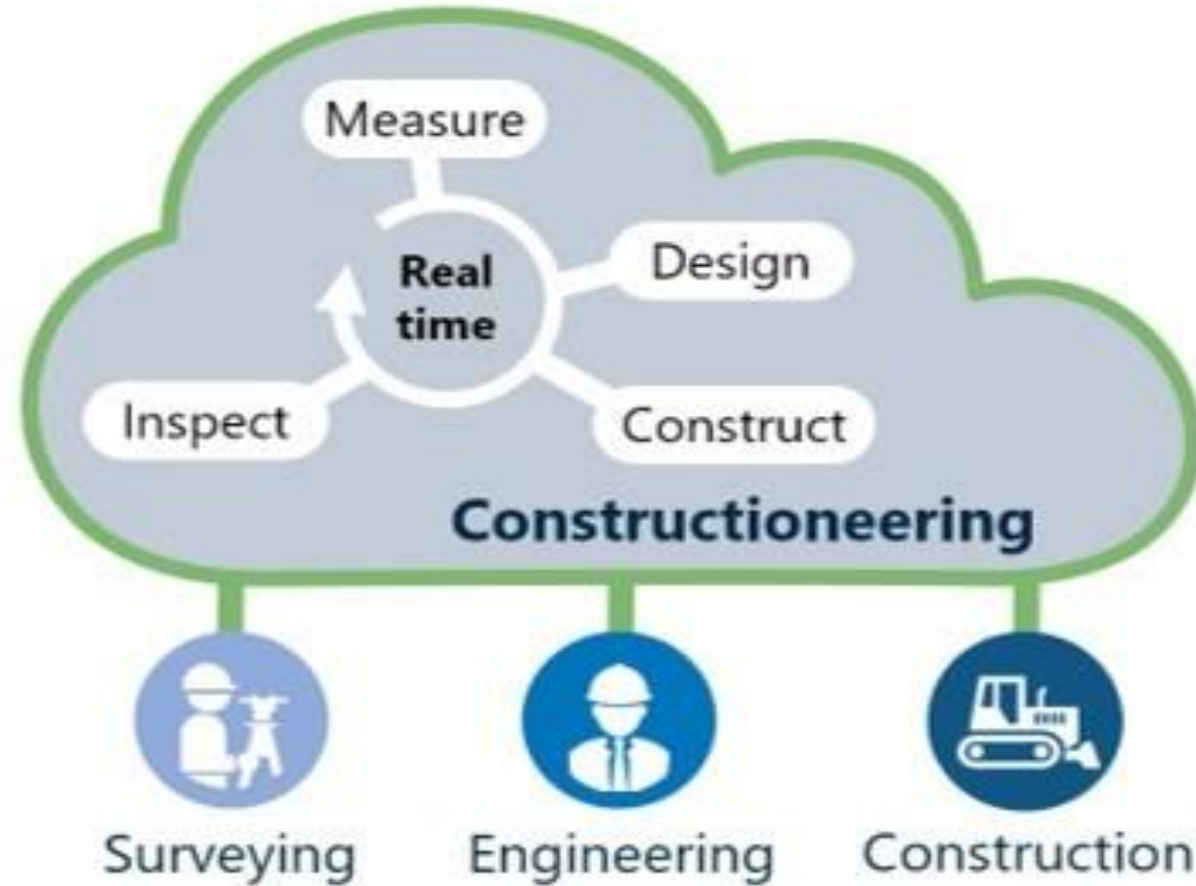


Get out of the silos



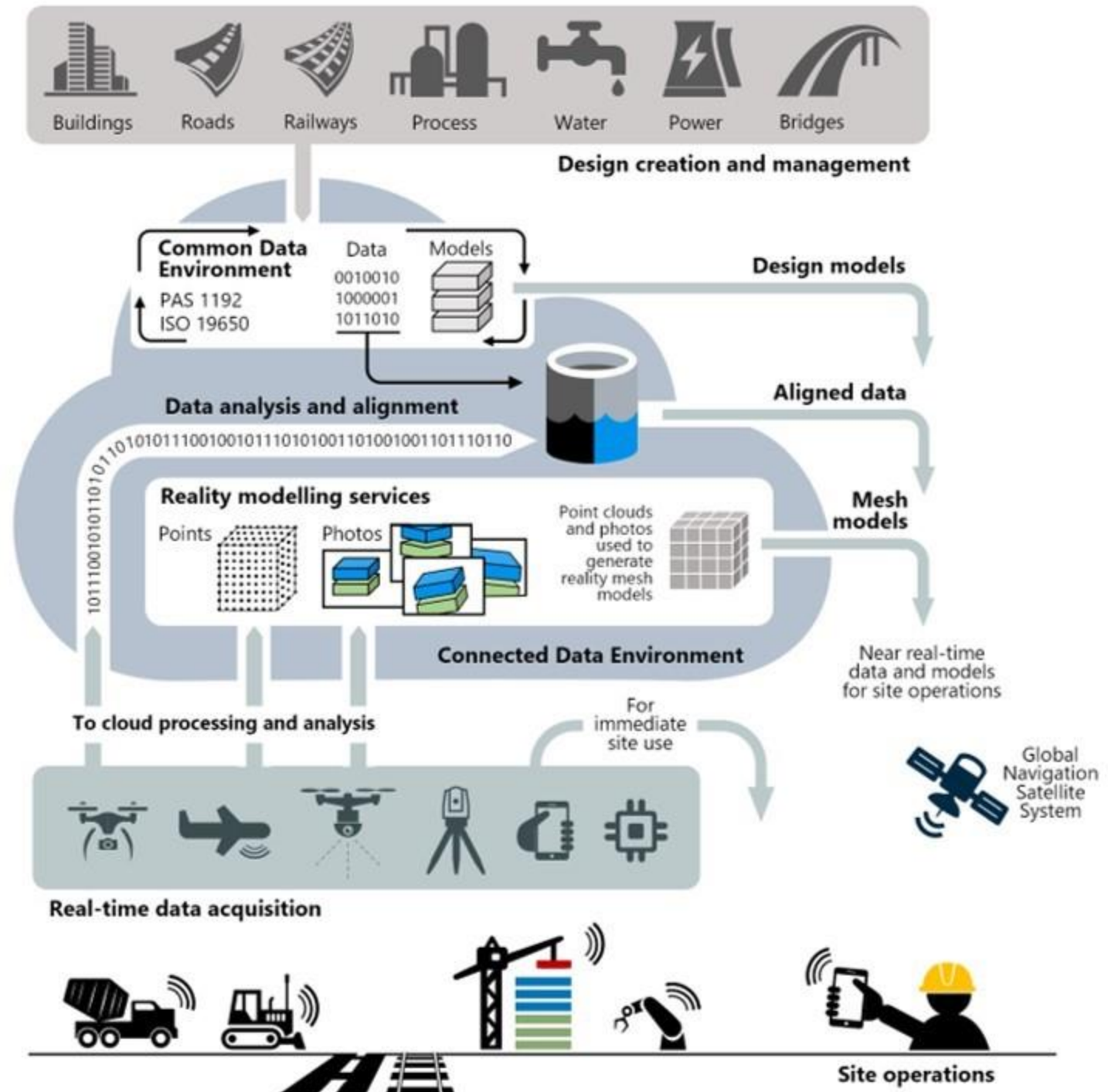


Exploiting the trends for construction



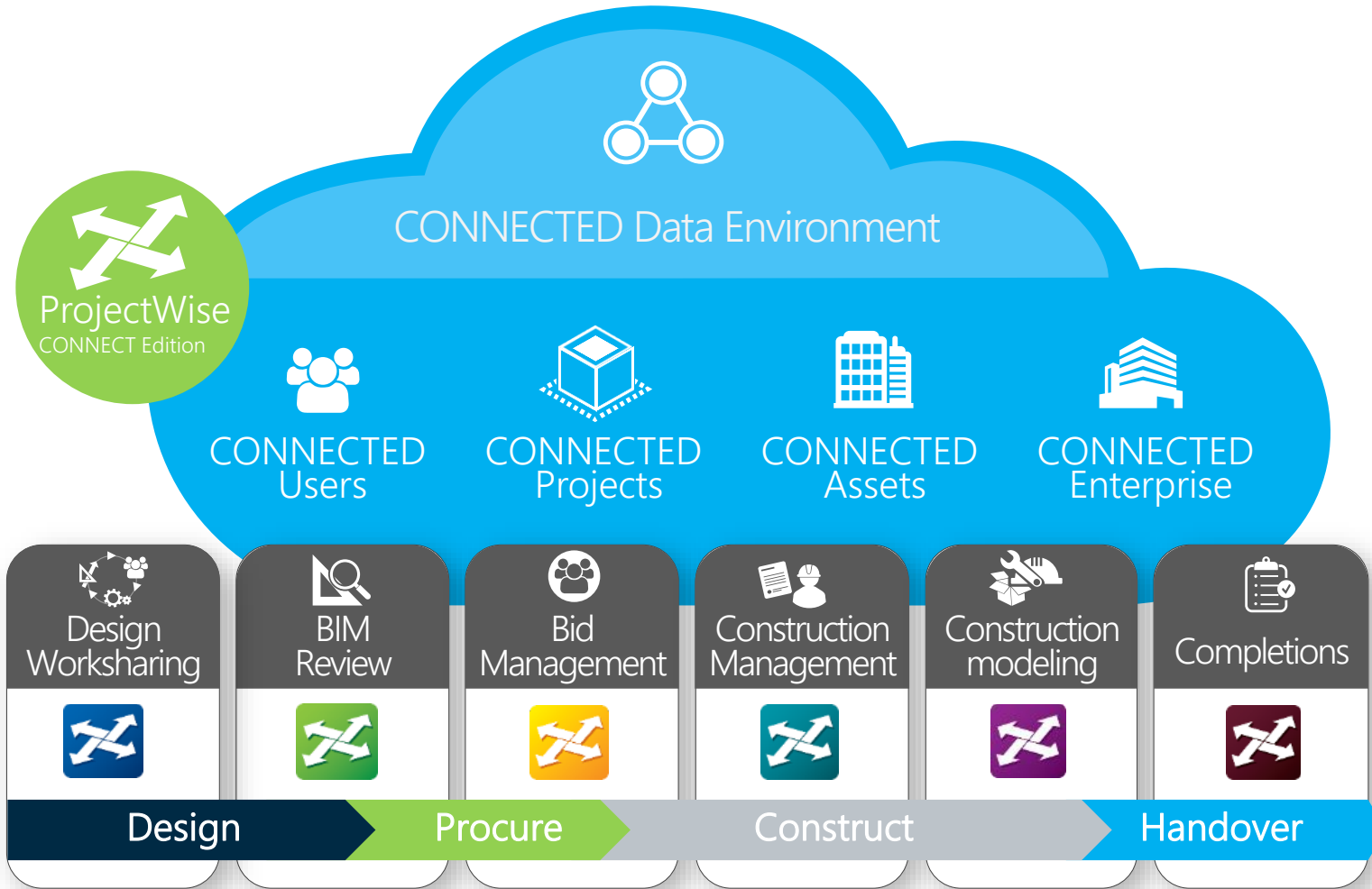


Time to get connected by Going Digital



An aerial view of a 3D model of Paris, France. The model shows the city's layout, including the Eiffel Tower, the Seine River, and various buildings and parks. The text "Paris in 3D" is overlaid in the center.

