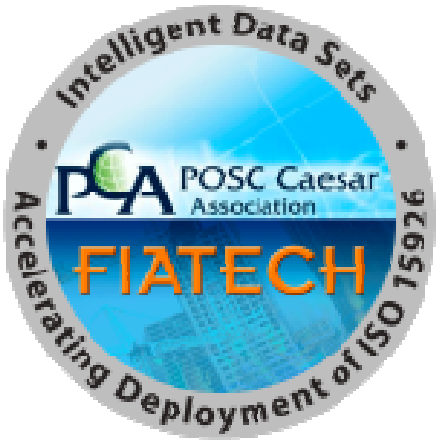


The Value of Reference Data
&
The Joint Operational Reference Data Project

PCA Members Meeting
Houston, March 4th, 2010

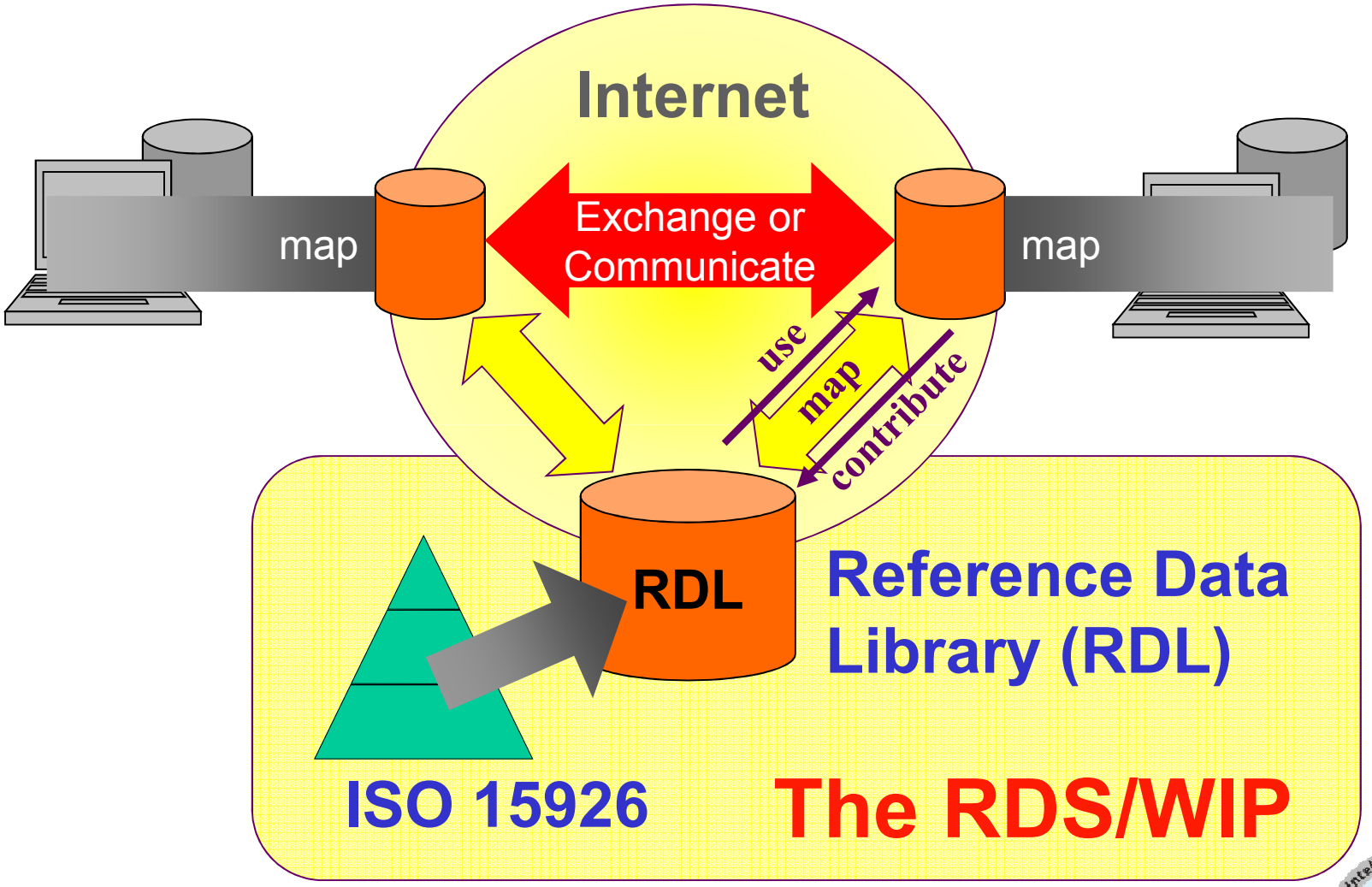
Ian Glendinning
Information Risk Management
Det Norsk Veritas, Oslo, Norway
ian.glendinning@dnv.com

