AutoPLANT Interoperability

DK User Meeting – 14th November 2011

Chris Binns – AutoPLANT Product Manager

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Agenda

- AutoPLANT & OpenPlant
  - Interoperability via i-model's
  - Interoperability via iRING
  - Integration with OpenPlant Isometrics Manager
  - Integration with OpenPlant Model Server
  - Integration with other OpenPlant applications
    - OpenPlant P&ID
    - OpenPlant Data Manager
    - OpenPlant Datasheets
    - OpenPlant Instrumentation
    - OpenPlant Electrical
- AutoPLANT & Bentley Collaboration Products

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AutoPLANT & OpenPlant

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AutoPLANT & OpenPlant

- Rumour:
  - "*Bentley are going to drop AutoPLANT for OpenPlant*"
- Fact:
  - AutoPLANT & OpenPlant are targetted at different market segments
  - AutoPLANT is worth a great deal of $$$ each year to Bentley
  - Bentley do not want to lose that $$$
  - OpenPlant is AutoPLANT's "Big Brother"
  - OpenPlant and AutoPLANT project collaboration the goal

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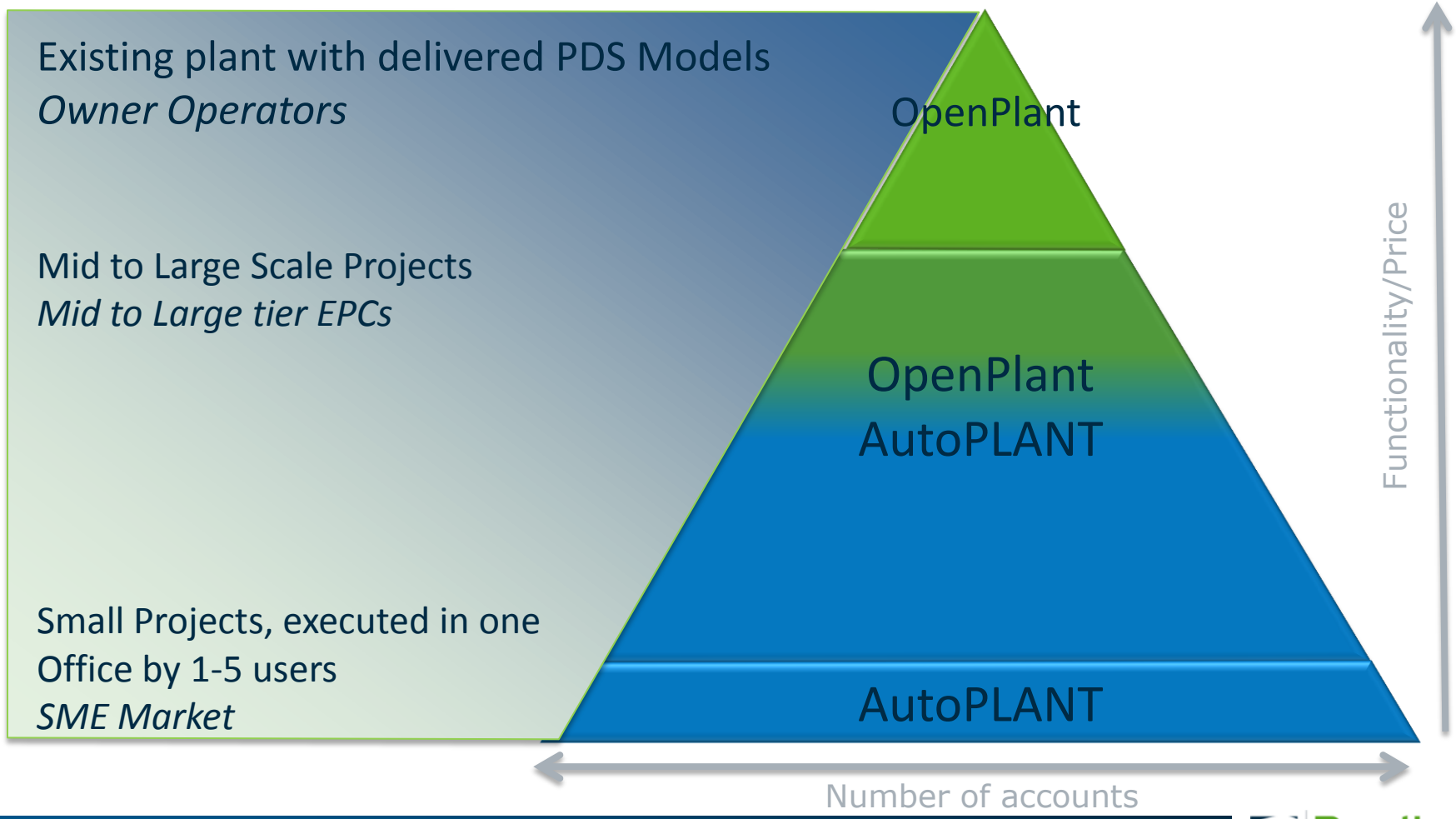
AutoPLANT & OpenPlant

- Market Segmentation



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AutoPLANT & OpenPlant

- OpenPlant
  - Component based modelling controlled by ProjectWise
  - Large EPCs and Owner Operators
  - Mid to Large scale projects only
  - Global distributed engineering its strength
  - Fewer accounts than AutoPLANT
  - Greater lead time for deployment
  - Competing with SmartPlant, PDS, PDMS

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AutoPLANT & OpenPlant

- AutoPLANT
  - File based modelling – ProjectWise not required
  - Small – Medium EPCs and Owner Operators
    - (Some large also)
  - Small/Medium/Large scale projects
  - Global distribution limited
  - More accounts than OpenPlant
  - Shorter deployment lead time
  - Competing with AutoCAD Plant and CADworx

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Interoperability via i-models

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"What is an i-model?"

- Interoperability via i-models
- *"What is an i-model?"*
  - "*An i-model is an immutable (can't be changed) container for rich multi-discipline information published from a known source, at a known time, at a known state*".
    - A read-only published rendition of the model
    - A portable, self-describing, rich data file
    - An interoperable deliverable for change management
    - Bentley's currency of information exchange

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"When would I use an i-model?"

- Exchanging project information
  - Between both Bentley ***and*** 3rd party applications
- Project information review
  - Dynamic Review at project milestone
- For change management
  - When iterative delivery is required
- For reuse of project information
  - Publish project information for different purposes

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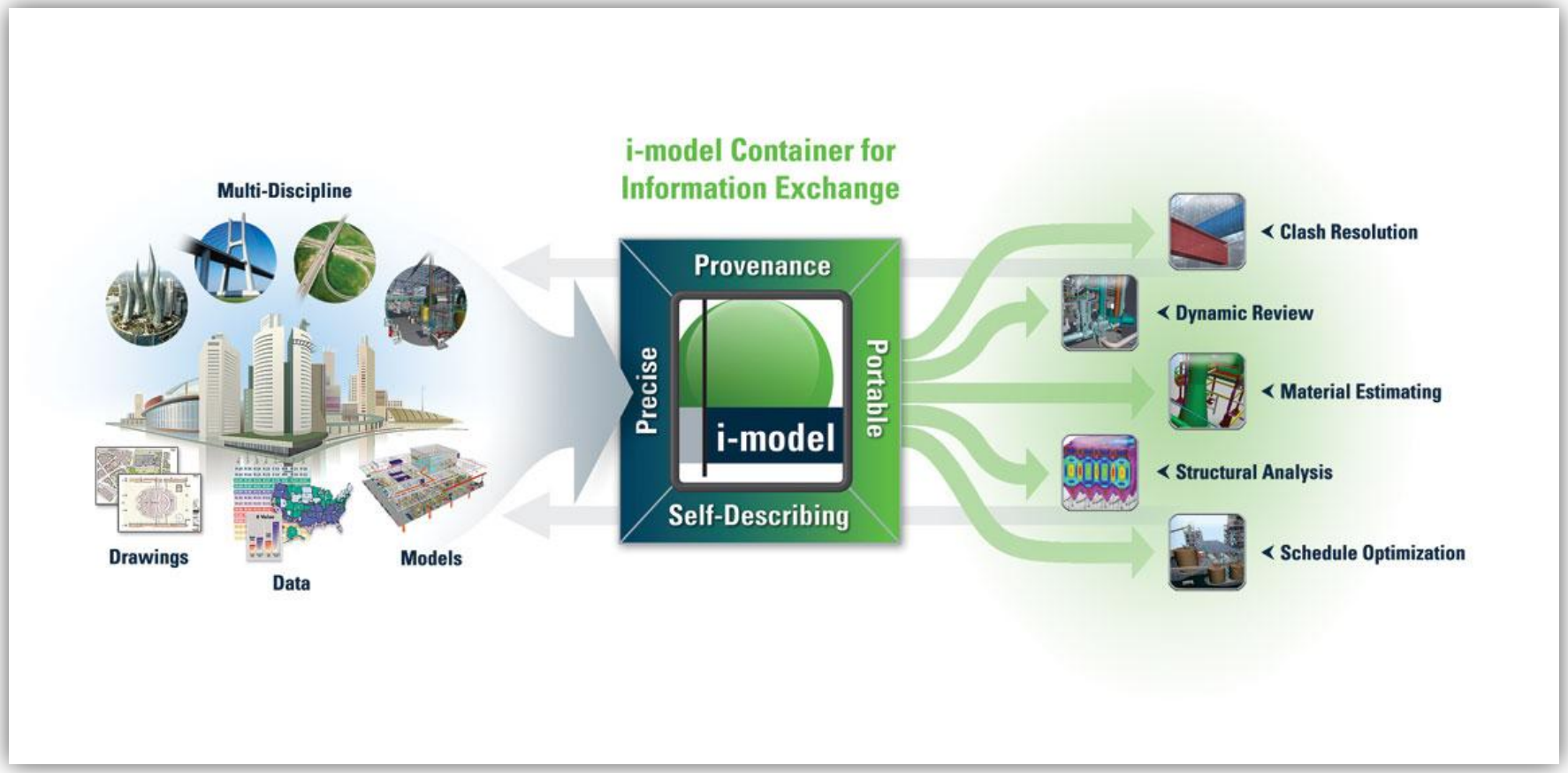
“When would I use an i-model?”



