How to Participate Today

- **Audio Modes**
  - Listen using Mic & Speakers
  - Or, select "Use Telephone" and dial the conference (please remember long distance phone charges apply).
- Submit your questions using the Questions pane.
- A recording will be available for replay shortly after this webcast.
Tony DeRosa
Senior Consultant

Agenda

• About Bentley
• Bentley’s Going Digital Strategies
• BIM is not CAD and the benefits of BIM
• Bentley and Going Digital
  – Understanding iModels, and PlantSight
• iTwin Services and iModel.js
• Connected Modeling and Connected Data Environment
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**.
What is the definition of “Going Digital”

• Going Digital consists of three main pillars
  – Digital Workflows
  – Digital Components
  – Digital Context
Digital Workflows for Design and Construction

• Ability to manage design and construction workflows
• Ability to undertake design and construction modeling simulations
• Ability to reuse digital components

Digital Components

• Ability to develop, share, exchange, and consume digital information
• Ability to collaboratively develop, share, exchange, and consume digital components
• Ability to consume and reuse digital information
Digital Context

- Ability to capture and reuse existing site conditions
BIM is not CAD
BIM - Building Information Modeling

- Interference-free 3D Models
- Timeline Simulation
- Bill of Materials

- Integration between project disciplines and software
- Compatibility of Multidisciplinary Models
- Collaborative Environment
- Process Workflow Definitions
- Training
- Integration with other systems and databases
- Simulation and Management of Construction
- Asset Management and Maintenance

What BIM is NOT...

- BIM is not only Software!
- Its not a recipe
- Its not only about making “3D” smart
- Its not only about building a library of objects
- Its not only to estimate cost
- It is not for simulating timelines
- Its not only for Architecture or Buildings
- Its not only delivering files
  - Example: IFC - IFC does not support any BIM workflow
The Three Pillars of BIM

- Technologies
- Processes
- People

- BIM EXECUTION PLAN
- BIM MANDATE
- IMPLEMENTATION MANUAL
- ETC...

Traditional Process vs BIM Process
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**Level of Detail/Level of Information 2D to BIM**

- **LOD 100**: Conceptual design with schematics or simple geometry
- **LOD 200**: Approximate geometry with TAGs, attributes and basic properties
- **LOD 300**: Precise geometry and quantities for cost estimating, including important attributes, properties, and specifications
- **LOD 400**: Manufacturing: Precise models for manufacturing including all attributes, dimensions, and properties for acquisition, fabrication, and installation
- **LOD 500**: As-Built: Accurate representation of reality – The Digital Twin
Increased predictability of costs

Improved scheduling and adherence to deadlines

Reduction in errors

Increase in design optimization

Increased understanding of the proposed solution

Source: Ministry of Industry, Foreign trade and services (MDIC)
The Difference Between BIM and Digital Twins

• BIM is all about static 3D Models yet lacks digital context
  – Every piece of infrastructure is located somewhere on the planet. Digital Twins provide Digital Context

• Second – BIM lacks the dimension of time
  – Digital Twins bring in the element of time

Model Centric
✓ Work In Progress Design
✓ Change Management
✓ Data Insights
All the data you have

**Gartner – leading research and advisory company**
ALIGNMENT
ACCESSIBILITY
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iTwin Services and iModel.js
Digital Twins

• What we know today about Digital Twins
  – They are not always reliable
  – The digital twin is outdated in the time it takes you to read this line.
  – To be reliable, they must synchronize reflections of both an asset’s physical reality and its “virtuality” (engineering data)

• The Problem today…
  – The evolving 3D physical reality is to difficult to capture digitally and keep-up-to-date
  – Corresponding as-operated engineering information tends to be unavailable or at best, dated.
  – Engineering data is typically an assortment of inaccessible “dark data”

iTwin Services from Bentley

• Enables project digital twins and performance digital twins
• Take advantage of reality modeling, PlantSight, Connected Data Environment (CDE), and web-visibility technologies, where…
  – Reality Modeling:
    • Captured, and maintained through continuous surveys
    • Using Bentley’s reality modeling software providing “reality meshes”
  – PlantSight:
    • Overcomes the hurdles through automated digital alignment and synchronization based on change ledgers.
    • Corresponds to the CDE’s project workflows (ProjectWise) or configuration management (AssetWise)
  – Web Visibility – iModel.js
    • Designed for web-based visualization
    • Teams can develop custom applications to connect their digital twin for specific use cases
    • Open source ecosystem
Project Digital Twins with ProjectWise CONNECT Edition

- User can instantiate cloud-provisioned iTwin Services
- Can be done without disruption to current ProjectWise workflows
- PlantSight transparently creates and maintains the iModel (a distributed database)
  - It includes its change ledger
  - And is updated at each deliverable-in-progress check-in state
  - For every update to engineering information, “information bridge” processing puts into place digital alignment of the iModels components

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iModel.js SDK

- Portable
- On-Premise / Cloud
- Web
- Mobile

- TypeScript
- JavaScript
- HTML5
- Node.js
- Docker
- Kubernetes
- Chrome
- Firefox
- Android
- iOS

Multi
Platform

iModel Bridges

Align

Bentley
Common Modeling and Data Environments

Coordinate Across Design Teams

GIS  POWER  UTILITIES  STRUCTURAL  BUILDING  RAIL  ROAD  BRIDGE

Common Modelling Environment

Common Data Environment
Want To Learn More?

Achieving Success with Digital Plant Design Workflows with Abbas Ali of Bentley and Shaun Severin of Brown and Caldwell

November 12th at 10:30 AM EDT