MANAGING RISK

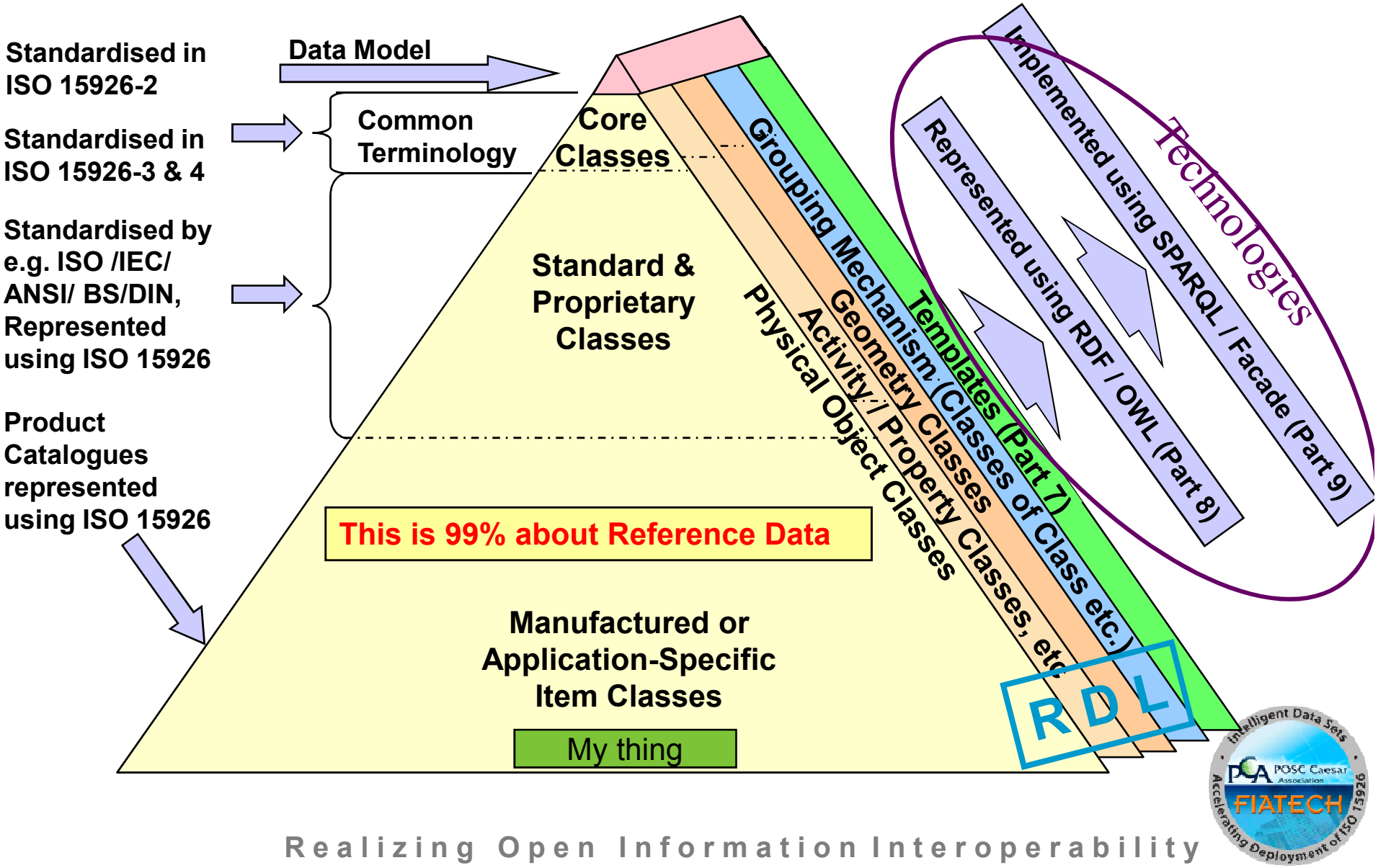
Members Meeting Ref Data Agenda

- **The Value of Reference Data (20 mins)**
- **The Joint Operational Reference Data Project (20 mins)**

