OpenPlant and ISO 15926

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Bentley® Sustaining Infrastructure

Presentation Overview

- Why ISO 15926 and iRING?
- OpenPlant Interoperability Vision and Benefits
- OpenPlant – Current solutions built using ISO 15926 Reference Data
- PW Lifecycle Server (LCS) using ISO 15926 for Handover Scenario and Single Source
- Example EPC to O-O Data Exchange Scenario using ISO 15926
- Summary

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Sharing Project Data

Interoperability vs Integration

- Integration
  - Integration is the idea that data or information on a given program can be read or manipulated by another program using an agreed format
- Interoperability
  - Interoperability describes the capability of ***any*** program to ***share*** data and information via a published set protocols ***without*** the need to agree a format

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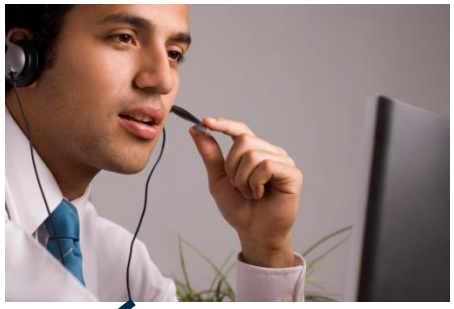
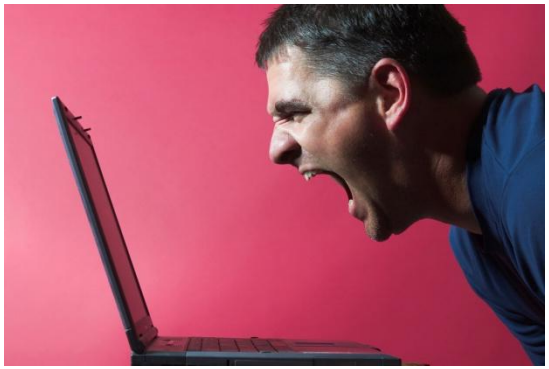
Integration vs. Interoperability





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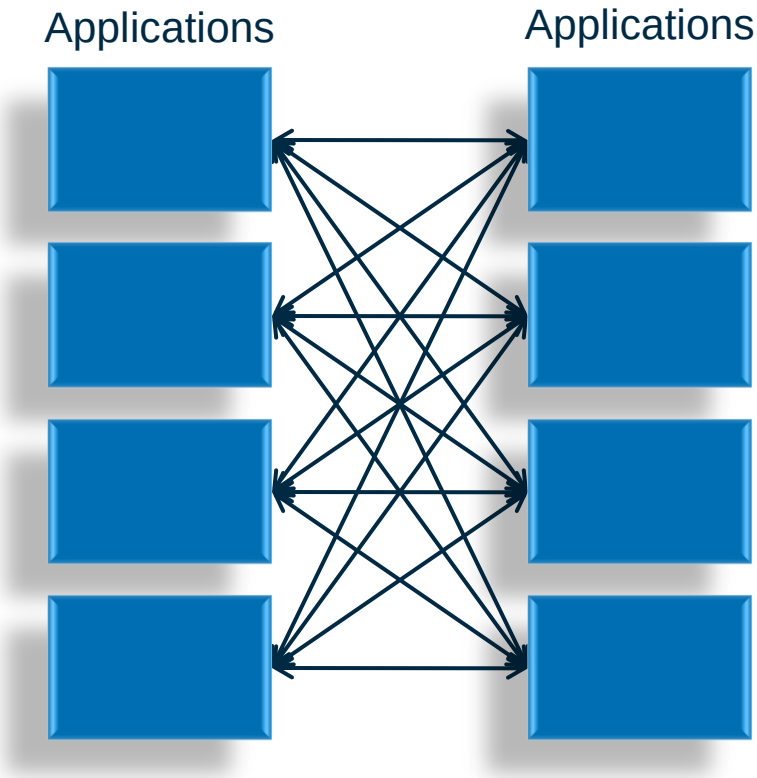
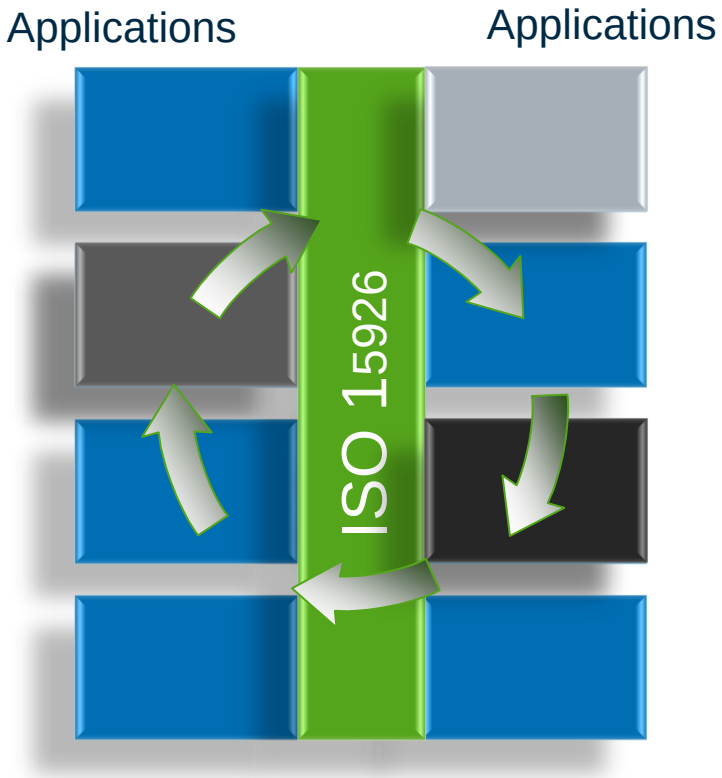
Data Interoperability

The Problem



Integration Yesterday

The Solution



Interoperability Today

iRING

ISO 15926 Realtime Interoperability Network Grid

- ***iRING*** is a set of information interoperability and integration protocols and reference data compliant with the ISO 15926, Parts 7, 8, & 9 standards (building on Parts 1 through 6).

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iRING User Group

http://iringug.org

Community of users interested in implementing ***iRING*** protocols and reference data.

Driving the usage of iRING, provide guidance to iRINGTools, and provide support to the community

