ISO15926 and Join Projects
- Overview and Progress -

PCA FORUM 2010 AND MEMBERS MEETING

20-21 October 2010, Kuala Lumpur

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Content

- POSC Caesar Association (PCA)

- ISO 15926 – A short introduction

- Join Projects - Overview and Progress
  - Integrated Operations in the High North (IOHN)
  - Equipment Hub (EqHub)
  - RFID
  - iRING
  - Oil and Gas asset management operations and maintenance Interoperability (OGI)
  - Joint Operational Reference Data (JORD)

- How to get involved
  - Join projects
  - Special Interest Groups (SIGs)

- Summary

POSC Caesar Association (PCA)

- PCA is a global, **not-for-profit**, independent **member organization** developing, enhancing, and promoting methodology, technology and solutions for **data interoperability** with special focus on **ISO 15926**

- 37 members in 12 countries on 4 continents

- PCA arranges forums and member meetings every year in:
  - **Asia/Australia**
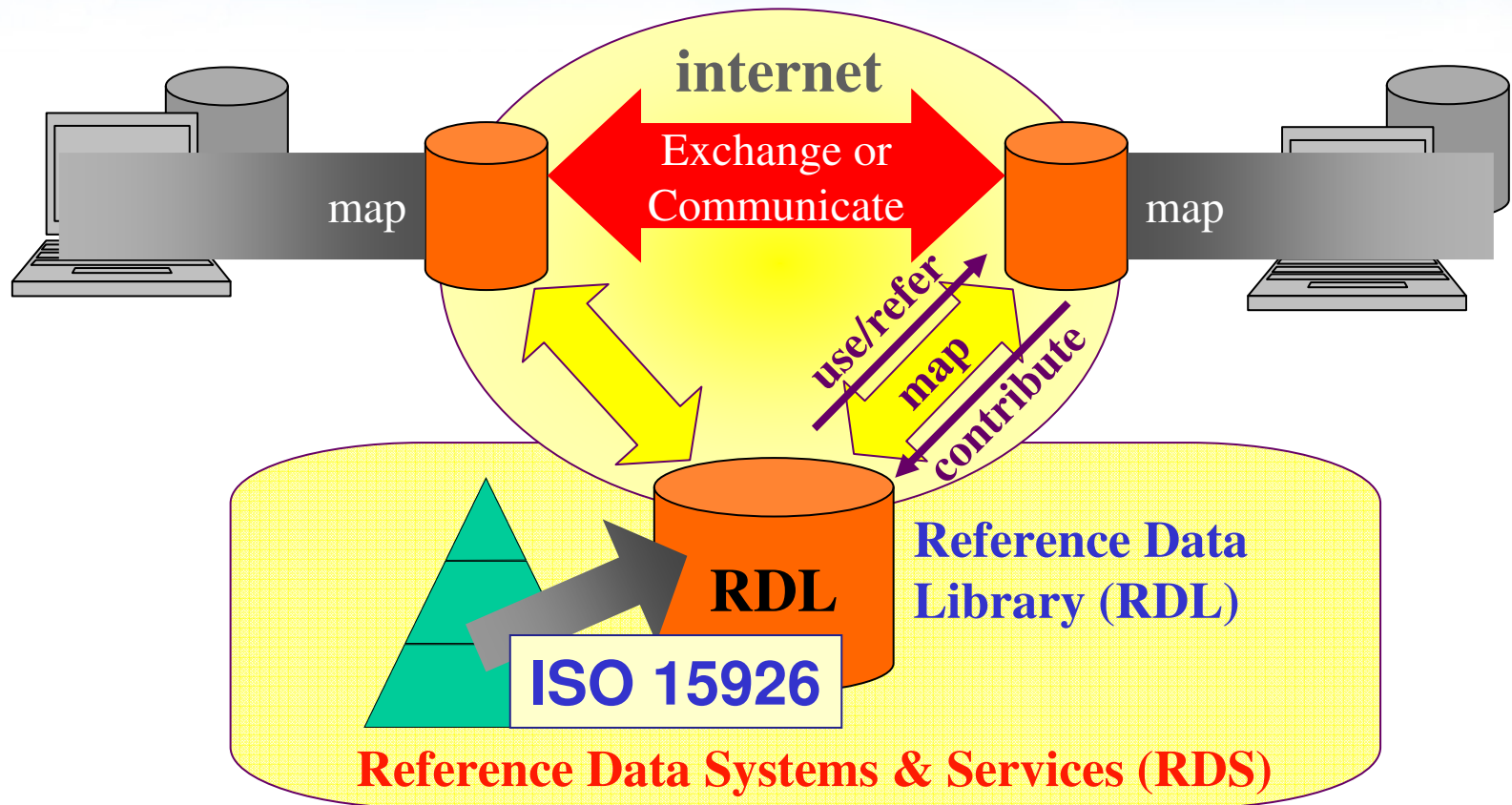 - **Europe/Africa**
  - **America**

**The vision of ISO 15926
data interoperability and life cycle**

P&ID window

Data sheet window

Reservoir window

CAD window
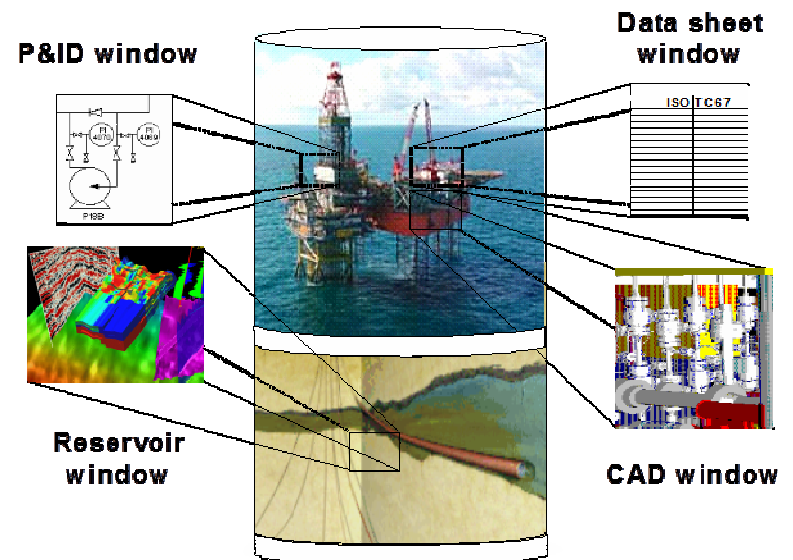
Focus areas so far:
1. Handover EPC - OO   (1993+)
2. Integrated operations   (2004+)
3. Operations and maintenance (2008+)