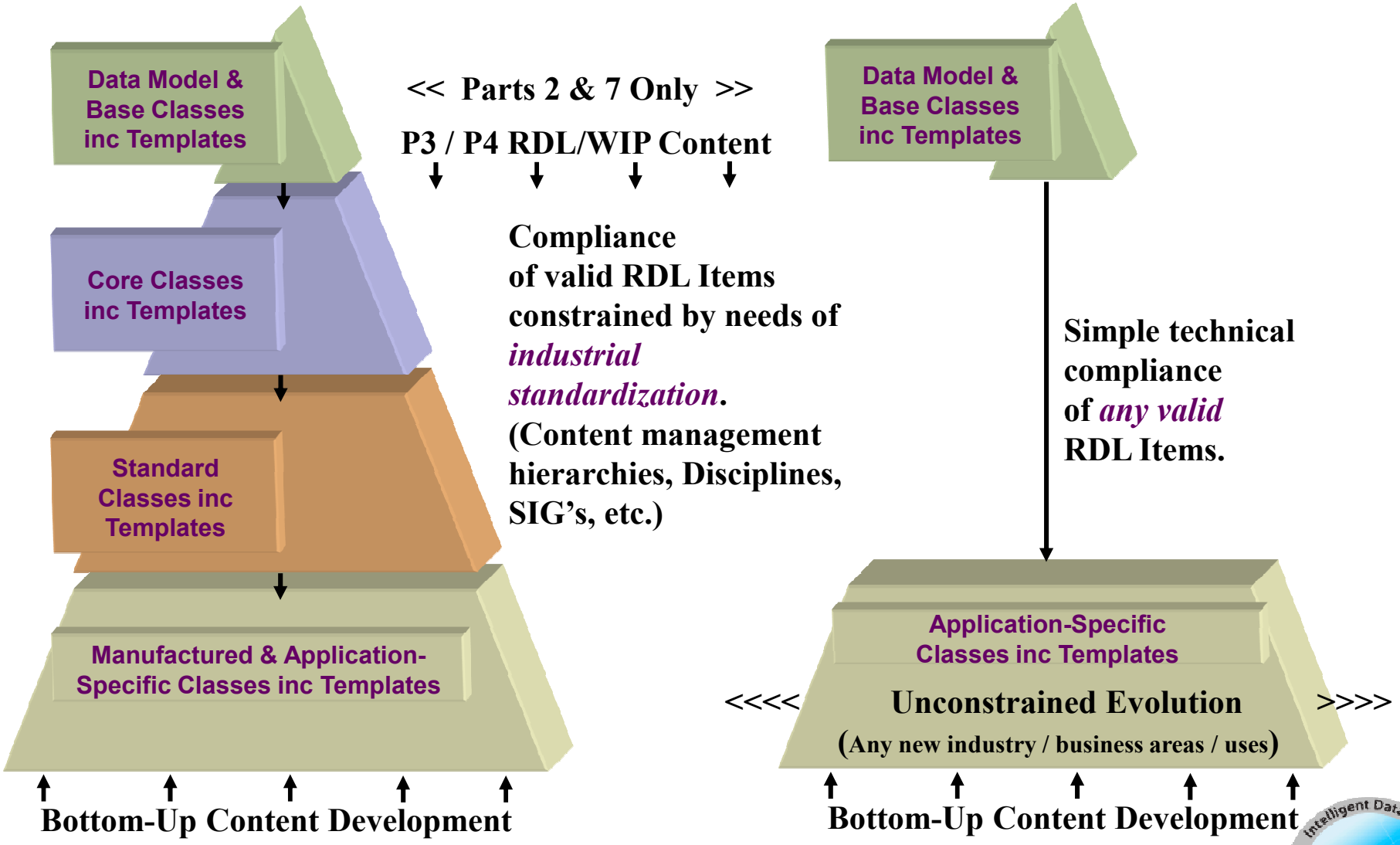
ISO 15926: At its simplest



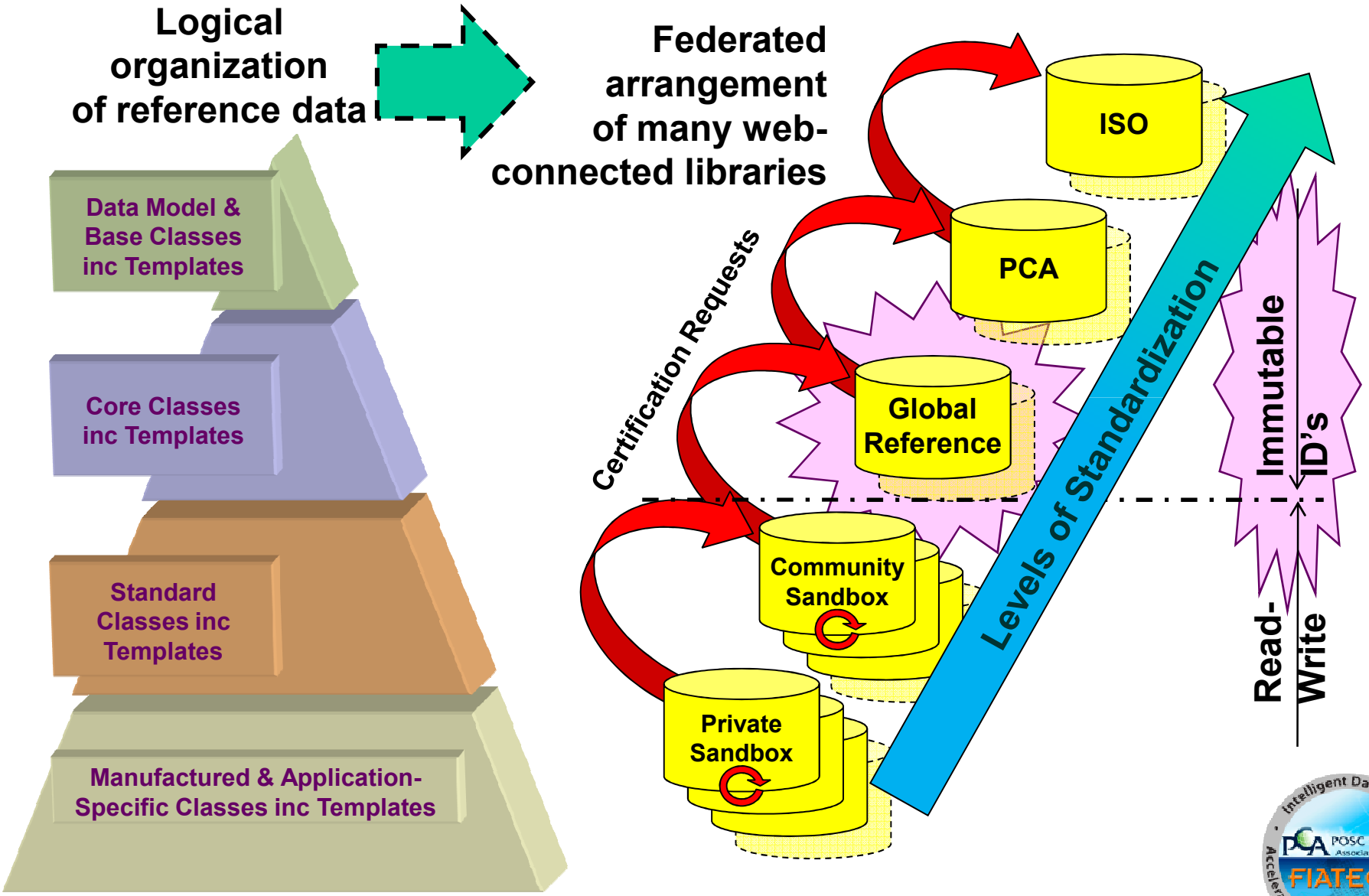
ISO 15926 - Reference Data Architecture



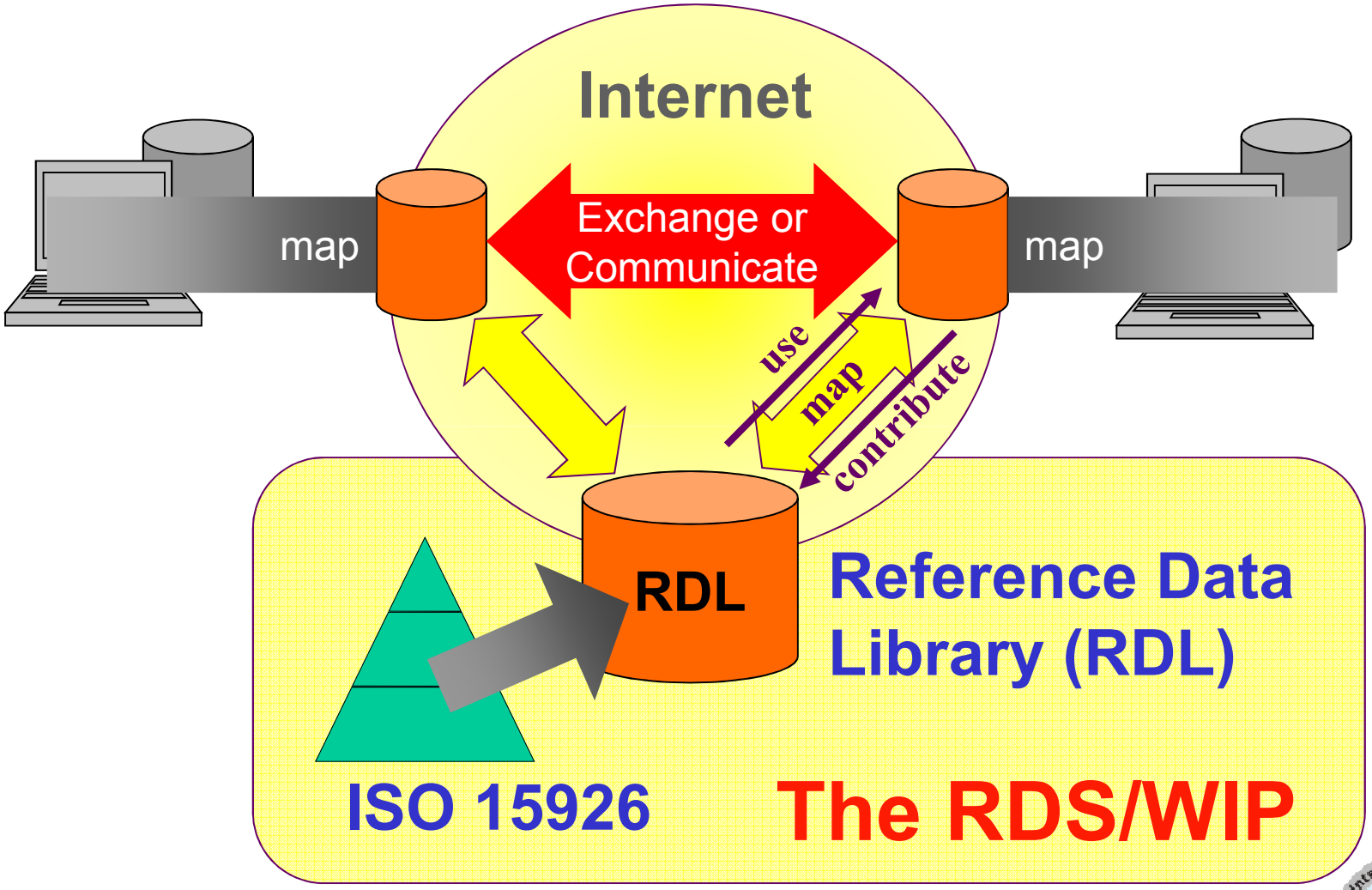
Industrial (& non-Industrial) Use



Standardization & Federation of Reference Data

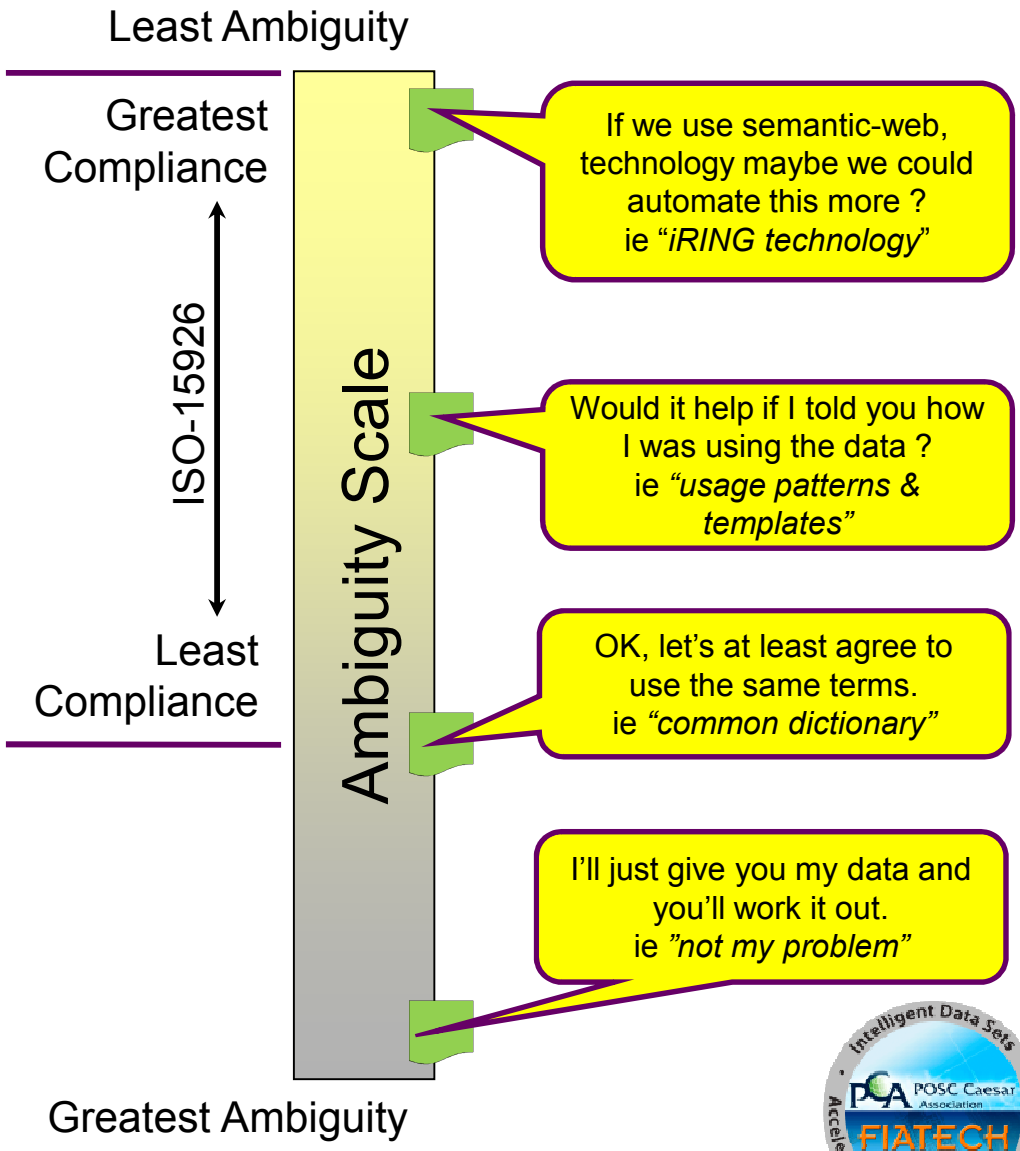


ISO 15926: At its simplest



Interoperabilty as *reducing ambiguity*

- Because we focus on ***doing business*** much information may be implicit or ambiguous when we ***exchange or integrate information***.
- Ambiguity when exchanging and intergrating information represents ***risk, requiring effort to resolve***.
- The higher the ambiguity, ***the higher the risk & cost***.
- When new business uses or interfaces arise, new ambiguities may be significant, and the ***costs & risks may be repeated***.
- **Ambiguity = Lifecycle Cost & Risk**



Interoperability, *a major business issue*.

- In the US capital facilities industry in 2002 alone, NIST estimated the annual cost of poor interoperability – the cost of finding and verifying (& the cost & risk of *not* finding) correct information for operational decision support – at ***USD15.8 billion*** – over and above wider health, safety and environmental risks.

- The McGraw Hill ENR Technology for Construction 2007 report on interoperability estimates the cost to be ***twice as much*** as the 2002 NIST report.

- According to a 2008 Gartner report "Legacy data issues (accessing and maintaining data in old systems and formats) are ***unarguably the biggest problem*** facing the process industries".

