

MIMOSA/PCA Operations & Maintenance Special Interest Group

Mon, 27 May 2013



Agenda

- Background and requirements for the SIG
- Relationship to other SIGs and broader community
- Deliverables, Status and Results
- Conclusions, issues and plans for further work

Overall SIG Mandate

▪ Purpose

- develop and publish input to MIMOSA and PCA which properly incorporates the Operations and Maintenance oriented concepts and methods established by the OpenO&M initiative and certain ISO standards (including ISO 15926 and ISO 18435) in the joint MIMOSA/PCA solution set
 - output from the SIG published in the annex of the ISO OGI TS along with the resulting updates (proposed and actual) to the related standards
 - works for the consistency and the quality of the PCA reference data in their defined domain and for making these data completely compliant with the data model in ISO 15926 Part 2.
- Facilitate discussion degrees of interoperability required to support the complete life-cycle based on agreed-upon open, supplier and geographically neutral standards and specifications
 - Supports the improvement of the composite, evolutionary architecture used in the OGI Pilot, using ISO 15926 for the Reference Data Library, along with a portfolio of other appropriate existing standards to enable the levels of interoperability required to support the use cases incorporated in the OGI Pilot



Relationship to other SIGs and Broader Community

▪ Community Setting

- The SIG shall ensure that the oil and gas industry achieves interoperability of O&M data with Engineering data by:
 - enabling bidirectional consistency of engineering and O&M data throughout the facility lifecycle
 - Producing outputs that shall be used in real industry projects and lead to extensions of and/or updates to ISO 15926 and/or MIMOSA CCOM which will be codified in the ISO OGI Technical Specification

▪ External Relationships

- **SIG hosts the OGI Pilot and packages results as input to ISO OGI TS**
 - will contribute to industry Use Cases, Compliance Data Sets and Specifications/Standards used in the OGI Pilot activities
 - Provides input to ISO TC184/WG 6 working on the ISO OGI TS based on the proven results in the OGI Pilot
- **PCA/MIMOSA IT Architecture SIG, PCA Geometry SIG, Proteus 2 SIG, MMT SIG**
- **EDRC Project**
 - Common requirements for HEED and OGI Pilot
 - Focused mappings for specific equipment data areas



Scoping - SIG

- Interoperability from an O&M Perspective
 - Enable the operation of systems performing in an agreed upon process
 - Process exemplified by the chosen use cases
 - Trusted systems agree to take over particular tasks within a use case
- OGI Pilot as the vehicle

Interoperability Versus Integration

The New Industry Solutions Process

- Project specific solutions process - Integration
 - Use cases, custom code and testing are all project specific
 - Integration risks are borne by Owner/Operator and Integrator
 - Expensive and high risk to implement and sustain (20% - 25% annual recurring cost)
 - Not repeatable, lower quality due to project specific code base
- Industry-driven Solutions Process - Interoperability
 - Requirements Driven – The use case approach by OpenO&M is a good example of this
 - Industry Foundation Architecture – Open standards **incorporated by reference**
 - Industry compliance data sets are developed and managed by industry
 - ISO TC 184 OGI TS is an example of an activity that sets forward a ‘Target Industry Foundation Architecture’ and codifies piloted industry solution
 - Suppliers develop, maintain and license compliant adaptors as COTS products
 - Enables repeatable and scalable industry-driven solutions for **Oil and Gas** shared with other elements of **Critical Infrastructure**
 - Guided by Owner/Operators with assistance from service companies and standards bodies

Various Interoperability Definitions

- **IEEE:** The capability...
 - of two or more systems or elements to exchange information and to use the information that has been exchanged.
 - for units of equipment to work together to do useful functions.
 - that enables heterogeneous equipment, generally built by various vendors, to work together in a network environment.
 - of two or more systems or components to exchange information in a heterogeneous network and use that information.
- **SEI:** The ability of a set of communicating entities to
 - (1) exchange specified state data
 - (2) operate on that state data according to specified, agreed-upon, operational semantics
- Data/information interoperability is necessary, but only part of the requirement for Interoperable Systems of Systems



Oil and Gas Interoperability (OGI) Solutions Process

- Results in a supplier-neutral OGI Ecosystem for more flexible and sustainable solutions that are also repeatable and scalable
 - OGI Ecosystem is the **“un-walled garden”** for industry and provides basis for System of Systems Interoperability between solutions components
 - Driven by industry use cases identifying, defining and solving owner/operator prioritized business problems
 - Leverages a portfolio of international and industry standards which are **incorporated by reference**
 - Data is managed on a full life-cycle basis improving quality, while reducing cost and solutions implementation time
 - Uses the OGI Pilot to develop and validate use cases in conjunction with COTS solutions components which are enabled by the OGI Solutions Architecture
 - Participating COTS solutions must demonstrate compliance for defined use cases and industry data sets developed by EPCs