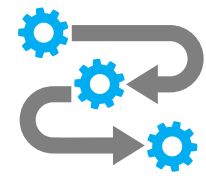
Paris in 3D



Going Digital with ProjectWise CONNECT Edition

Digital Workflows for:

- Accelerated design collaboration
- Connected supply chain with automated deliverables
- Connected field personnel with mobile workflows
- Integrated construction workflows
- Analytics for project insights



ProjectWise

100+

COUNTRIES

1M+

PROJECTS DELIVERED

1M+

MONTHLY BUSINESS
PROCESS AUTOMATIONS

10B+

AUDIT TRAIL RECORDS

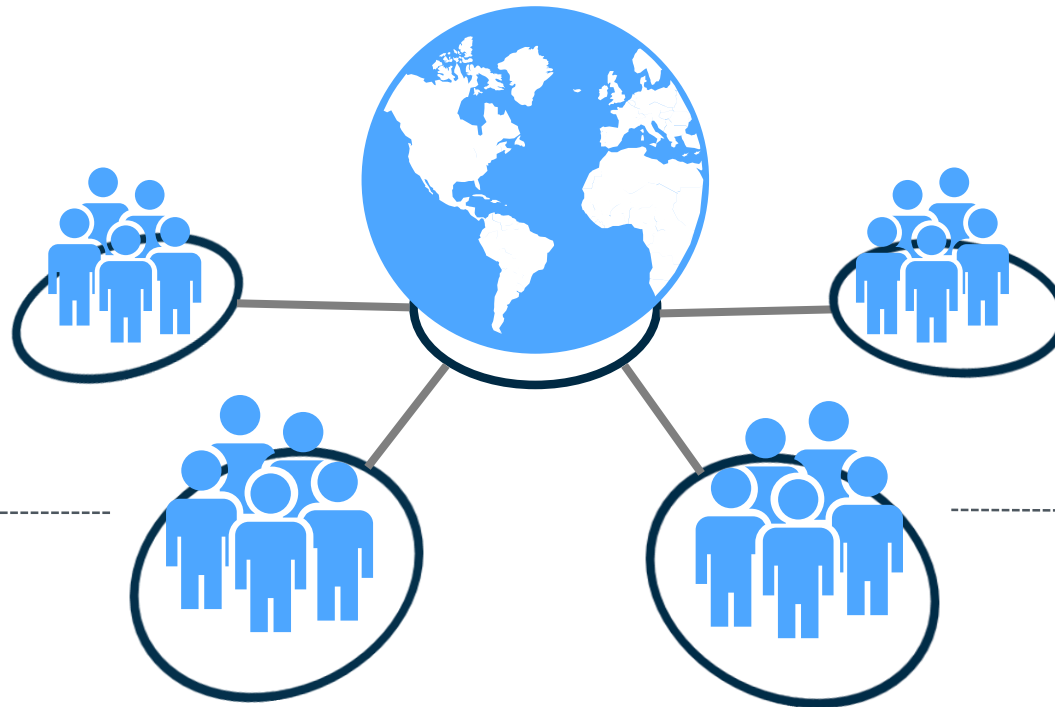
1

CONNECTED DATA ENVIRONMENT



Collaborate with Multi-discipline Teams

Remove geographic and technology boundaries



Share files securely among
different organizations

Control group, user
and document access

Leverage caching servers and delta file
transfer for immediate access to large files

Best-in-class Design Application Integration



MicroStation
CONNECT Edition



Bentley

Building Plant
Civil Bridge
Structural Geospatial
Construction i-model
Analysis

esri

ArcMap

Pitney Bowes

MapInfo

Adobe

InDesign
PDF

Autodesk

AutoCAD
Civil 3D
Revit
AutoCAD MEP
AutoCAD Architecture
AutoCAD P&ID
AutoCAD Map 3D