- Repeated estimates since the mid-90's had already suggested that ***individual asset projects*** spend multi-million-USD's simply handing over information into the operations phase, and that inadequate interoperability as a whole accounts for 1% to 2% of capital costs.

ISO 15926 – The Whole Standard

- **ISO 15926**
  Integration of life-cycle data for process plants *including* oil and gas production facilities.
  - **ISO - 15926 - 1 Overview and fundamentals** (Approved IS June 2004)
  - **ISO - 15926 - 2 Data model** (Approved IS December 2003)
  - **ISO - 15926 - 3 Geometry** (Approved TS April 2009)
    (ISO - 10303 - 42 Represented in RDS/WIP according to Parts 2 & 4)
  - **ISO - 15926 - 4 Initial reference data**. (Approved TS October 2007)
    (RDL included in the RDS/WIP and extended from there according to Parts 5 & 6)
  - **ISO - 15926 - 5 RDL Maintenance Procedures** (***Superseded*** by **ISO-TC184/SC4 RDL Database procedure** with 15926-specific annex – issued for ballot January 2010)
  - **ISO - 15926 - 6 Scope and methodology for developing additional reference data**
    (NWI/CD submitted to ISO Q3 2007, planned complete in 2010)
  - **ISO - 15926 - 7 Template Implementation Methodology** (Final TS submission December 2009)
  - **ISO - 15926 - 8 OWL/RDF (W3C) Representation** (TS submission December 2009)
  - **ISO - 15926 - 9 Façade (Web Interface) Implementation** (TS planned complete 2010)
  - **ISO - 15926 - 10 Abstract Test Methods** (in progress)
  - **ISO - 15926 - (NWI-11) Simplified Industrial Usage**
    (New ISO work item under development, based on ***existing*** industrial usage and compliance guidelines.)