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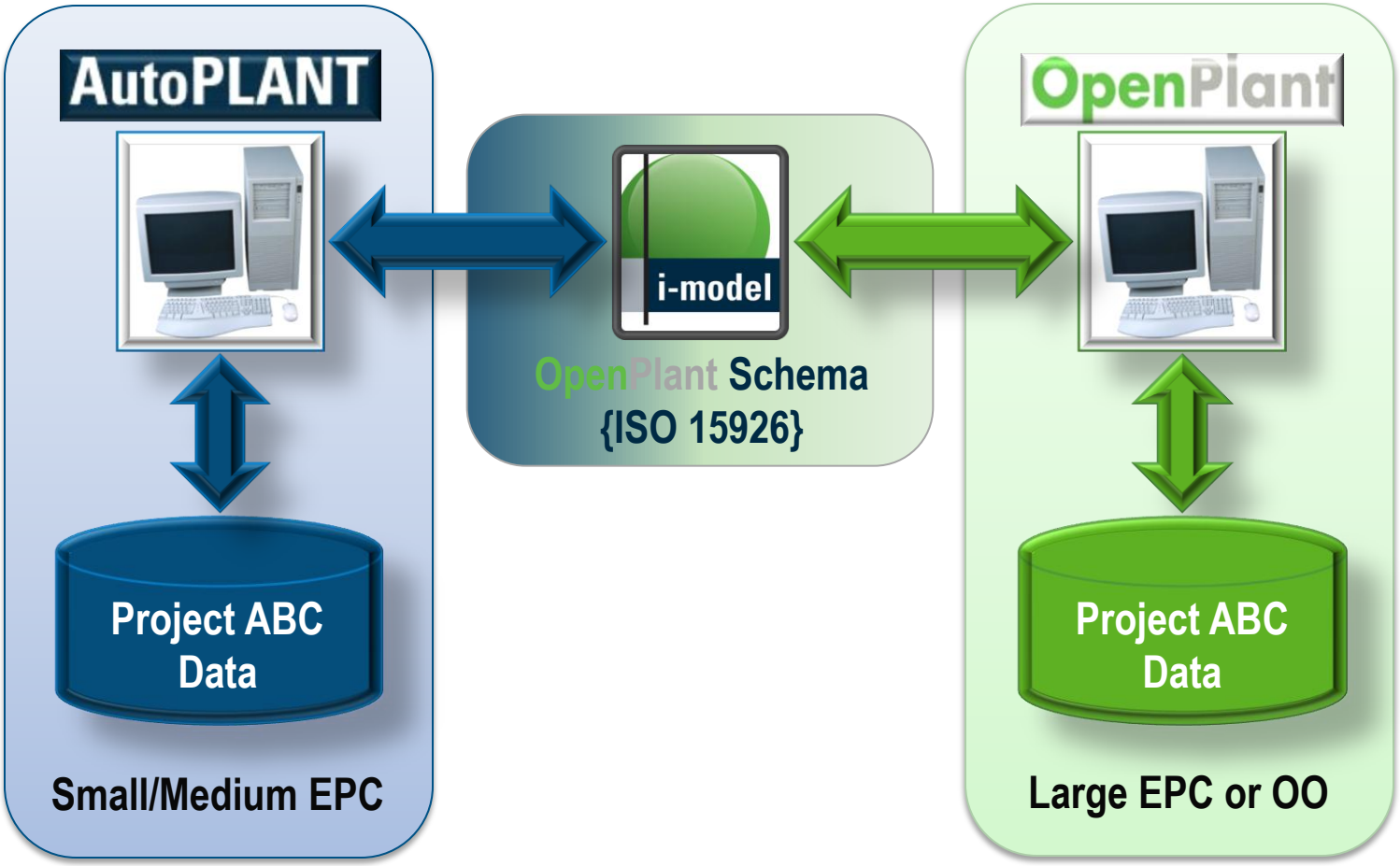
AutoPLANT & OpenPlant Collaboration

- Project collaboration



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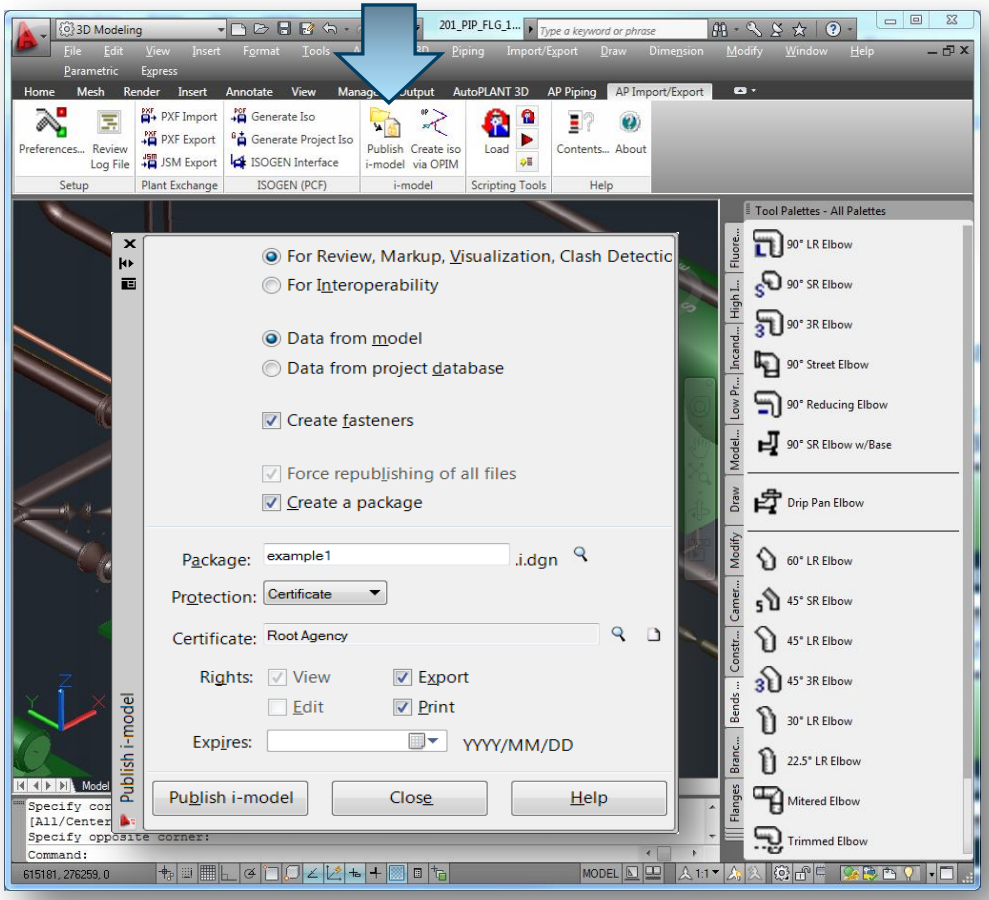
AutoPLANT i-model Composer

- i-model creation from within PDW
  - Based on AutoPLANT Schema or OpenPlant schema



