

Using Semantic Web Technologies in Open Applications

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Agenda

- Current Situation
- ISO 15926 and Semantic Web Technologies
- Bentley's Vision of Open Applications
 - OpenPlant set of Products
 - Architecture and OpenPlant Schema
- Bentley Class Editor and ISO 15926 RDS/WIP Connection
- Next Steps and role of W3C for Oil and Gas Industry

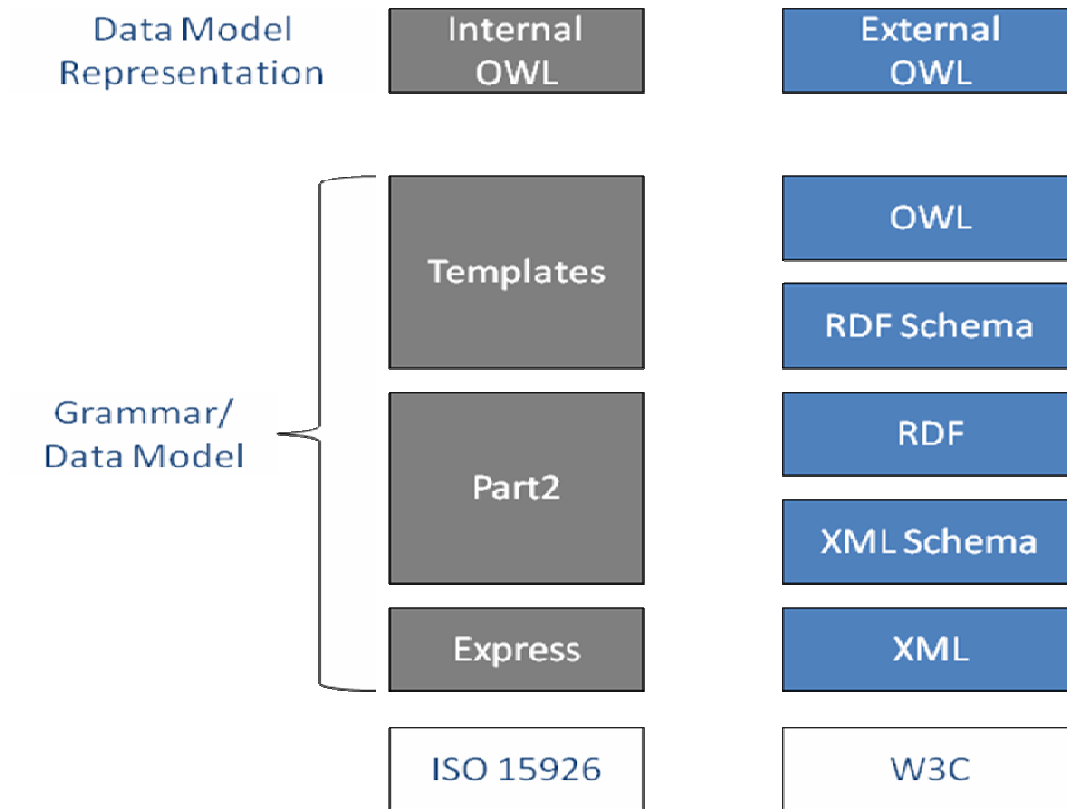
Current Situation

- IDS-ADI Projects are producing methodology and basic software tools to accelerate ISO 15926 implementation
- RDS/WIP 1.0 established leveraging rapidly evolving Semantic Web Technologies
- Technology Developers need to implement these standards into their products
- Wide adoption of core Semantic Web Technologies in Oil and Gas Industry is required