Oil and Gas Interoperability (OGI) Pilot

- Purpose
 - A vehicle to enable **pragmatic, incremental transformation to standards-based interoperability**
 - Industry needs a broadly available, **supplier neutral** way to determine which standards and methods are **ready to be used in real projects** spanning the full life cycle for plants and platforms.
 - Provides **gap analysis** for continuous improvement
 - Provides basis for system of systems **interoperability validation**
- Scope and Deliverables
- Methods
- Publication



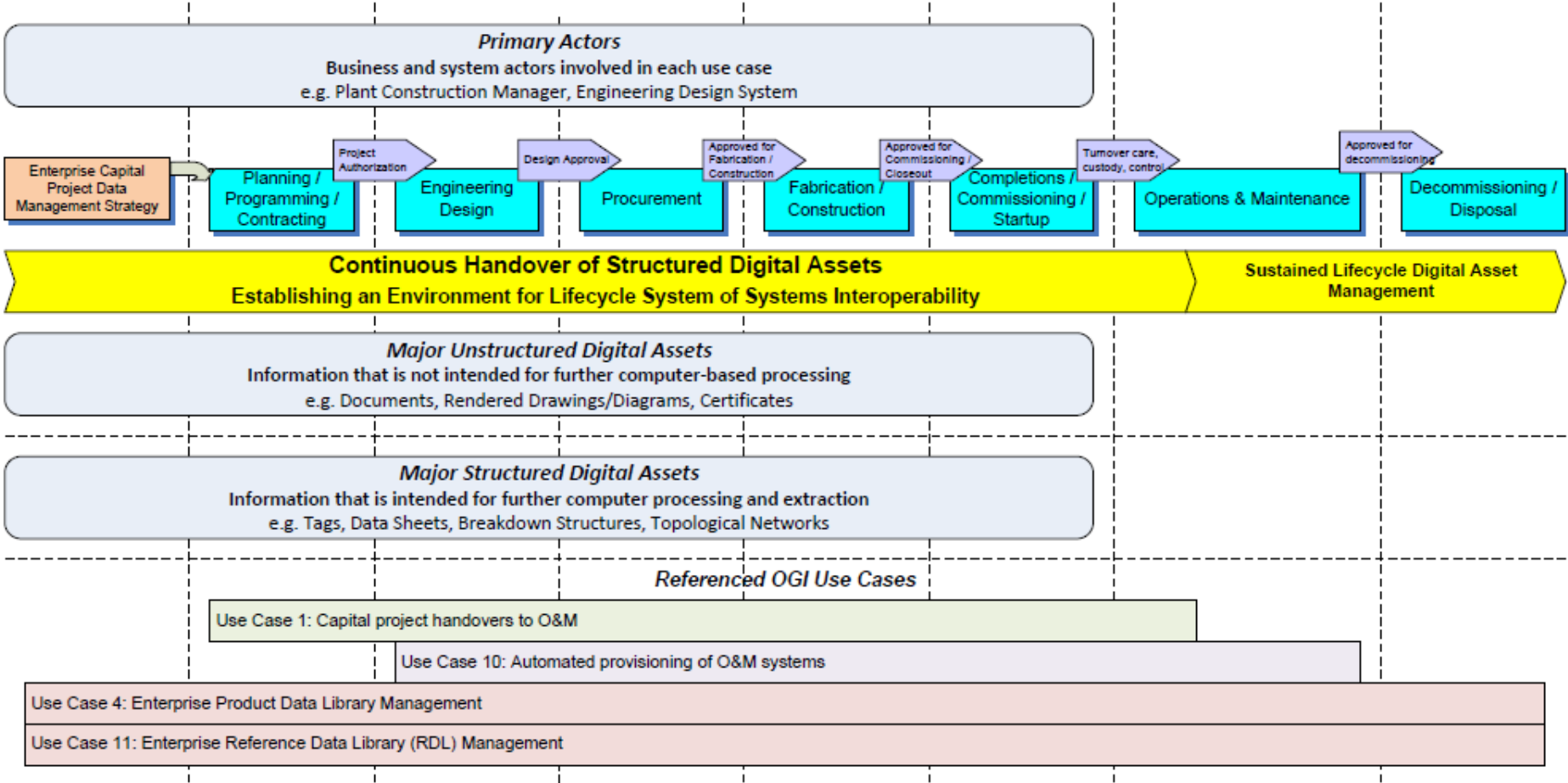
Oil and Gas Interoperability (OGI) Pilot

