



**Fiatech: Focused on the Future**

2013 Member Meeting

St Julien, Boulder, CO

# **Capturing Equipment Data Requirements Using ISO 15926 & Assessing Conformance (EDRC) and OGI Pilot**

*Manoj Dharwadkar, Bentley Systems; Alan Johnston,  
MIMOSA; Mark Palmer, NIST*

## *EDRC and OGI Pilot Outline*

- *20 min*, Overview of EDRC and its synergy with OGI Pilot & other projects
- *10 min*, EDRC current status & progress (schedule)
- *30 min*, Discussion & Feedback

# Fiotech Interop Vision Paper (2012) Calls to Action

## Business Value

1. Develop a sustainable long-range plan to deliver meaningful progress - identify easiest opportunities first, and build business case for financing the cost of change
2. Create a business case analysis showing cost/time savings on specific information exchanges in current work processes

## Culture Changes

1. Develop Best Practices to help adopters of new interoperability technologies and tools understand the impact on their people
2. Use case studies and research to explore and define key people issues to develop the most effective 'enablers' for the successful uptake of these new tools and technologies

## Industry Calls to Action for Advancing Interoperability (enabling standardized, structured information exchanges)

### Process Management

1. Develop common process mappings, definitions and views to align and communicate information exchanges and workflow management
2. Establish a globally accessible automated & integrated supply chain system: incl. tracking industry IE, materials & manages access

### Information Management

1. Develop a robust, common methodology for conformance and interoperability testing incl. well-defined test models for IE requirements
2. Initial mappings moving towards harmonizing between ISO 15926 and BIM (ISO/PAS 16739) to benefit both process facilities and buildings

# EDRC Advancing Interoperability Linkages to Fiatch Interop Vision Paper

Industry Calls to Action for Advancing Interoperability  
(enabling standardized, structured information exchanges)

*Information management* **Develop a robust, common methodology for conformance and interoperability testing**

*Culture Changes* Develop Best Practices to help adopters of new interoperability technologies and tools understand the impact on their people

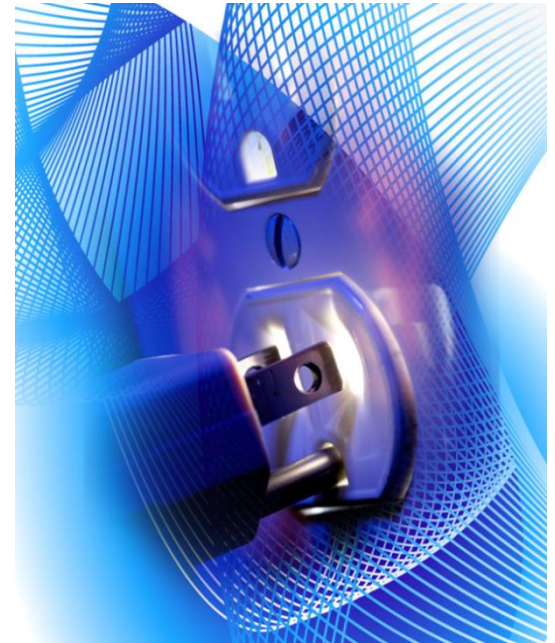
*Process management* Develop common process mappings, definitions and views to align and communicate information exchanges and workflow management

# EDRC Business Motivation & Objectives

Achieve plug and play interoperability and major savings for capital projects

## Objectives:

- Deliver & demonstrate ISO 15926 conformance
- Establish common understanding on using ISO 15926 across all Fiatech Projects



# EDRC Synergy with OGI Pilot

OGI Pilot is the primary driver for EDRC:

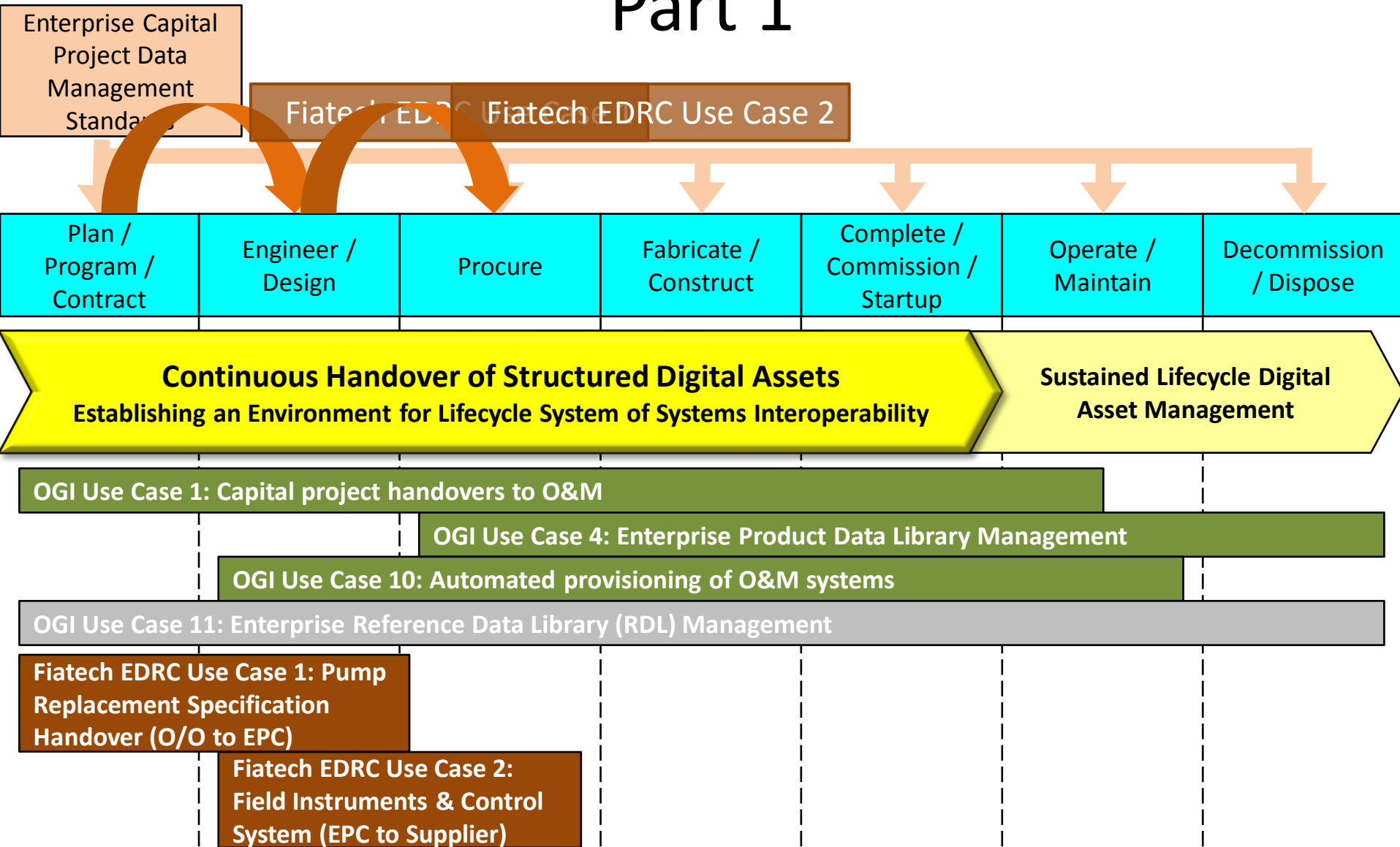
- OGI Phase 1 in 2012 confirmed that the lack of rigorous methods for defining and assessing conformance to ISO 15926 is a major barrier to industry adoption
- EDRC scope is a small subset of OGI with focus on Conformance
- EDRC findings and deliverables will be applied in the OGI Pilot on broader use cases and end-to-end testing