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

Evolution of ISO 15926 alongside W3C



Bentley: *Sustaining Infrastructure*

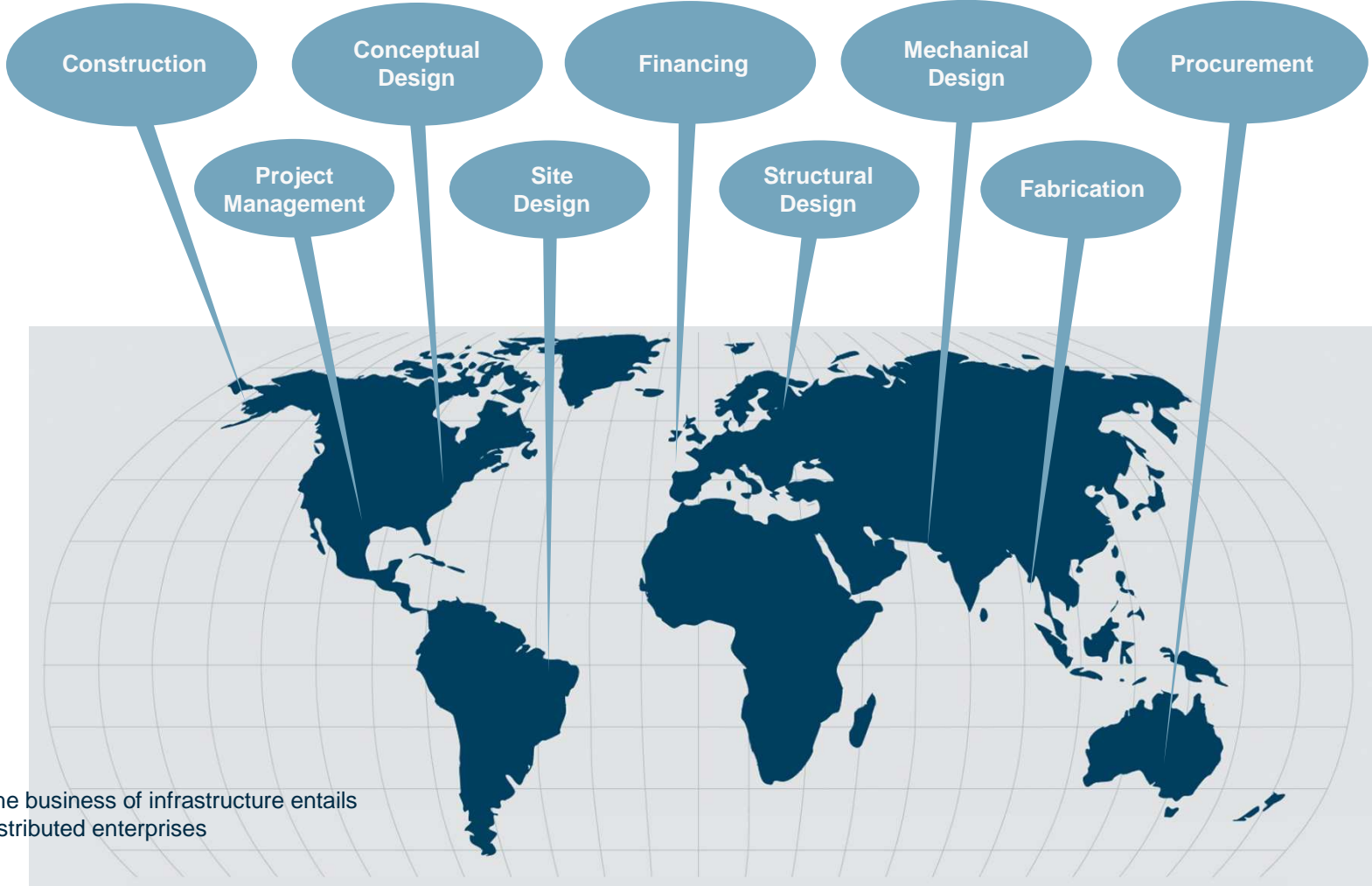


Our mission is to provide solutions to Design – Build – Operate the world's infrastructure with the goal of:

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



Serving Distributed Enterprises



The business of infrastructure entails distributed enterprises



A Strong Global Company

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



Bentley Product Portfolio

	■ BUILDING	■ PLANT	■ CIVIL	■ GEOSPATIAL
O&M	Bentley® Facilities™	ProjectWise® LifeCycle Server™	ARPS™, ROW™, LDM™, Cptram™, 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+™ promise® 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®



