OpenPlant™–Accelerating ISO 15926 Adoption Through Open Applications.

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Sustaining Infrastructure

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Agenda

- Current Situation
- ISO 15926 and Semantic Web Technologies
- Benefits of adopting ISO 15926
- Bentley's Vision of Open Applications
  - OpenPlant set of Products
  - Architecture and OpenPlant Schema
- Bentley Class Editor and ISO 15926 RDS/WIP Connection
- Summary and Next Steps

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Current Situation

- PCA/FIATECH driven IDS-ADI Projects are producing methodology and basic software tools to accelerate ISO 15926 implementation
- RDS/WIP is established leveraging rapidly evolving Semantic Web Technologies
- Technology Developers need to implement these standards into their products

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ISO 15926 and Semantic Web Technologies

- Core problems ISO 15926 is trying to solve
  - Model the asset lifecycle information
  - Extract information from existing native formats
  - Convey information across globally distributed points
  - Verify the information at multiple conversion points
- ISO 15926 evolving alongside W3C standards
- Lifecycle information models can now be represented and implemented using Semantic Web technologies

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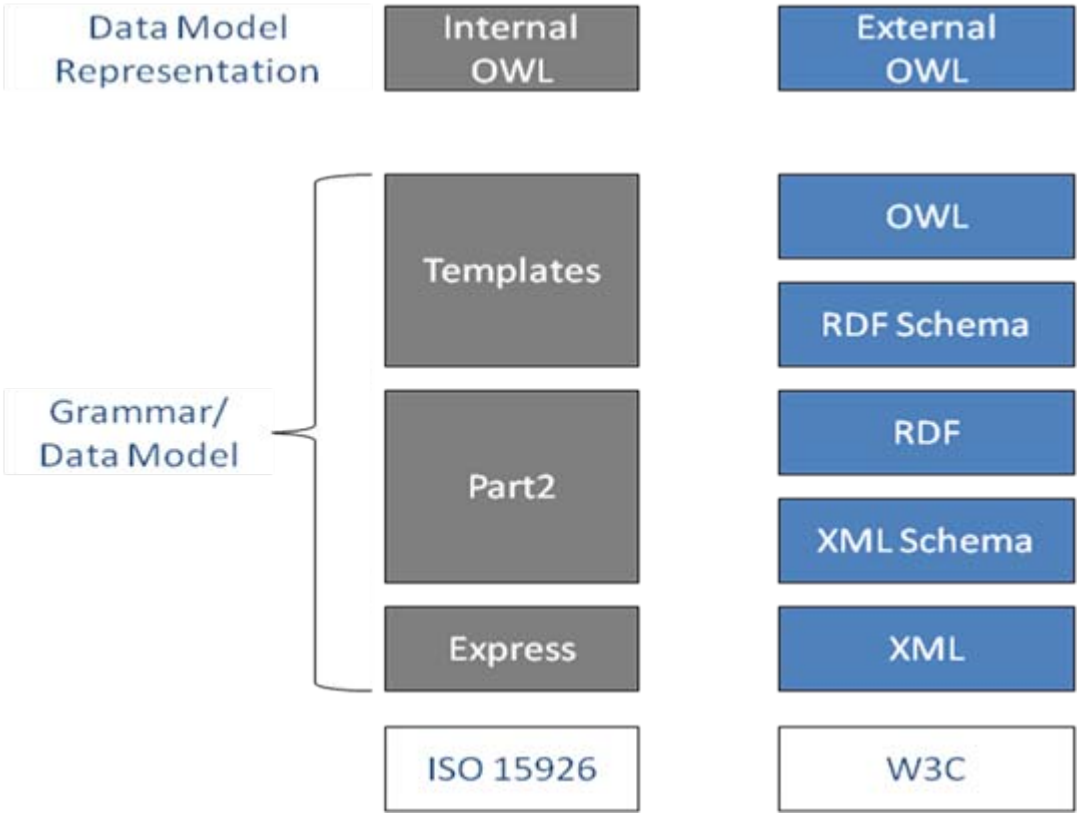
Evolution of ISO 15926 alongside W3C



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Bentley: *Sustaining* Infrastructure