# Oil and Gas Interoperability (OGI) Summary

- The **OGI Ecosystem**
  - Is the open industrial interoperability ecosystem
  - Is driven by owner/operator defined, fully dressed use cases
  - Use cases leverage reusable scenarios, with implementation details
  - The scenarios provide reusable “utility services” for the ecosystem
  - Provides the interoperability test-bed for defined use cases
- The **OGI Pilot** is the OGI Ecosystem development program
  - Collaboratively managed under the Joint MIMOSA PCA O&M SIG
  - Coordinated with Fiotech projects including EDRC, JORD & IIMM
  - All OGI Pilot Artifacts are published on **MIMOSA.org**
- The **ISO OGI Technical Specification**
  - Is under development by ISO TC 184/WG 6
  - IS based fully on proven output from the OGI Pilot
  - Incorporates standards by reference (e.g. ISO 15926, MIMOSA CCOM)

# OGI Pilot Business Use Cases Roadmap

## Part 1

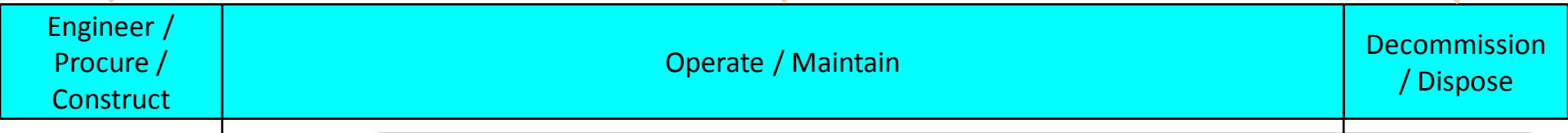




# OGI Pilot Business Use Cases Roadmap

## Part 2

Enterprise Capital  
Project Data  
Management  
Standards



OGI Use Case 2: Recurring Engineering Updates to O&M

OGI Use Case 3: Field Changes to Plant/Facility Engineering

OGI Use Case 4: Enterprise Product Data Library Management

OGI Use Case 5: Asset Installation/Removal Updates

OGI Use Case 6: Preventive Maintenance Triggering

OGI Use Case 7: Condition-Based Maintenance Triggering

OGI Use Case 8: Early Warning Notifications

OGI Use Case 9: Incident Management/Accountability

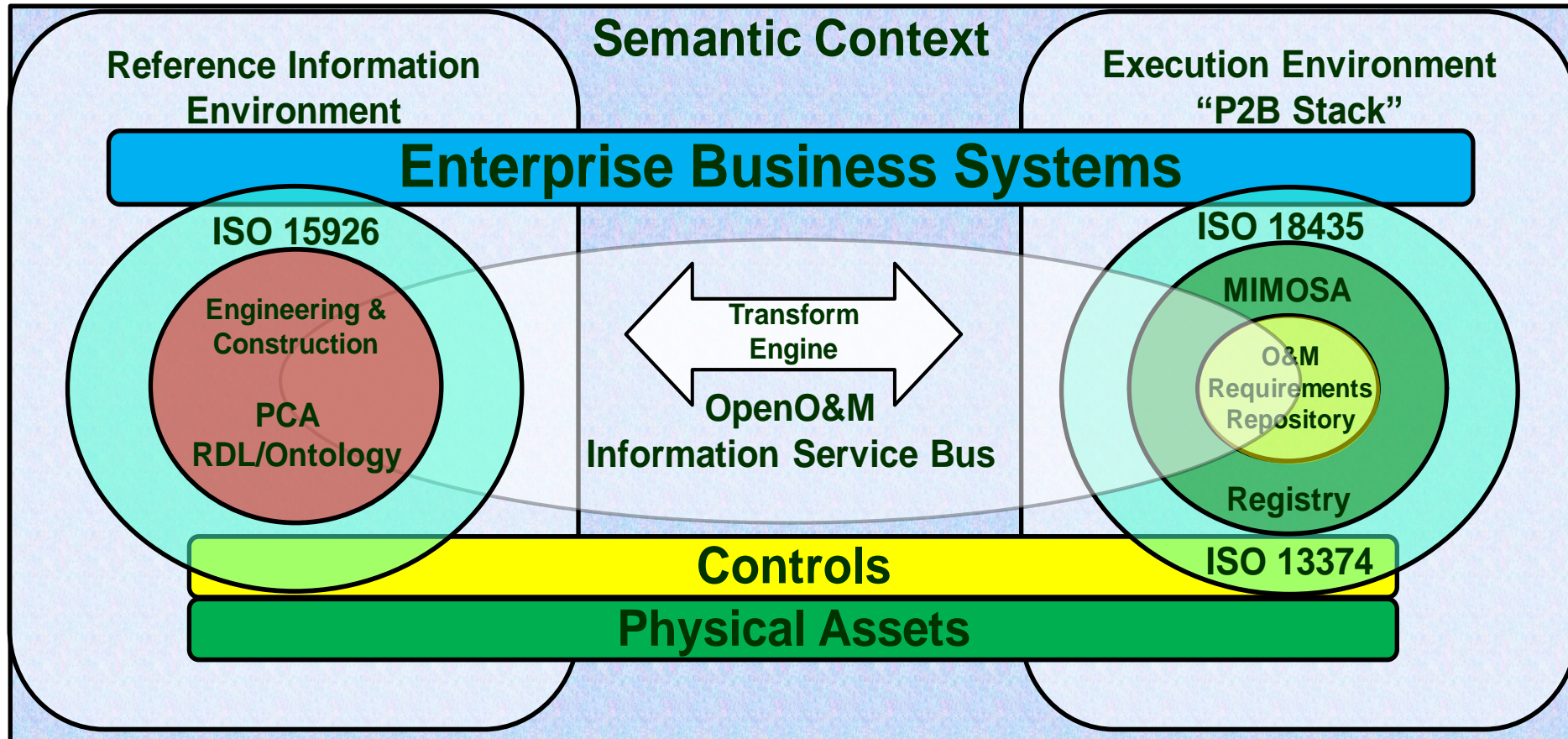
OGI Use Case 10: Provisioning of O&M systems