Bentley's Vision of Open Applications – OpenPlant™

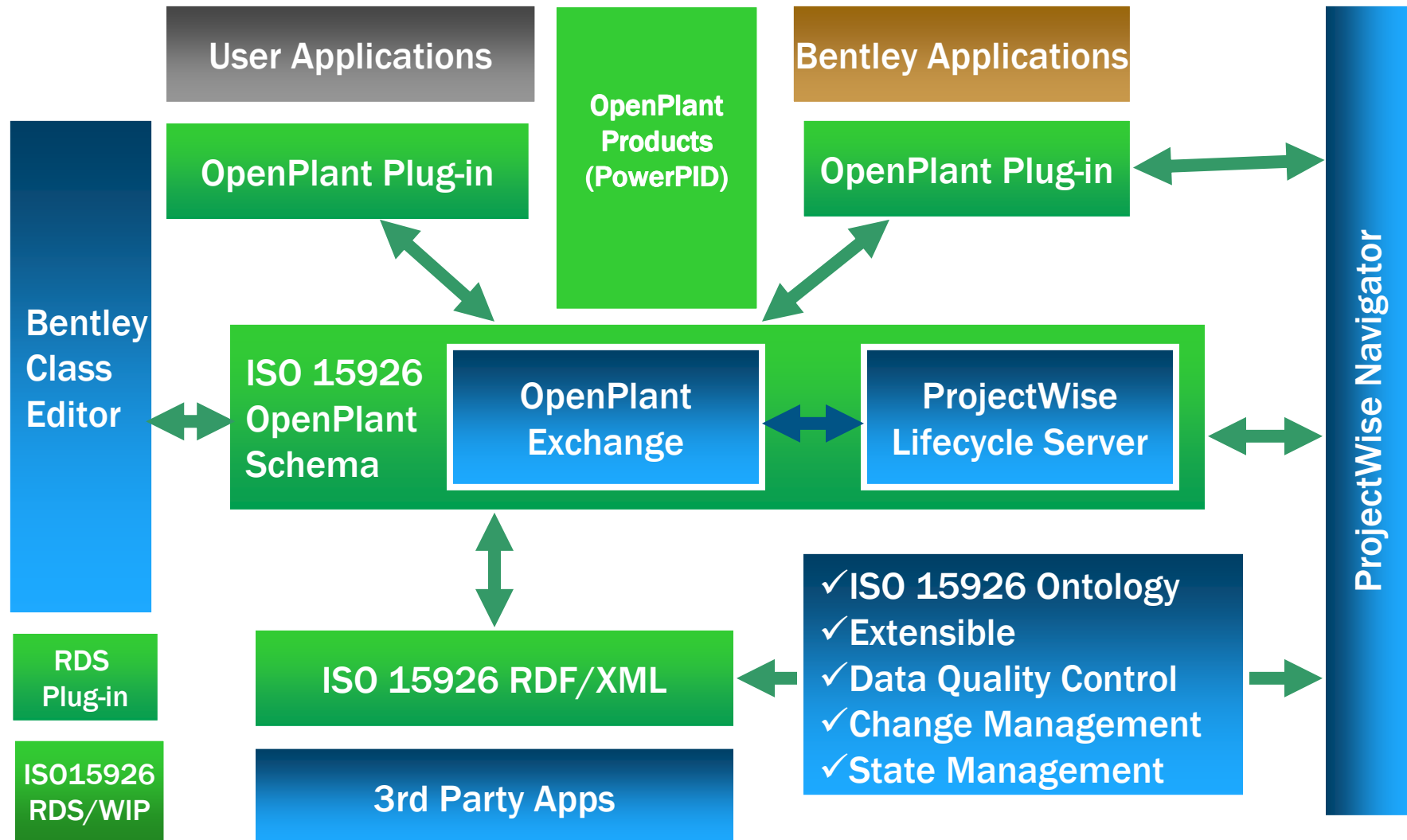
- Data interoperability using Industry Standards
- Common ontology - fundamental part of the software application
- OpenPlant™ set of products is software designed for the distributed world
 - uses ISO 15926 Reference Data natively for application content
 - lets engineers quickly access and share data,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