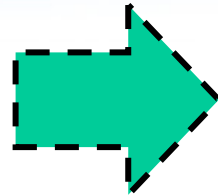# ISO15926 interoperability at its simplest

internet

Exchange or Communicate

map

map

use/refer

map

contribute

RDL

ISO 15926

Reference Data Library (RDL)
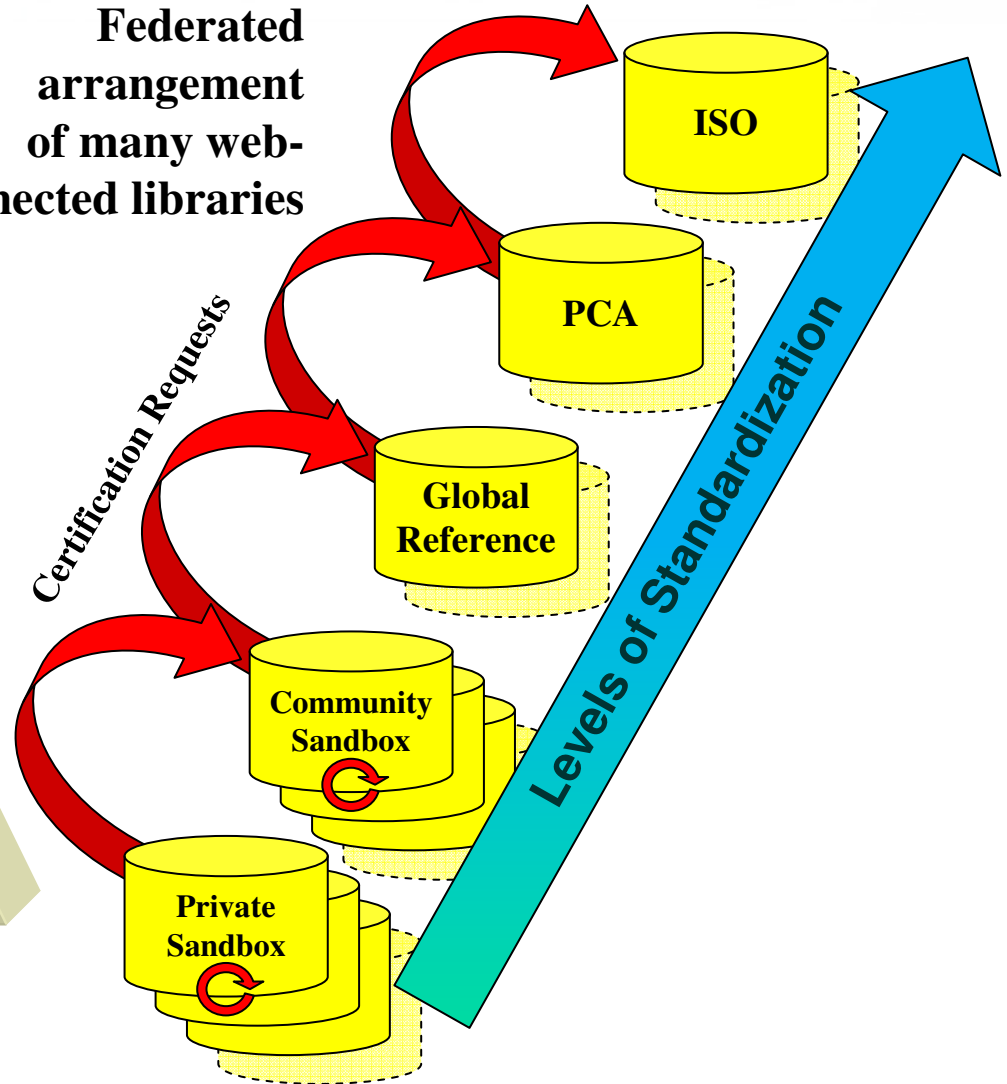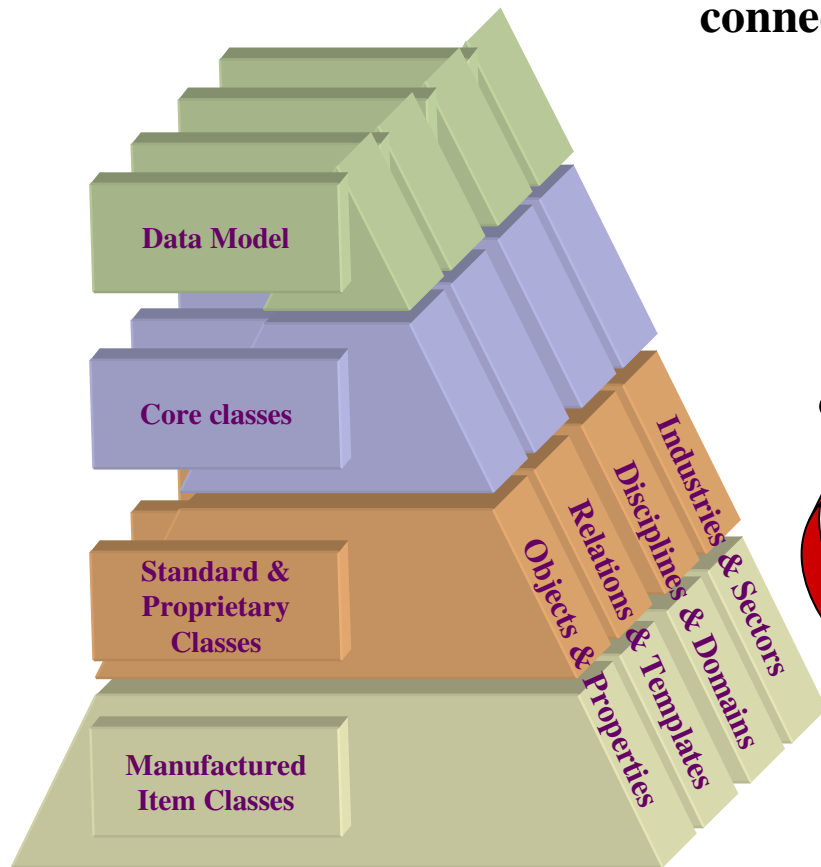
Reference Data Systems & Services (RDS)

Using shared references & sharing references used, reduces business ambiguity & reduces mapping overheads. **Makes interoperability easier and reduces risk & cost.**

Reference data architecture

Logical organization of reference data

Federated arrangement of many web-connected libraries

Data Model

Core classes

Standard & Proprietary Classes

Manufactured Item Classes

Objects & Properties

Relations & Templates

Disciplines & Domains

Industries & Sectors

Certification Requests

ISO

PCA

Global Reference

Community Sandbox

Private Sandbox

Levels of Standardization

www.posccaesar.com

POSC Caesar Association

ISO 15926 stack

Gain

Semantic Web XML file transport

OWL / RDF XML enables validation online

Can be expressed implicitly in XML Schema

High value, high cost resource, available today

Knowledge Mgt

Rule-based Engineering

Technology (SOA, security, ….)