OGI Use Case 11: Enterprise Reference Data Library (RDL) Management

# OGI Ecosystem Standards Landscape

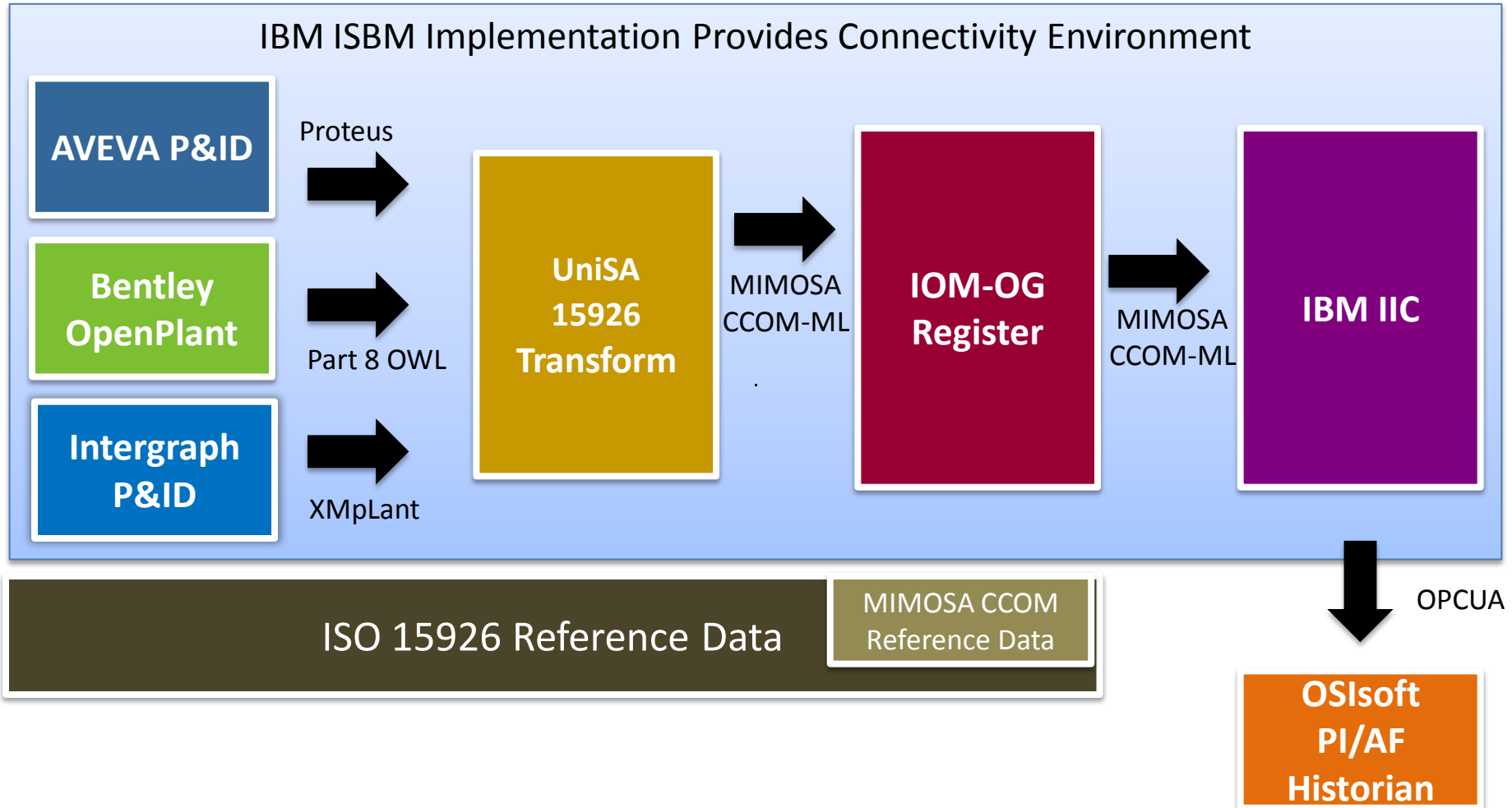


## Context for Collaboration



ISO TC 184/WG 6

# OGI Pilot Phase 1+ Application Architecture



# Together Each Achieves More

- **EDRC Objective:** Deliver & demonstrate ISO 15926 conformance
- **EDRC Project Lead:** Manoj Dharwadkar, Bentley Systems Inc.
- **EDRC Technical Leads:** Mark Palmer, NIST; Alan Johnston, MIMOSA; Rob Brawn, CH2M HILL
- **EDRC Participating Members:**

AREVA	Dow	NIST
AVEVA	Emerson	Siemens
Autodesk	ExxonMobil	Tecgraf/PUC-Rio
Bentley	Fluor	ThomasNet
CH2MHILL	Hatch	Vniiaes
DMS Software Co.	MIMOSA	WorleyParsons

# EDRC Deliverables

- Procedures for specifying and assessing conformance
- Demonstration of successful use of these procedures
- Input to complete core capabilities of ISO 15926
- Industry report



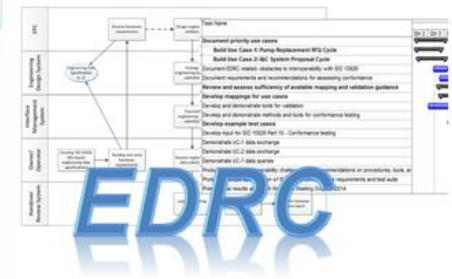
## Project Resume: Capturing Equipment Data Requirements Using ISO 15926 and Assessing Conformance (EDRC)

### Executive Summary

The primary objective of EDRC is to establish a common understanding across industry projects of how to use ISO 15926 and how to assess software conformance to specified ISO 15926 data structures and capabilities. Collaboration with MIMOSA on the OGI Pilot is a cornerstone of this project. EDRC will focus on a narrow scope limited to equipment and system data that is common with the OGI Pilot and HEED project, and consistent with the objectives of the ISO 15926 Information Patterns (IIP) project.