Microsoft

Office 365 Visio
SharePoint MS Project



ProjectWise 365 Services



Deliverables
Management



Project
Share



Performance
Dashboards



Issues
Resolution



Field Data
Management



Design
Worksharing



BIM Review



Bid Management



Construction
Management



Construction
Modeling



Completions



Design

Procure

Construct

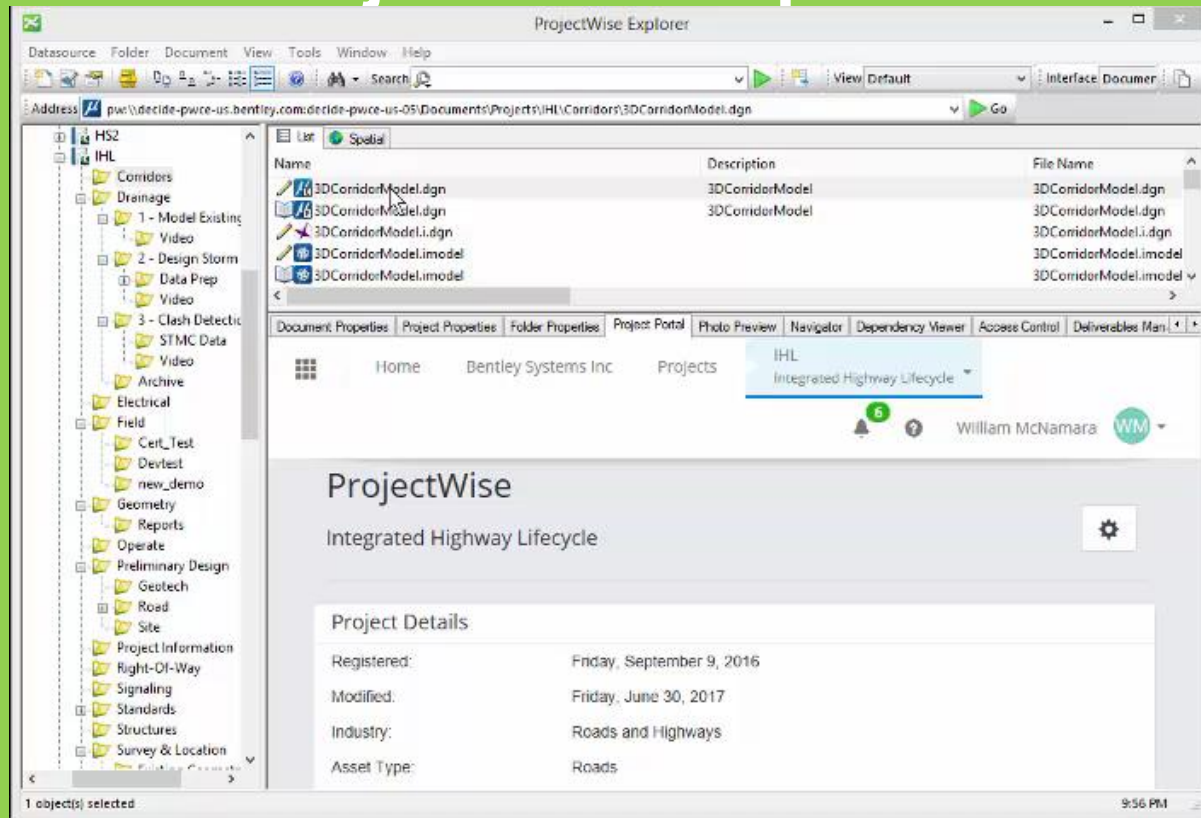
Handover



ProjectWise Project

Dedicated to continued enhancement for Best-in-Class Design Collaboration

ProjectWise Explorer



Robust Design Environment

Application Integration

Workflows

Audit Trail

Reference File Dependencies

Secure

Meta Data





ProjectWise Project

Streamline Web Access for Project Participants *Replaces ProjectWise Web Server*

ProjectWise Share

	Name	Type	File Size	Modified	Modified By
<input type="checkbox"/>	Schematic- Deliverable	Folder		Jul 26, 2017 10:40 PM	William McNamara
<input type="checkbox"/>	meeting form Published.pdf	pdf	59.3 kB	Jul 26, 2017 10:29 PM	William McNamara
<input type="checkbox"/>	PW Capabilities Comparison V5.pdf	pdf	87.6 kB	Jul 26, 2017 10:30 PM	William McNamara