Semantic Web / Ontology

Template Modeling and Methodology

Reference Data Library

Essential for non-proprietary data exchange

Vendor implementations

Information Strategy for IO
An efficient pipeline for real-time transfer and analysis of data

Smarter solutions

Web portals
Web services

Field data
- Health, safety, environment
- Seismic
- Drilling & Completion
- Reservoir & production
- Operation & maintenance

Common XML schemas

Vendor

Operator

Vendor

Infrastructure for web services
Oil & Gas Ontology[1]
Based on ISO 15926

Smarter data
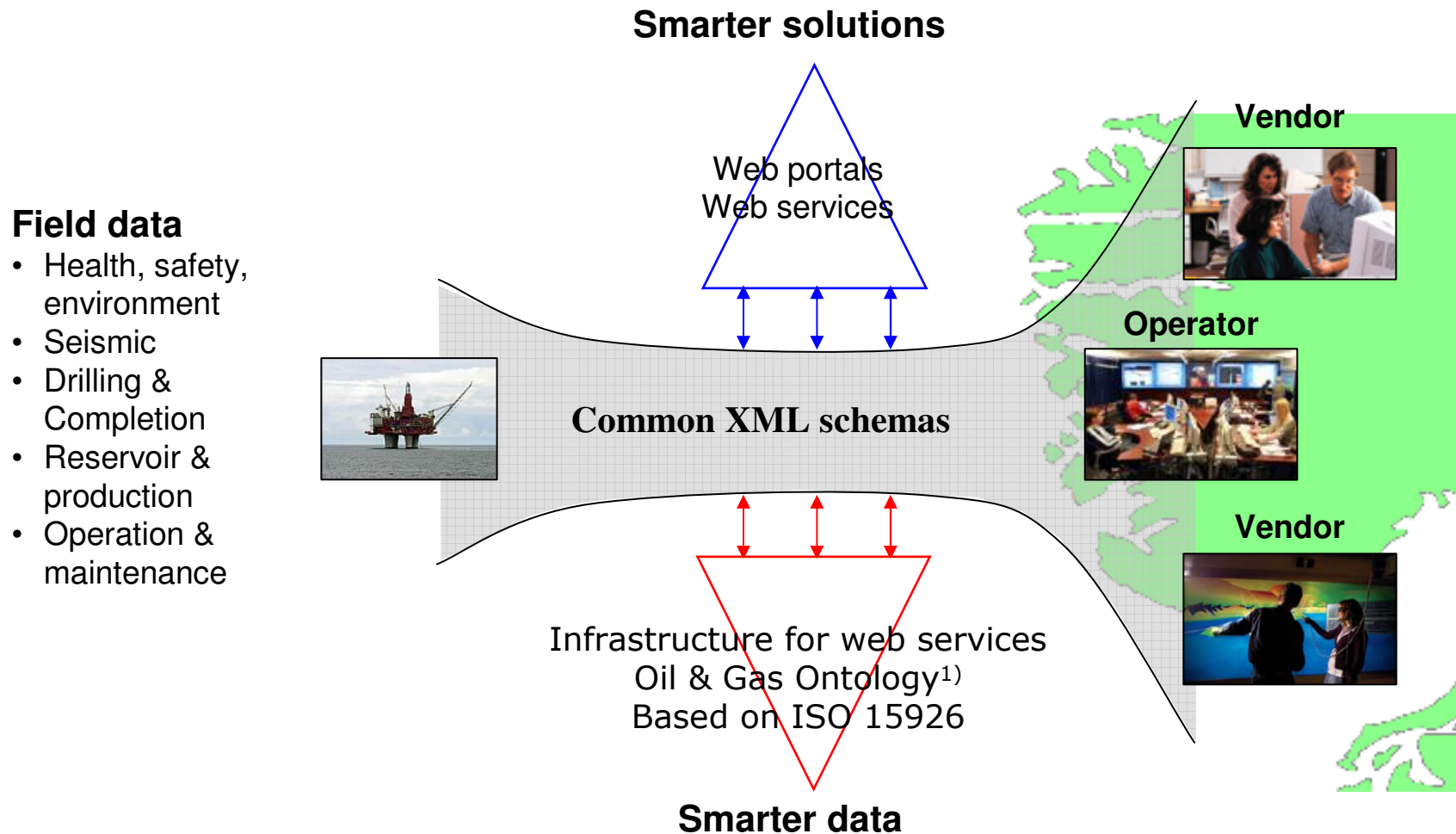
*Ontology = A hierarchical data structure containing concepts, relationships, properties and rules for a specific domain

High North - Typical operational concept

IOHN

- Heavily instrumented facilities
- Lean local organization
- Extensive remote support organization

$\Rightarrow$ **Robust and secure digital infrastructure required**

$\Rightarrow$ **Novel collaborative work processes required**

Main Objective for IO in the High North

Main objective: Demonstrate a reliable digital platform for Integrated Operation Generation 2 (IO G2)
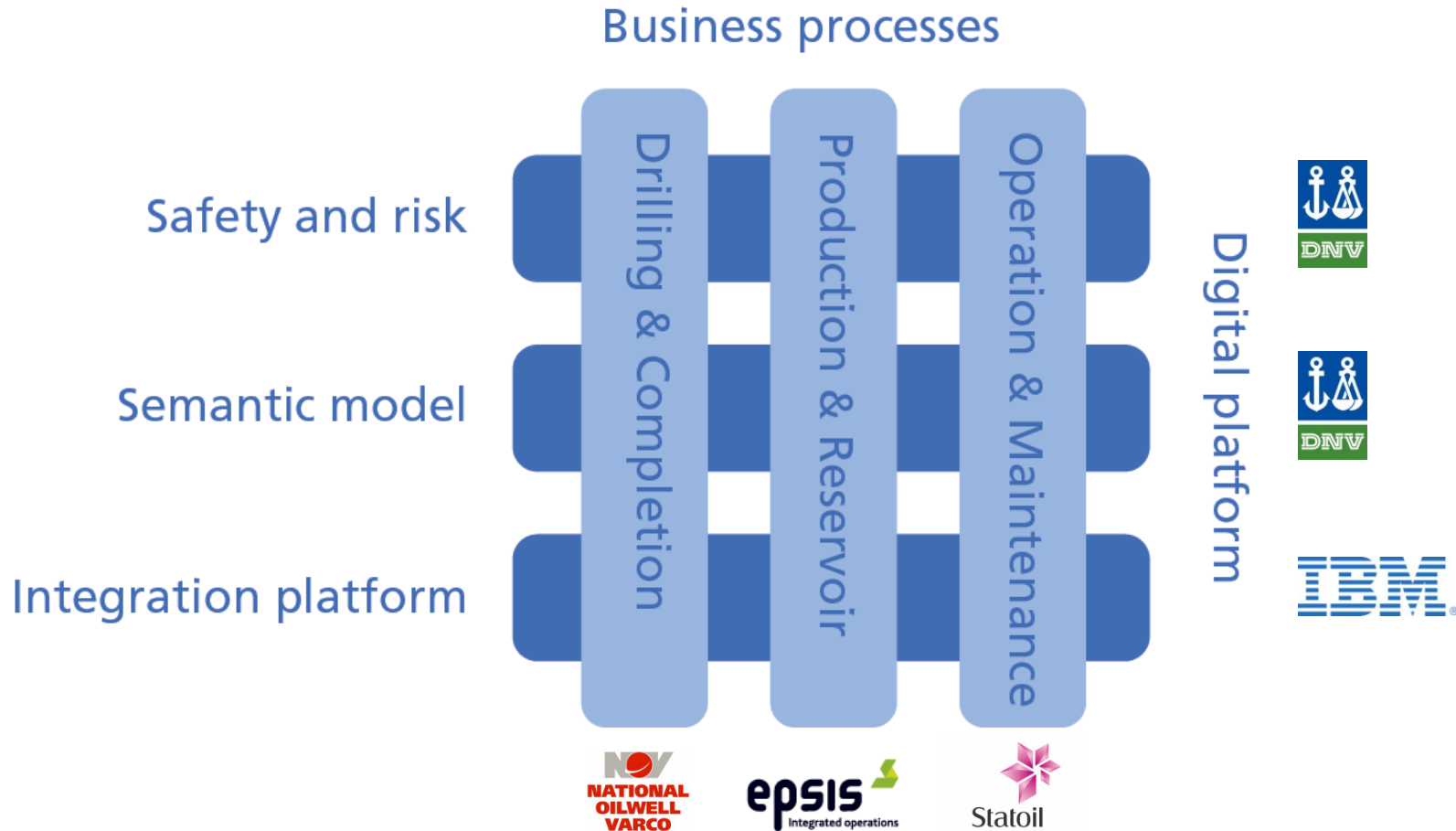
Requirements: Come from use cases within