### Problem Statement

Recent industry pilot projects of ISO 15926, including the MIMOSA and PCA Oil and Gas Interoperability (OGI) pilot project in 2012, have confirmed that the lack of rigorous methods for defining and assessing conformance to ISO 15926 is a major barrier to industry adoption and deployment of this evolving standard.



### Business Motivation

With the results from this project incorporated into improved methods and documentation for conformance specification and testing and the software vendors offering conforming implementations, industry will be able to achieve plug and play interoperability and major cost and time savings for capital projects.

# EDRC Project Interfaces

- Leveraging reference data and sample datasets developed in other projects (IIP, IIMM, HEED, and OGI)
- JORD (Joint Operational Reference Data)
  - RDS (Reference Data Services)
  - Validation and conformance
- POSC Caesar Association (PCA) MMT (Modeling, Methods and Technology) SIG
  - Agreement on core set of templates
  - Specification of implementation details
- Instrumentation & Control SIG (Special Interest Group)
  - RDL for Use Case 2
- PCA TAB (Technical Advisory Board)

# Current status & progress (schedule)

- Progress to date
- Input to ISO
- Key Challenges
- Next Steps (leads for key areas)

# EDRC Progress to Date

- Developed priority use cases
  - Use case 1: Pump Replacement Specification, driven by OO
  - Use case 2: Field Instruments and Control System, EPC to supplier
  - Identifying relevant applications and implementation approaches
- Developed initial template mappings for use case 1
- Identified technical issues and working with MMT to resolve



# Input to ISO

- ISO TC184/SC4/WG3: produces the ISO 15926 standard
  - provides more global participation
  - more modelers than commercial implementers
  - with new involvement by U.S. and recent negative vote on draft Part, committed to complete the core capabilities, including conformance
- Eleven “Parts” for ISO 15926
  - some complete, some in development (8, 9, 10, 11 and 12)
  - requirements for conformance defined in various Parts
    - based on implementation and deployment selections
- Part 10, Conformance testing
  - just starting, New Work Item to be submitted to ISO
- EDRC: develop and test recommendations for Part 10

# EDRC Key Challenges

- Common understanding of data exchange vs. data query (online access)
- Template approval process and PCA RDL Change Management
- Alignment with JORD on validation and conformance
- Active engagement of major software vendors