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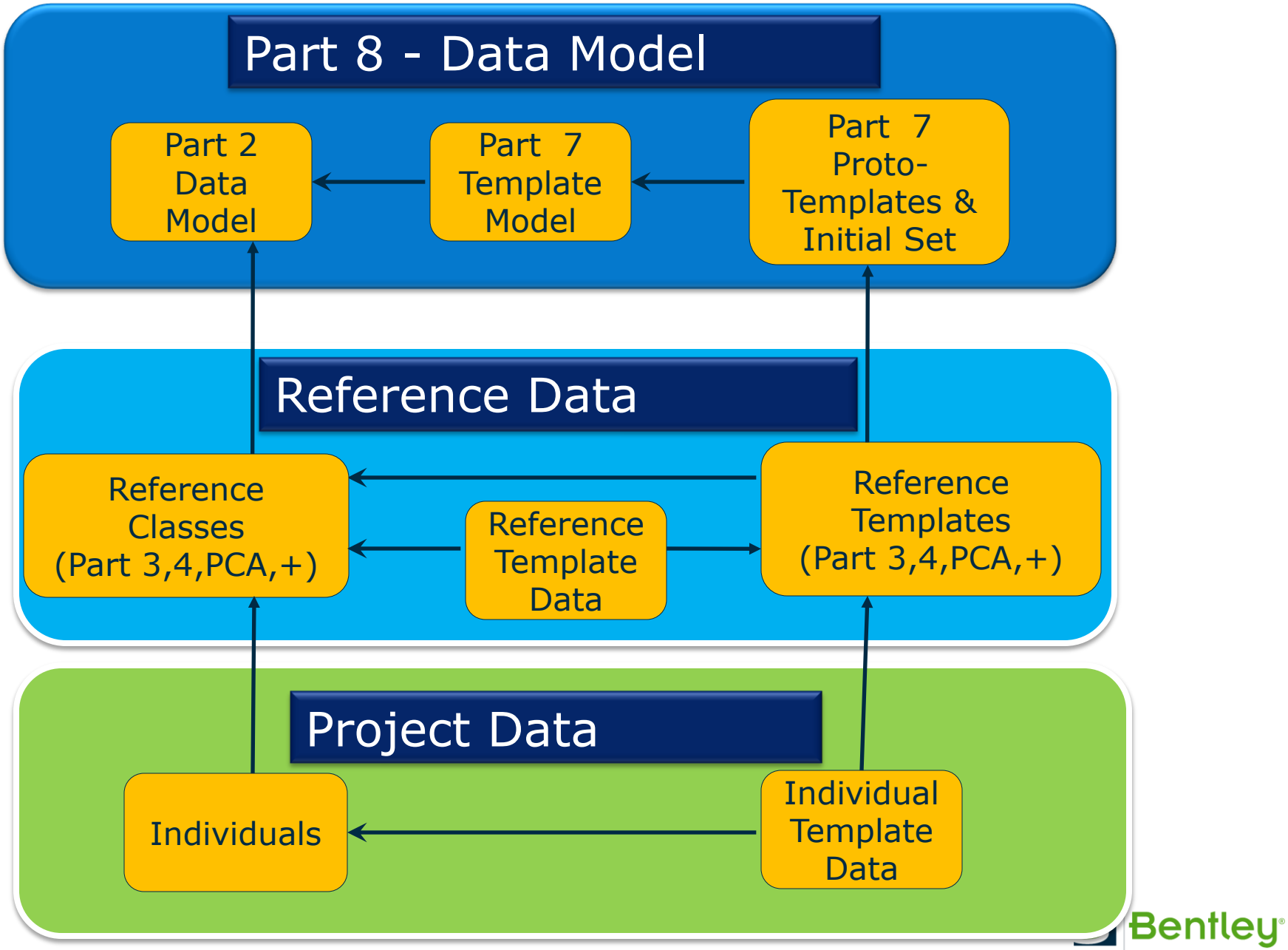
Part 8 - Data Model
Part 2 Data Model
Part 7 Template Model
Part 7 Proto-Templates & Initial Set
Reference Data
Reference Classes (Part 3,4,PCA,+)
Reference Template Data
Reference Templates (Part 3,4,PCA,+)
Project Data
Individuals
Individual Template Data

Bentley's participation in ISO 15926

- Active member of FIATECH and POSC Caesar
- Co-founder of FIATECH ADI Project
- Steering Committee member of IDS-ADI
- Active participation in the iRING Camelot and Avalon projects
  - Bentley is driving the completion of iRING Protocols from the Technology Provider Perspective
- Collaborating with other leading participants on ISO 15926 implementation
- Actively implementing ISO 15926 and providing feedback to improve the standard

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Our Vision...

- Data interoperability using Industry Standards
- Open & Common Information Model
- Bentley OpenPlant™ products designed for the distributed world;
  - Uses ISO 15926 reference data natively
  - Quick access & sharing of data, facilitating collaboration
  - Provides complete, consistent & correct data throughout the plant lifecycle
  - Provides an integrated, functionally complete set of solutions supporting key engineering disciplines

The Benefits ...

- Achieves standardization across key plant lifecycle workflows
- Reduces the time to implement & learn
- Increases end-user productivity
- Improves plant safety & performance
- Delivers greater return on investment in information
- ISO 15926–based Open Information Model offers true data & application interoperability lowering overall cost of ownership

Our Solution ...

Bentley OpenPlant™

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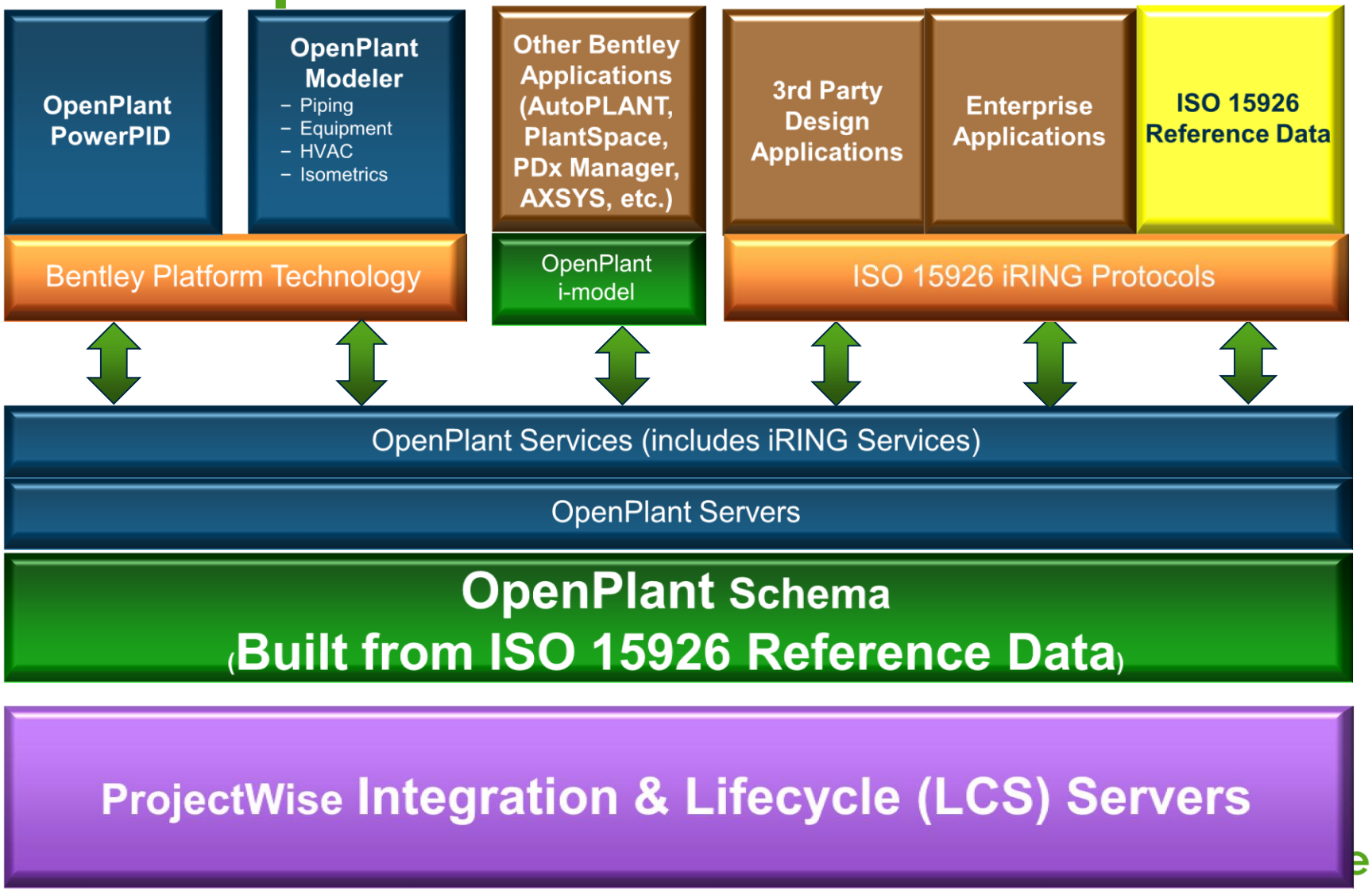
Bentley OpenPlant and ISO 15926 Implementation Architecture