Our mission is to provide solutions to Design – Build – Operate the world's infrastructure with the goal of:

- Sustaining our society
- Sustaining the environment
- Sustaining the profession

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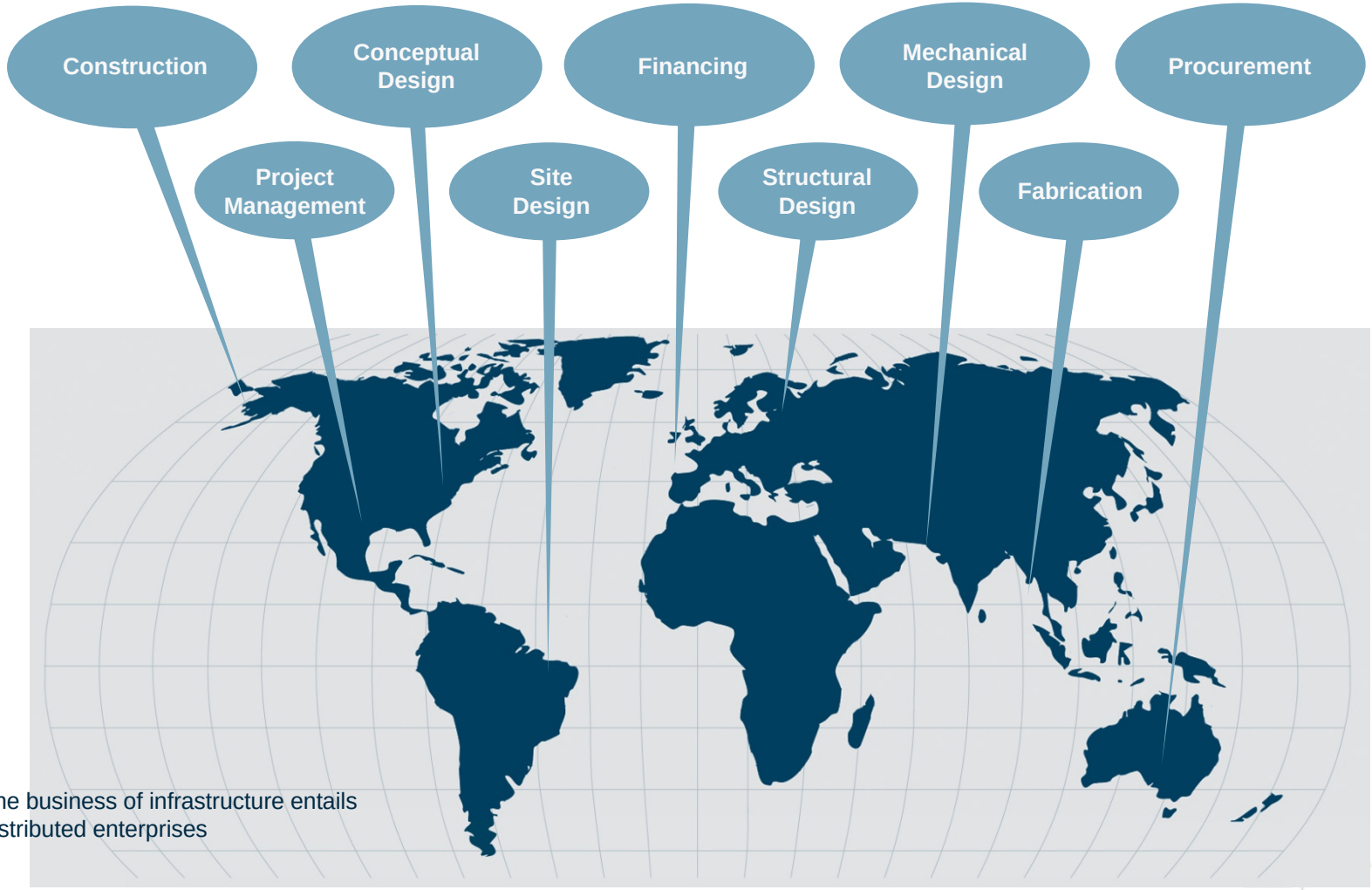
Serving Distributed Enterprises