Instant-On *Access to PWDI content*

Simple, fast start up

Easy navigation

Sheet file
References

Check in / out

Conduct timely
reviews and approvals

Single Sign On

Share
PWDI
Reality Data
SharePoint

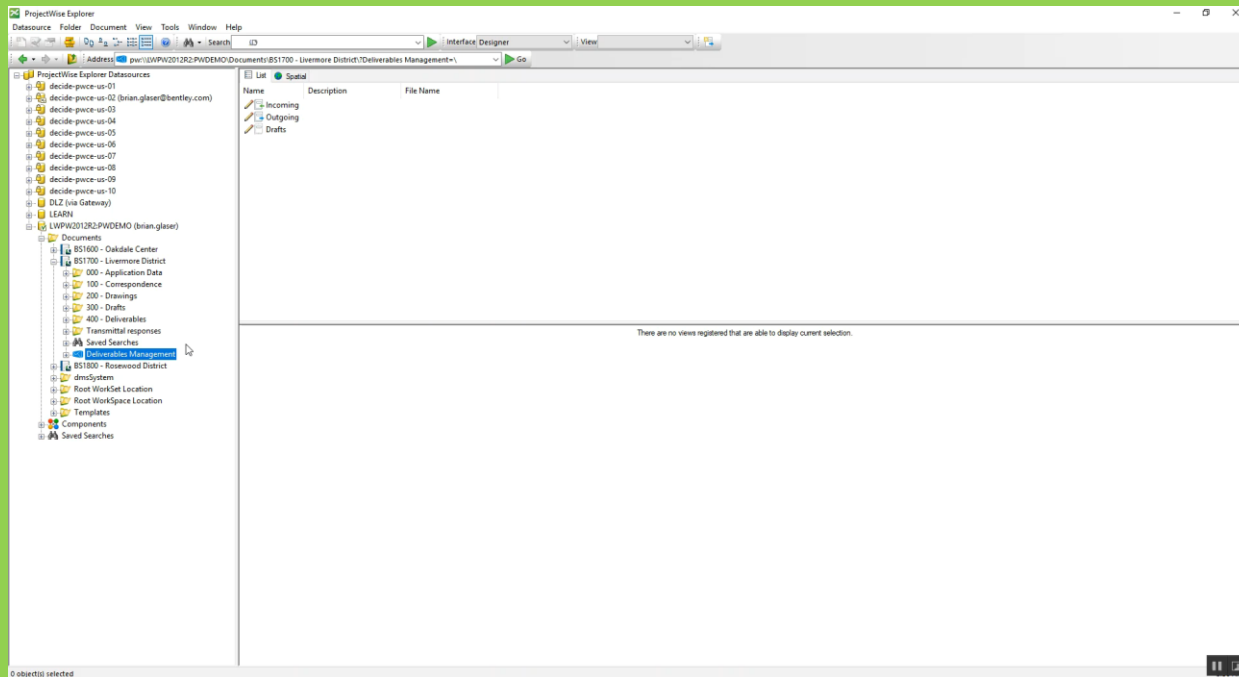




ProjectWise Project

Create, control, and expedite project deliverables

Deliverables Management



Supply Chain Collaboration

Routing & Distribution

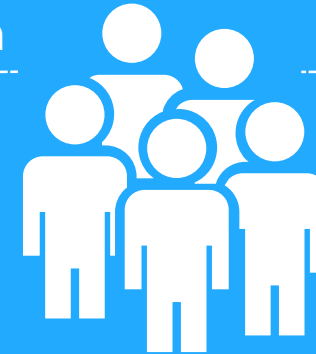
Distribution Matrix

Drawing Production

Ball-in-Court

Alerts

Model
Publishing





ProjectWise Project

Office-Site-Field Project Coordination & Review

Navigator



BIM Review

Project coordination

Speed approvals

Navigate models
immersively

Perform clash
detection

Resolve field
issues

Real-time
collaboration

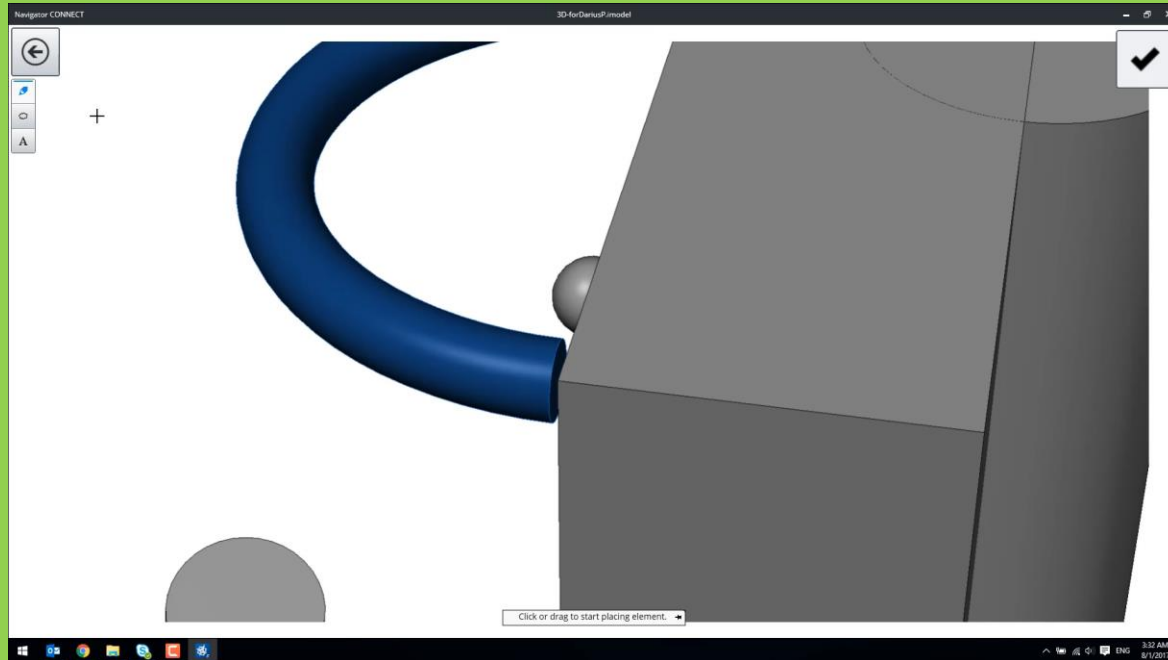




ProjectWise Project