OpenPlant PowerPID V8i SELECTseries 3

- Common Specs
  - Use of common piping specs between OpenPlant PowerPID and OpenPlant Modeler
- Managed Workspaces
  - ProjectWise Managed Workspaces
- Shared Schema
  - Single Schema version used for both products
- Support for Common Tag Format
  - One location to set Tag format properties at the schema level

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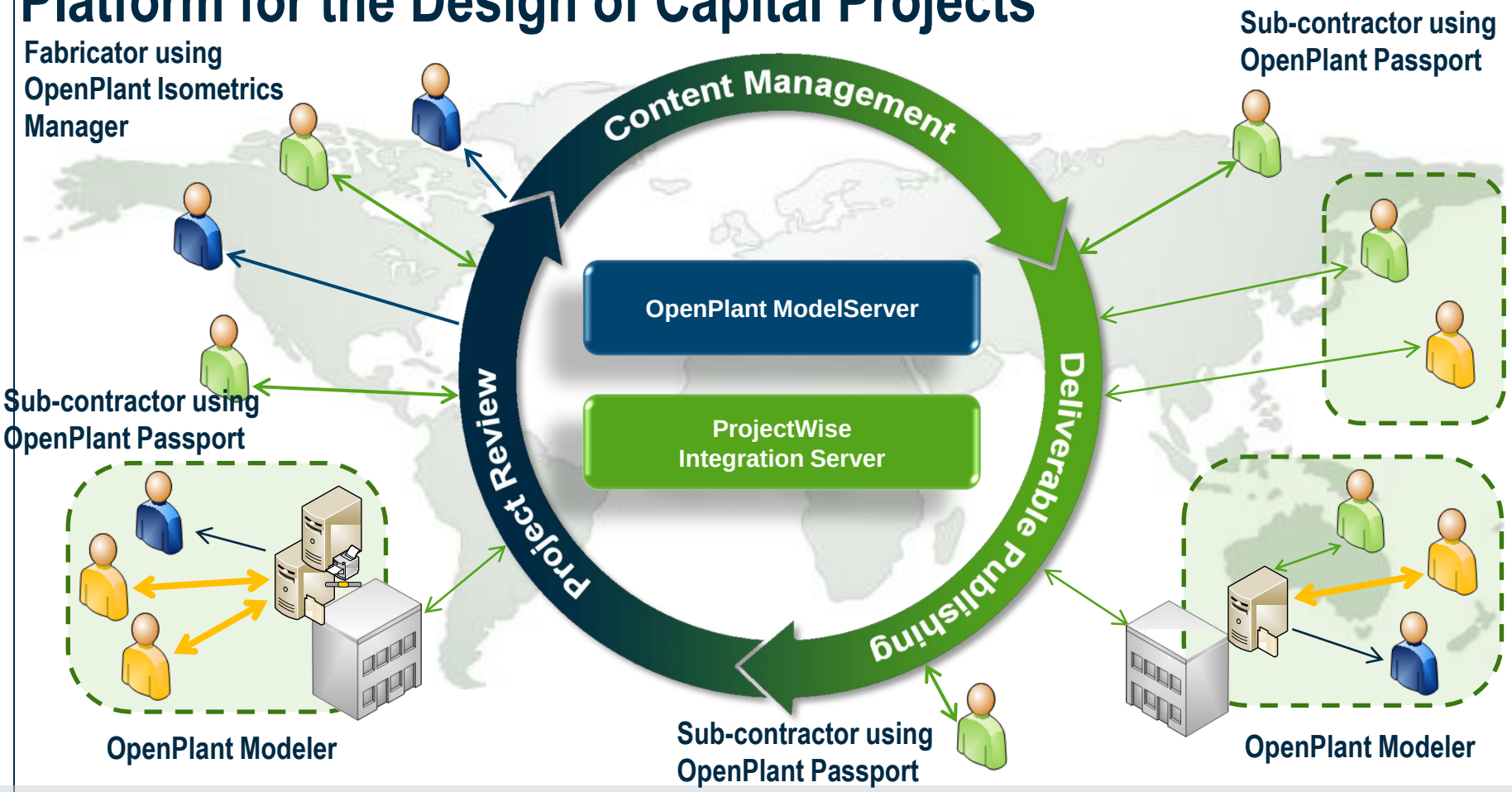
OpenPlant and ProjectWise is a Project Team Collaboration Platform for the Design of Capital Projects



Bentley ProjectWise V8*i*

Engineering Project Collaboration Platform

Open Minds think OpenPlant

Built on ISO 15926

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Capabilities in June Release

- Workflow:
  - Component Level check in/out of Equipment, Piping, Cable Tray
  - Reference in Drawings from other apps
- Modeling Tools:
  - Piping
  - Equipment
  - Cable Tray
  - Structural (ISM using ProSteel or Bentley Structural)
  - Commodity Pipe Supports
- Utilities:
  - Administration & security
  - Specification Generator
  - Reports, Tagging
  - Configuration, Class Editing
  - Clash Detection
- PDS Import:
  - Specs/Cats
  - Models
- Drawing Production:
  - General Arrangements with annotation
  - Isometrics
- Analysis:
  - AutoPIPE PXF Export
- Design Review Workflow:
  - i-model generation
  - Markups
- Other:
  - Isometric Management/Status
  - Power based application
  - Operating Systems: XP, Vista & Windows 7

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Summarizing OpenPlant Benefits

Save time and effort	Does not requiring "translating" information
Flexibility in your work practice	You can work online or offline and edit with no bandwith
Reduce learning curve	Intuitive task-based interfaces
Maximize global resources	Leverage existing applications you have in place & control work execution
Improved project collaboration	All team members have equal access to information
Deliver better quality documents	▪ Open, based on ISO 15926 ▪ Truly intelligent deliverables ▪ Self-contained with graphics and data ▪ Repurpose information easily without the original authoring application

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Why Lifecycle Server for Handover?

- Comprehensive Management of Change
- Full State Control
- Data Quality Management
- Integrated Security Control
- Document and Data Cross Referencing
- Data Integration Platform
- Complete Multi-Language Support

ProjectWise Lifecycle Server

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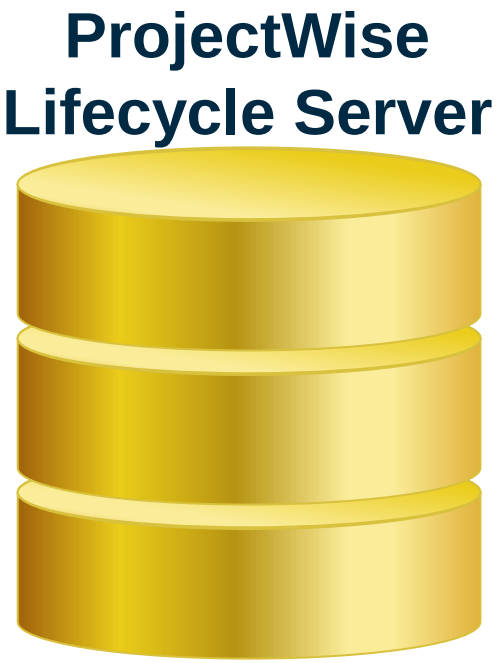
Why Lifecycle Server as a Single Source?