- Drilling & Completion
- Production & Reservoir management
- Operation & Maintenance

Key element: Handling of real-time data across applications, disciplines, locations and organizations
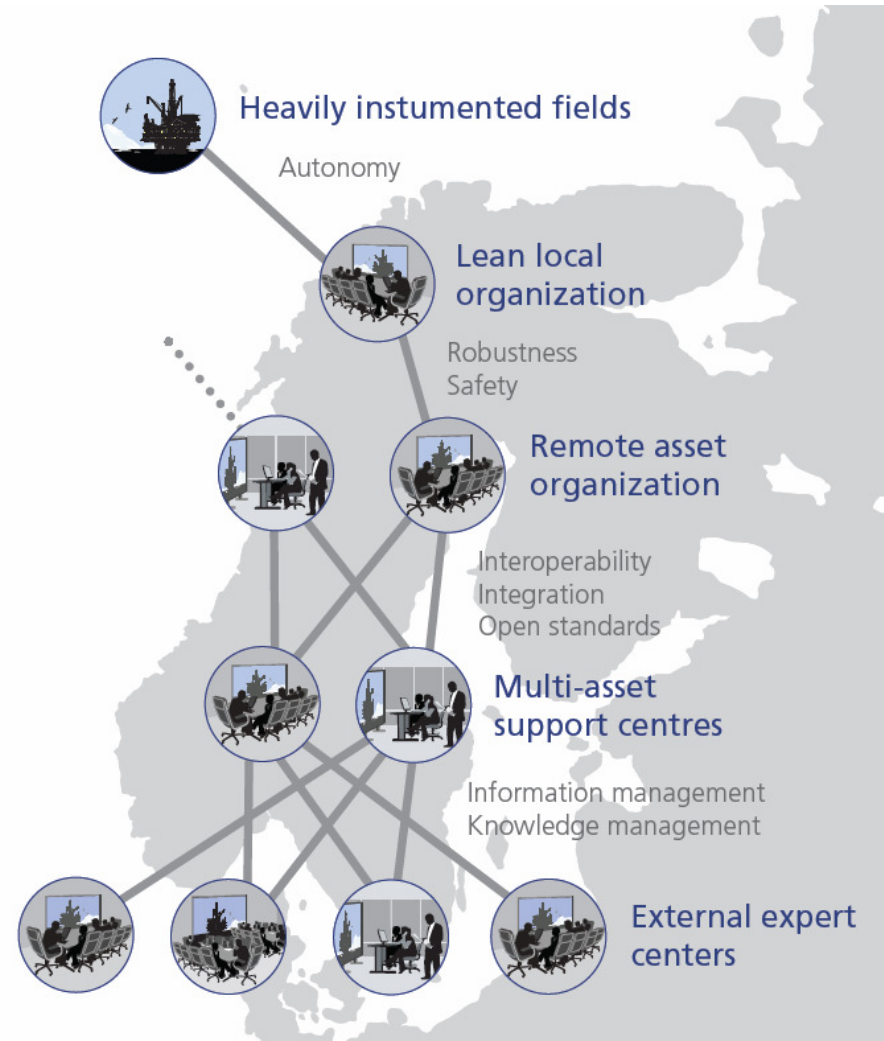
Project set up and activity leads
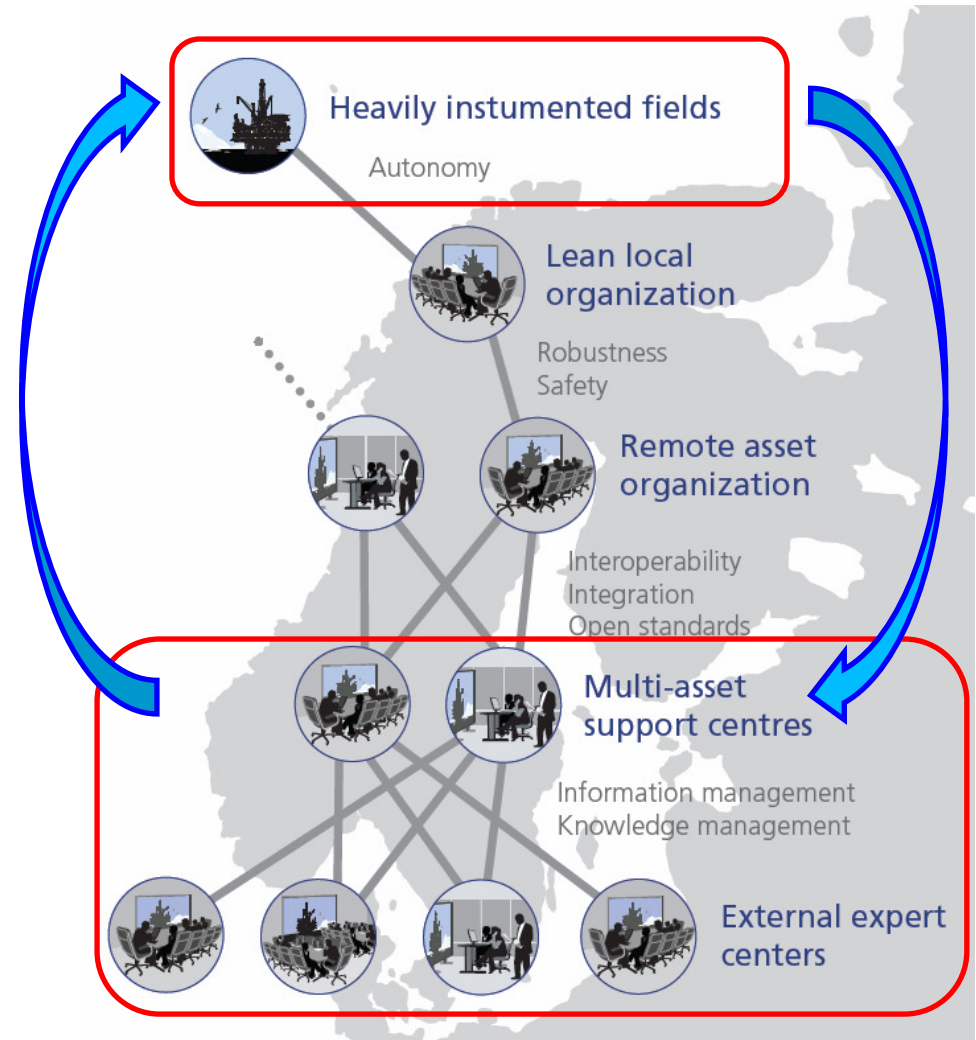
Drilling use cases

IOHN

Current situation:
- Gap between data/information and timely utilization in drilling operation

How to close the loop?