A range on the data sheet

SHARECAT

Datasheet
Transmitter, Pressure, Electric

Document Number	:	28-1A-KOG-I54-27500-0012	Revision	:	1
Plant/Platform	:	Test Installation 2	Process Datash. No.	:	N/A
Tag number	:	PT -42-0304	System	:	N/A
SerialNo	:	N/A	Range From	:	0
SetPoint Low	:	10 barG	Range To	:	110
SetPoint Hight	:	71 barG	Range Unit	:	barG
P & ID	:	28-1A-KOG-C78-00275-0002	Area	:	N/A
Line/Equipment no.	:	XX-42-0002	PO:	:	TI2-M022-ME-01
Service description	:	SCALE INHIBITOR. PUMP OUTLET			

1. Accepted
2. Accepted with comments incorporated
3. Not accepted, revise and resubmit

Unique no.	:	TEK-00018117
Manufacturer	:	EMERSON PROCESS MA
Type	:	3051CG
Manuf. Partno.	:	3051CG-5-A-2-2-A-1-K-B4
Class	:	Transmitter, Pressure, E

rea

Explosion protection	:	EEx ia
Gas-group	:	IIC
Temperature class	:	T5
Approval authority	:	BASEEFA
Certificate	:	BAS 97ATEX108
IP-Class	:	IP66
ATEX group	:	II
ATEX category	:	1
ATEX explosive atmosphere	:	G
Ambient temperature	:	-40 - 85 °C

imensions and Weight

Weight	:	4.7 kg

unction

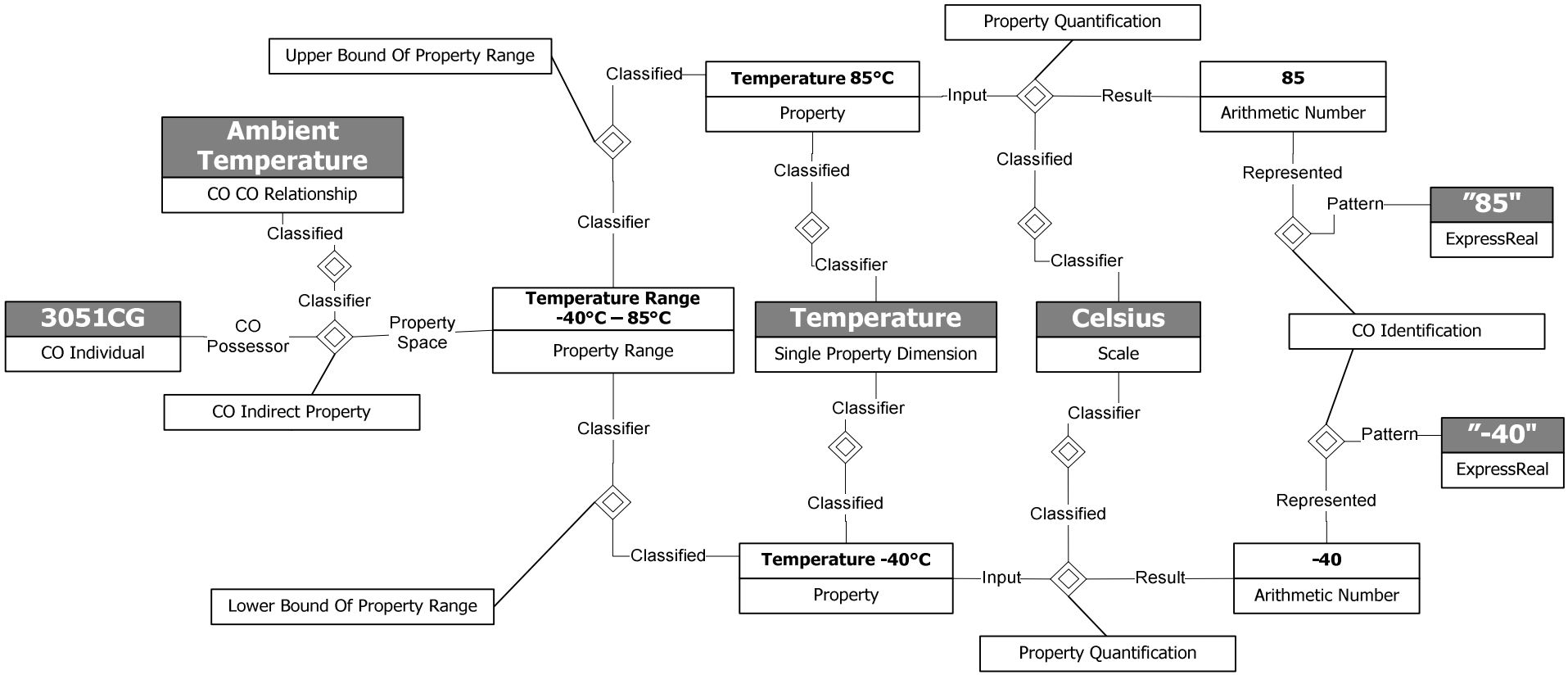
Seal material	:	Glass filled TFE
Process connection material	:	Stainless steel
Non process cover material	:	316
Flange bolt material	:	316 AUSTENITIC
Drain/vent material	:	Stainless steel
Diaphragm material low pressu	:	316L