Speed the reliable resolution of issues

Issues Resolution



Create, Track & Resolve Issues

Create punch list Issues

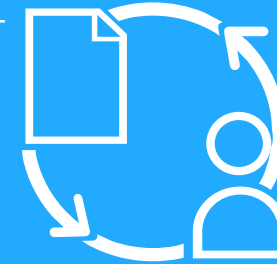
Add Comments

Mobile App
Integration

Add Attachments

Navigator
Integration

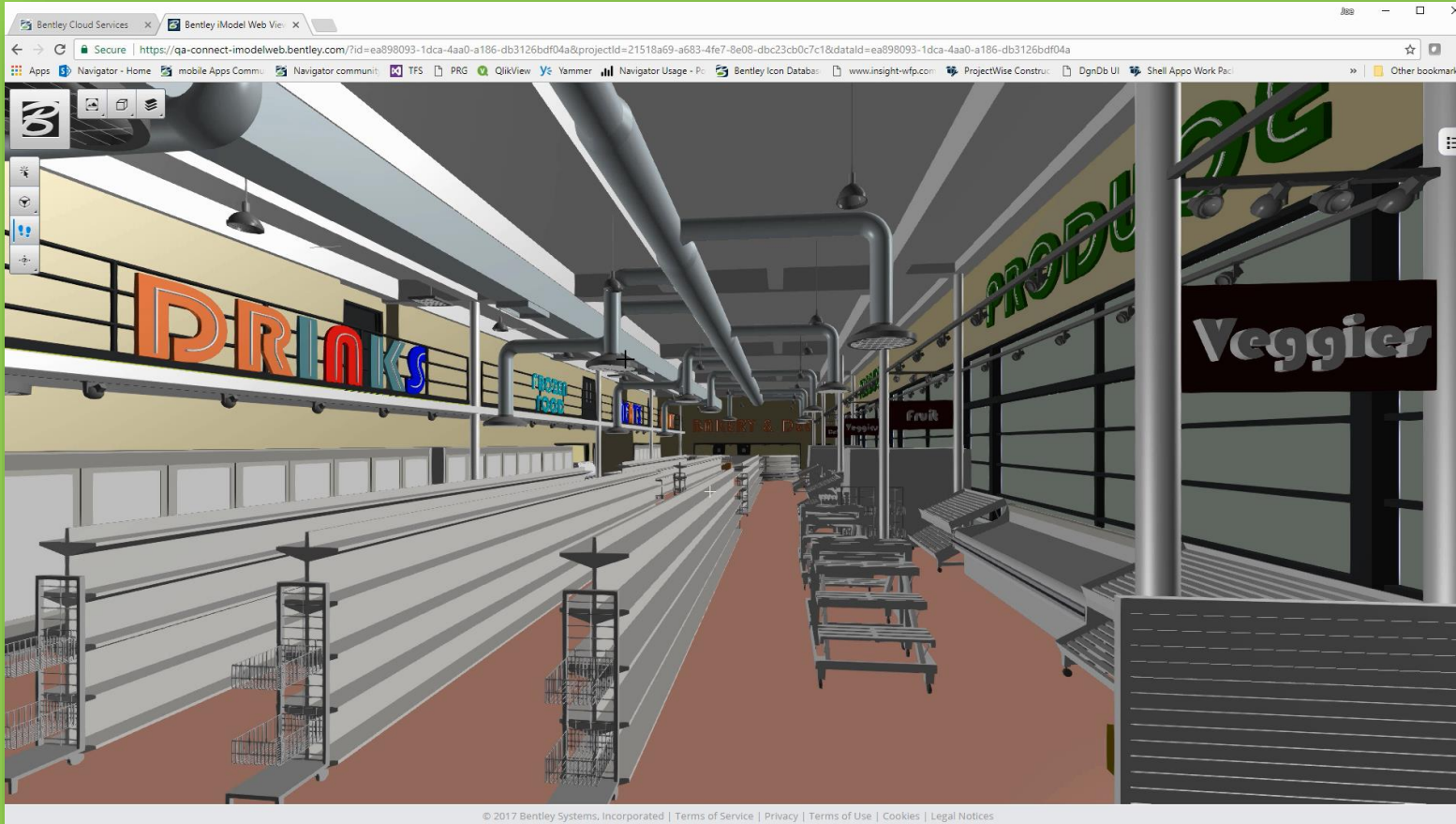
Assign Issues to
project participant





ProjectWise Project

Model visualization with Navigator Web



- Securely share models regardless of authoring application
- View large and complex models with zero footprint

ProjectWise Share

Share

All

In Progress

Recycle Bin

Manage Connections

Home

📁

📤

📥

➡

🗑

✎


🔗

📎

🌐

Search for something

🔍

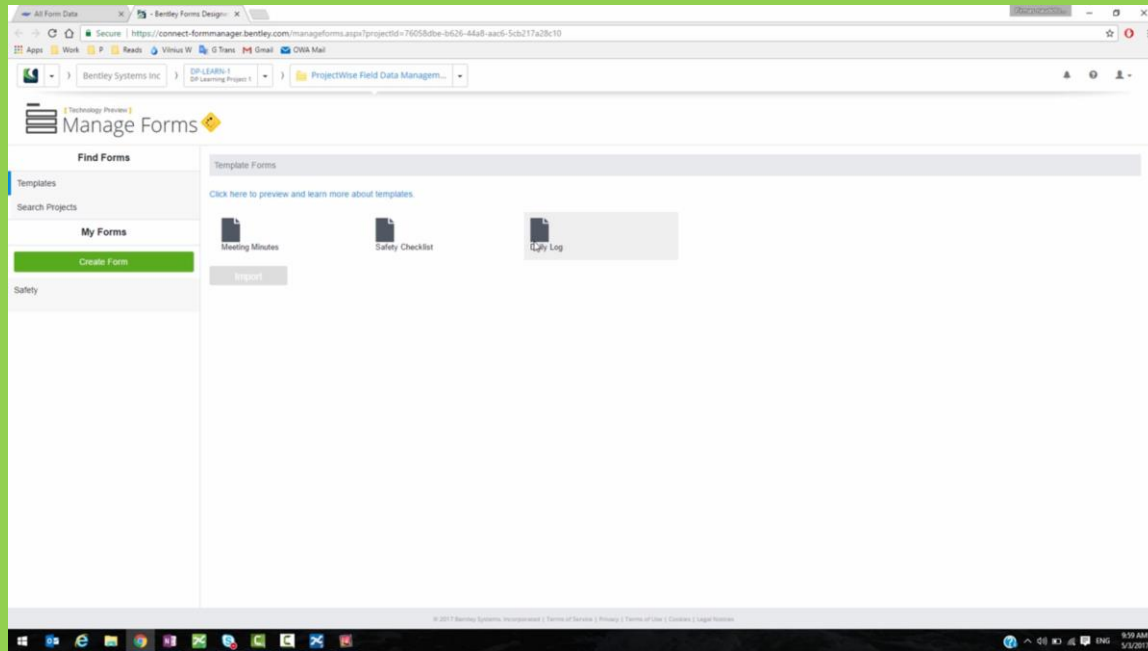
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<input type="checkbox"/>	 Render Master Market.i.dgn	i-model	104.6 MB	Sep 19, 2017, 9:14 PM	Joe Granville