- Independent of a specified set of creation tools
- Repository for all data and documents, not just an Operations or Design specific portal
- Desktop or Web-based implementations
- Simple, easy-to-use interface for Maintenance and Operations



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Why Implement LCS with ISO 15926?

- **'An average of 40% of engineering time is dedicated to finding and validating information from disparate systems' –** "Cost Analysis of Inadequate Interoperability in the U.S. Capital Facilities Industry", National Institute of Standards and Technology, Office of Applied Economics.
  - **Avoidance Costs –** *money spent to prevent interoperability problems from occurring*
  - **Mitigation Costs –** *money spent to correct problems once they occur*
  - **Delay Costs –** *money lost due to schedule slippage*

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Some numbers to set the stage …

- **As a % of Total Installed Cost (TIC)**
  - **Potential Savings for an Interoperability Program.**

For a "small" $50,000,000 USD project

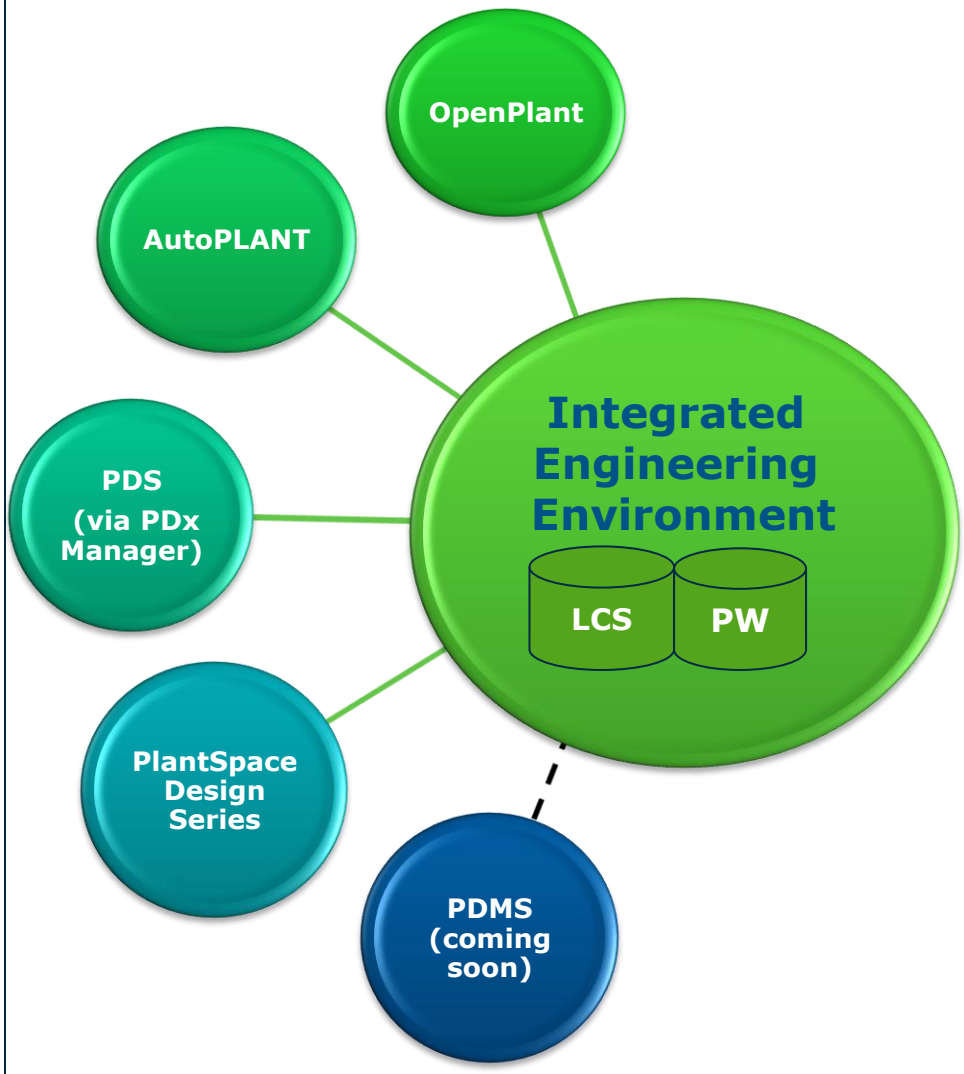
NIST Study - Estimated Savings	Engineering	Construction	O&M
Architects and Engineers - %TIC	0.96%	0.14%	0.01%
Architects and Engineers	**$ 478,844**	$ 69,886	$ 7,464

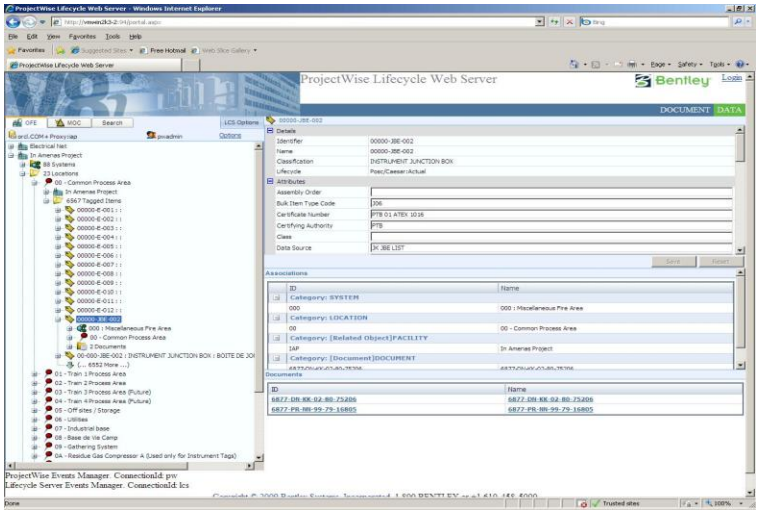
NIST Study - Estimated Savings	Engineering	Construction	O&M
Owner Operators - %TIC	0.19%	0.24%	2.41%
Owner Operators	$ 96,600	$ 120,015	**$ 1,206,464**

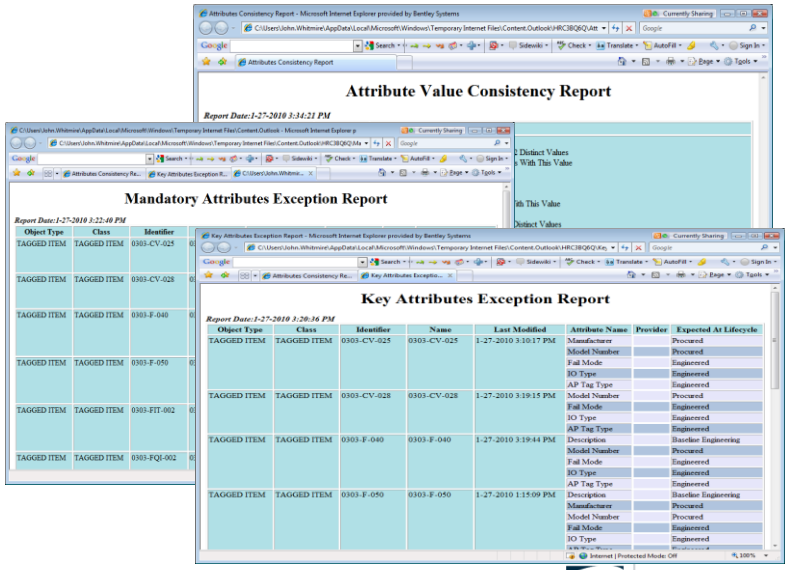
***numbers are on a per annum basis**

Lifecycle Server Rapid Deployment Toolkit – leverage ISO 15926 and LCS core functionality to deliver ROI to our clients in *weeks* not *years.*