Interoperability Architecture and OpenPlant Schema

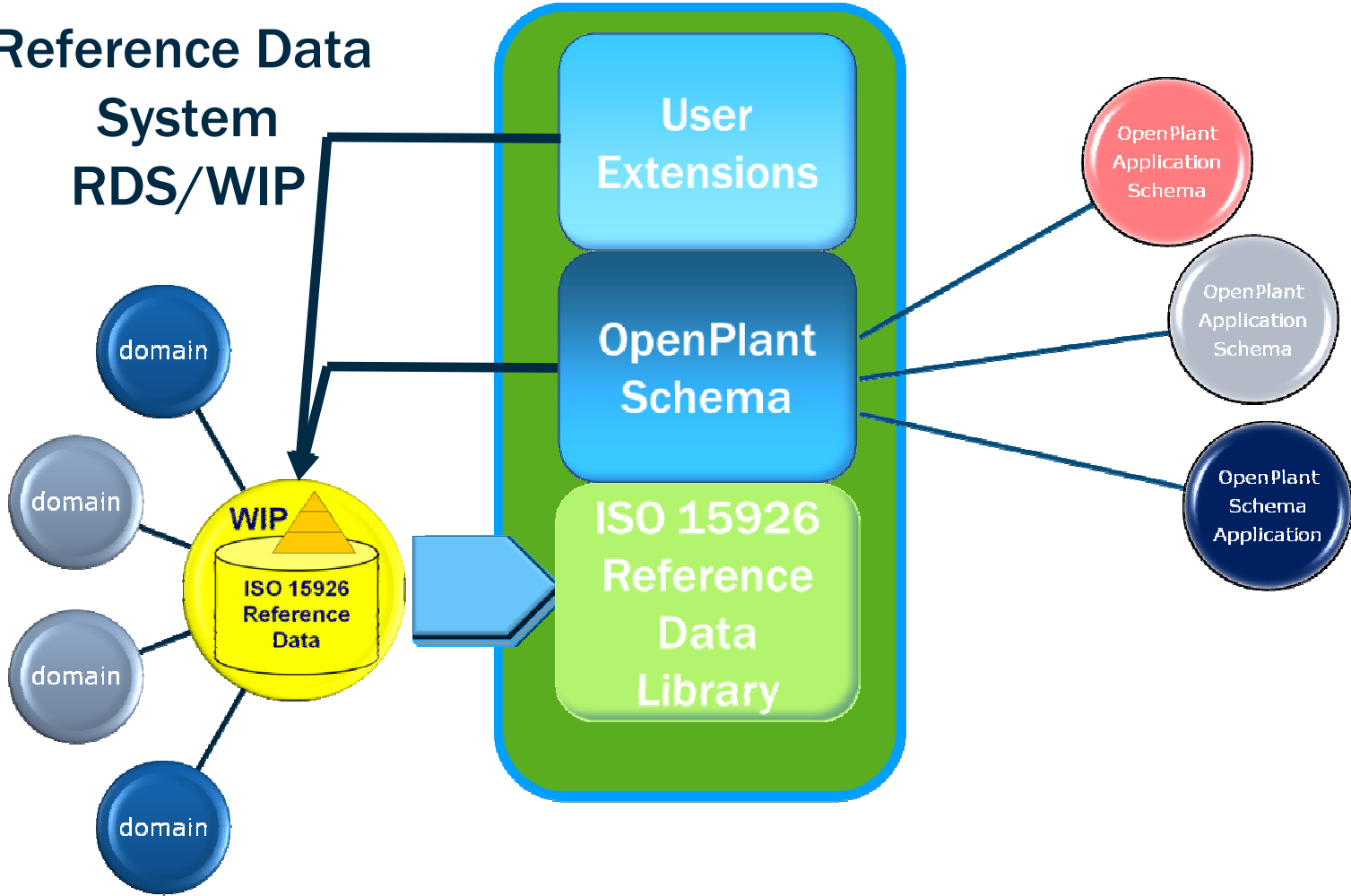


Interoperability Architecture



OpenPlant Schema

Reference Data
System
RDS/WIP

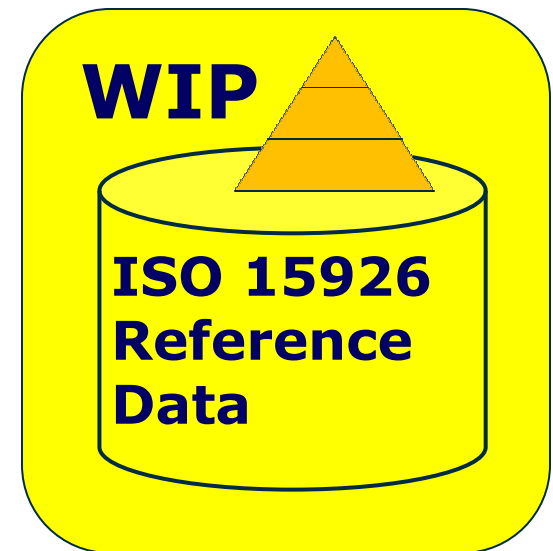


Bentley Class Editor and the ISO 15926 RDS/WIP Connection



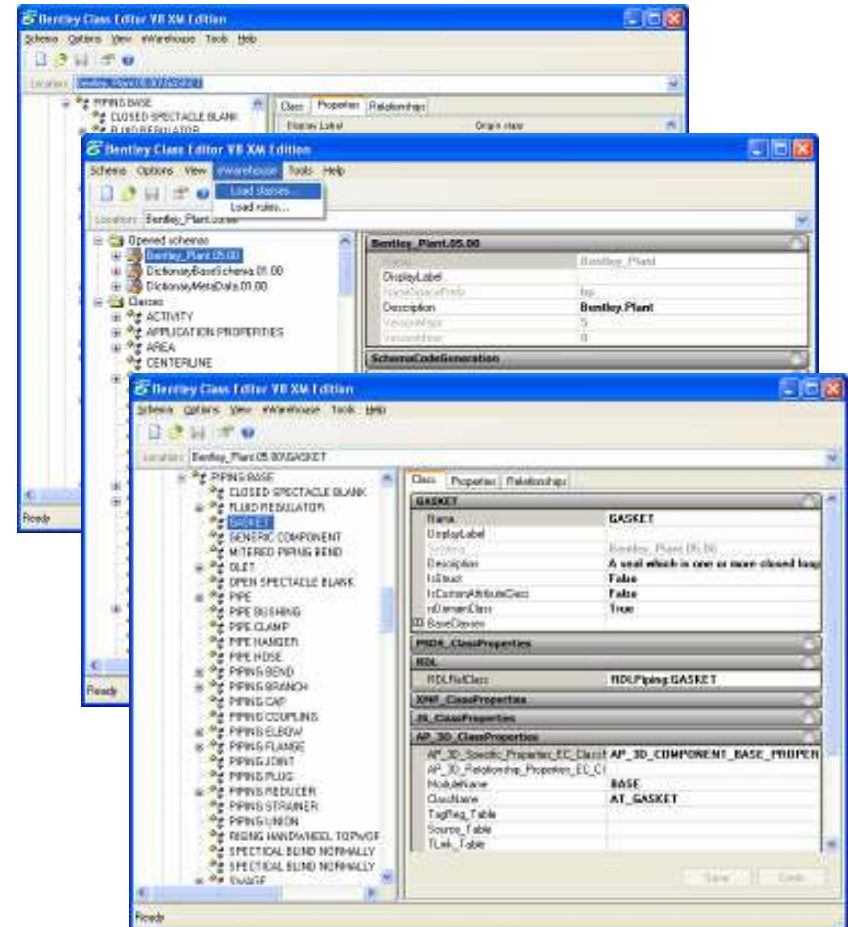
ISO 15926 RDS/WIP

- 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

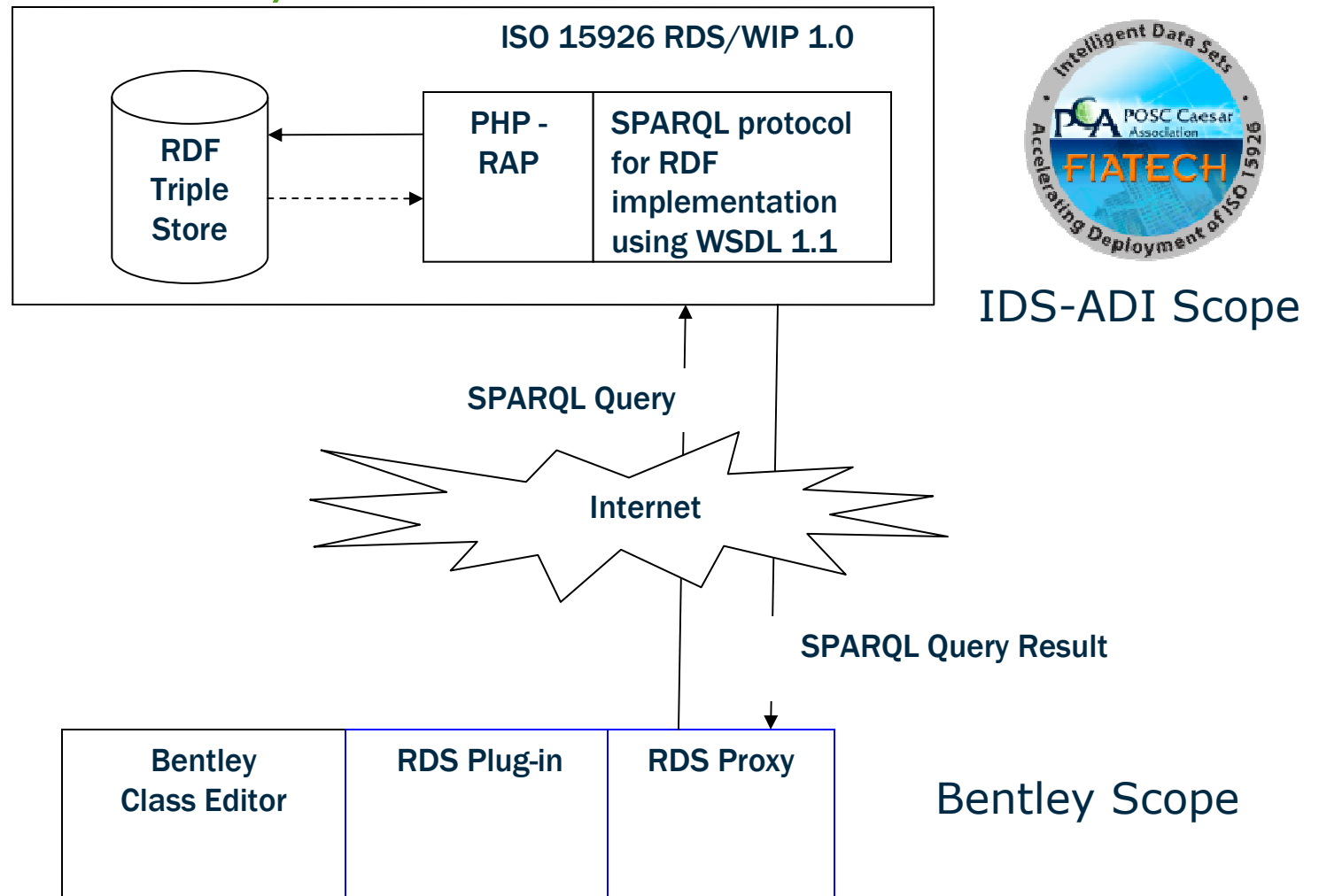


Bentley Class Editor supports ISO 15926

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