- Purpose
- Scope and Deliverables
 - Covers Core Asset Life-cycle – From Capital Project through O&M
 - Provides basis for unambiguous **compliance testing**
 - Pilots Key OpenO&M, PCA and SPE DSA-TS Use Cases
 - Develops industry **compliance data sets**
 - **Industry Foundation Architecture** -Leverages a Portfolio of supplier-neutral, Industry and ISO Standards and Specifications which are incorporated by reference
 - Working through **Joint MIMOSA/PCA O&M SIG**, OGI Pilot provides basis for **ISO OGI Technical Specification**, which will **incorporate by reference** industry use cases, compliance data sets, specifications/standards
- Methods
- Publication



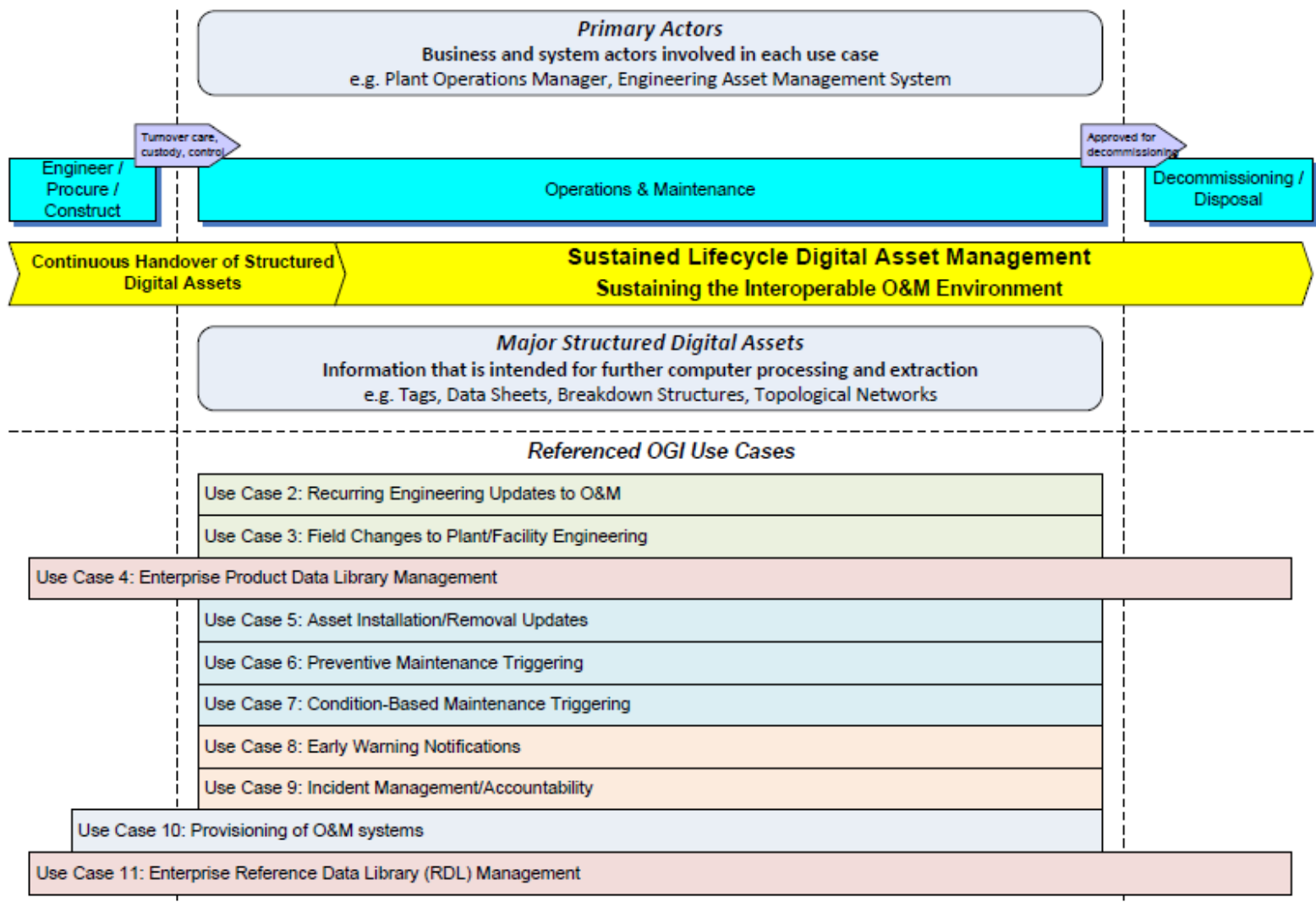
Oil and Gas Interoperability (OGI) Pilot

OGI Pilot Business Use Cases Roadmap - Part 1 (Summary)



Oil and Gas Interoperability (OGI) Pilot

OGI Pilot Business Use Cases Roadmap - Part 2 (Summary)