The business of infrastructure entails distributed enterprises

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A Strong Global Company

- 24 years of growth and stability
- 2,500+ employees, 80 offices, 40 countries

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Bentley Product Portfolio

	BUILDING	PLANT	CIVIL	GEOSPATIAL
O&M	Bentley® Facilities™	ProjectWise® LifeCycle Server™	ARPS,™ ROW,™ LDM,™ Optram,™ SUPERLOAD®	Bentley® GeoWeb Publisher Bentley® Geospatial Server
APPLICATIONS	Bentley® Architecture™ Bentley® Structural™ RAM™ STAAD™ Bentley® Building Mechanical Systems™ Bentley® Building Electrical Systems™ Speedikon® ProSteel™ **Hevacomp®** **Tas™**	PlantSpace® AutoPLANT® AutoPIPE™ AXSYS™ PlantWise™ Design++™ **promis•e®** **OpenPlant PowerPID™** **ConstructSim™** **OpSim™**	GEOPAK® InRoads® Bentley® Rail™ Bentley® MX™ Bentley® Rebar™ RM Bridge™ **LEAP™**	Bentley® Map™ Descartes™ I/RAS B™ Bentley® Electric™ Bentley® Water™ Bentley® Sewer™ Bentley® Copper™ Bentley® Fiber™ Bentley® Coax™ Bentley® Inside Plant™ CADscript™ sisNET™ Haestad Methods® Solutions Bentley® Expert Designer™
POWER PRODUCTS			PowerSurvey™ PowerCivil™ PowerRebar™	PowerMap™ PowerMap Field™
PLATFORM	**MicroStation®** GenerativeComponents® MicroStation® PowerDraft® Bentley® View™ Bentley® Redline™			
	ProjectWise® ProjectWise® StartPoint™ ProjectWise® Navigator™ ProjectWise® InterPlot™ ProjectWise® Integration Server™			

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What are the Benefits of adopting ISO 15926?

- Select software that best-fits your organization
  - No need to change based on the project needs
  - Integrate with your other systems
  - Maximize your personnel, minimize re-training
  - It's the "green" thing to do
- Access to all data across lifecycle
  - Data always available for re-use
  - Legacy storage in a non-proprietary format
- Large and small organizations benefit equally
  - Benefits irrespective of organization size or geographic distribution

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What are the Benefits of adopting ISO 15926?

- Flexibility in project team
  - Different project members can use different tools – can still share together without loss of fidelity
- Choice of tools on revamp
  - On Brownfield sites, don't need to use same tools that were originally used for project
- Greater competition
  - For owners greater choice of engineering contractors
  - For engineering contractors greater choice of software tools

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What are the Benefits of adopting ISO 15926?

- Foster innovation
  - Lowers cost of entry for new solution providers into the plant market
  - New specialized tools can be leveraged for their benefits without having to recreate the complete infrastructure
  - Easy to pass existing information for new analysis, designs, etc.

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Bentley's Vision of Open Applications – OpenPlant™

- Data interoperability using Industry Standards
- Common ontology - fundamental part of the software application
- OpenPlant™ set of products is software designed for the distributed world
  - uses ISO 15926 Reference Data natively for application content
  - lets engineers quickly access and share data, facilitating collaboration in an open environment
  - provides complete, consistent and correct data throughout the plant lifecycle

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Interoperability Architecture and OpenPlant Schema