ATEX category : 1

ATEX explosive atmosphere : G

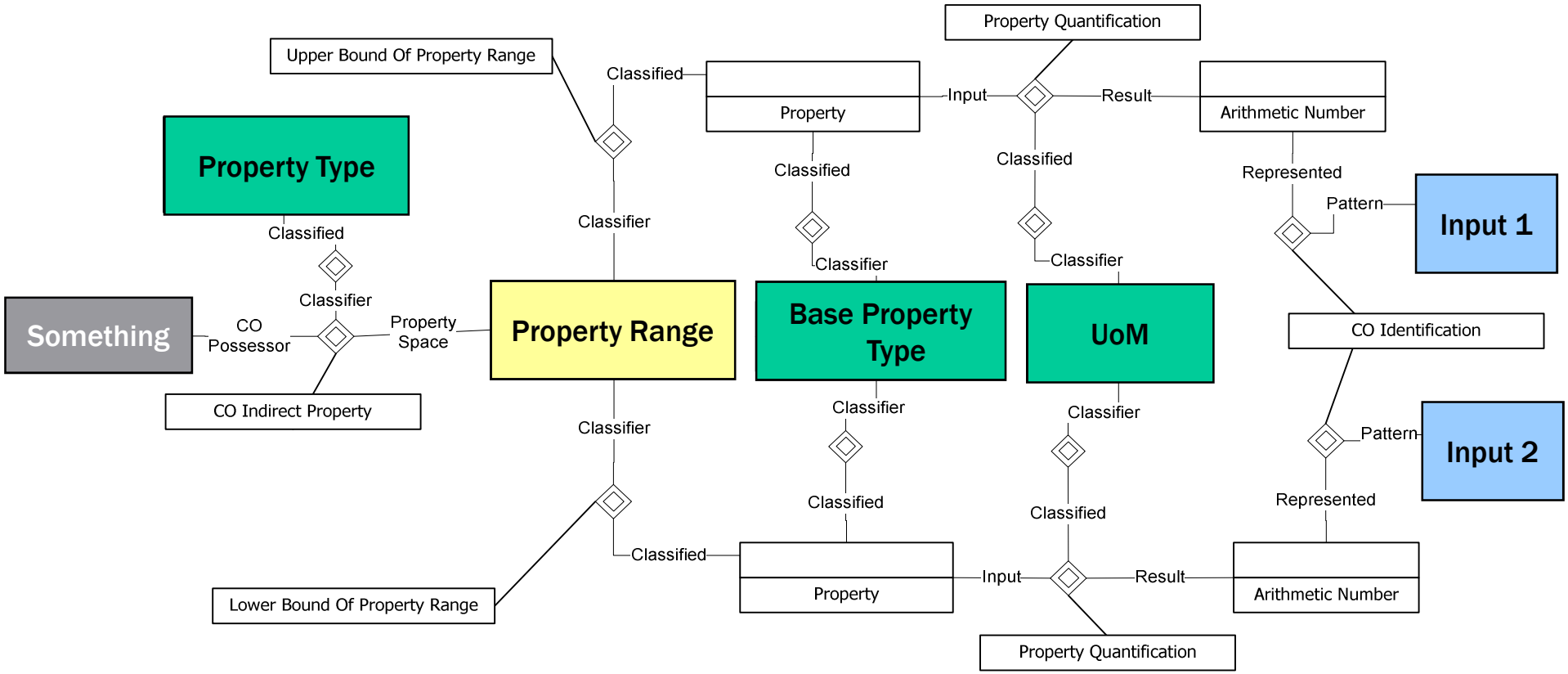
imensions and Weight

Model: Ambient Temperature Range



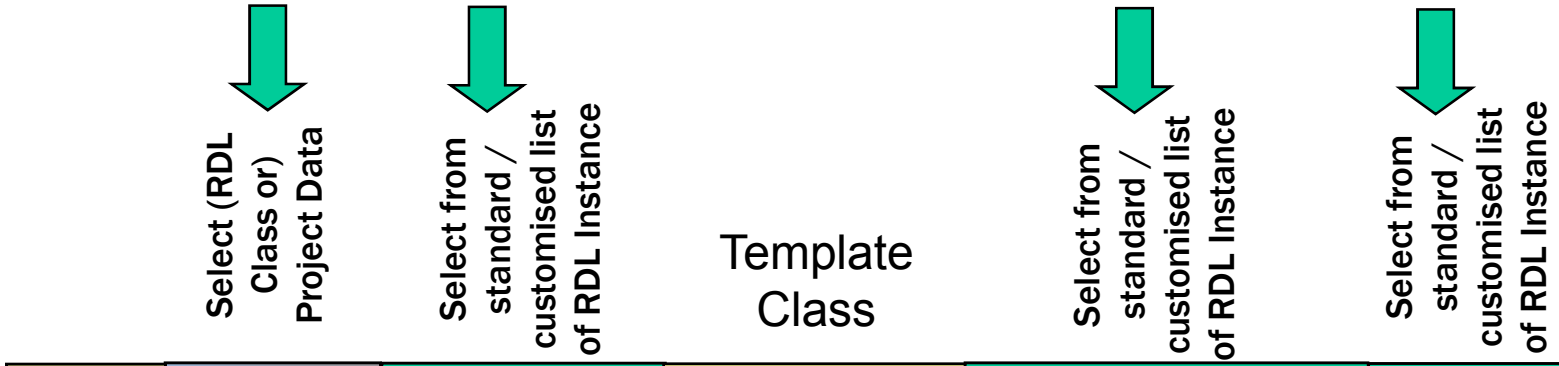
3051CG ambient temperature: -40°C – 85°C

ISO 15926 Property Range Template



'Something' has 'Property Type' with 'Property Range' of 'Base Property Type' defined by 'Input 1' and 'Input 2' with 'UoM'

Template Signature Mapping Interface / Wizard



Temp. Inst. #	Something	Property Type	Property Range	Base Property Type	UoM	Input 1	Input 2
#nnn	3051CG	Ambient Temperature	(Created by the system)	Temperature	C	-40	85