Lifecycle Server Rapid Deployment Toolkit







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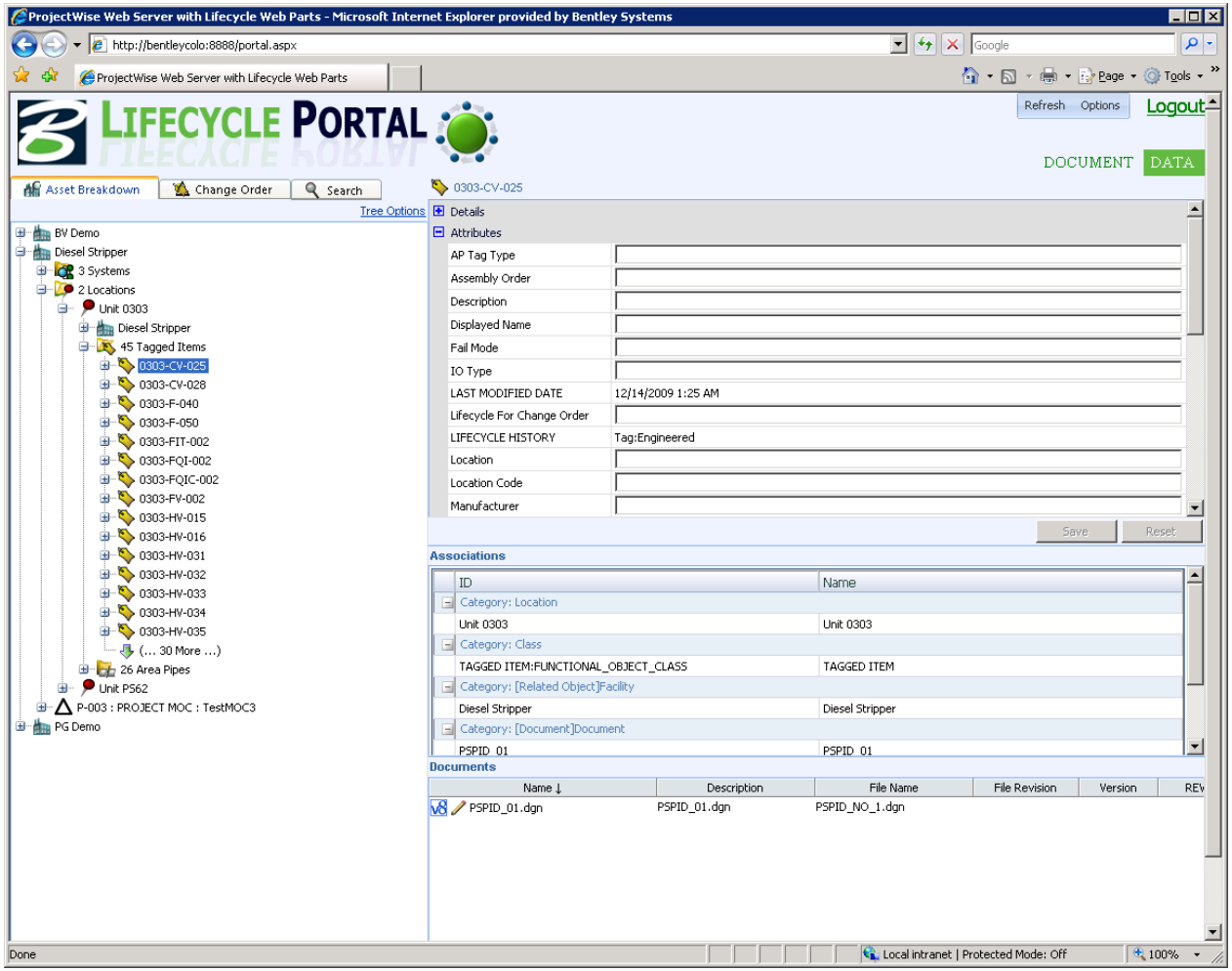
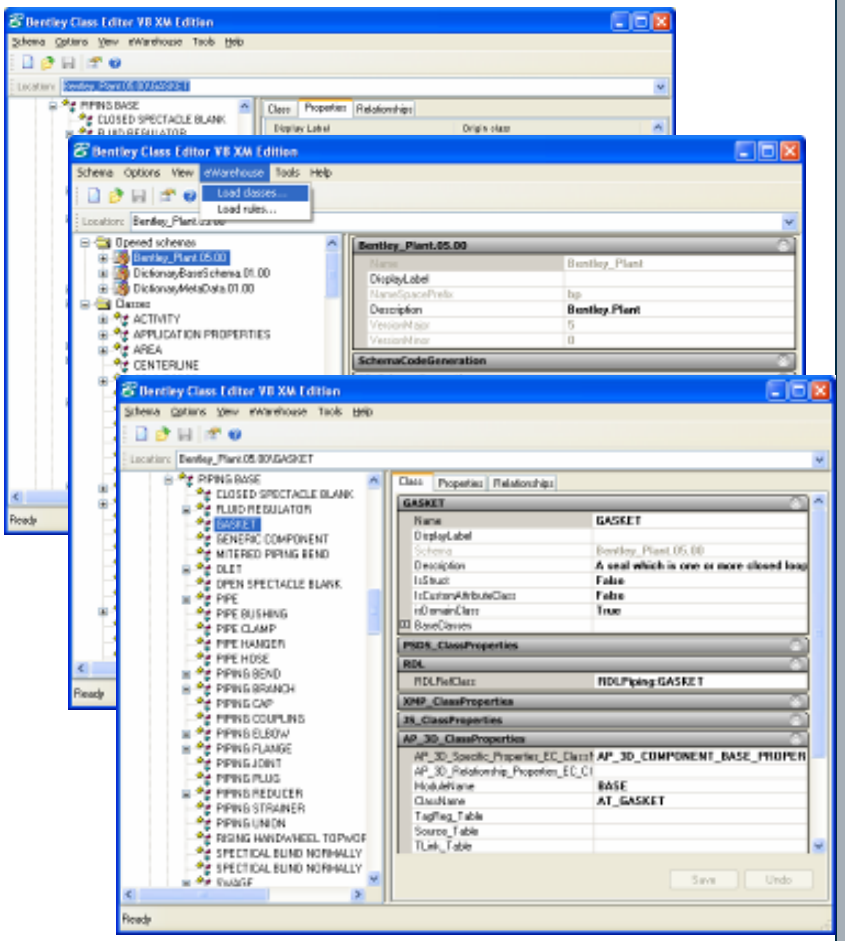
LCIM & ISO 15926 on the web