AutoPLANT Schema

OpenPlant Schema (ISO 15926)

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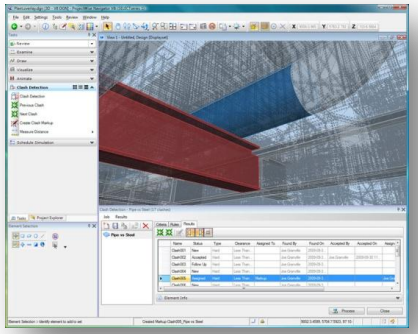
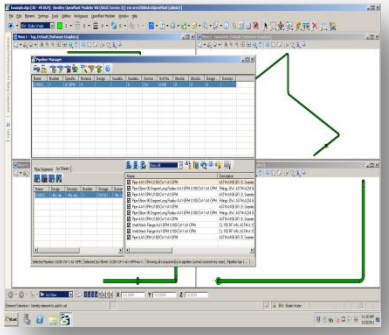
AutoPLANT i-model Composer

- **AutoPLANT Schema**
  - Model/Design Review
  - Clash Detection
  - Visualization
  - Mark-up
  - All from within Bentley Navigator





- **OpenPlant Schema**
  - Interoperability with OpenPlant
  - Interoperability with 3rd parties via iRING

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AutoPLANT & OpenPlant

- 2011
  - AutoPLANT i-models can be *referenced* into OP Modeler
  - Enables combined reporting, clash detection and referencing for pipe placement
  - Cannot check into OP Model Server yet
- 2012
  - AutoPLANT i-models checked into OP Model server for editing
  - i-models consumed by AutoPLANT for “round-tripping”

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Interoperability via iRING

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"So what is the iRING?"

- **I**SO 15926 **R**ealtime **I**nteroperability **N**etwork **G**rid

FIATECH

iRING USER GROUP

POSC Caesar Association

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"So what is the iRING?"

- iRING objectives are to deploy an ISO 15926, open source infrastructure on the internet to enable:
  - The use of ISO 15926 in modelling business information
  - To provide publically available, open source tools to map legacy systems to ISO 15926 - iRINGTools
  - Data exchange between companies using ISO 15926 via the internet
- Bentley are an active partner in this undertaking
- iRING User Group
  - http://iringug.org/wiki/index.php?title=Main_Page

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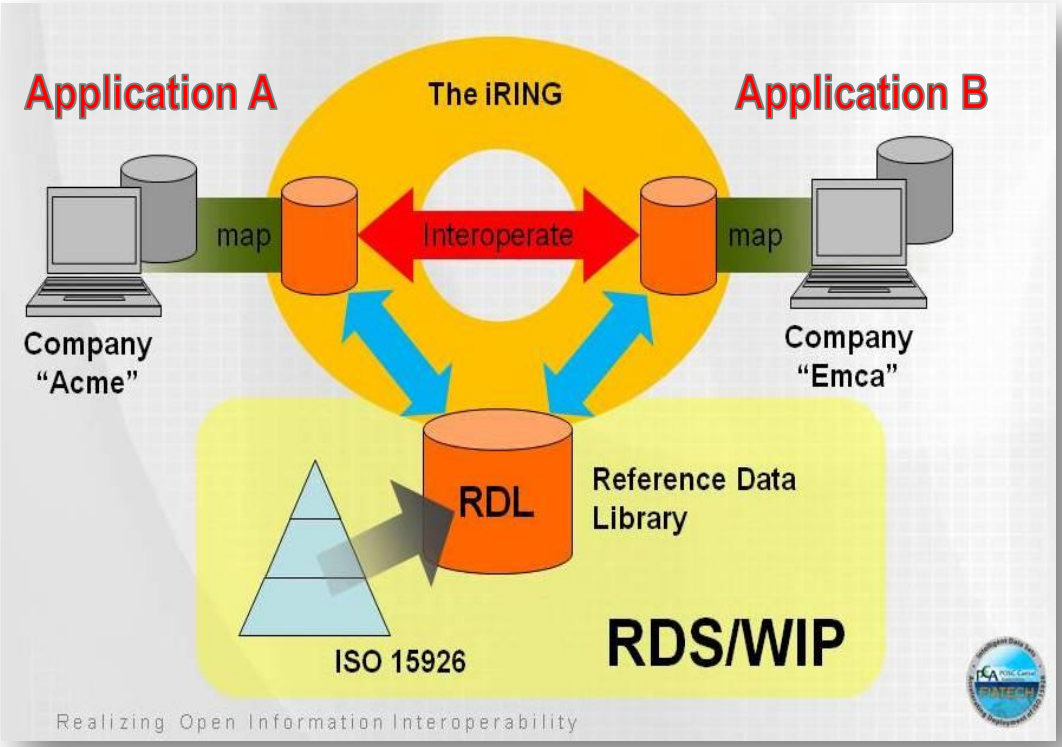
"So what is the iRING?"

- Interoperability via iRING



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AutoPLANT V8*i* (SELECTseries 3) & iRING

- Sharing “1D” data via the internet in ISO 15926 format
  - Valve Lists
  - Line List
  - Instrument & I/O Lists

- Targeted workflow - Sharing I/O data with DCS vendors
  - Bentley Systems & Emerson Process working together
  - EPC publishes I/O data to the iRING
  - DCS vendor consumes, processes & publishes back to iRING
  - EPC consumes the data to complete deliverables

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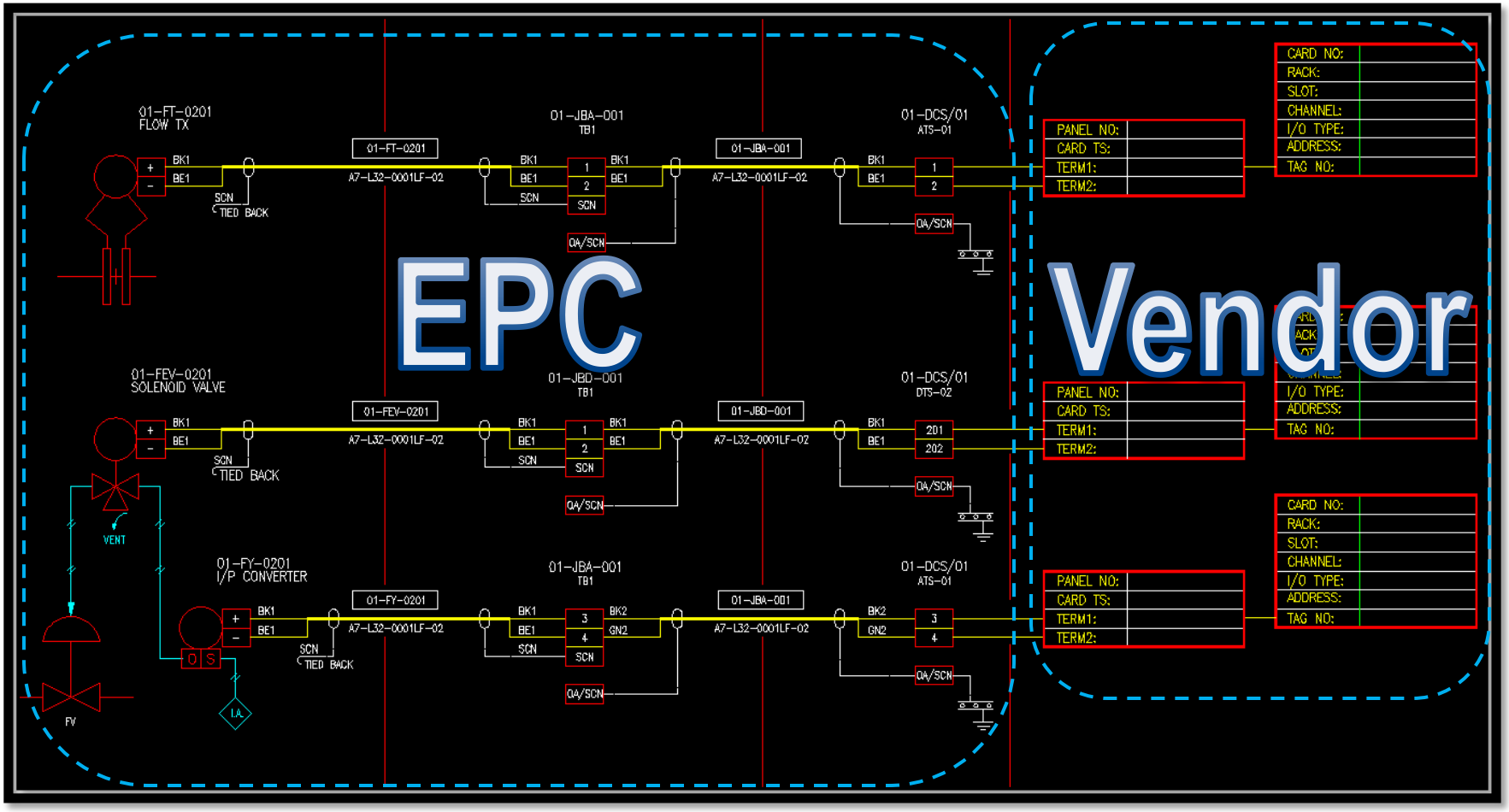
iRING Targeted Workflow