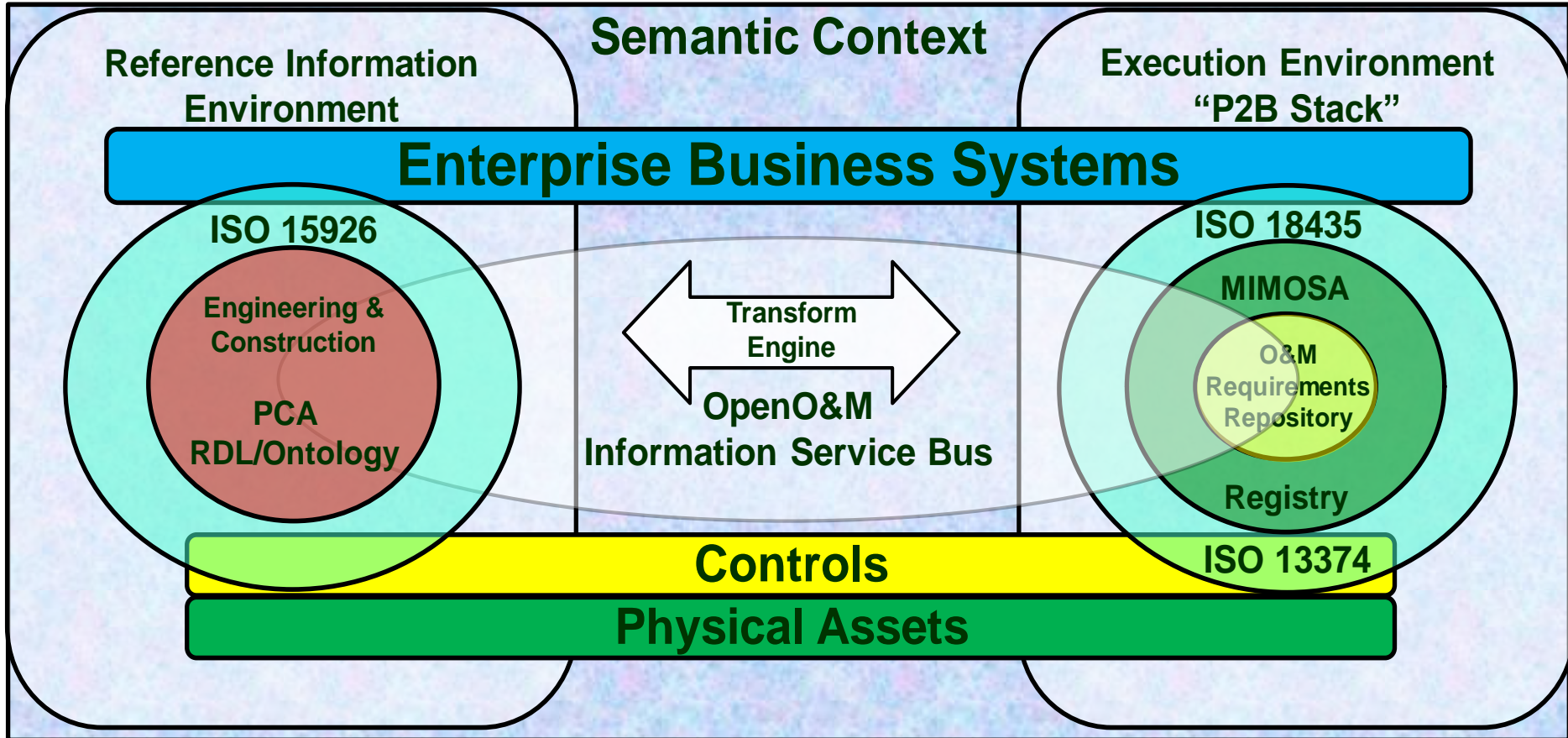
Oil and Gas Interoperability (OGI) Pilot

- Purpose
- Scope and Deliverables
- Methods
 - **Owner/Operator leadership**
 - **Use case driven**
 - **Cooperatively aligned with PCA: Joint MIMOSA/PCA O&M SIG**
 - **Managed like a true capital project-** Worley Parsons-Lead EPC for downstream pilot
 - **Pilot phasing driven by requirements** to be incorporated, resources and capabilities
 - Pragmatic focus on **Commercial Off The Shelf (COTS)** products
 - **Suppliers assume responsibility for compliance** of own products
- Publication – All working documents and results are on the mimosa website at www.mimosa.org