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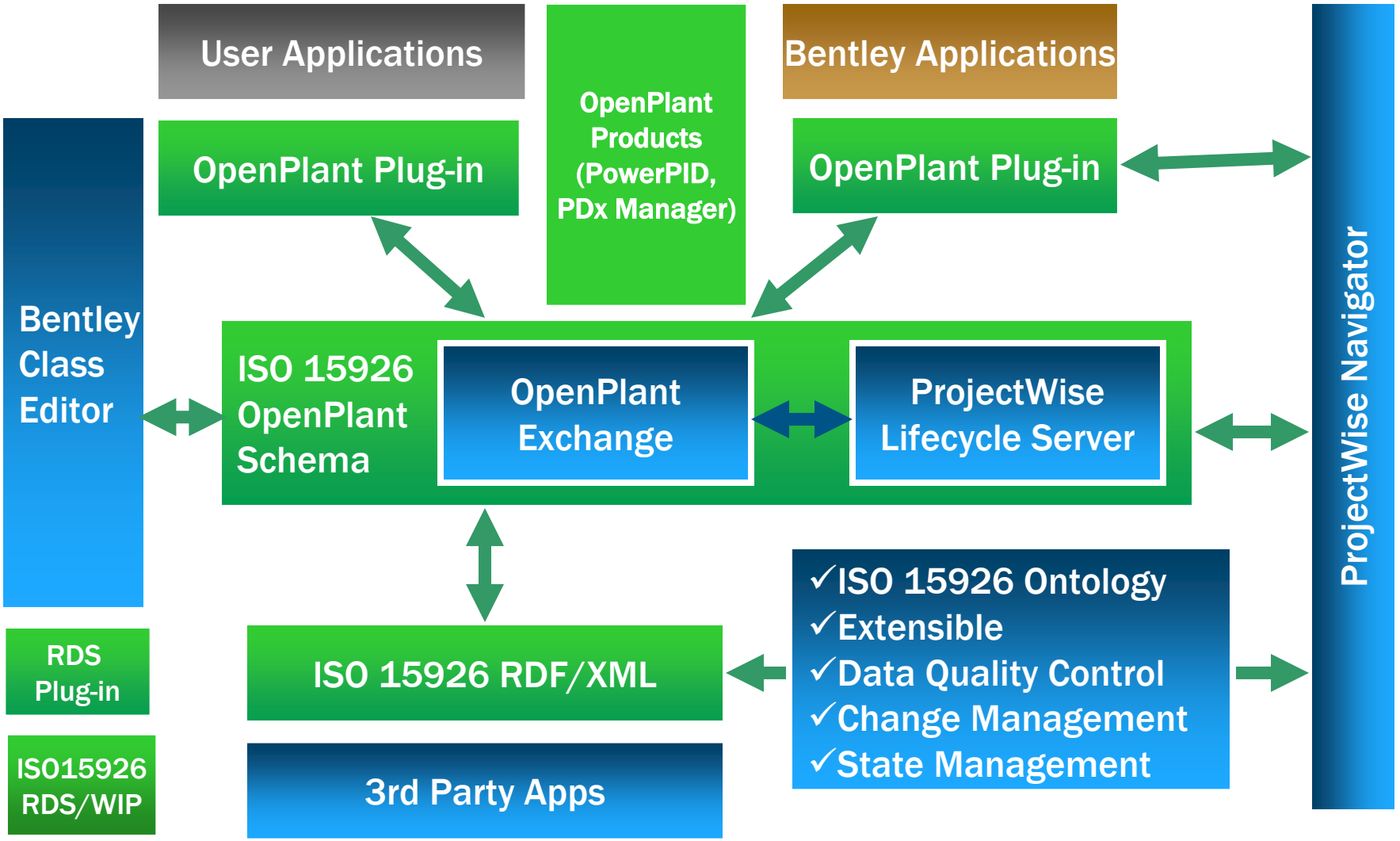
Interoperability Architecture