# Next Steps

## EDRC Schedule

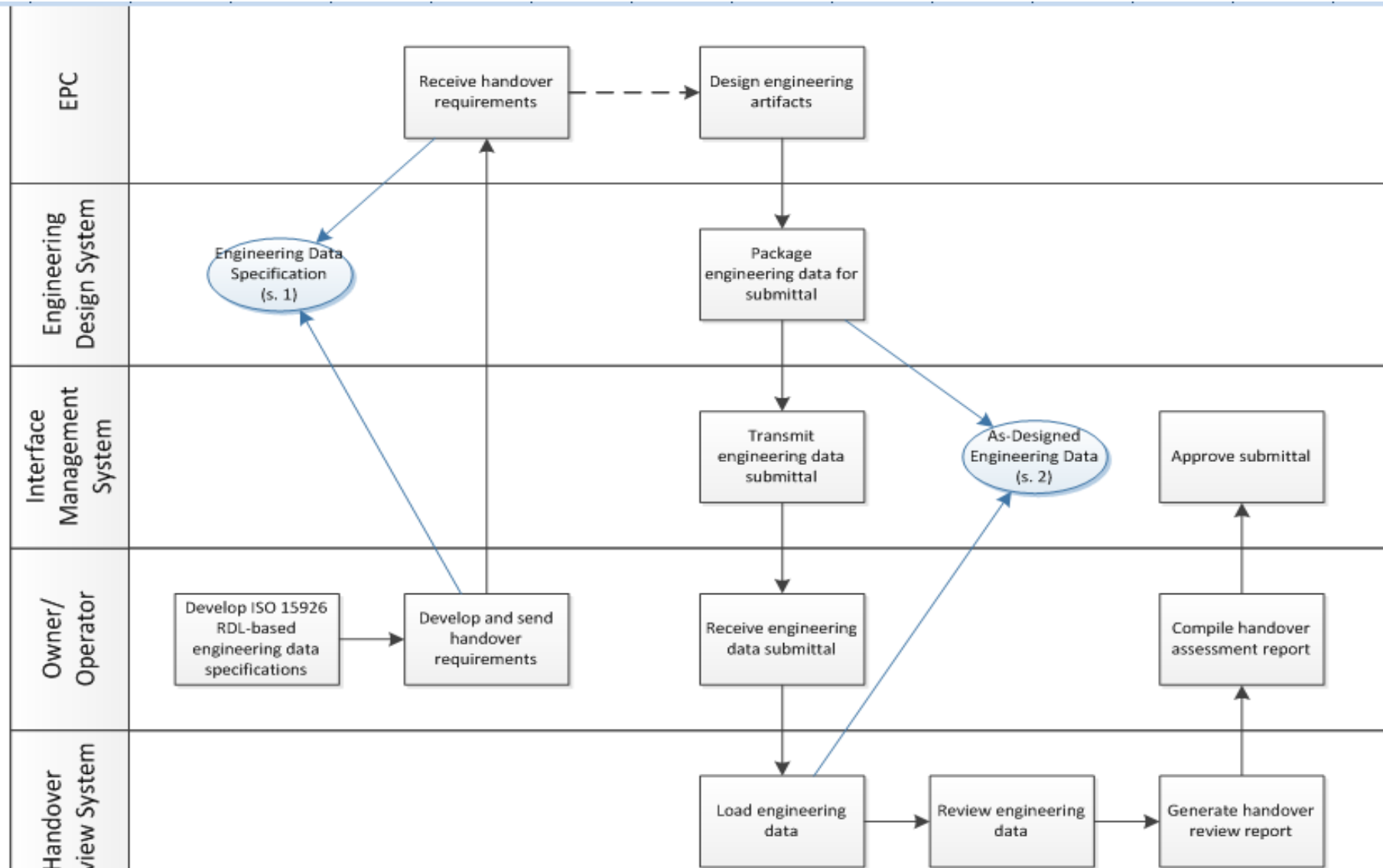
Task Name	2014						
	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4
<b>Document priority use cases</b>	▶						
<b>Build Use Case-1: Pump Replacement RFQ Cycle</b>	▶						
<b>Build Use Case-2: I&amp;C System Proposal Cycle</b>		▶					
Document EDRC related obstacles to interoperability with ISO 15926		▶					
Document requirements and recommendations for assessing conformance		▶					
<b>Review and assess sufficiency of available mapping and validation guidance</b>		▶					
<b>Develop mappings for use cases</b>			▶				
Develop and demonstrate tools for validation		▶					
Develop and demonstrate methods and tools for conformance testing				▶			
<b>Develop example test cases</b>				▶			
Develop input for ISO 15926 Part 10 - Conformance testing			▶				
Demonstrate UC-1 data exchange							▶
Demonstrate UC-2 data exchange							▶
Demonstrate UC-1 data queries							▶
Produce report on interoperability challenges and recommendations on procedures, tools, and test suites				▶			
Produce example specification of ISO 15926 conformance requirements and test suite				▶			
Present final results at Fiatech Member's Meeting October 2014							◆ 10/7