Bentley Class Editor is used to build and maintain OpenPlant Schema

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



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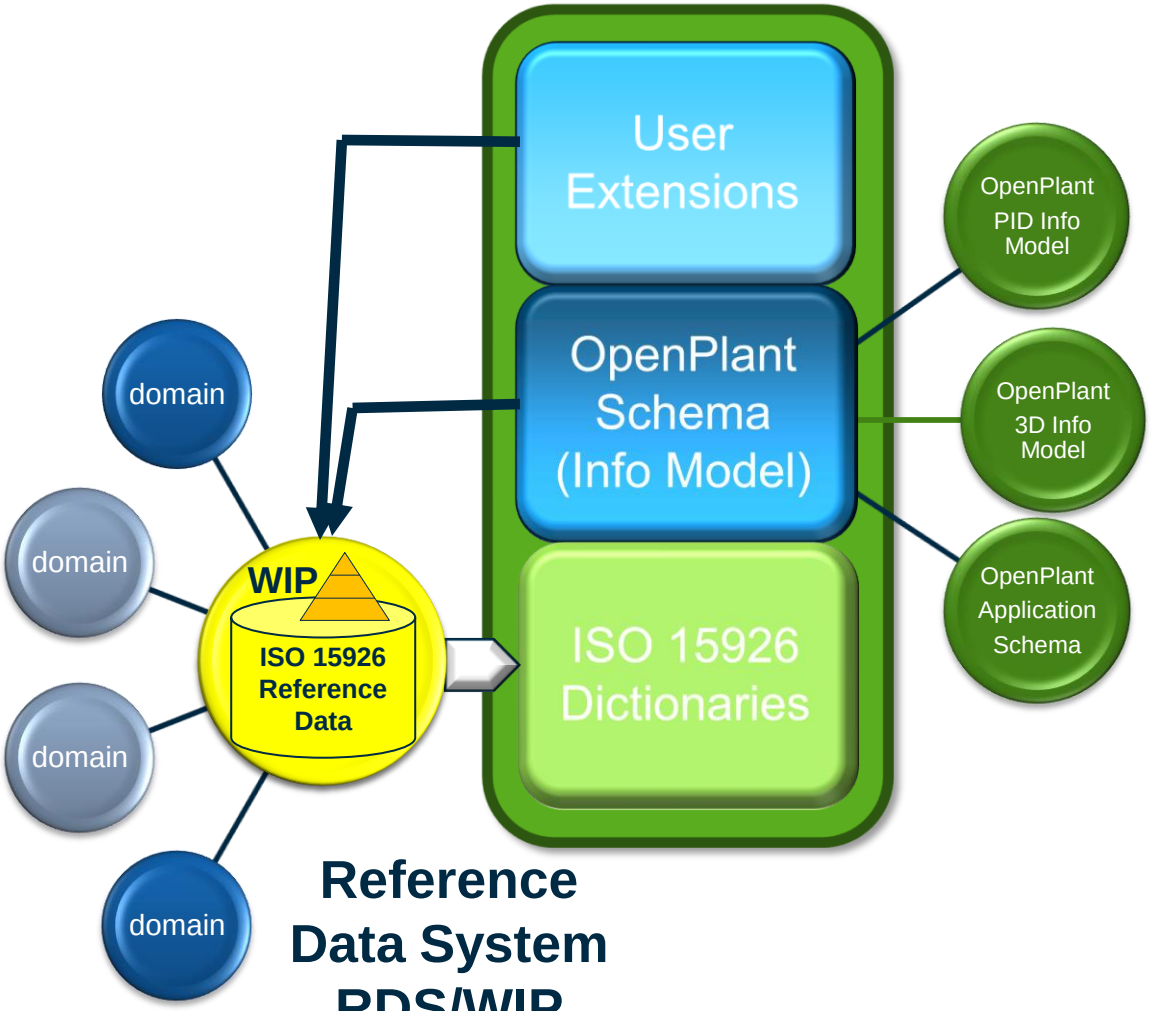
What is the OpenPlant Schema?



- Open
  - Ownership remains with the author
- Flexible/Adaptable
  - Change as changes happen
  - Reduced administration burden
- Future proof