Solution:
1. Open standard for communication with drilling control system
2. Open standard and abstraction of data, information and knowledge in drilling domain
3. Framework and mechanisms for increased automation / autonomy

Heavily instumented fields

Autonomy

Lean local organization

Robustness
Safety

Remote asset organization

Interoperability
Integration
Open standards

Multi-asset support centres

Information management
Knowledge management

External expert centers

Equipment Hub (EqHub)

Traditional way of handling equipment information in the offshore industry

EqHub™

Operator

Contractors

1-5 Purchase Orders

Package Suppliers

100-200 Purchase Orders

Suppliers

10-100 Purchase Orders
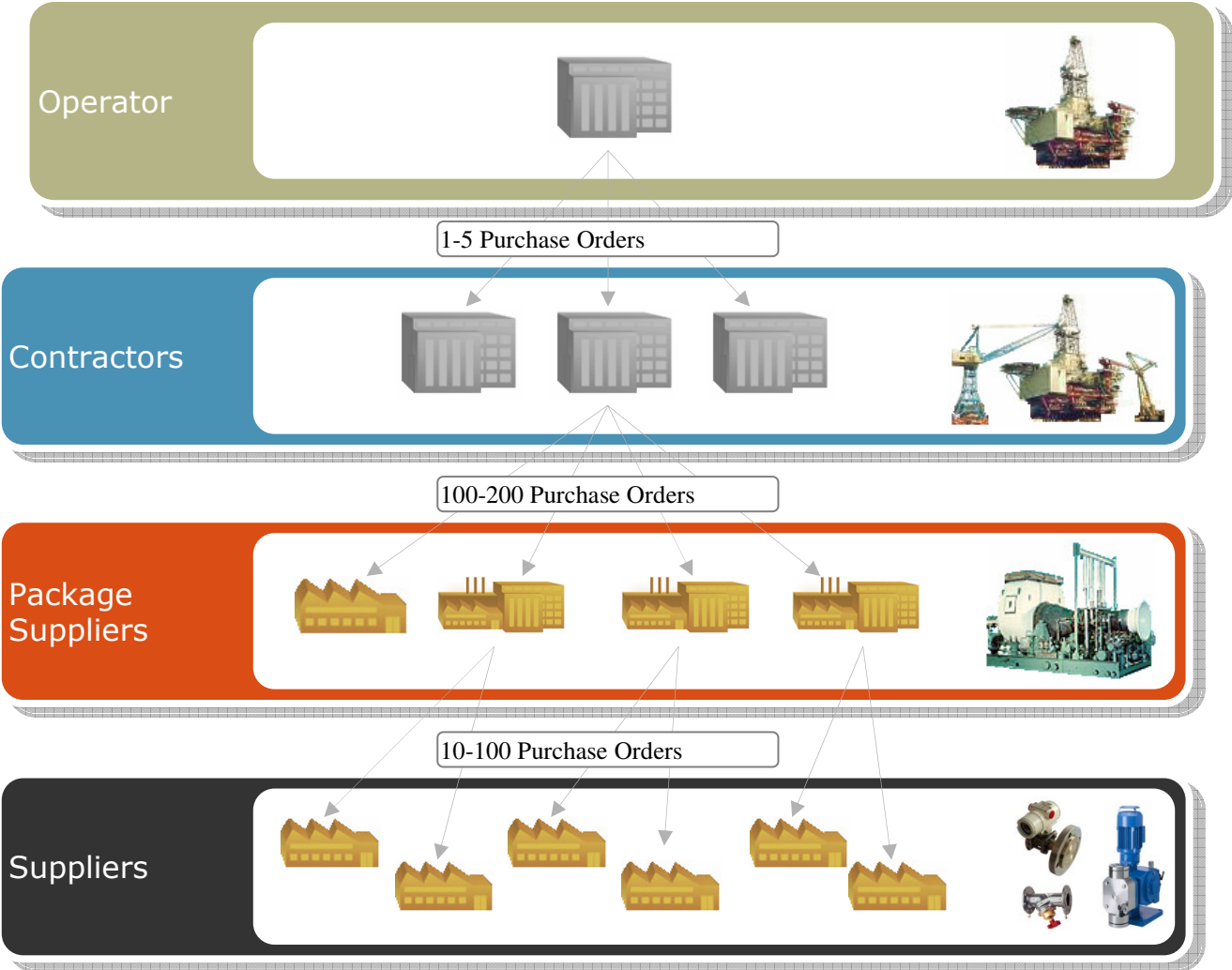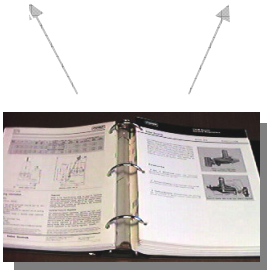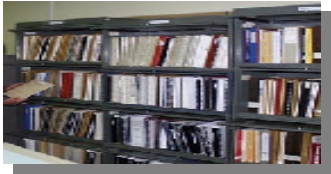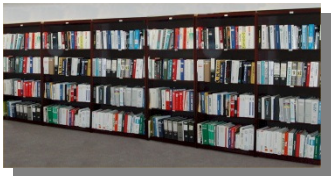
EqHub - the concept
pre-qualified information delivered once and for all