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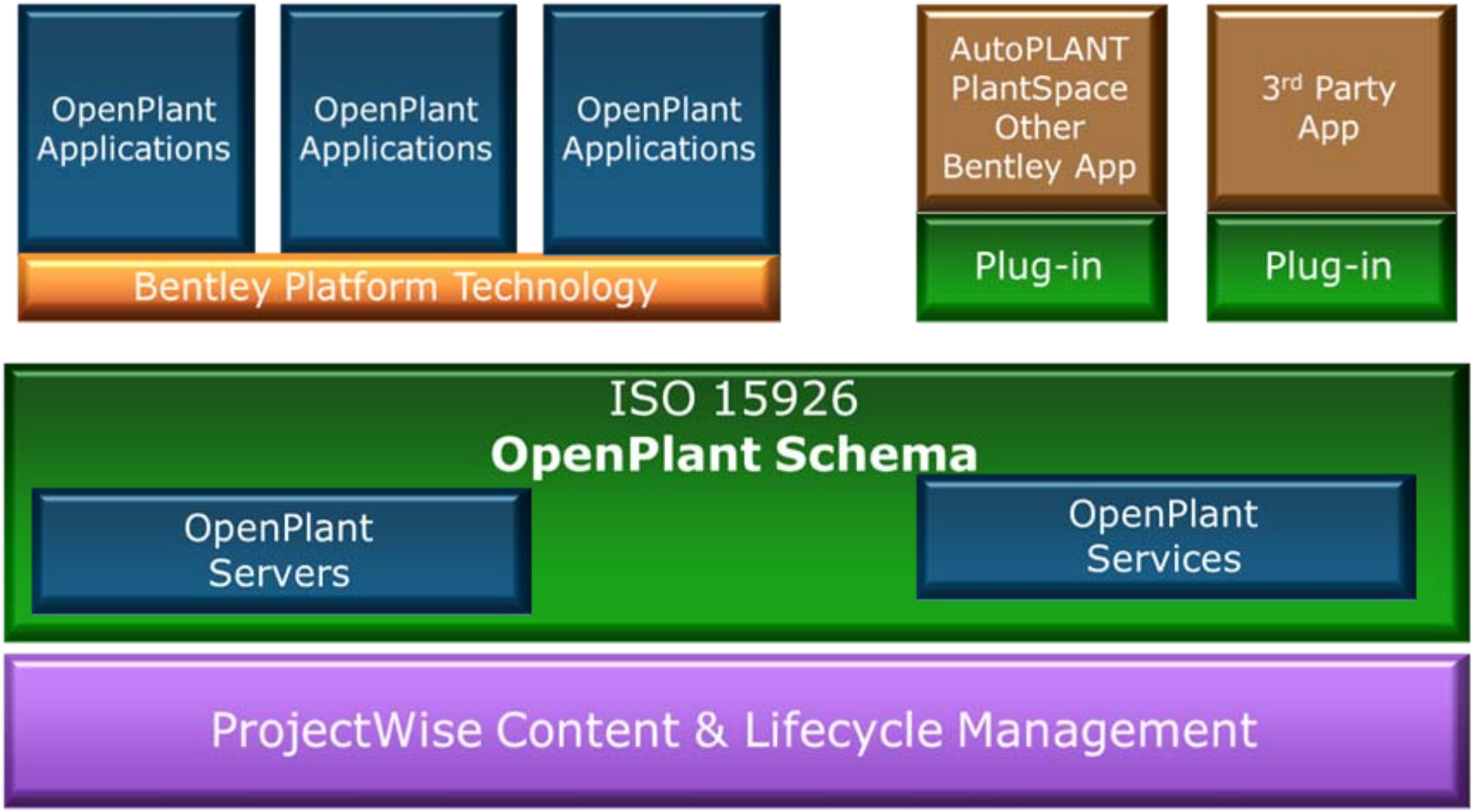
OpenPlant Design Technology