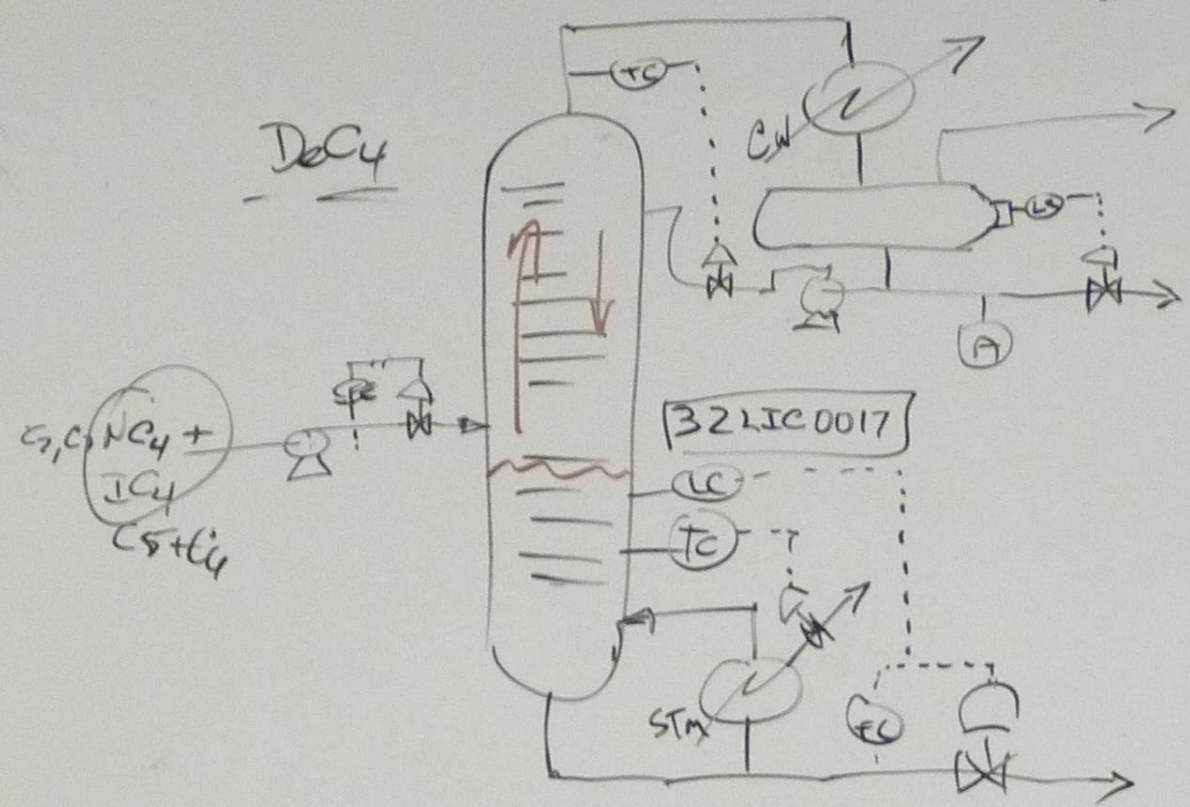


Context for Collaboration

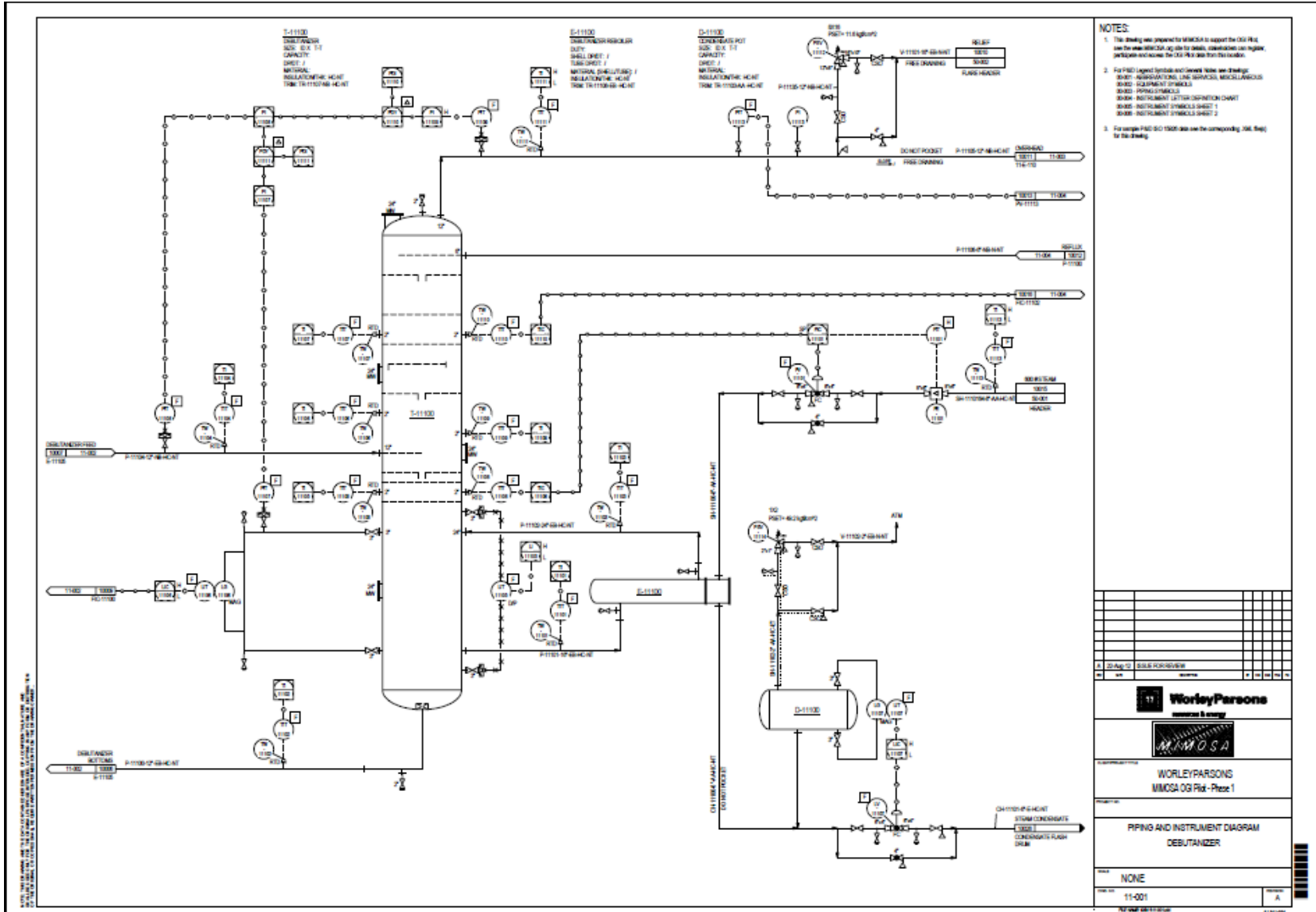


DeButanizer Fractionator

FlowSheet (PFD)



Debutanizer P&ID 001- Worley Parsons OGI Pilot Run as a true Capital Project Uses Standard Engineering Artifacts



- NOTES:**
- This drawing was prepared for MIMOSA to support the OGI Pilot Run. See the user MIMOSA log file for details, observations and input. Participation includes the OGI Pilot Run that has been.