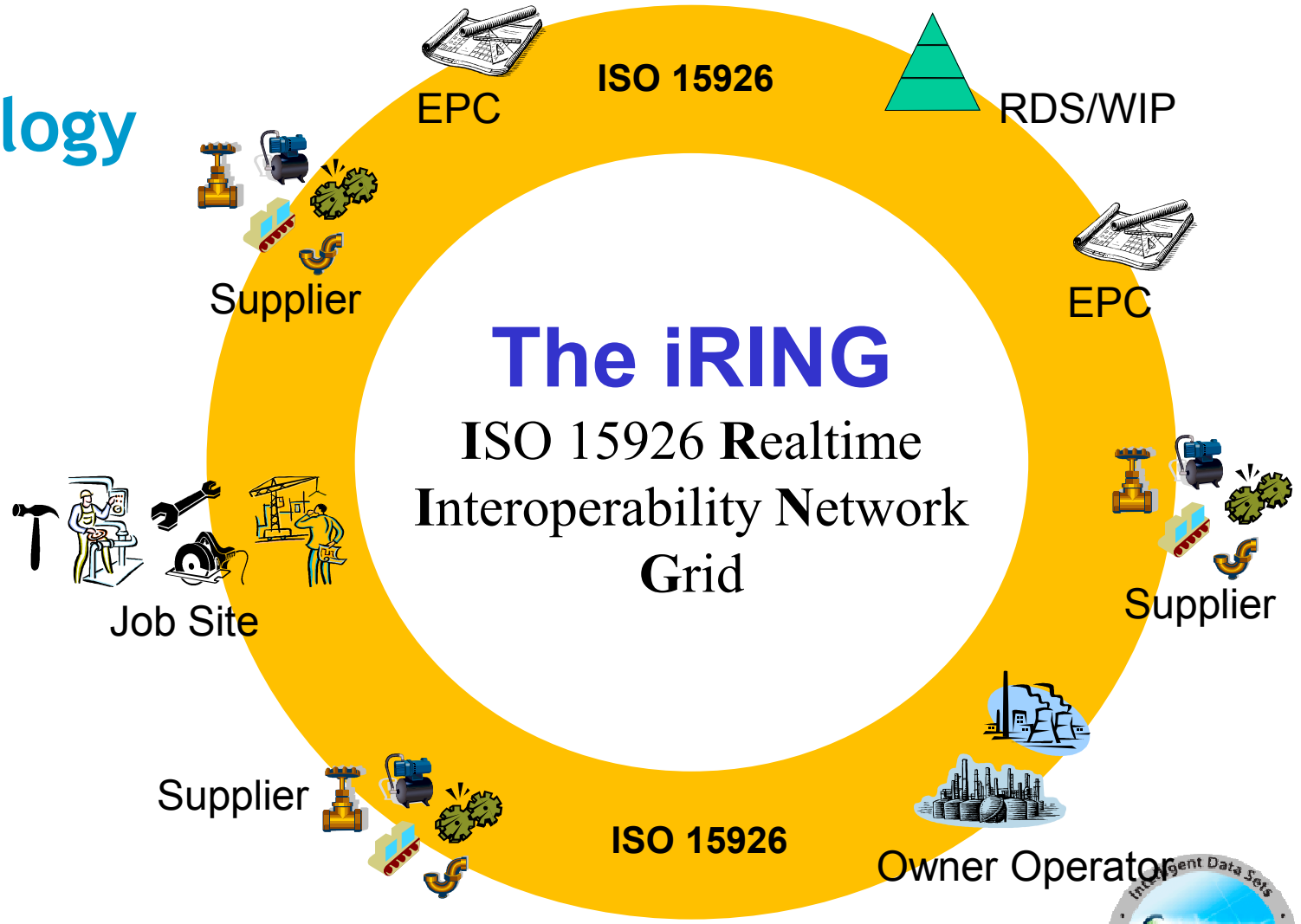
A “Mapping Guide” already exists, to select templates and populate their signature … Without ever seeing Part 2 (or even Part 7). This is being upgraded to support an initial *core* set of Templates in the RDL.

And note that the method can apply to any data representation.

The Power of Templates

- They provide a flexible and precise tool for ontology building for any arbitrary source information definition.
- They make ***practical*** the creation of rich semantic structures.
- They ***standardize*** modeling by standardizing templates and their selection rules.
- With good templates and mapping guide, it's ***easy to speak the language*** of the ontology from a business modelling perspective.
- The signature is all the ***business domain expert and end user*** need to know.
- Signatures and rules have ***technology-independent*** definitions.
- Their rigorous defintion enables ***automated validation***.
- **Templates hide complexity and guarantee correctness**

iRING Technology



Realizing Open Information Interoperability

The Significance of iRING

iRING User Group & iRING Tools (P8 OWL/RDF & P9 Facades) Technology *focus*, but with content in iRING Sandbox.

Important because **ISO15926 needs P8 & P9 for fully automated semantic interoperability, *and* ...**

Because **there is an *iteration* between content & technologies in the evolution of both**

- **Content is technology independent, *BUT* creating, managing, mapping and using existing and new content is easier as better tools become available.**

- **Better tools will be developed *IF* developers can work with better content needed for business use *and* standard RDL management.**

Members Meeting Ref Data Agenda

- The Value of Reference Data
  (20 mins)

- **The Joint Operational Reference Data Project**
  (20 mins)

Latest News Release :

FIATECH POSC Caesar Association

PCA & FIATECH Announce Joint Operational Reference Data

FOR IMMEDIATE RELEASE
Austin, TX and Oslo, Norway, February 24, 2010

POSC Caesar Association (PCA) and FIATECH have agreed on a single "***Joint Operational Reference Data***" project plan to create in 2010 a stable, scalable and commercially-viable operation of the ISO15926 reference data system and associated services

Boards of both member organizations have already agreed funding for the front-end phase to start in March, with a governance board and project manager already in place.

.... more ...

History of Joint Operational RD Plan

- **Avalon *Challenge* to PCA (Spring 09) – In fact, many of the plan components *arose from IDS-ADI collaboration* and related project initiatives.**
- **PCA Board (June 09) Created "Ad-hoc RDL Team" to *recommend a plan.* (Active during Aug / Sep 09)**
  - Robin (lead), Petter, David, Kåre, Nils, (Ian / Neill liaisons)
- **FIATECH Board (Sep 09) Created 15926 / EI9 Governance team, expressed *commitment* and asked EL9 Champions to *create a plan*.**
  - Derek, Frank, Mark, Jerry, Ric + Adrian, Bruce (lead), Andy (Neill / Ian liasons)
- **Joint Reviews (Oct / Nov 09) – plans cross reviewed. *Agree need for a single plan* – as a 2010 plan (*NB already late for 2010 funding expectations*).**
- ***Joint Plan Created* (Dec 09)**
- ***Both Boards Agree* (Dec 09 / Jan 10) - to the *overall plan and PM* & agreements to fund Phase F. *Prioritized deliverables for Phase F***
- **Phase F *Funding & Contracting & Governance put in place* (Jan / Feb 10)**
  - Robin, Jann, Nils, Frank, Mark, Ric (Governance) + Ian (PM)
- **Go ... 1st Mar 2010 ...**