- ➢ Operators contract specifications to reflect EqHub requirement

- ➢ Operators aligned with same information requirements

- ➢ Information requirements is based on ISO 15926

- ➢ EqHub certified information pre-approved by operators

- ➢ EqHub is owned and operated by EPIM

- ➢ EqHub will use a membership funding model (ref. Achilles)
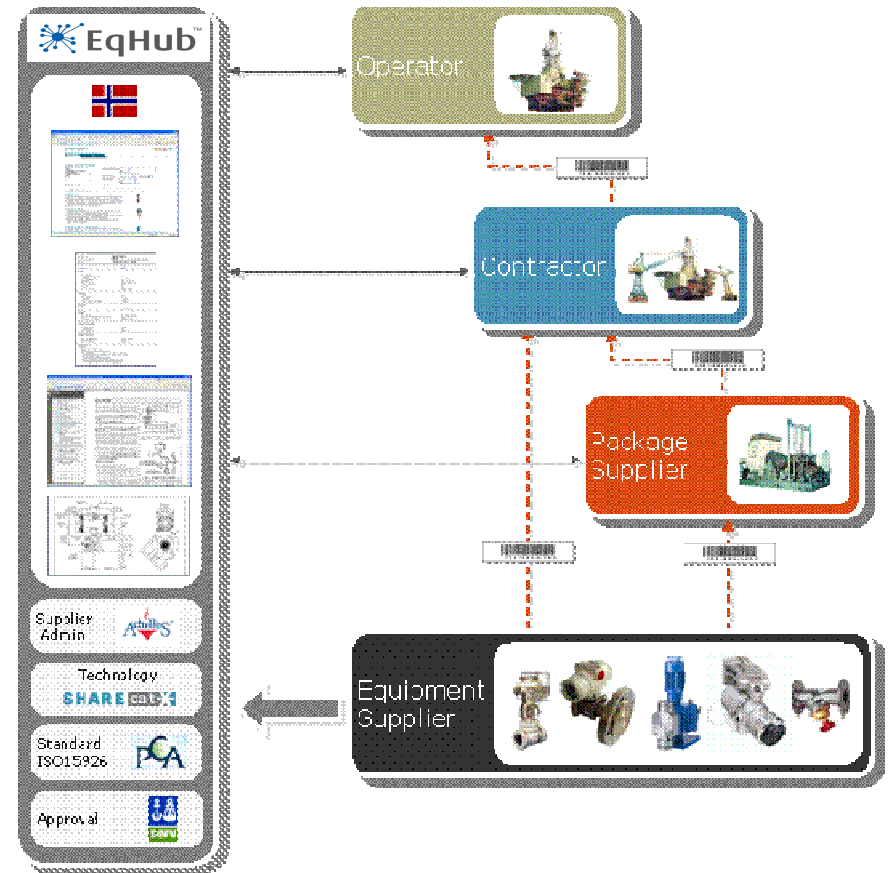
EqHub Standardization

- Enhance the PCA RDL, including templates, to cover the EqHub scope and improve the quality of the corresponding parts of the existing PCA RDL

- Run the PCA SIG approval of EqHub extensions

- Support ISO standardization of EqHub extensions

- Technical support of EqHub from PCA's Reference Data Services (RDS)

- Enhancements of the Reference Data Support System

- Coordination and Quality Control

RFID

Deployment RFID in oil and gas

RFID System	Datbases Repositories	Enterprise End User Applications
	Data	Work Processes Decission Processes
	ISO 15926	
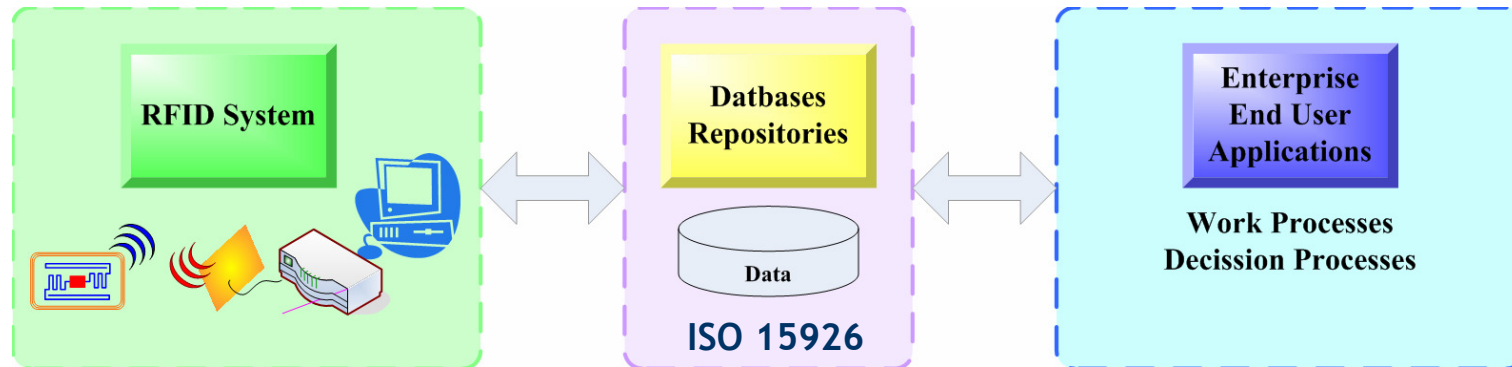
- Deployment of RFID in oil and gas – an OLF Guideline for:
  - ✓ Personnel
  - ✓ Containers
  - ✓ Drill strings
  - ✓ Mobile equipment
  - ✓ Fixed equipment
- The guideline is based on ISO standards
- PCA develops the ontology for RFID

iRING
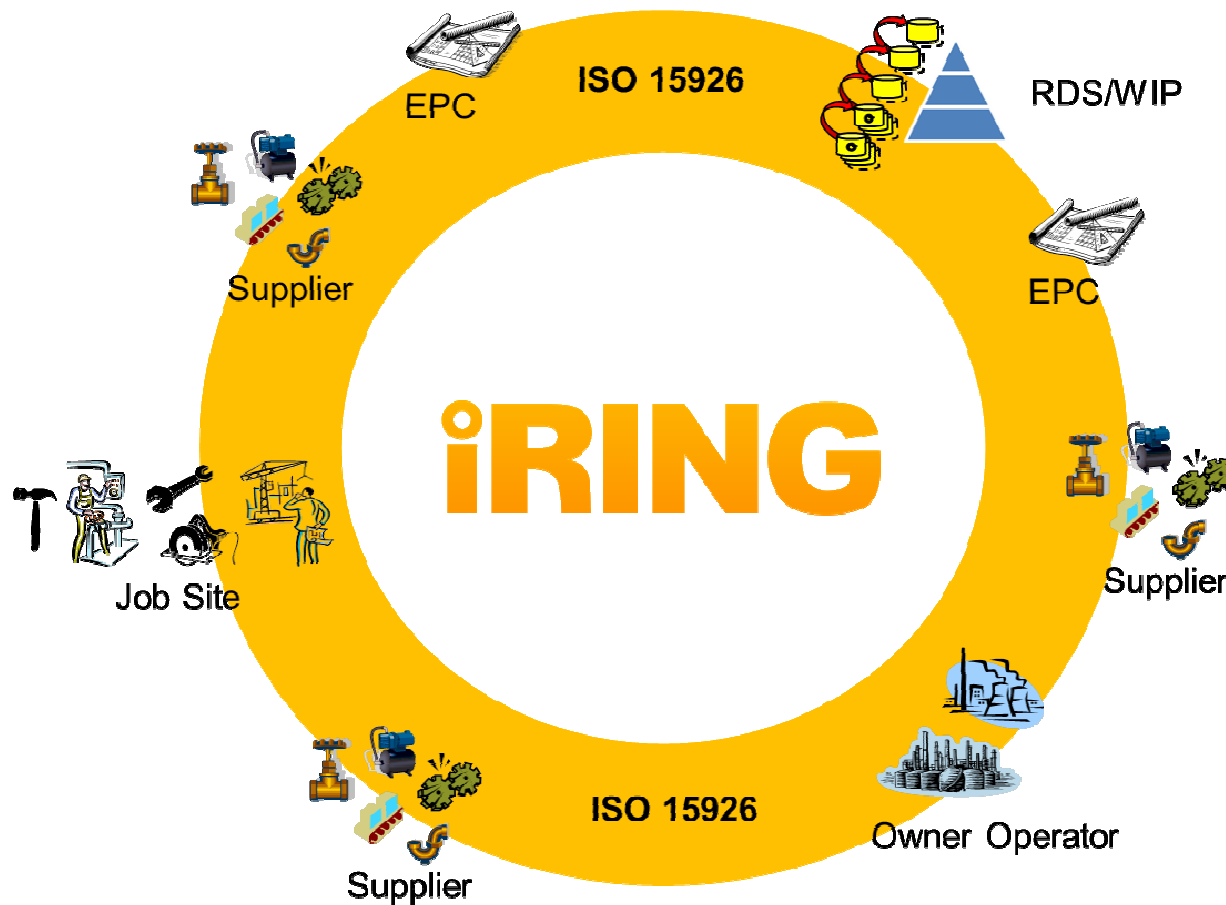
ISO 15926 Realtime Interoperability Network Grid