Overview of Bentley Class Editor RDS/WIP Connection



Bentley Class Editor and the ISO 15926 RDS/WIP Connection

- Demonstration

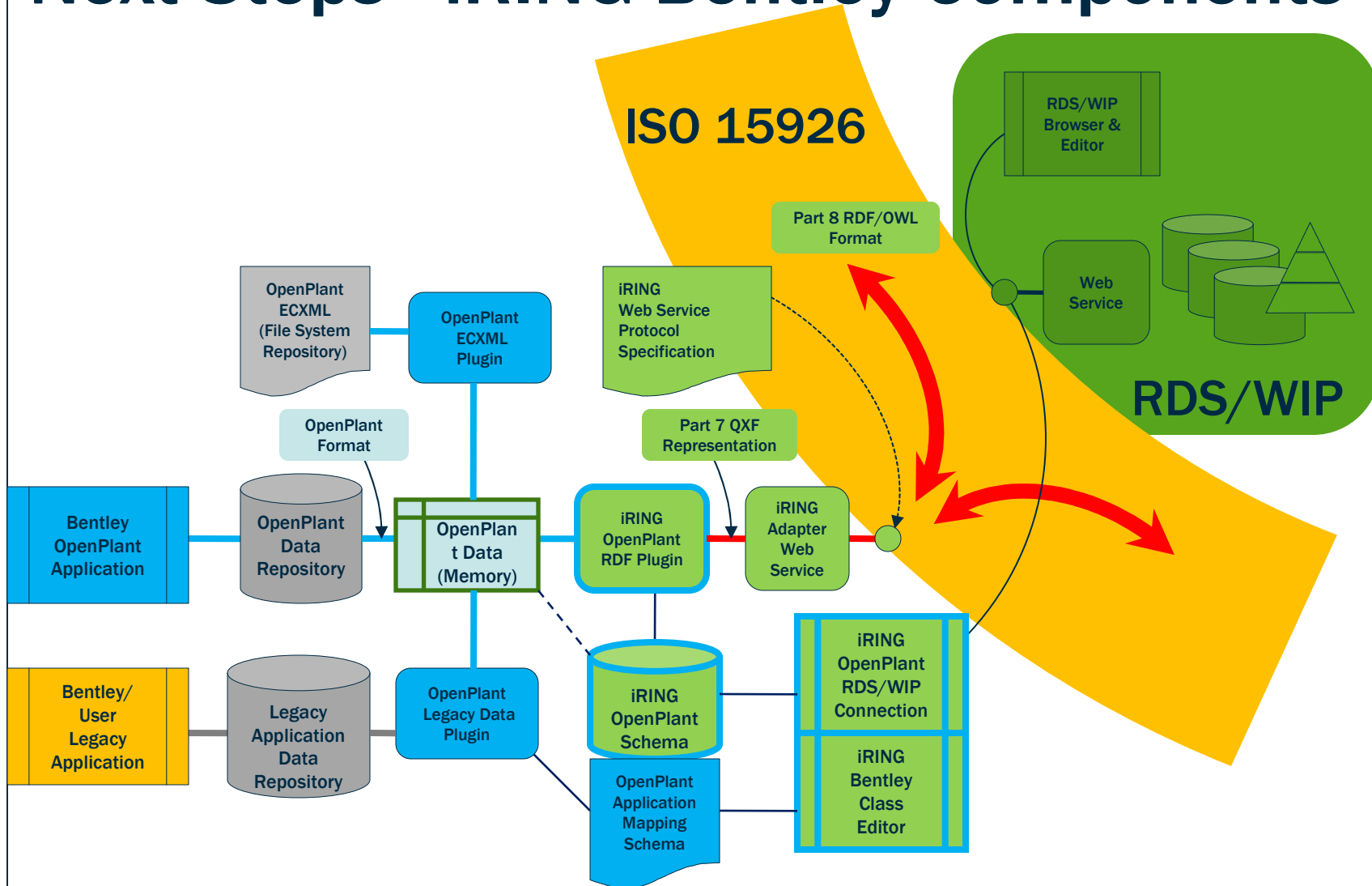
Role of W3C for Oil and Gas Industry

- Consider use cases from Oil and Gas industry while developing new W3C standards:
 - Each standard term used by the industry should have at least one URI. Multiple URIs for same term must be harmonized (owl:SameAs).
 - RDF/OWL should be able to support all aspects of asset lifecycle modeling needs:
 - Temporal aspects – how to determine Car was red from Jan 08 to July 08?
 - Templates – Composite and Aggregate Relationships
 - Issues related to exposing information to all project participants
 - Security and Access Control
 - Issues related to accessing data from multiple sources
 - Origin, Context, Ownership, History

Role of W3C for Oil and Gas Industry

- Assist Oil and Gas industry in accelerating adoption and implementation by
 - Working closely with the large Core Technology providers to rapidly provide tools supporting emerging protocols
 - Effectively communicating with the Oil and Gas community for timely resolution of implementation issues
 - Providing implementation and best practices guidelines
 - For effectively using query protocols – for e.g., when parts of data being queried is at different locations and has different ownerships
 - For mapping native concepts to URIs
 - For exposing the native system data as a triple store in a distributed manner and providing a SPARQL service for global access

Next Steps - iRING Bentley Components





Thank You

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