 - For P&ID legend symbols and General Note see drawing:
 - 0001 - ASSOCIATION LINE SYMBOLS, MECHANISMS
 - 0002 - EQUIPMENT SYMBOLS
 - 0003 - Piping SYMBOLS
 - 0004 - INSTRUMENT LETTER ASSIGNMENT CHART
 - 0005 - INSTRUMENT SYMBOLS SHEET 1
 - 0006 - INSTRUMENT SYMBOLS SHEET 2
 - For example P&ID 001 1100A use the corresponding '001' field for this drawing.





 WORLEYPARSONS
 MIMOSA OGI Pilot - Phase 1

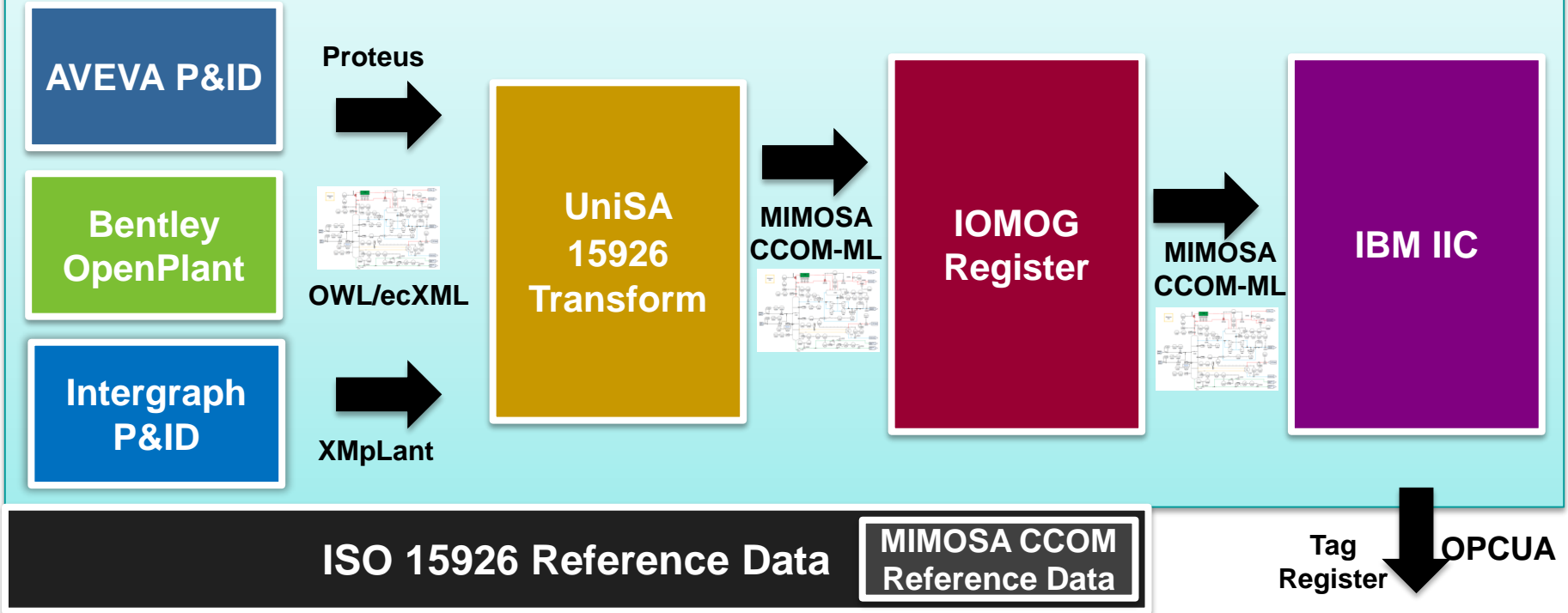
PIPING AND INSTRUMENT DIAGRAM
 DEBUTANIZER