Oil and Gas asset management operations and maintenance Interoperability (OGI)

DRAFT ISO TC184
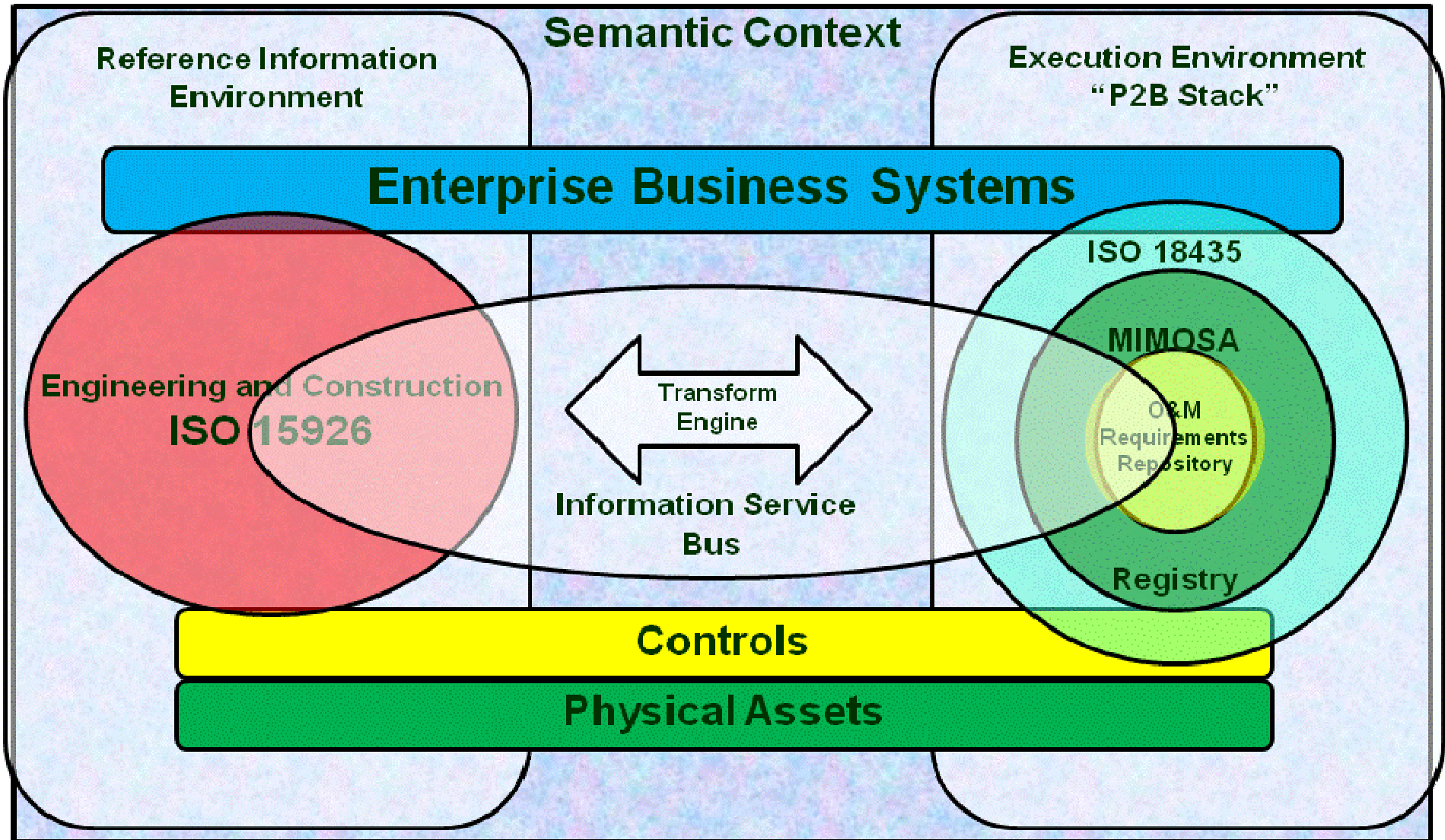
Joint Operational Reference Data (JORD)

ISO 15926 stack

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Vendor implementations

Reference Data Library Today

10s of man-years of content

Technology is not scaling

Tools exist … but only for modelers

JORD Objectives

- **Scalable:**

  - Technical infrastructure for 24x7x365 operation, ever-increasing content
  - Critical path no longer dependent on a few specialists

- **Sustainable:**

  - Business model and funding for self-sustaining operation
  - Governance model for long-term viability