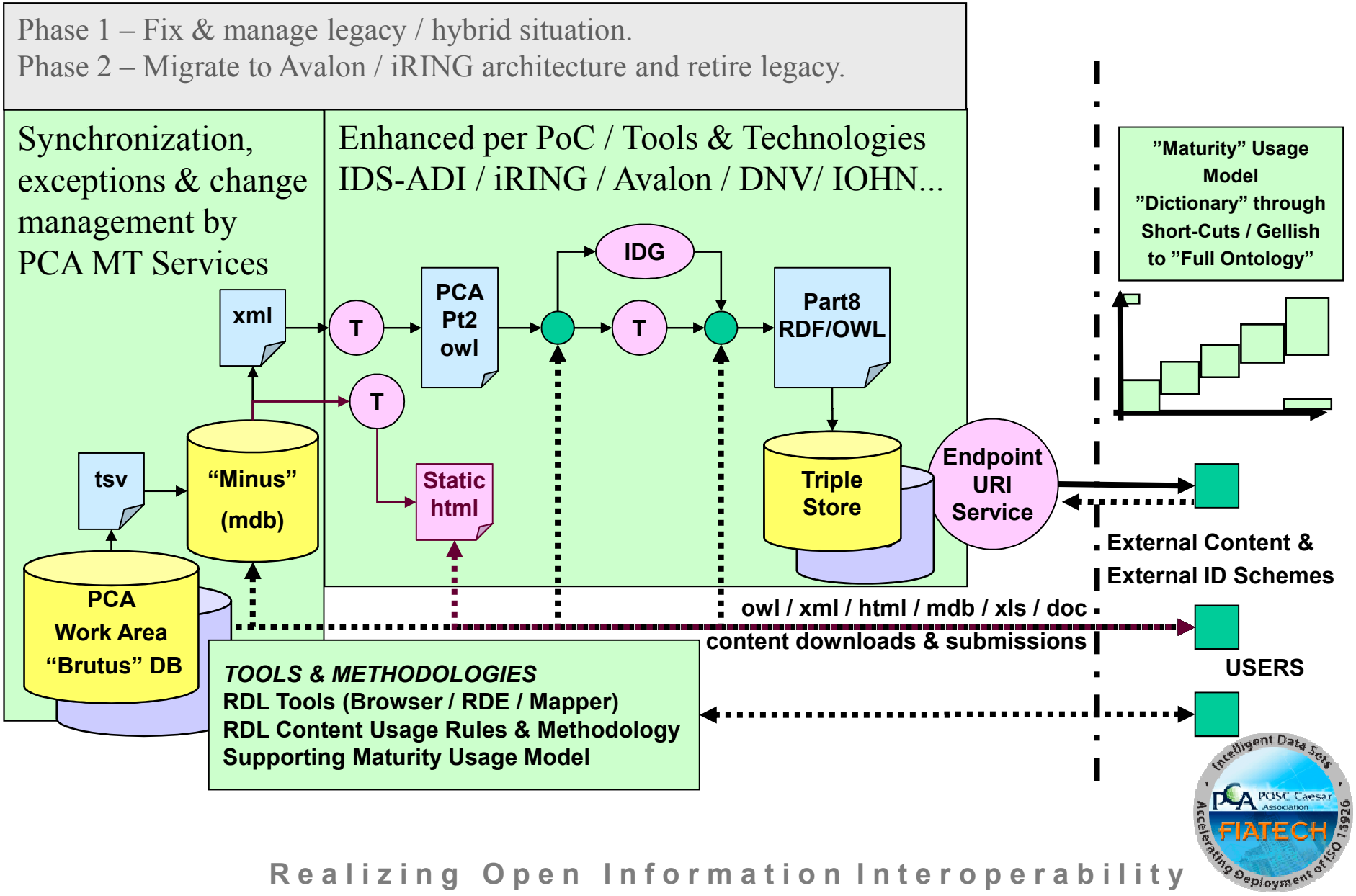
Project Announced Starting March 2010	FIATECH & PCA Joint Operational RDS/WIP Project To establish PCA & FIATECH Reference Data resources as a scalabe, and commercially sustaining *operation*.				
	Software (Systems, Tools & Services)	Business (Procedures & Processes)	Core Content (Classes & Templates)	New Content Scopes (Classes & Templates)	Ongoing RDL/RDS Operation (OPEX)
Phase E (Existing & Pre-Agreement)	Existing PCA RDS / mdb / xls / xml / html & Existing IDS-ADI / iRING / p2/7/8/9 triple stores	Existing PCA & FIATECH membership & project activities. Outline planning agreement.	Existing PCA RDL 15926 p3/p4 content & PCA extensions & Existing *proposed* user content.	Existing PCA RDL	Existing PCA RDS Operational Support SLA
Phase F (Front-End Establishment)	Nil	Establishing PM. Planning Ph1/Ph2. Funding model. Business-case(s). Creating EL9/15926 "road-map" context.	Nil (*Only as funded by existing projects*)	Ongoing as existing	Ongoing as existing
Phase 1 (Enhancement & RFP)	Minimum maintenance development of existing mixed systems & tools.	Agree compliance methodology. Synchronization of mixed systems. Create specification for third-party RFP.	Extend Core RDL to Template Signatures *Initial set* consistent with methodology	New Content Projects (AEX Schema) (Proteus Schema) *(Budgetted and planned projects, but not part of Operational RDS/WIP project scope)*	Enhanced PCA SLA to support Ph1 systems, business & content.
Phase 2 (New Development)	Develop and migrate content to new third-party supported systems & services.	Place contracts for new third-party systems & services.	Nil (*Separate funded projects*)		New SLA's based on third-party RFP.

The Joint Operational RD Project - Phase F

F = Front-End Establishment

- **Business, Funding & Governance model for ongoing operation.**
- **Road-map for combined PCA & FIATECH EL9/15926 strategies as context for other collaborations & developments.**
- **Planning & Estimating for Phases 1 & 2**
- **Resourcing & Bidding strategies for Phases 1 & 2**
- **Reviews with Key Stakeholders.**
- **Risks & Mitigations.**

Improving the interim situation



The Joint Operational RD Project – Phase 1

Manage the interim endpoint improvements (above).

Consolidate & agree compliance & usage methodology and enhance *Core* Class & Template Content consistent with this & add Part 3 Geometry *Base & Core* Templates.

Develop RFP(s) for enhanced systems & services, from
- **Existing PCA RDS systems and service level agreements**
- **Avalon proposed service requirements**
- **Agreed business model for ongoing operational needs**
- **Agreed packaging per bidding strategy**

Joint Operational RD Project - Phase 2
Implement & Deliver Operational Services

Reference Content Business Services

- (Free to All) Read & Licensed Use
- (Free to All ?) New ID-Generate & Licensed Use
- (Subs-based ?) Content-management & validation
- (Subs-based ?) Support to users & SIG's
- (Subs-based ?) Certified-write
- (Fee-based ?) Content & standardization proposals from users & SIG's
- (Fee-based ?) Certification of users and tools
- (Fee-based ?) Training & related consulting
- (?) Voluntary tool taxes / royalties

Subs =
Payment per annum

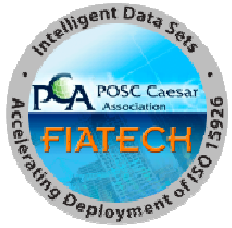
Fee =
Payment per scope

AVALON Substrate

- Provider Relationships Management
- Scalability Management
- Service Subset Management
- Software Management
- Admin Management

AVALON Infrastructure

- Network Access Provider
- Application Hosting Provider
- Content Storage Provider
- Backups Provider
- Operations Charging Provider


Intelligent Data Sets
POSC Caesar
Association
FIATECH
Accelerating Deployment of ISO 15926