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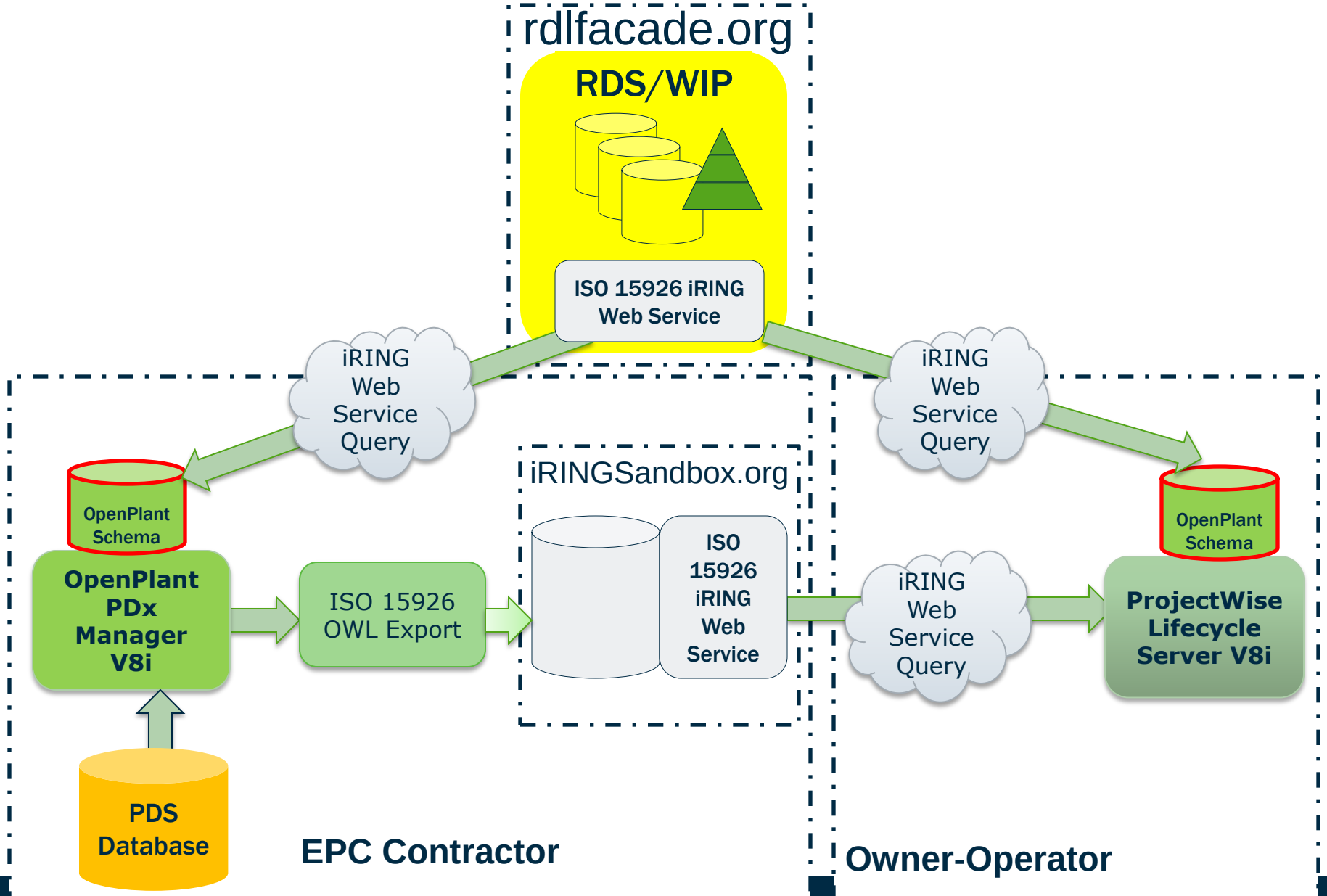
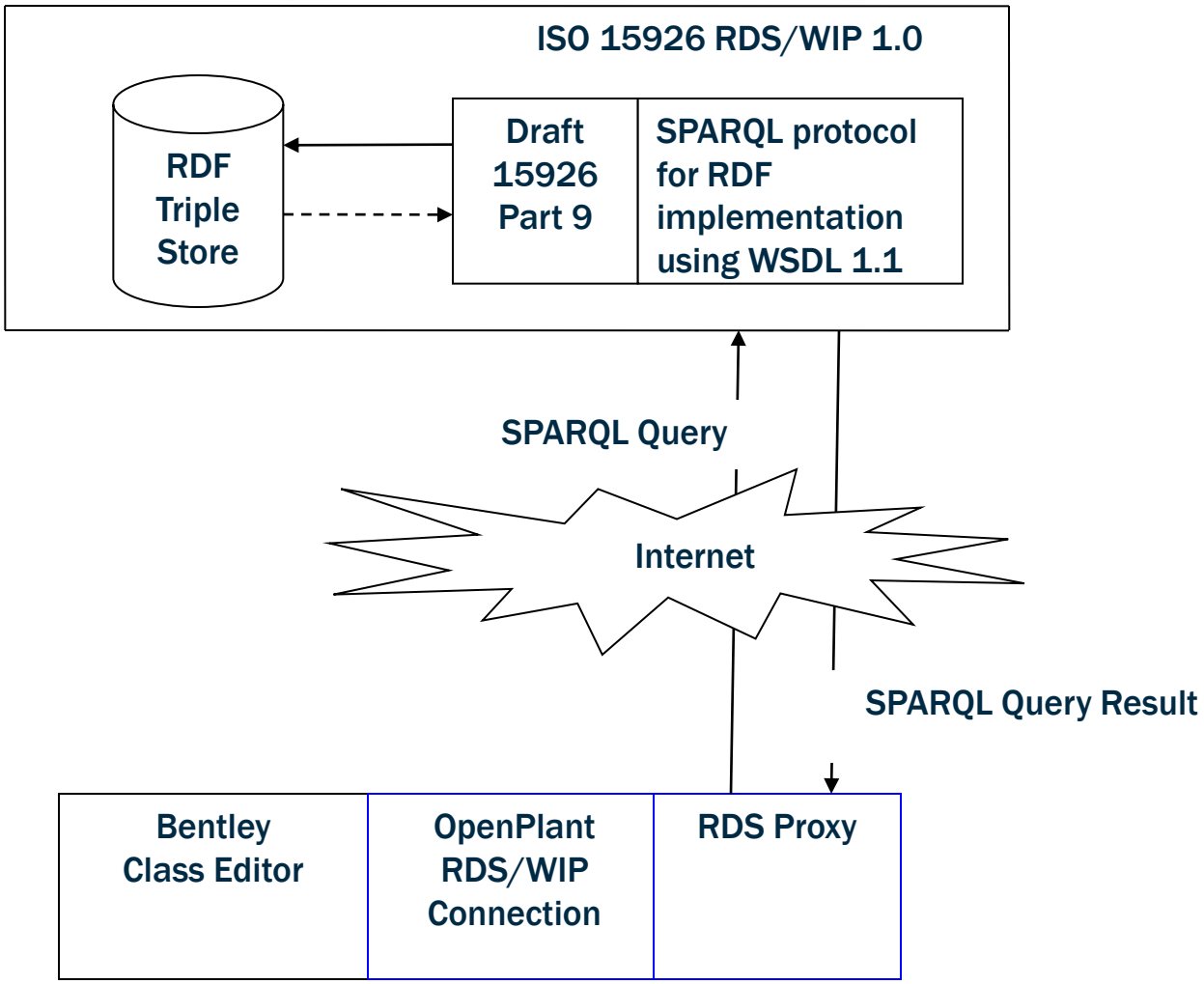
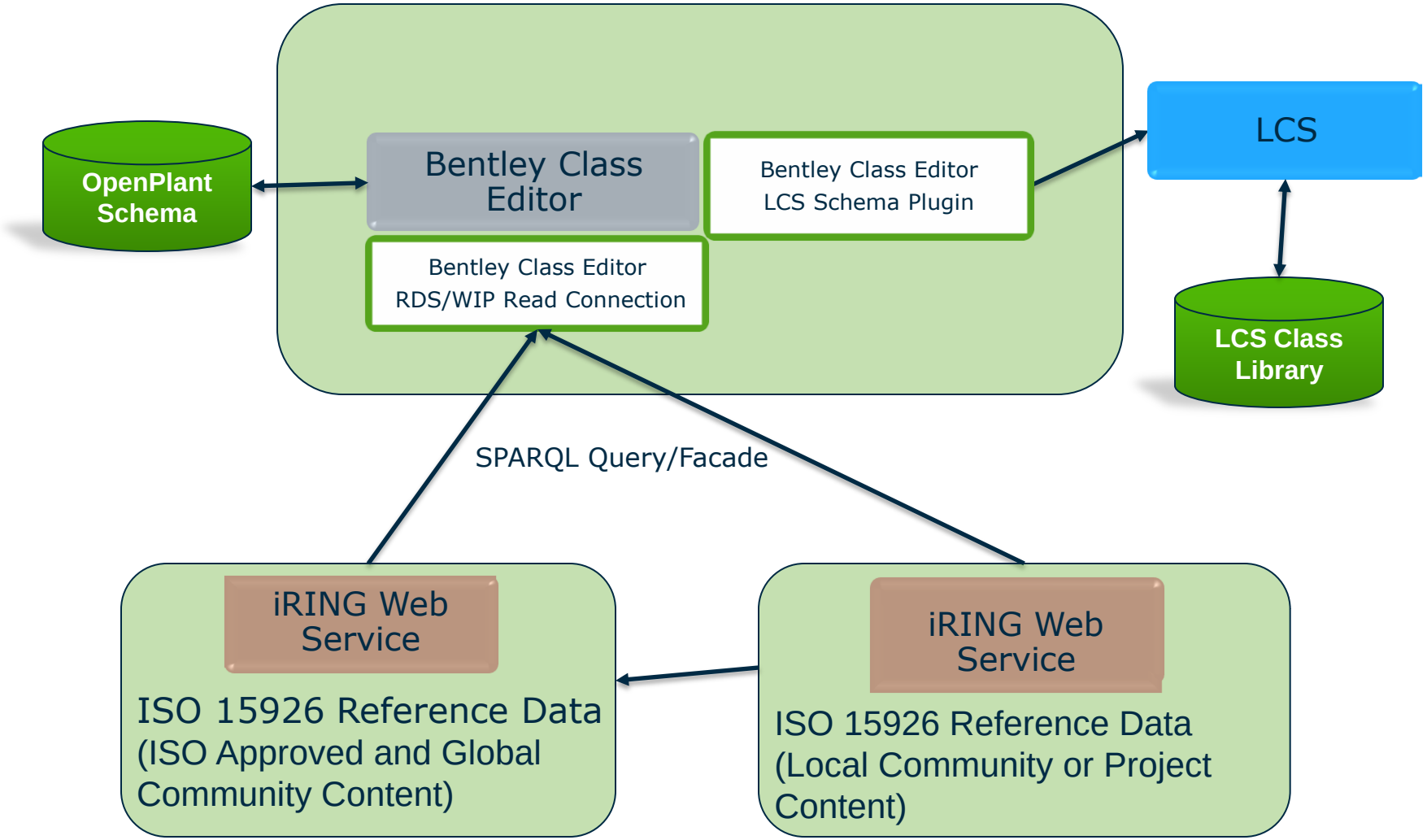
EPC to O-O Data Exchange Scenario