- **Validation:**

  - Content validated as consistent
  - Implementations validated as compliant

- **Adoption:**

  - An organization to enable <u>broad</u> uptake of ISO 15926

Realizing Open Information Interoperability

JORD Deliverable : Defined Services

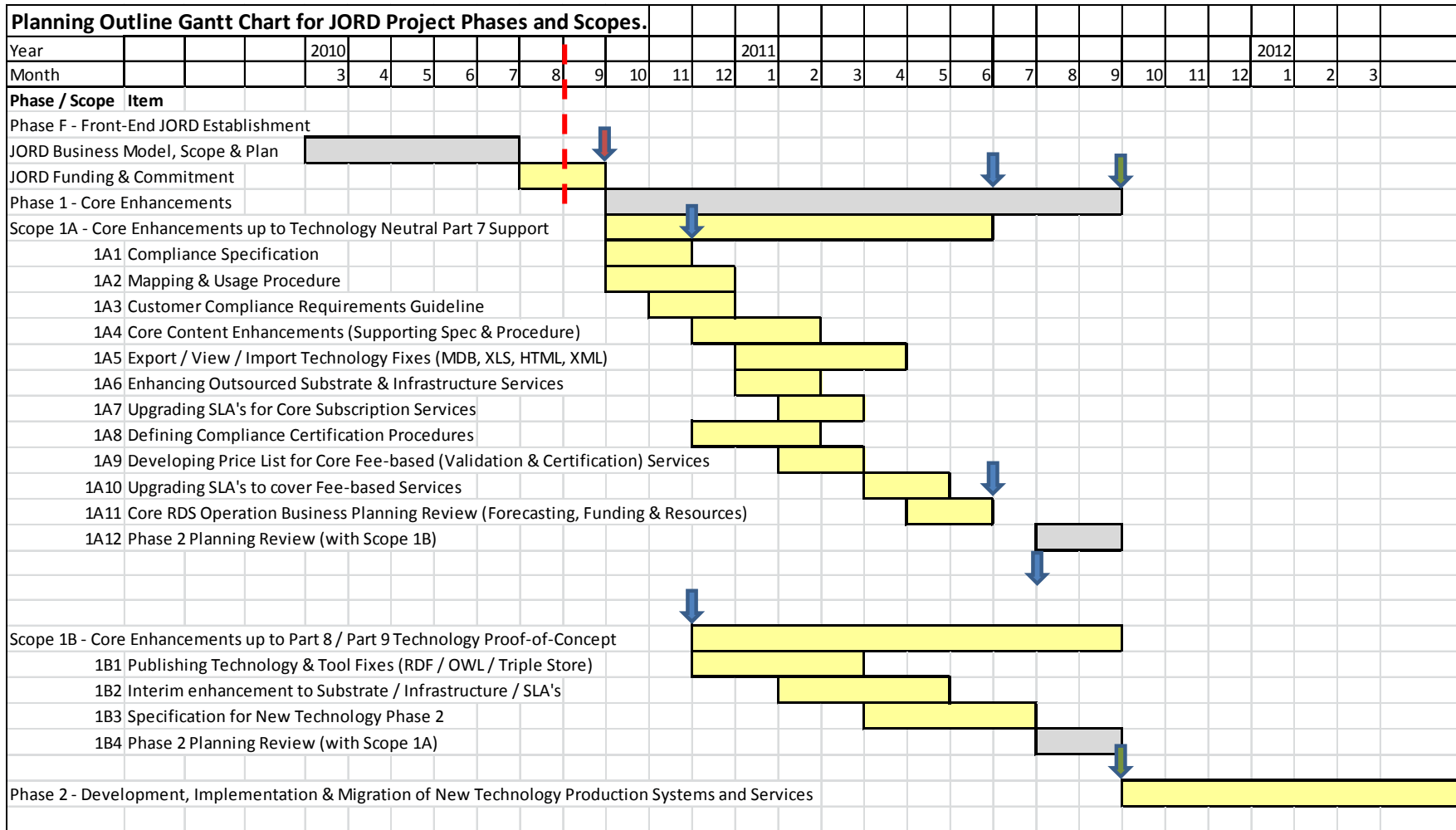| Core Services		
Read / Export Content	Free to anyone. (Funded by others, below.)	Primary Service. All references resolvable to unique content, all readable, exportable (Supported formats include Browser UI, MDB, Excel, HTML, XML and RDF/OWL.) Copyright & licensing apply.
Core Content Mgmt & Validation	Available to Subscribers & Sponsors	Maintenance and fixes of core content only and testing of proposed changes, etc. (for *new* domain content, see below).
Support for Users, Projects & SIG's	Available to Subscribers & Sponsors	Maintenance of core procedures and support requests concerning use of core content and processes (For *new* content processing, see below.)
Create / Read / Export new ID's	Available to Subscribers & Sponsors who are Certified	Registered subscribers to the management services are free to generate new Global ID's for content in their locally managed Libraries / Sandboxes, etc.
Content Write	Available to Subscribers & Sponsors who are Certified	Once subscribers achieve a level of certification, they will be able to write content directly (with appropriate meta-data controls on provenance & quality)
New Content & Standardization	Available for additional fees. (Per project / scope.)	Estimated cost per scope - Price list / rates development possible. Will arise from both Commercial Projects and Collaborative "SIG's".
Certification of User Org's & Tools	Available for additional fees. (Per project / scope.)	Estimated cost per scope - Price list / rates development possible. Organized around Compliance Checklist. (Free & self-certifying components)
Training & Related Consulting	Available for additional fees. (Per project / scope.)	Estimated cost per scope - Price list / rates development possible.

Plus, operational support services, business and back-office functions.
Other than core 15926 technical & coordination functions – all infrastructure
and substrate technologies & services competitively outsourced.

JORD – Planning Schedule

Planning Outline Gantt Chart for JORD Project Phases and Scopes.

Year		2010										2011											2012		
Month		3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3

Phase / Scope Item

- Phase F - Front-End JORD Establishment
- JORD Business Model, Scope & Plan
- JORD Funding & Commitment
- Phase 1 - Core Enhancements
- Scope 1A - Core Enhancements up to Technology Neutral Part 7 Support
  - 1A1 Compliance Specification
  - 1A2 Mapping & Usage Procedure
  - 1A3 Customer Compliance Requirements Guideline
  - 1A4 Core Content Enhancements (Supporting Spec & Procedure)
  - 1A5 Export / View / Import Technology Fixes (MDB, XLS, HTML, XML)
  - 1A6 Enhancing Outsourced Substrate & Infrastructure Services
  - 1A7 Upgrading SLA's for Core Subscription Services
  - 1A8 Defining Compliance Certification Procedures
  - 1A9 Developing Price List for Core Fee-based (Validation & Certification) Services
  - 1A10 Upgrading SLA's to cover Fee-based Services
  - 1A11 Core RDS Operation Business Planning Review (Forecasting, Funding & Resources)
  - 1A12 Phase 2 Planning Review (with Scope 1B)
- Scope 1B - Core Enhancements up to Part 8 / Part 9 Technology Proof-of-Concept
  - 1B1 Publishing Technology & Tool Fixes (RDF / OWL / Triple Store)
  - 1B2 Interim enhancement to Substrate / Infrastructure / SLA's
  - 1B3 Specification for New Technology Phase 2
  - 1B4 Phase 2 Planning Review (with Scope 1A)
- Phase 2 - Development, Implementation & Migration of New Technology Production Systems and Services

Note - Phase 1 has two scopes 1A (technology-neutral) and 1B (Part 8/9 technology-specific) *in parallel*, for distinct resource and funding priorities.

Why Participate?

- If you plan to use ISO 15926, you need a scalable and sustainable Reference Data Service

- You could wait for others to fund it and build it ….

  …. or you could help

- Once the Reference Data Service is in place, each of us gets 100% of the benefit …

  … but none of us will have paid more than a fraction of the cost

- The broader we share the cost, the faster we each start to see benefits

- Let's capitalize on the momentum that has built

How to get involved

Join projects

Projects open for new participants:

- Equipment Hub (EqHub)

- iRING

- Oil and Gas asset management operations and maintenance Interoperability (OGI)

- Joint Operational Reference Data (JORD)

Special Interest Groups (SIGs)

Active special interest groups:

- Modeling, Methods, and Technology

- Drilling and Completion

- Production and reservoir

- Operation and Maintenance

- Instrument and Control

- Geometry

More information: https://www.posccaesar.org/wiki/Sig

Summary

- ISO 15926 is implemented by a number of software vendor and have been use by many Owners/Operators and EPCs

- PCA is in the middle is changing from a development to an operation and support organization

- SIGs are a focus area

- PCA has operated a reference data services for a couple of years

- JORD is necessary to have a scalable and sustainable reference data services

- Co-operation is necessary in order to accelerate the work