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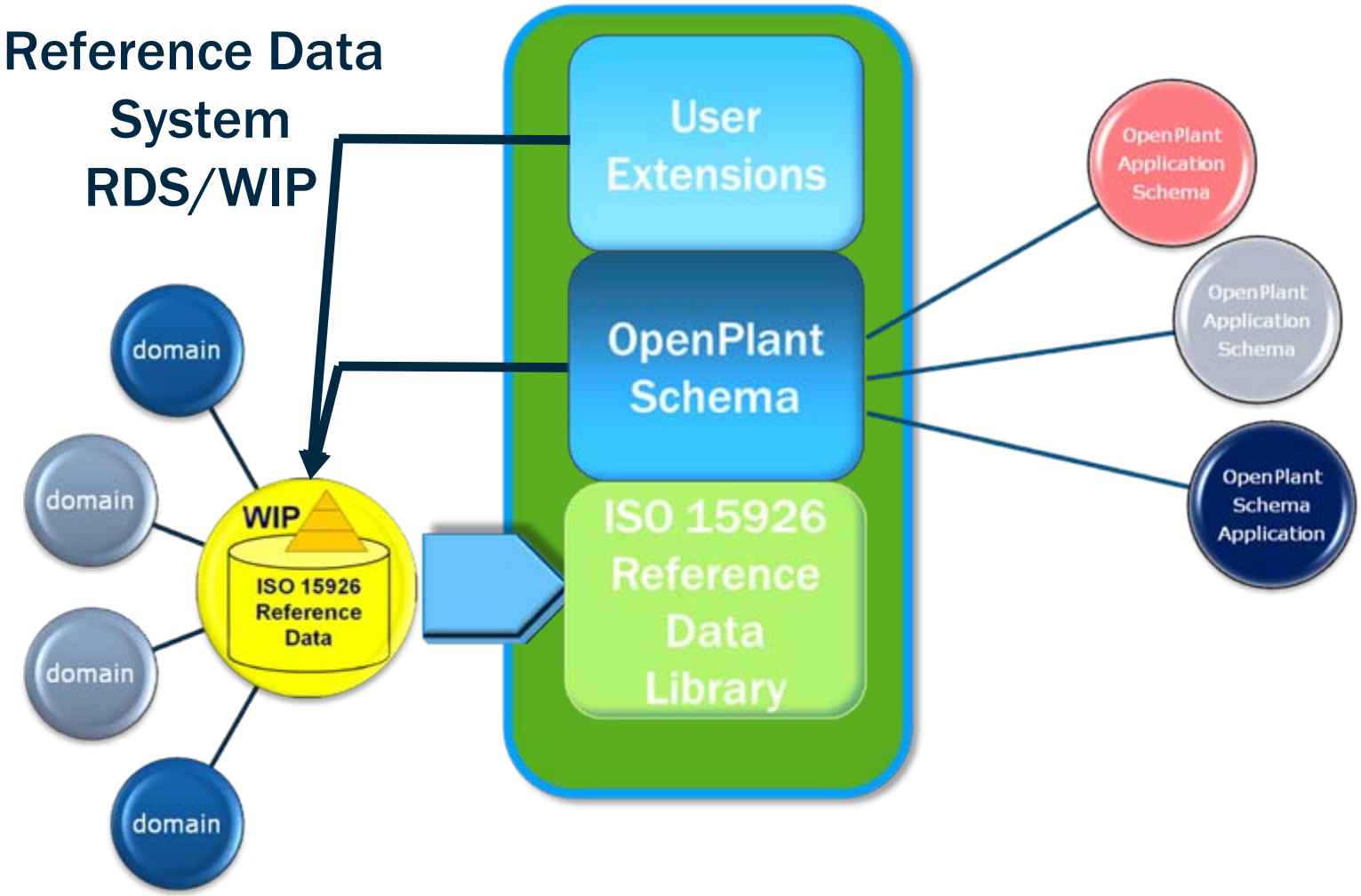
OpenPlant Schema



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Bentley Class Editor and the ISO 15926 RDS/WIP Connection

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ISO 15926 RDS/WIP

- Single global source for reference data
- Contains standardized product models
- Extensible
- The “inbox” for ISO
- Anybody can browse
- Certified user can extend
- All entries are permanent
- Includes browser and SOA interfaces