- Sharing I/O data with a control system vendor



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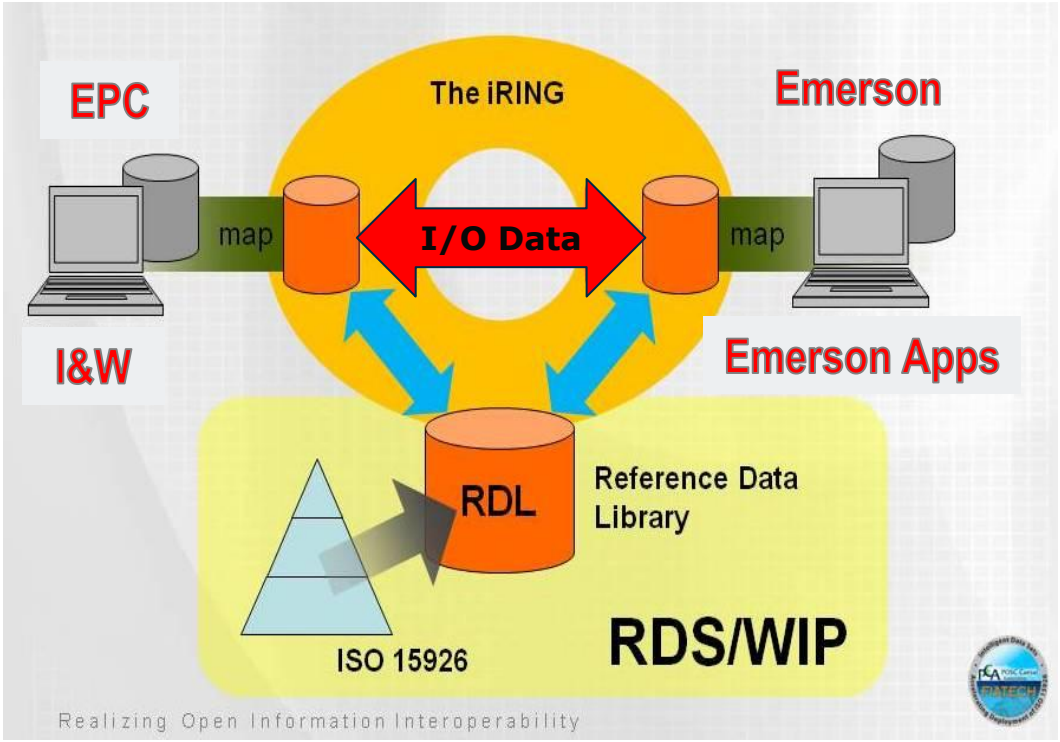
iRING Targeted Workflow

- EPC using I&W for instrumentation
- Vendor using their own tools mapped to ISO 15926



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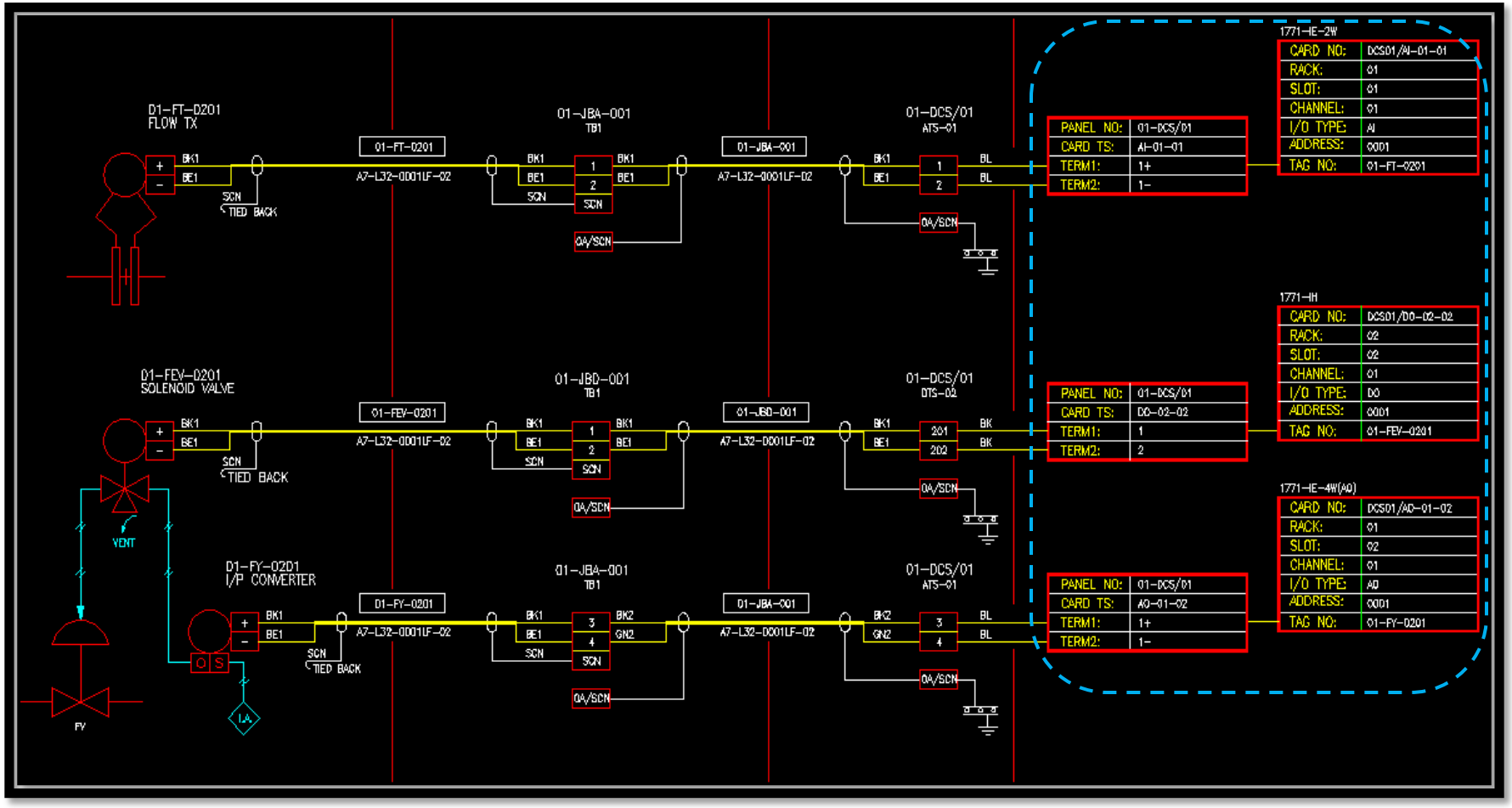
iRING Targeted Workflow