NONE

11-001

2012 ISA Automation Week Live OGI Pilot Demo

IBM ISBM Implementation Provides Connectivity Environment



Worley Parsons-Lead EPC for Downstream OGI Pilot

- Developing and Managing Reference Engineering Data Set
- Providing standard engineering artifacts used for EPC process



**Cormac
5 Minutes**

OGI Pilot

Preliminary Plans for 2013

- Phase 0 – 2010 – Basic POC
- Phase 1 – 2012 – Core Capital Project Capabilities
 - TBD-Cleanup/publish all Phase 1.0 Artifacts
- Phase 2.0
 - Switch to PCA RDL endpoints
 - Added Content
 - Equipment Data Modeling and Exchange – Aligned with HEED and new FIATECH equipment data exchange project (Common equipment for HEED and OGI Pilot)
 - 2 or more EPCs providing different aspects of the project data (with possible iRING)
 - Added Content
 - 3 or more automation suppliers (Emerson, Invensys, Rockwell Automation...)
 - Participation by one ERP supplier (IFS) with immediate focus on CMMS/EAM
 - Participation by Microsoft (ChemRA)
 - Improvements in peer to peer O&M systems provisioning – Use Case 10
 - Preliminary results from SPE DSAT-TS Drilling Automation
 - Improvements in 2D geometry exchange for Proteus based export routines



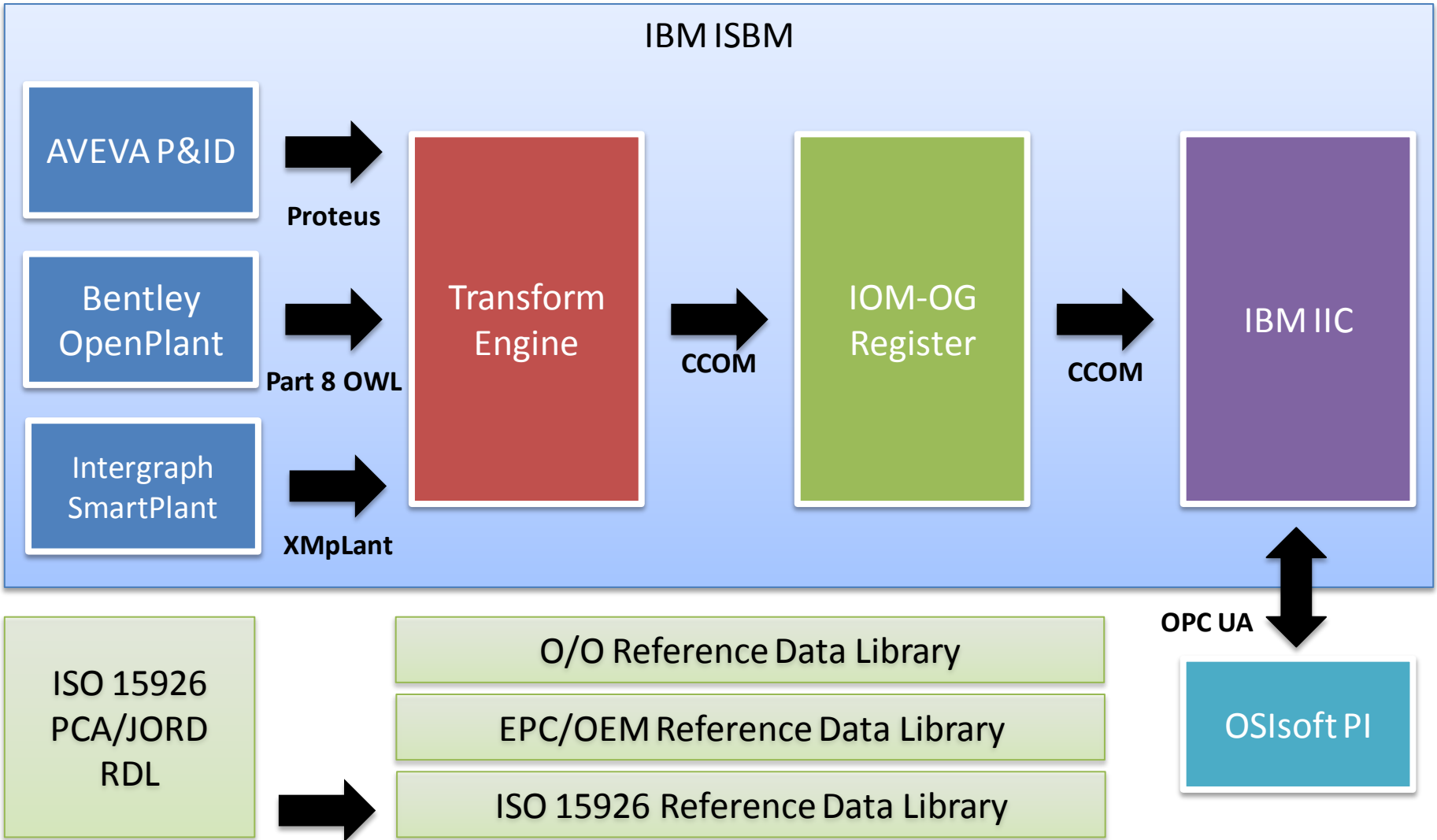
Data Handover Registers to support Safe, Sustainable Engineering/Operational Excellence