ProjectWise Project

Expedite field data collection and subsequent action

Field Data Management

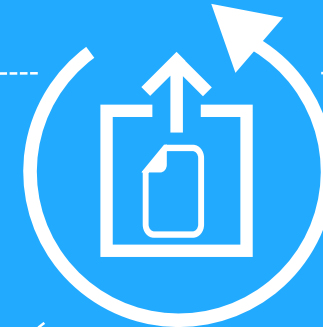


Collect Field Data

Design Forms

Mobile App
Integration

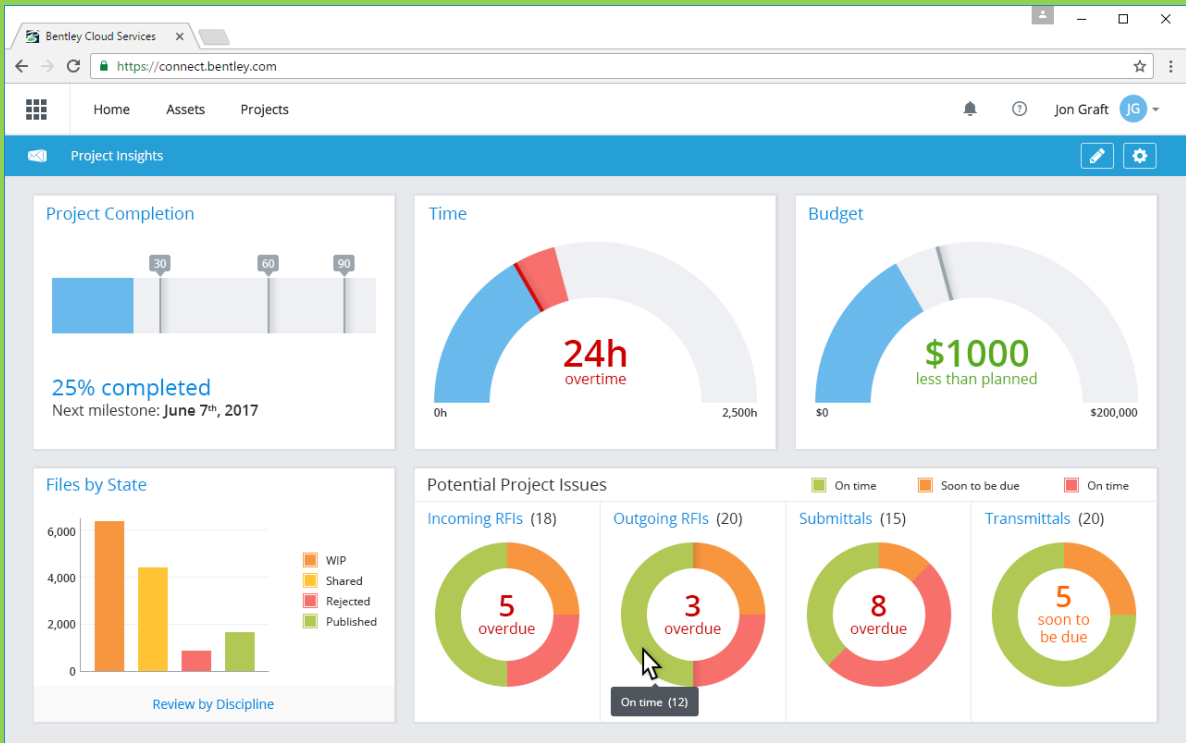
Collect Data on
In the Field



Add Comments

Add Attachments

Assign Forms to
project participant

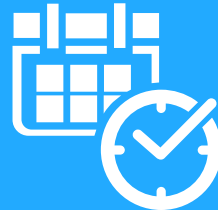


ProjectWise Insights

Coming
Soon!

 **Microsoft**
Cognitive Services

 **Power BI**





What is iModel?



- iModel is:
 - a container of information
 - self-describing
 - secure
 - geometrically precise and includes all business information
 - open
 - flexible
 - portable
- SDK available





ProjectWise Project

Embrace change to enable better decisions

Coming
Soon!