- Loop now completed via Vendor data from iRING



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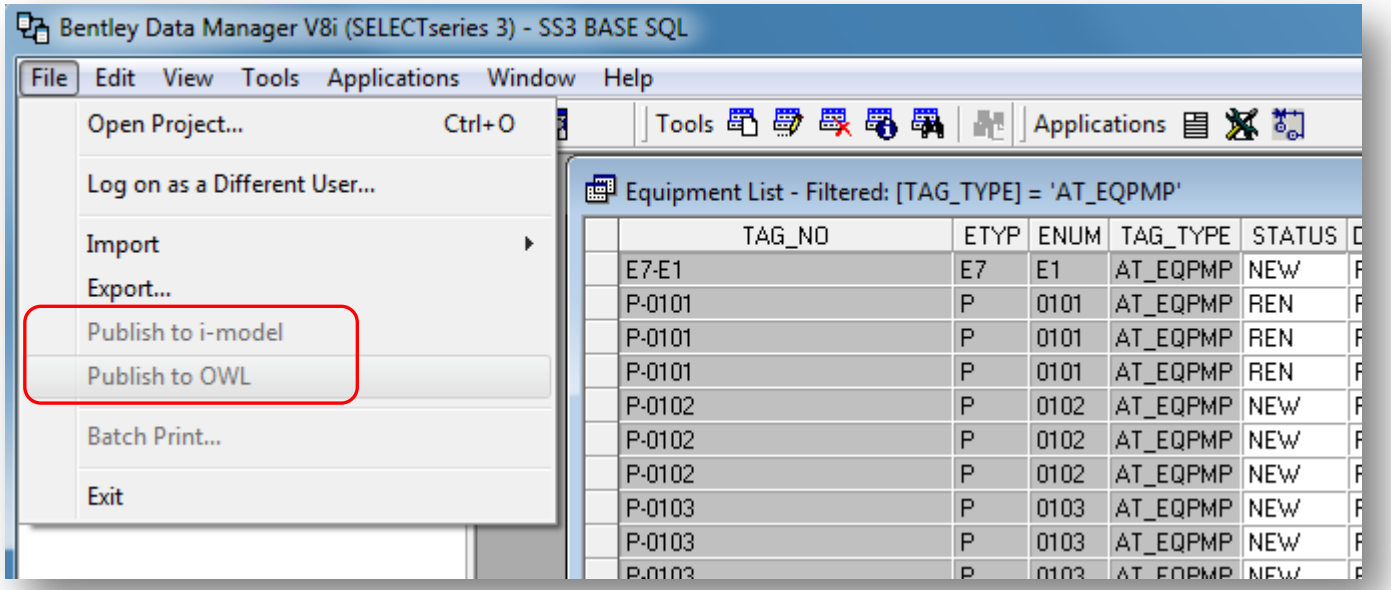
iRING Targeted Workflow

- Export capability delivered with AutoPLANT V8i (SELECTseries 3)
- Ability to consume OWL data - 2012



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Integration with OpenPlant Iso Manager

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AutoPLANT & OpenPlant Isometrics Manager

- AutoPLANT OpenPlant Isometrics Manager integration
  - To offer an **alternative** to ISOGEN
  - ISOGEN support to continue
  - ISOGEN will no longer ship with AutoPLANT
  - Gives BSW greater control of the iso creation technology
  - AutoPLANT Workflows to remain the same
  - Ability to generate Iso's from project database outside of AutoPLANT
  - DWG/DXF/PCF support
  - Additional intelligent DGN support (intelligent Iso's)
  - Easier configuration with migration of ISOGEN setting

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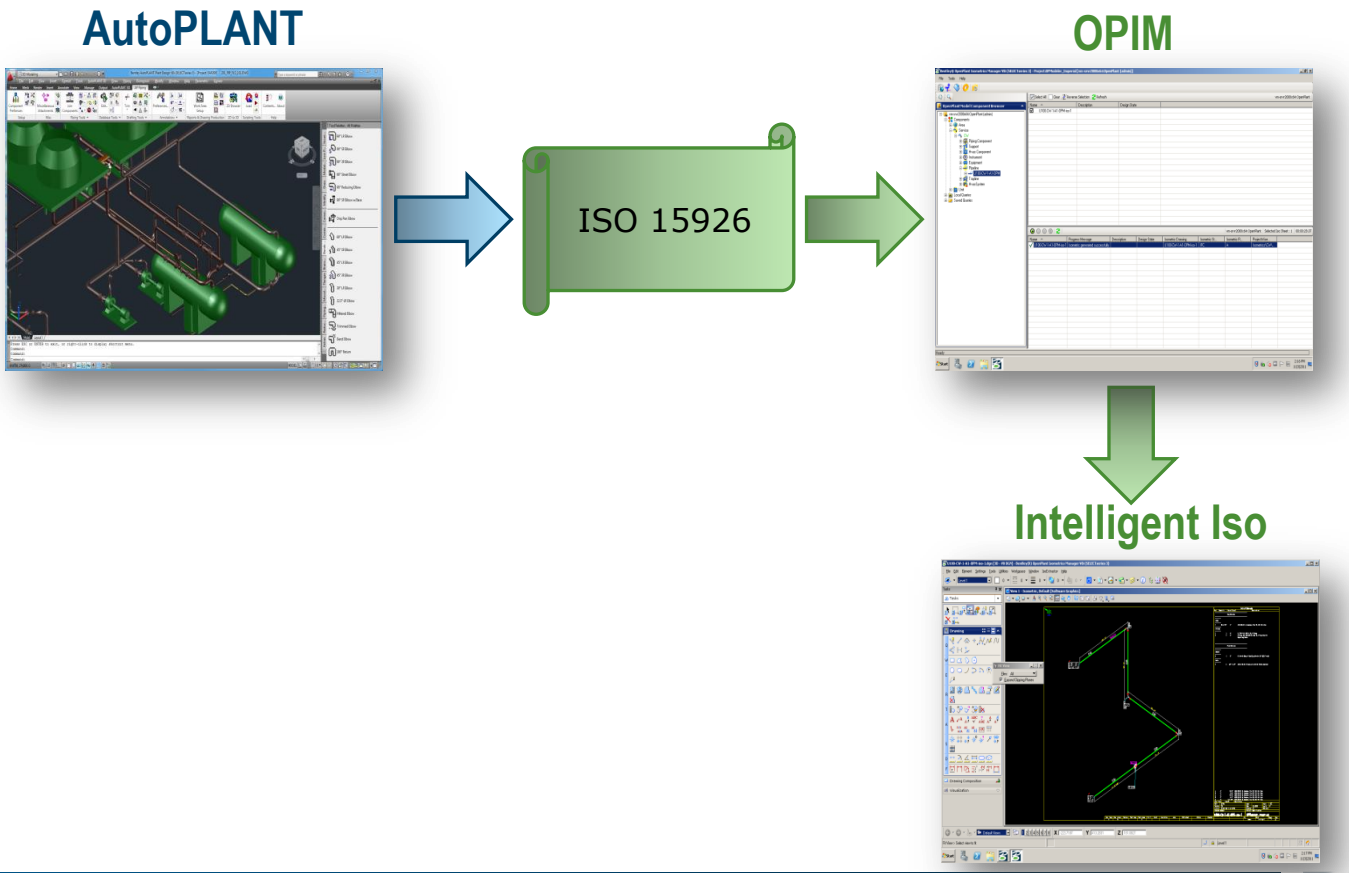
AutoPLANT & OpenPlant Isometrics Manager

- OpenPlant Isometrics Manager integration Workflows
  - Workflow 1 - Replicating existing workflows from AutoPLANT



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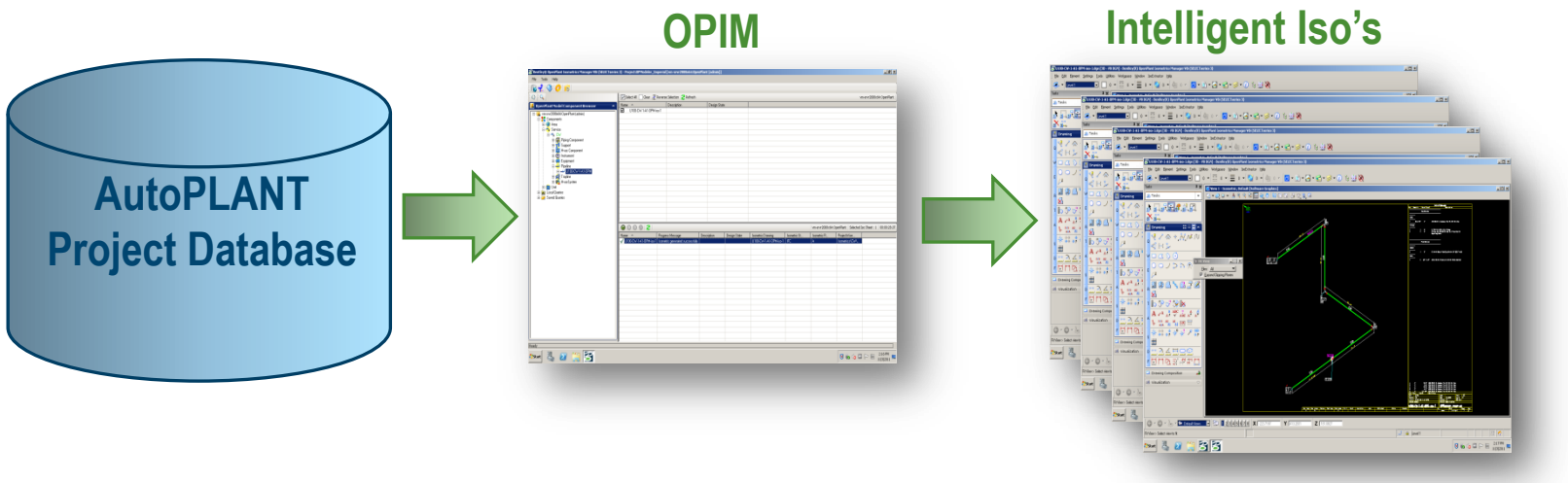
AutoPLANT & OpenPlant Isometrics Manager