	Name	EPC Feed	EPC Detail Design	EPC Purchasing/ Vendor	Construction	Regulatory or Important	M.C. and Static Comm.	Dynamic Commissioning	Maintenance	Reliability	Inspection	Operations
1												
2	Master List Registers											
3	Cathodic Protection		X		X	X	X		X			
4	Document Register	X	X		X	X	X	X	X	X	X	X
5	Electrical Register	X	X	X	X	X	X	X	X	X		X
6	Fire Suppression Equipment Register		X	X	X	X	X	X	X	X		X
7	Flange Management Register		X				X	X	X			X
8	Instrument, Telecom, and Fire & Gas Index Register	X	X	X	X	X	X	X	X	X		X
9	HVAC Ducting Register		X		X		X					
10	HVAC Equipment Register		X		X		X		X			
11	Lifting Accessories Register				X	X	X		X			
12	Lifting Appliances Register	X	X		X	X	X		X			X
13	Lighting and Small Power Circuits		X		X		X		X			
14	Line Designation Table Register	X	X	X	X	X	X	X	X	X	X	X
15	Manual Valve Register	X	X	X	X	X	X	X	X			X
16	Mechanical Equipment Register	X	X	X	X	X	X	X	X	X	X	X
17	Pipe Support Register		X		X		X		X		X	
18	Process Isolation Point Register		X				X	X	X			X
19	Safety – Fire Equipment Register		X		X	X	X		X		X	X
20	Safety – Personnel Safety Equipment Register		X		X	X	X		X		X	X
21	Safety – Safety Shower, Eyebath, and First Aid Equipment Register		X		X	X	X		X		X	X
22	Software and Hardware Systems Register		X			X	X					
23	Specialty Items Register		X		X		X	X	X			X
24	Tie-in Register		X				X		X			X
25	Design Data Registers											
26	Blind List Register		X			X	X	X	X			
27	Instrument Control System Register		X		X	X	X	X	X			X
28	Junction Box, Panels, and Cabinets Register		X		X	X	X		X			
29	Lubrication Register		X									
30	Special Tool Register		X									
31	Trace Heating Circuit		X		X		X		X			
32	Weld Supply Register		X									
33	Weight Control Register		X	X		X			X			
34	Nameplate Data Registers											
35	Heat Exchanger Register			X		X	X	X	X	X	X	X
36	HVAC Fan Register			X		X	X	X	X			X
37	Pressure Vessel Register			X		X	X	X	X	X	X	X
38	Tanks and Storage Vessels			X		X	X	X	X	X	X	X

OGI Pilot

Phase 2 Baseline now using PCA Jord Endpoints

Engineering Handover and O&M Provisioning



Deliverables

- Gap Analysis out of OGI Pilot Phases
- Evaluation Matrix
- RDL additions based on Gap Analysis
- Contribute to Pilot Documentation