iModelHub + Navigator



Change Insights

Notification

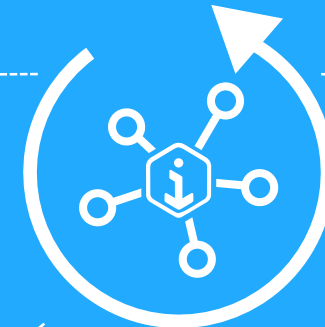
Version Comparison

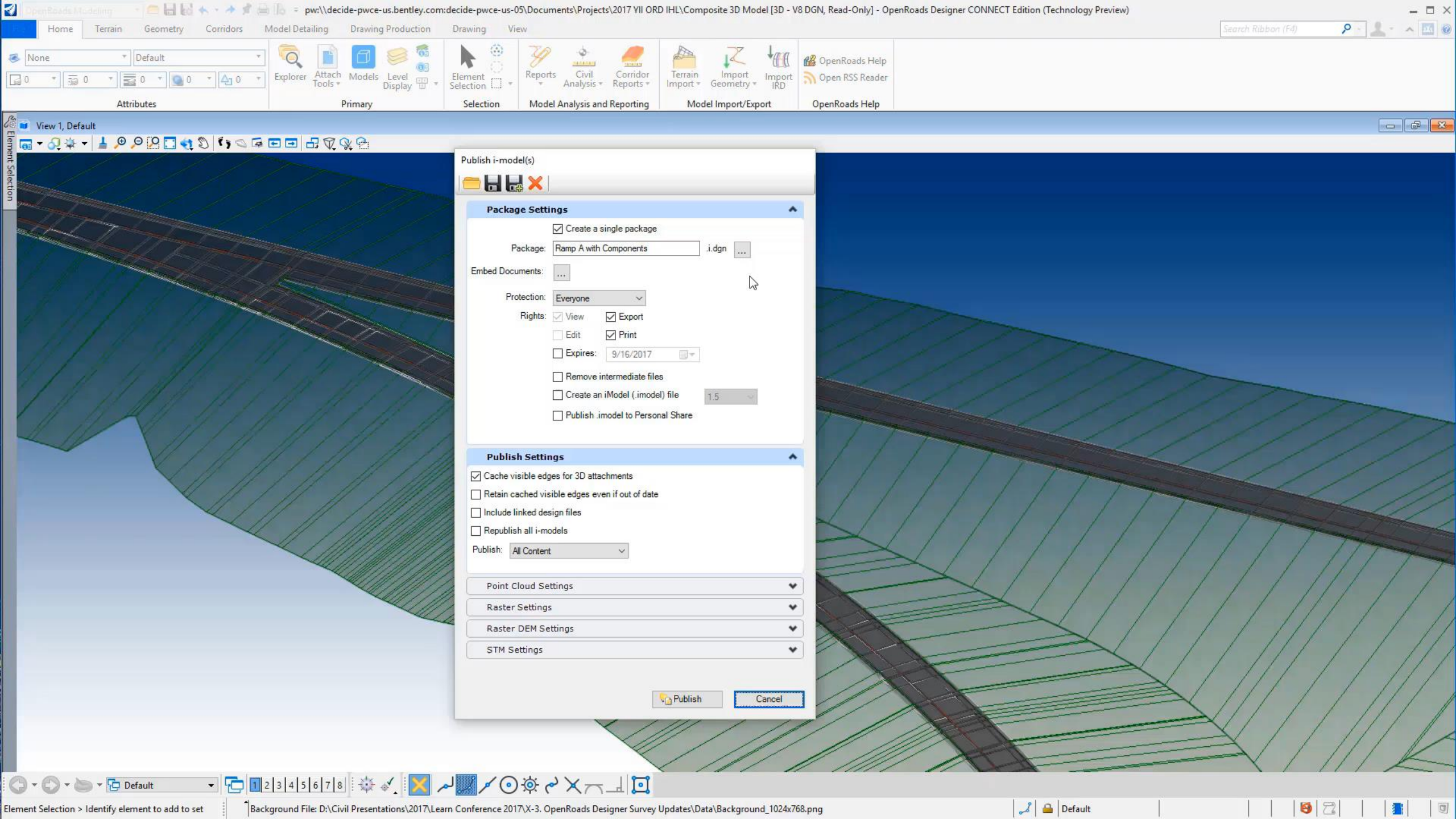
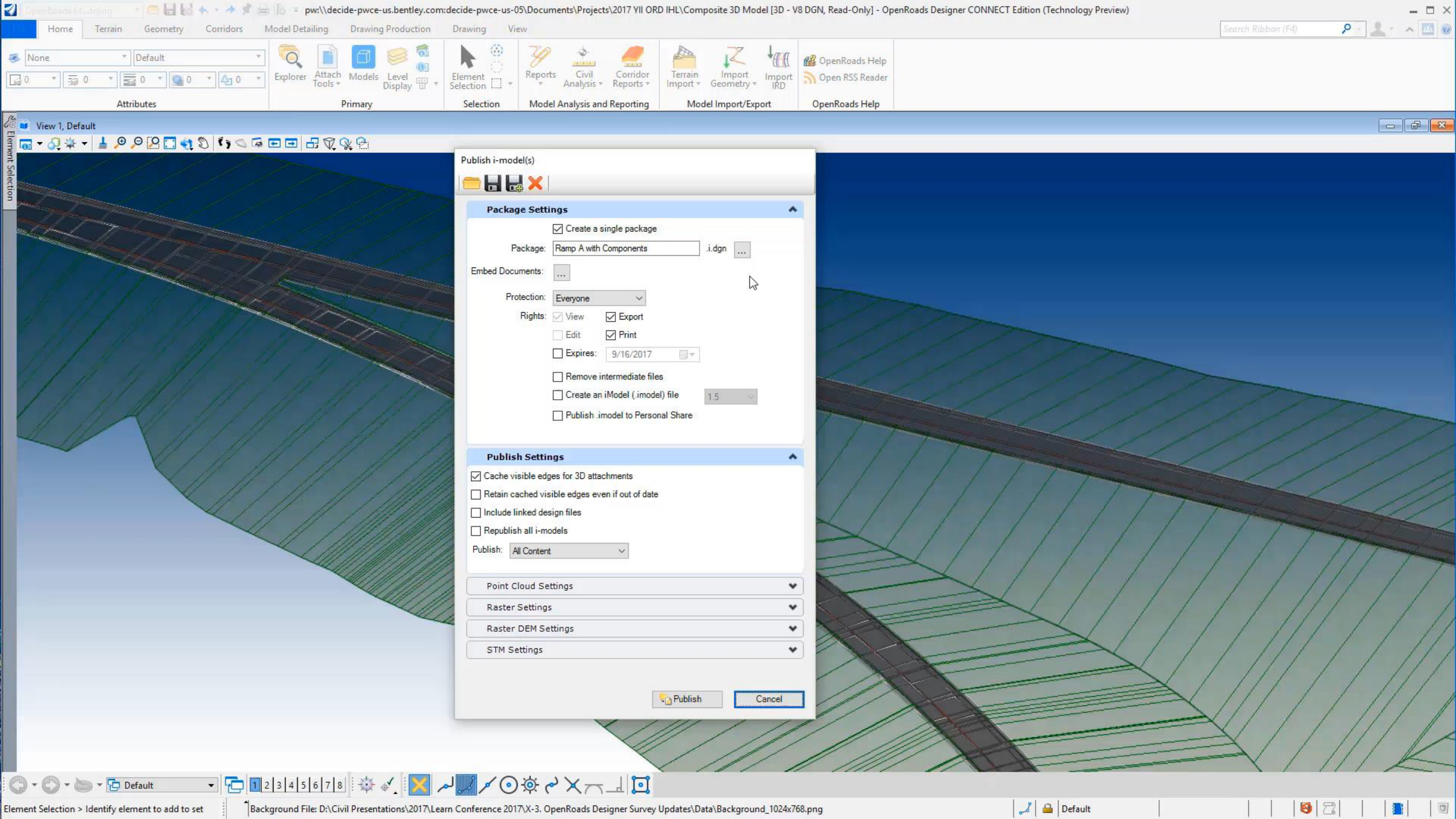
Visualization

Analysis

Impact

Feedback







ProjectWise Project

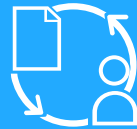
Combining the power of ProjectWise with Microsoft 365



Deliverables
Management



ProjectWise
Share



Issues
Resolution



Field Data
Management



Performance
Dashboards

ProjectWise 365 Services



Flow



SharePoint



OneDrive



Azure Search



Power BI



Baltic Tour BIM and Beyond

Thank You!



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