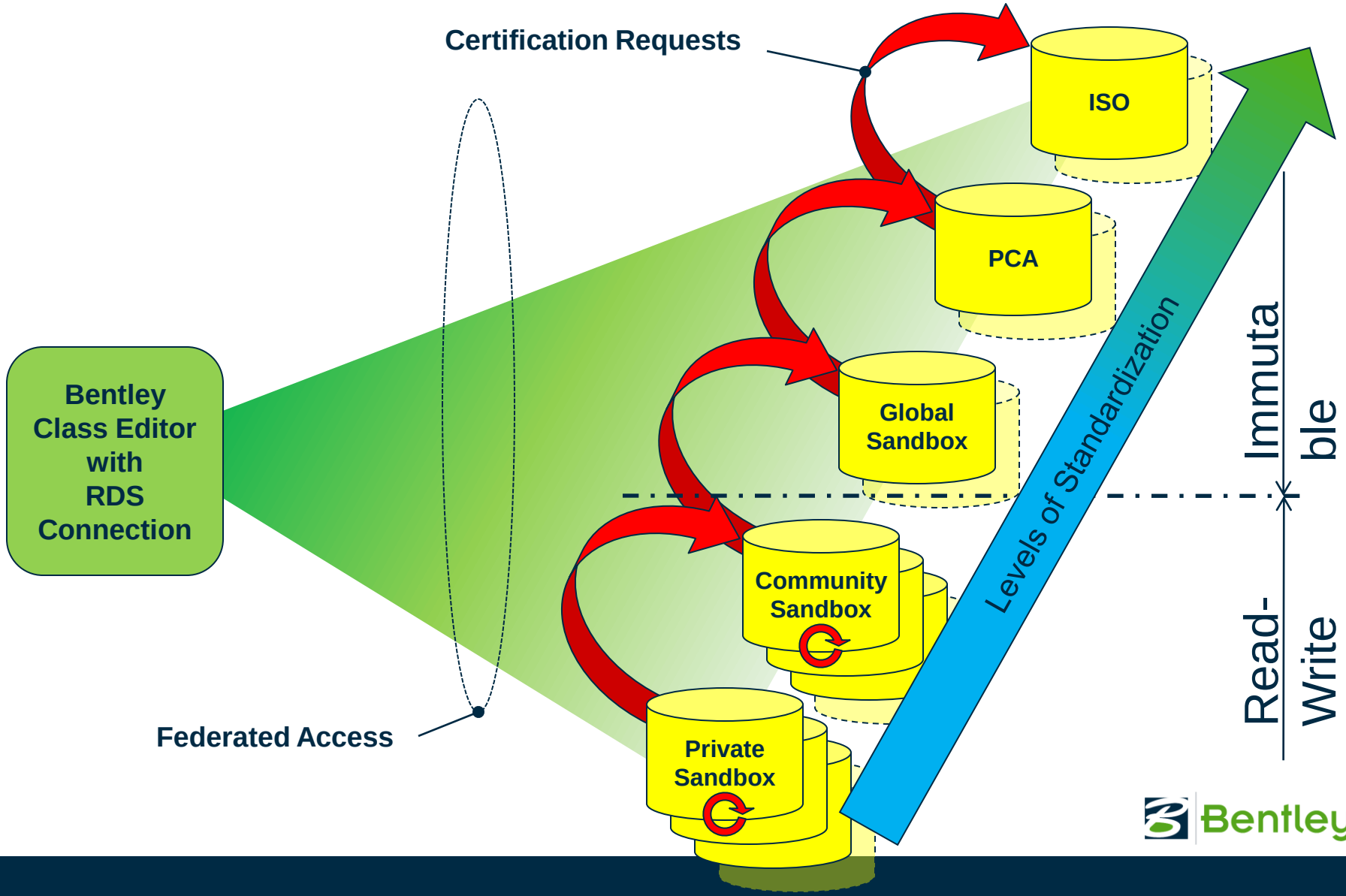
Overview of Bentley Class Editor RDS/WIP Connection



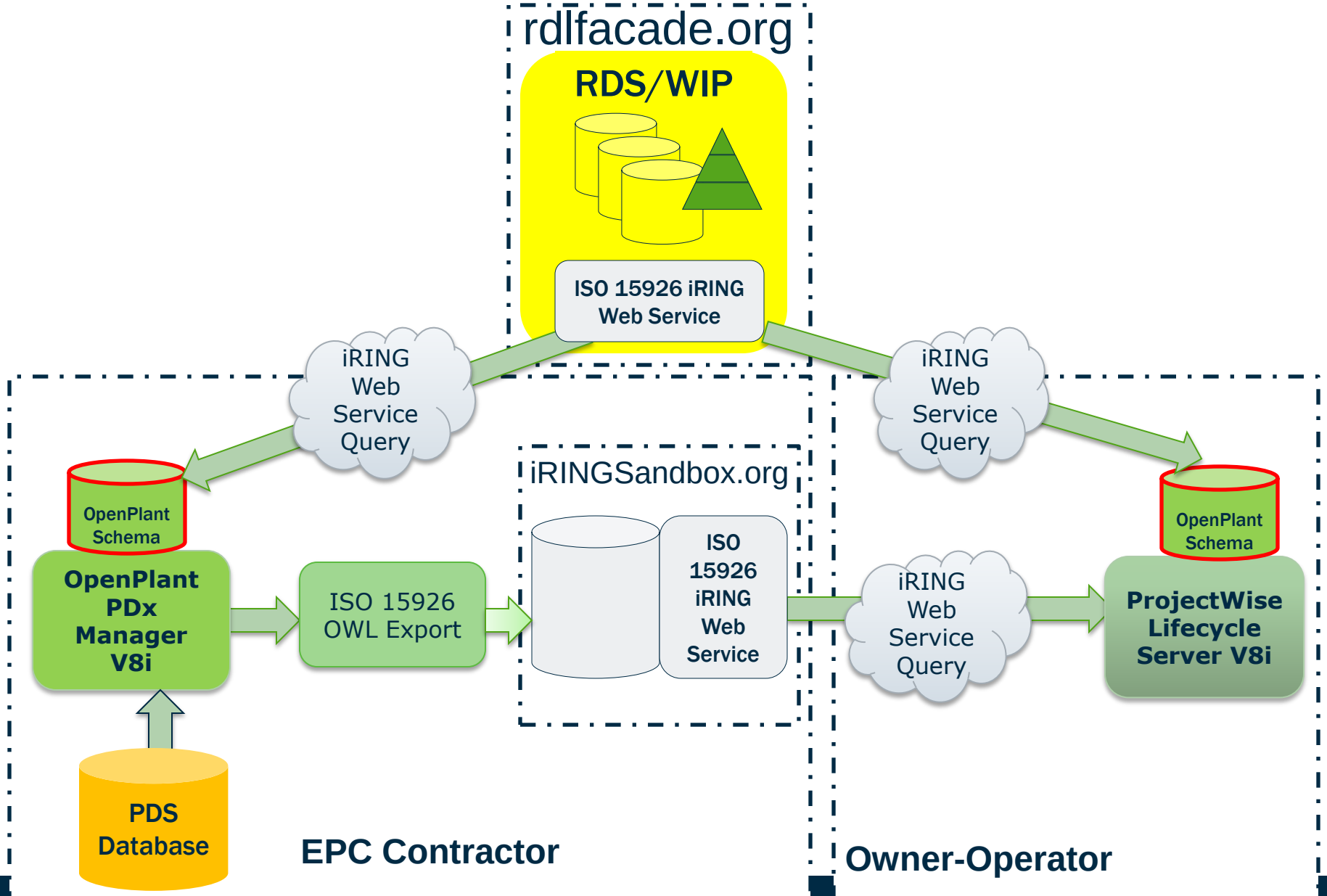
Class Editor RDS/WIP Read Connection



Reference Data Federation



EPC to O-O Data Exchange Scenario



Take-Aways

- Adoption and participation in ISO 15926 is a benefit to the entire industry
  - Bentley is actively collaborating to accelerate industry adoption of ISO 15926
- Interoperability is a key driver
- OpenPlant products use ISO 15926 Reference Data natively
- **Remember: Interoperability using ISO 15926 is a journey, with many destinations!**
- Increase efficiency and Remove barriers
- Maximize your return on human and financial investment

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Thank You!!

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