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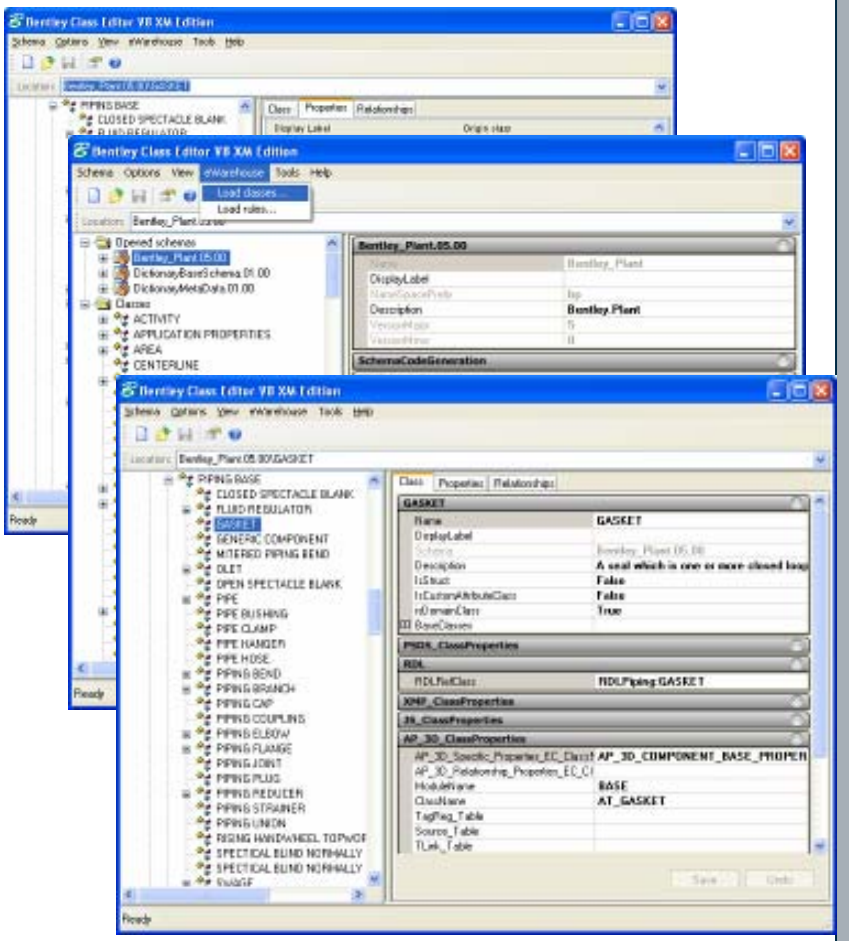
Bentley Class Editor supports ISO 15926

- ISO 15926 dictionaries
- Engineering Friendly View of Reference Data
- Information model building
- Simplified mapping interface



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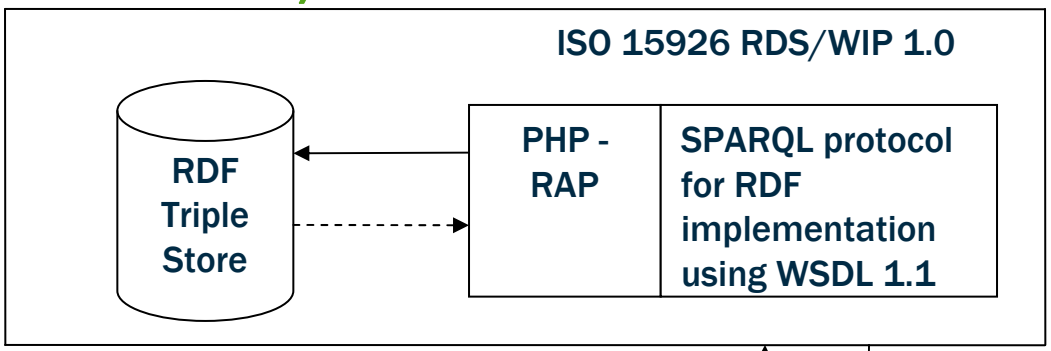
Overview of Bentley Class Editor RDS/WIP Connection

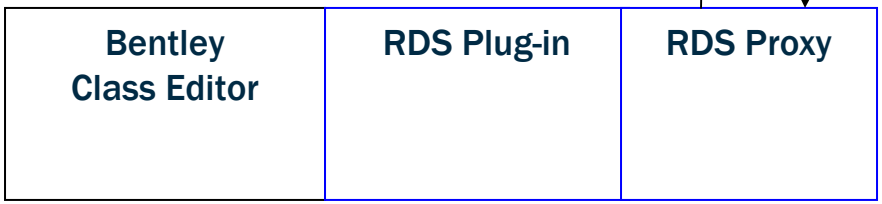


IDS-ADI Scope

SPARQL Query

Internet

SPARQL Query Result



Bentley Scope

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Bentley Class Editor and the ISO 15926 RDS/WIP Connection

- Demonstration

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OpenPlant PowerPID

- OpenPlant PowerPID is the first truly open P&ID solution based on the ISO15926 Reference Data
- OpenPlant PowerPID is rules based and data driven
- OpenPlant PowerPID can produce truly intelligent deliverables in either DWG or DGN format

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Summary

- Adoption and participation in ISO 15926 is a benefit to the entire industry
- Benefits of work already done can be leveraged today
- Start to think about new ways of working for tomorrow

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Thank You

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