- Leads for key areas

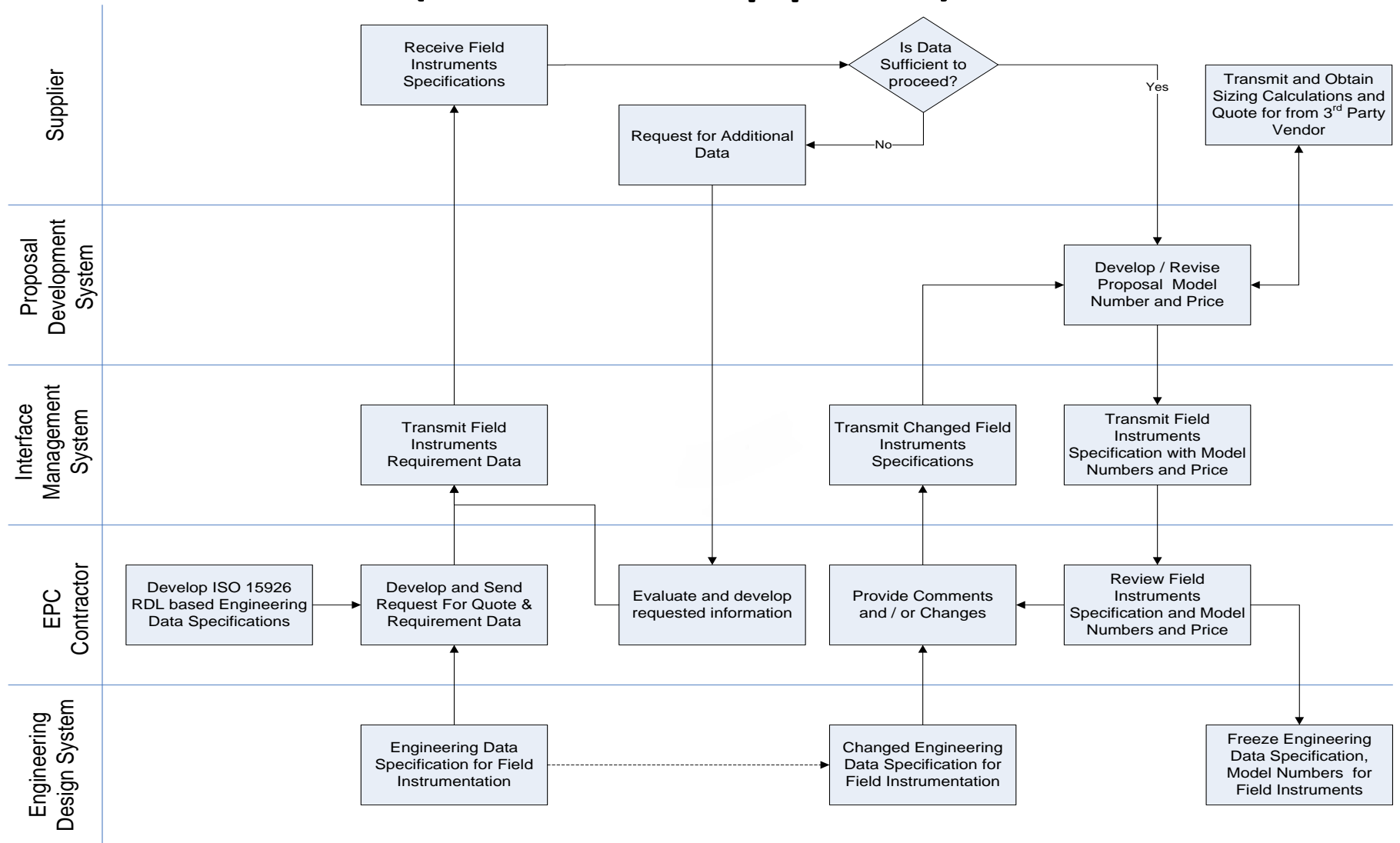
# Project Discussion & Feedback

- Use case: questions - feedback
- EDRC proposed conformance demonstration
  - Approach and schedule
  - Engagement of software implementers (COTS, iRINGTools)
- Input to ISO and project interfaces
- Expanding the involvement of software implementers
- Next steps & path forward
  - plans for March '14 Conference

# Use Case 1- Pump replacement specification (O/O to EPC)



# Use Case 2: Field Instruments (EPC to Supplier)



# Use Case 2: Control System (EPC to Supplier)