- OpenPlant Isometrics Manager integration Workflows
  - Workflow 2 – Iso generation outside AutoPLANT



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AutoPLANT & OpenPlant Isometrics Manager

- Workflow 1 – Benefits
  - Replicates existing workflows
    - EcXML generated from AutoPLANT and automatically processed by OPIM
    - Mimics PCF/ISOGEN workflows
  - Intelligent isometric created containing business data
    - Iso i-model in effect
  - DWG, DWF or DGN deliverables
- Workflow 2 – Benefits
  - Anyone with access can generate iso's when they are required
  - Iso production will not occupy an AutoCAD/AutoPLANT license
  - Iso production can be scheduled and/or batched
  - DWG, DWF or DGN deliverables

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Integration with OpenPlant Model Server

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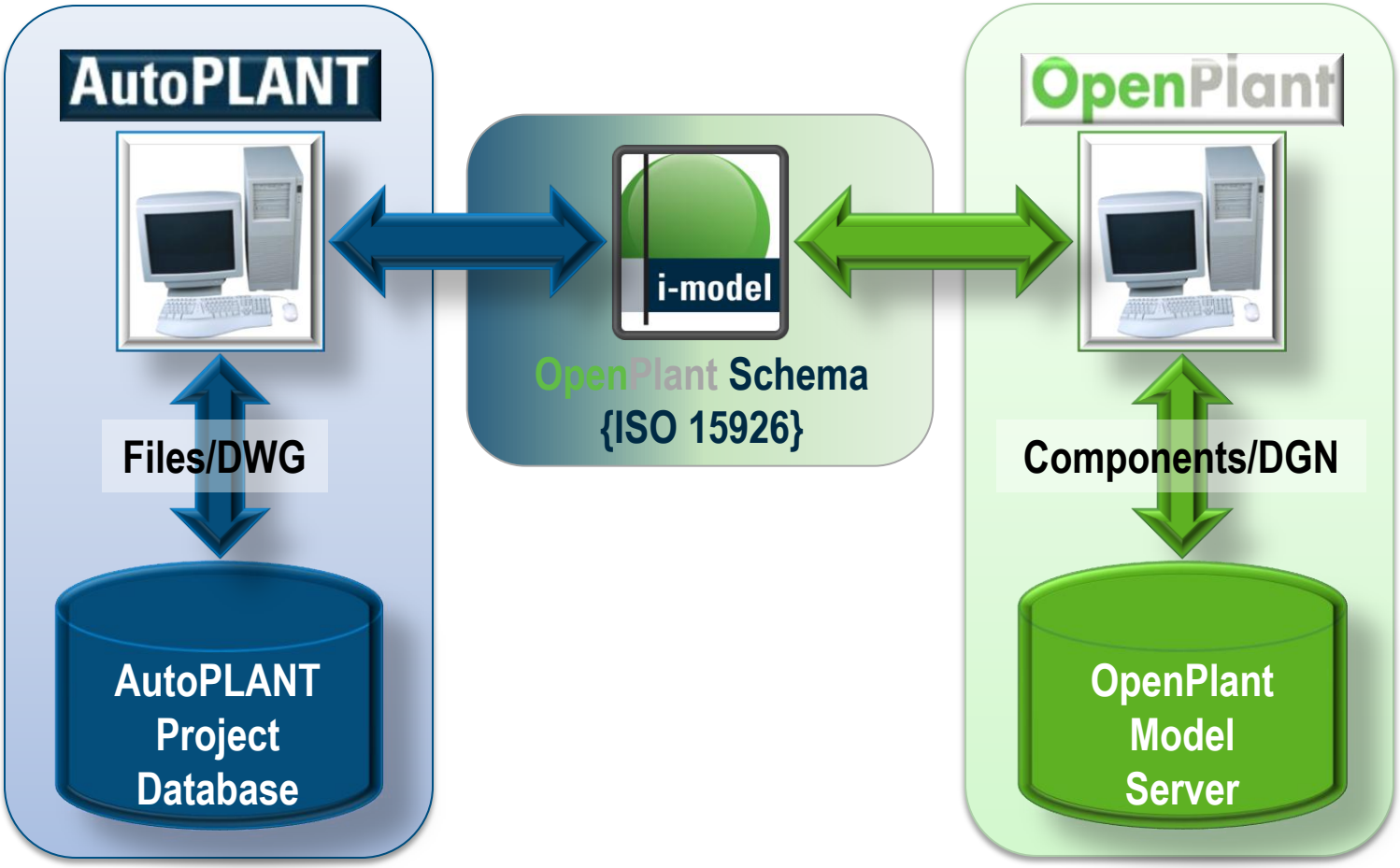
AutoPLANT & OpenPlant Model Server

- Interoperability via i-model's – targetted for 2012



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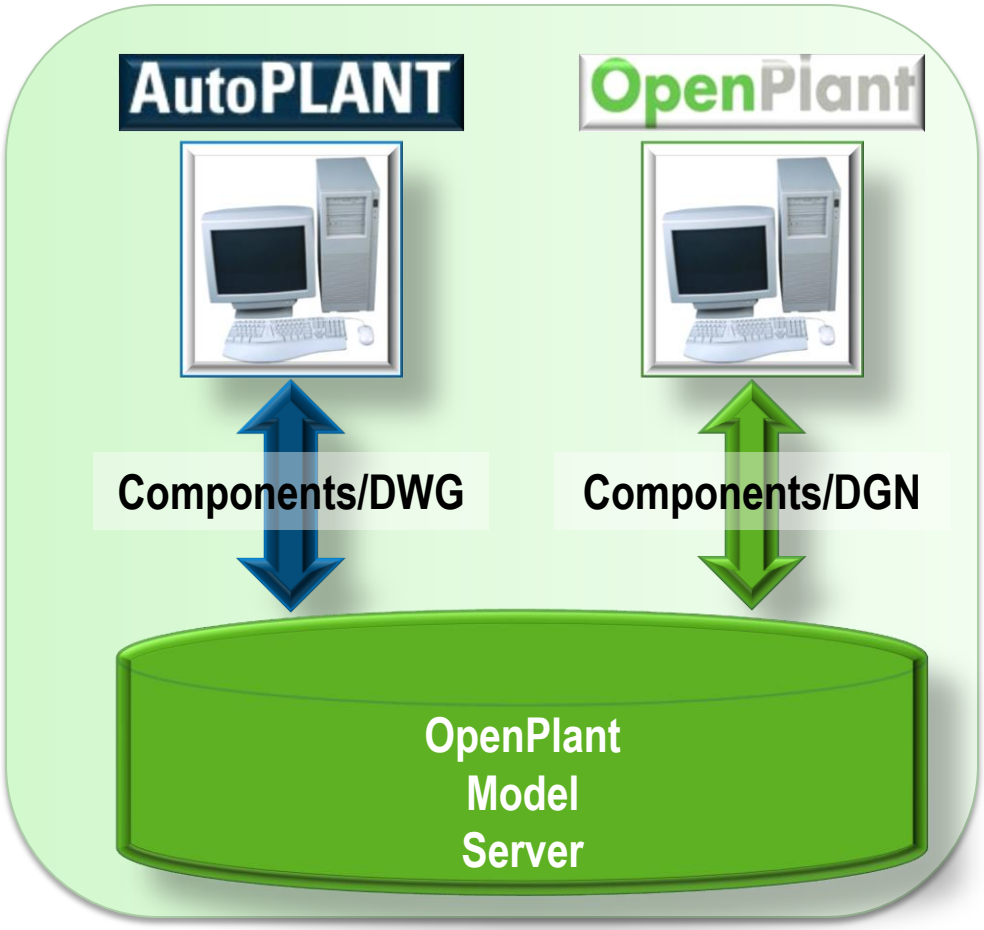
AutoPLANT & OpenPlant Model Server

- Interoperability via Model Server – targetted for 2013



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AutoPLANT & OpenPlant Model Server

- To enable AutoCAD (DWG) based component based design
  - Components Checked out of OP Model Server (not file based)
  - Same AutoCAD/AutoPLANT interface and feel
- To enable distributed engineering for AutoPLANT
  - Controlled and managed by ProjectWise
- To enable immersive project collaboration
- 3 AutoPLANT working modes
  - Project database, i-model interoperability, OP model server
- Prototype - 2013

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Integration with other OpenPlant Applications

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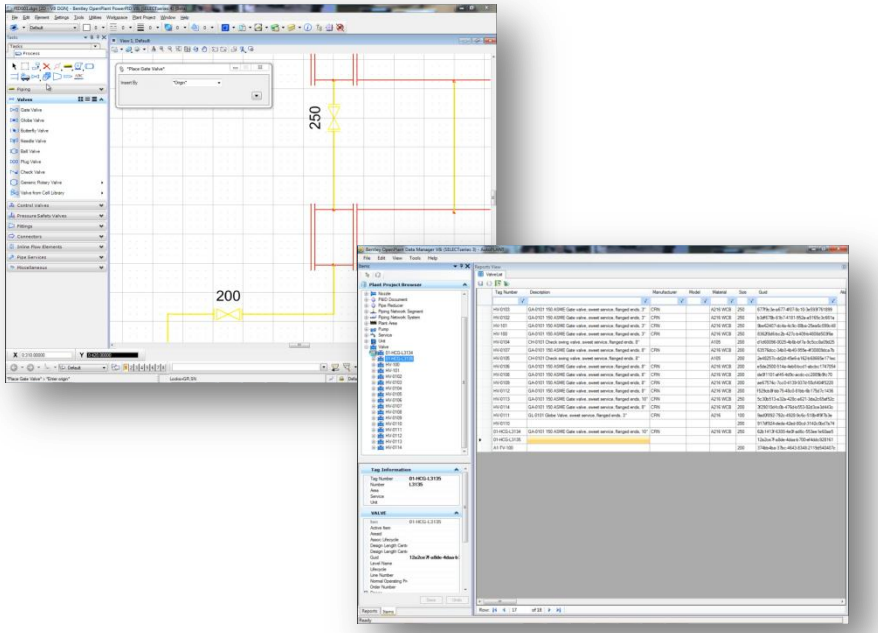
AutoPLANT & Other OpenPlant Applications

- OpenPlant P&ID
  - Available now
- OpenPlant Data Manager
  - Available 2012
- OpenPlant Datasheets
  - Targetted for 2012/2013



- OpenPlant Instrumentation & OpenPlant Electrical
  - Targetted for 2013
- All working with AutoPLANT or OpenPlant data repositories

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Integration with Bentley Collaboration Products

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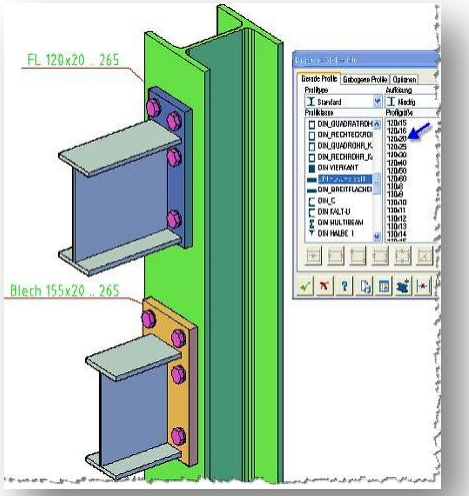
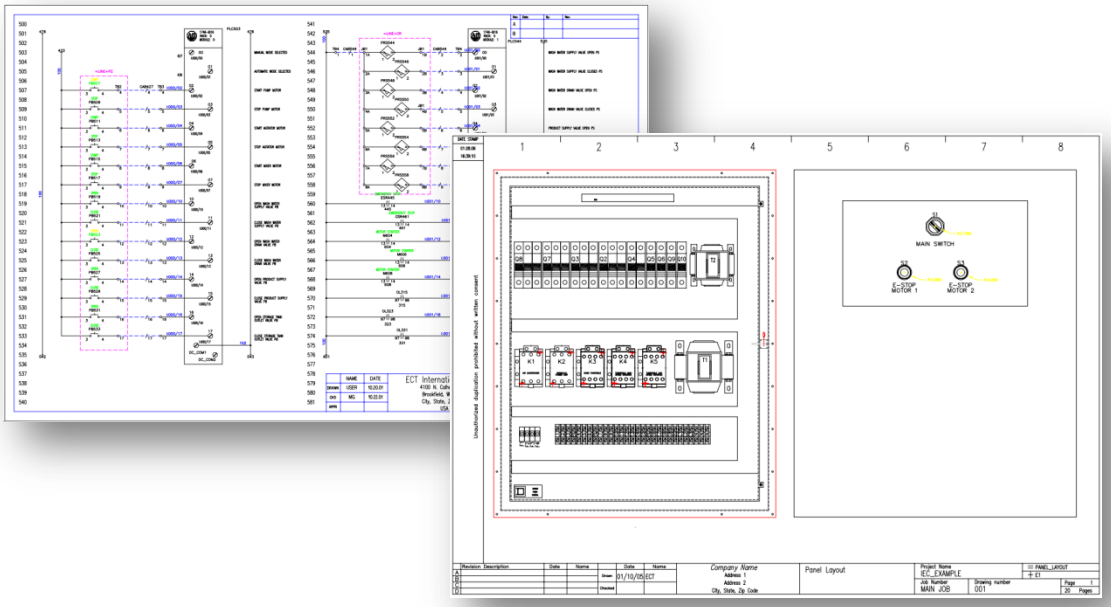
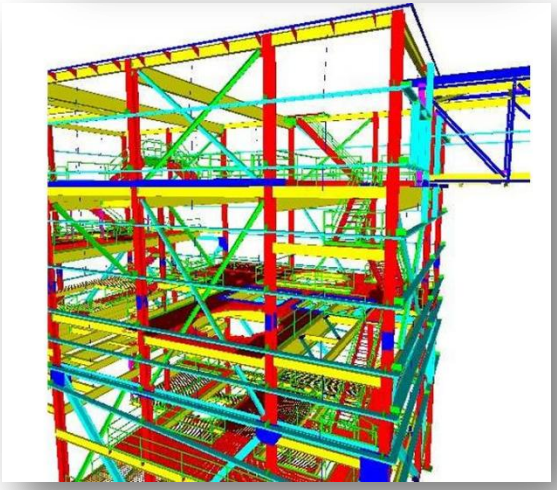
AutoPLANT & Bentley Collaboration Products

- Collaboration Applications – Design Tools
  - ProSteel
    - 3D modeling environment for structural steel and metal work
  - promis•e
    - Intelligent software for electrical control system design







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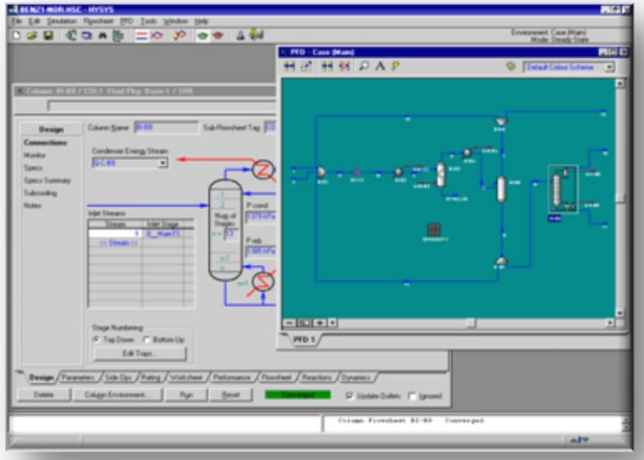
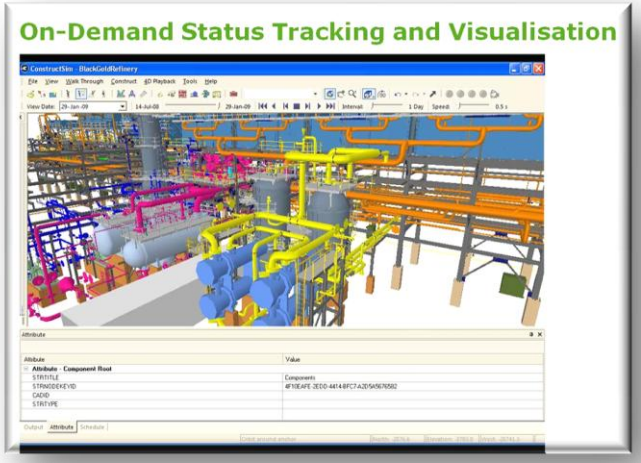
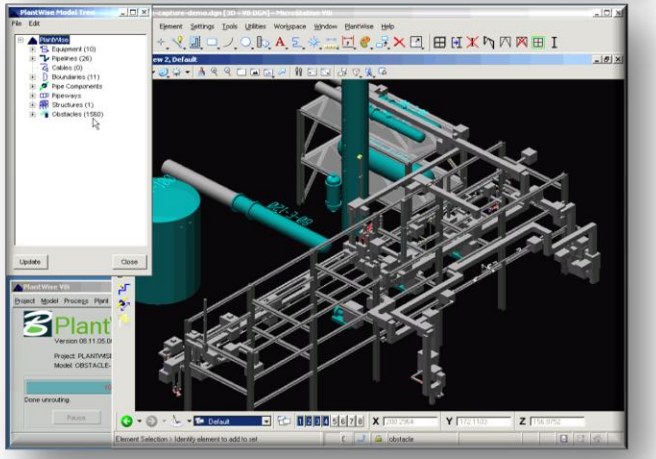
AutoPLANT & Bentley Collaboration Products

- Collaboration Applications – Conceptual Plant Design
  - AXSYS.Process
    - Automated **F**ront **E**nd **E**ngineering **D**esign - **FEED**
  - PlantWise/EquipmentWise
    - Conceptual automatic 3D piping and equipment design
  - ConstructSIM
    - Plant construction simulation







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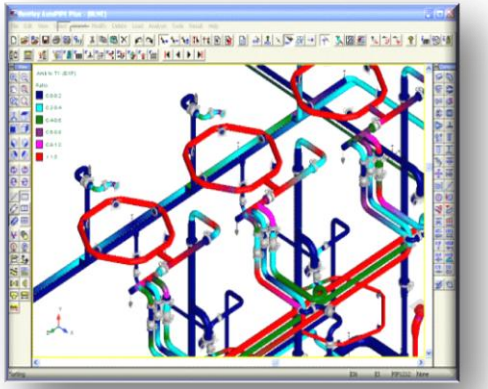
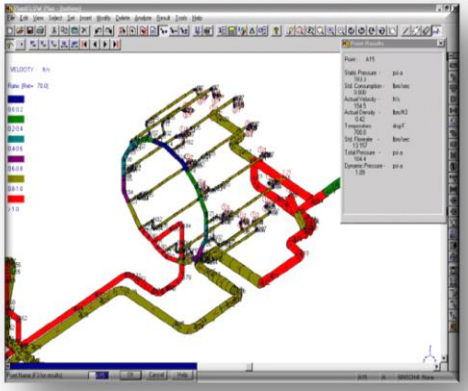
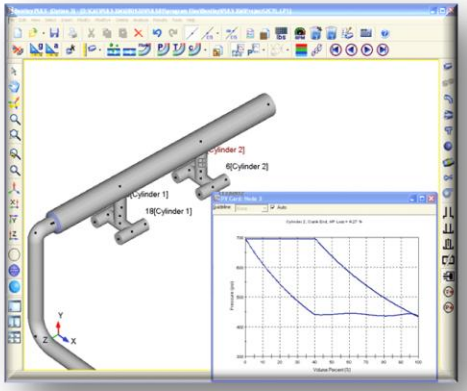
AutoPLANT & Bentley Collaboration Products

- Collaboration Applications – Analysis Tools
  - AutoPIPE
    - Pipe stress analysis software
  - AutoPIPE Nozzle (formerly WinNOZL)
    - Nozzle/vessel junction stress analysis software
  - PlantFLOW
    - Build, modify and view piping “flow models”
  - PULS
    - Analysis of fluid flow under steady state pulsating flow in piping networks







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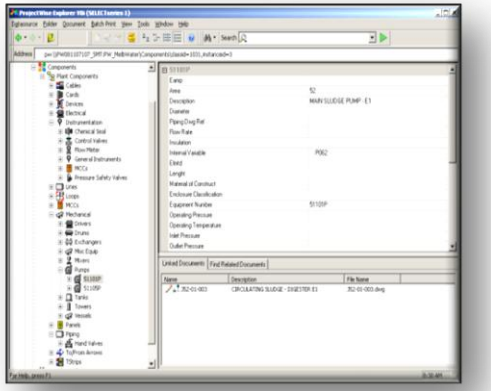
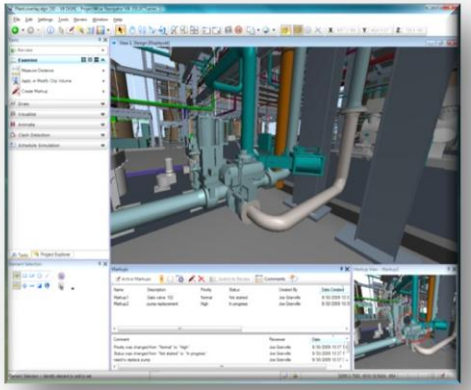
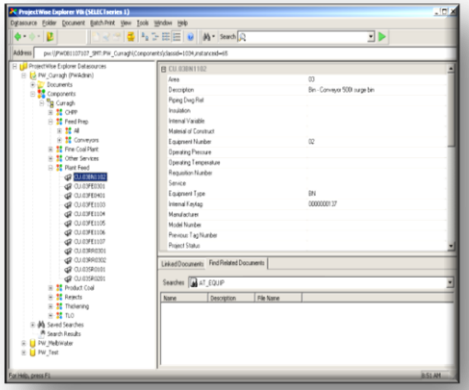
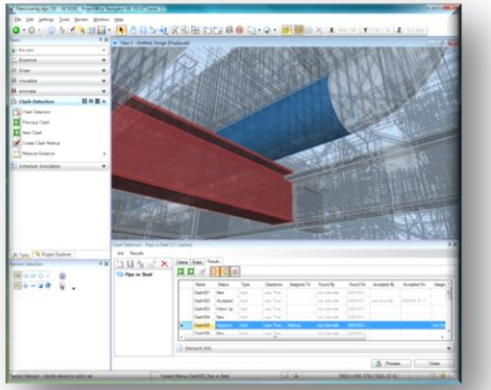
AutoPLANT & Bentley Collaboration Products

- Collaboration Applications – Review & Management Tools
  - ProjectWise
    - Real-time project collaboration across distributed teams
  - Navigator
    - Review and analyze project data
  - View
    - Free DGN viewer, DWG viewer, and i-model viewer
  - Redline
    - Multi-function viewing, redlining, and print-to-scale tool









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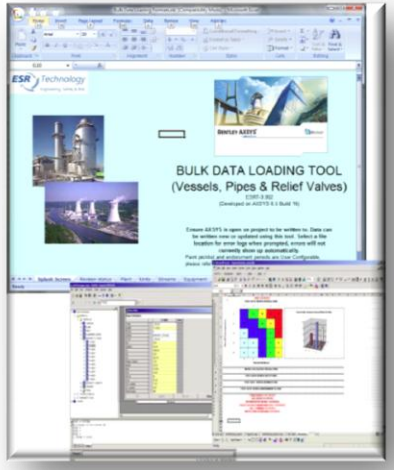
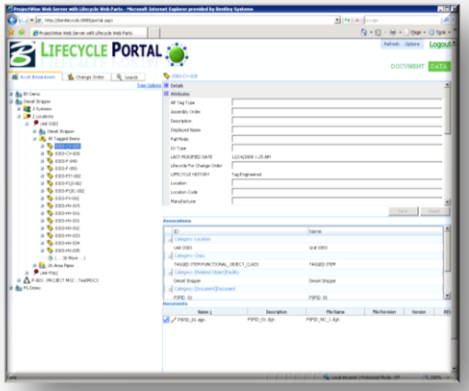
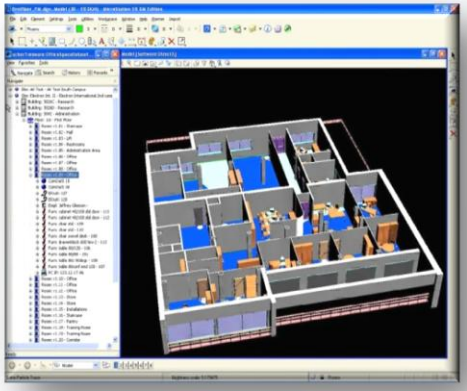
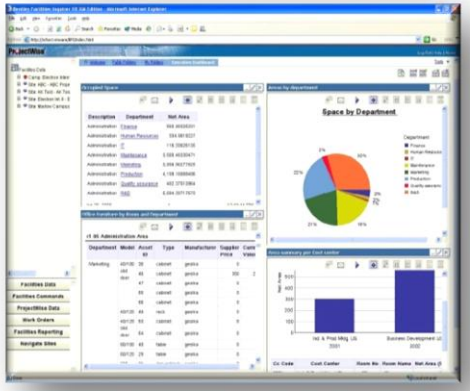
AutoPLANT & Bentley Collaboration Products

- Collaboration Applications – Operations & Maintenance
  - AXSYS.Integrity
    - Risk-based inspection, planning & data management
  - eB Insight/AssetWise
    - Control information throughout the lifecycle of change
  - Facilities Manager
    - Maintain all of your facilities-related information









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Thank you!

- Questions?
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