# ILAP Use Case and PCA & ISO

**2019 MIMOSA Open Meeting**

**Houston 2019-12-04**

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POSC Caesar Association

# Summary

- **ILAP Use Case**
  - Exchange between scheduling systems (Safran, Primavera MS Project)
  - Plans for next phase
- POSC Caesar Association (PCA)
  - READI – REquirement Asset Digital lifecycle Information
  - RDL 2
- ISO/TC184/SC4
- Opportunities for cooperation between MIMOSA and PCA

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# Integrated Lifecycle Asset Planning

- ConocoPhillips, ENI, Equinor and AkerBP has funded the project since 2012
- EPIM is project executer
- PCA standardize and fasilitate global co-operation. MIMOSA
- ILAP is a project within IOGP ISSC

**Note: every Norwegian contractor supports this initiative**

# ILAP project goals achieved


1. **Developed an international standard for schedule data terms: ISO15926-13. Published in 2018**

2. **Developed «API» that supports the standard and schedule software Primavera, SAP, Safran Project, Excel and MS Project**

3. **Marketed the project and standard to get support and use of it**


ILAP

# OGI Scheduling Pilot

Use case description to demonstrate interoperability of schedules between different scheduling systems

# 1. Objective for interoperability test

To demonstrate that schedules can be transferred between different scheduling systems and still contain the same schedule information

# 2. Preparations, basis and prerequisites

Individual Scheduling tool preparations:

- Time-now / data date to be set
- Calendar sets to be configured
- Resources sets to be configured
- Non ILAP Core field definitions to be defined and configured (e.g. Activity Codes / Reference fields)
- No Resource Profiles to be used

Other notes

- Scheduling tools will have «standard» set-up, hence network analysis results may vary slightly
- Interdependency (logic) lags are handled differently with regards to calendars. This may effect network analysis result
- Periodized values might vary due to different calculation rules between software

# 3. Base schedule to be used

There's an excel spreadsheet containing all schedules to be used for the interoperability test

The Excel spreadsheet is named: "OGI ILAP Schedules"

From this Excel spreadsheet five ILAP XML files are generated:

- OGI ILAP Schedule level 1
- OGI ILAP Schedule level 2
- OGI ILAP Schedule level 4
- OGI ILAP Schedule level 5 installation jobs
- OGI ILAP Schedule level 5 maintenance jobs

# 4. Interoperability test

The test of interoperability shall be performed by an independent organization

The interoperability test shall be executed as follows:

Relevant ILAP XML files (from Excel) are:

a) Imported into scheduling system no. 1
b) Exported from scheduling system no. 1
c) Imported into scheduling system no. 2
d) Exported from scheduling system no. 2
e) Imported into scheduling system no. 3
f) Exported from scheduling system no. 3

The exported ILAP files from scheduling system no. 3 shall be verified against the original ILAP XML files

# 5. Accept criterias for interoperability

The interoperability shall be verified as follows:

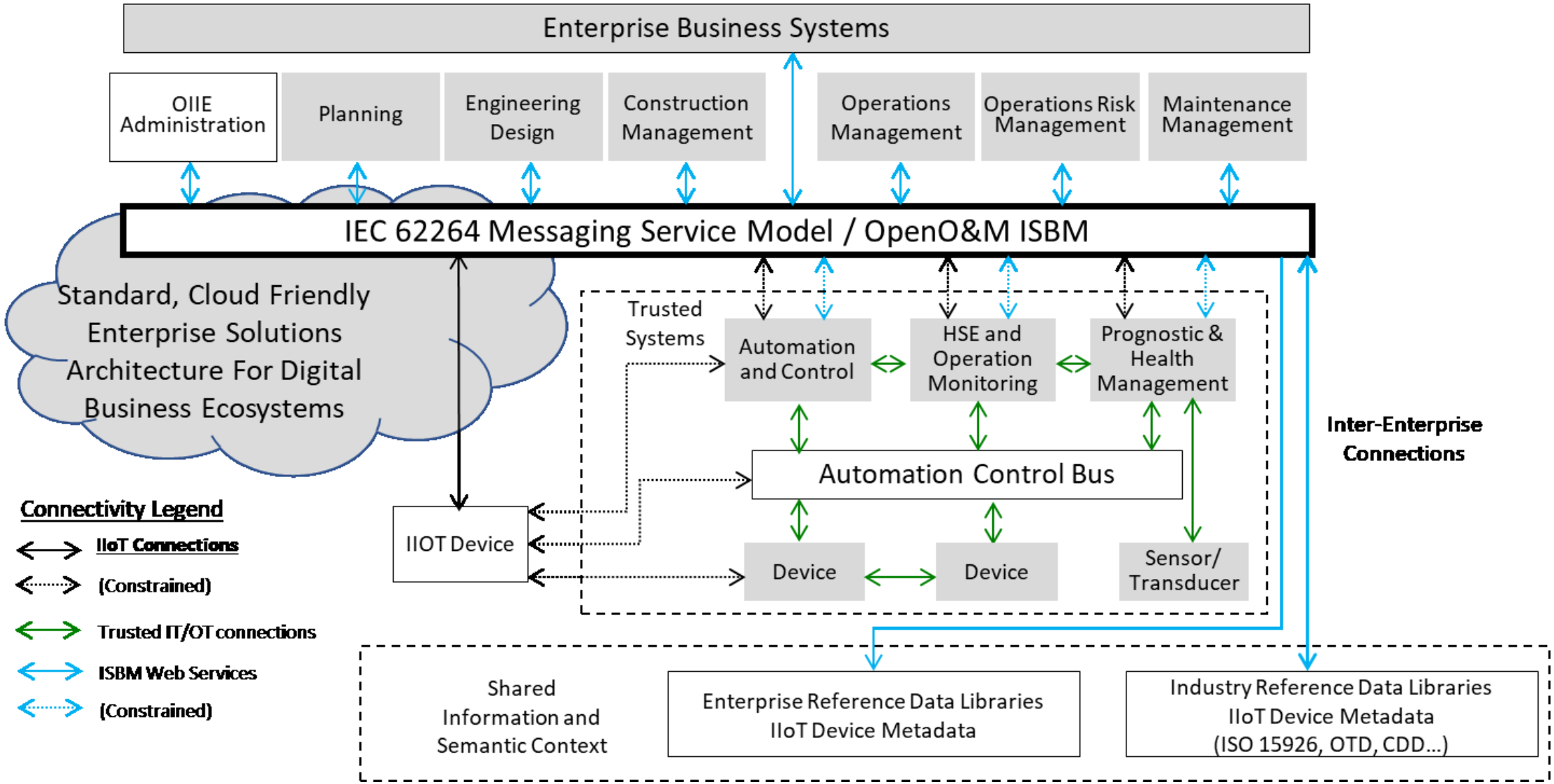
a) Import the Original XML and the Result XML files into Excel and compare the content between the two files

b) There shall be no change of any information, such as activity text, dates, hours, locations or other information

c) There shall be no change of dependencies

d) After verifying this, a report to be issued by the independent organization

# Intra-Enterprise OIIE Digital Ecosystem



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# What is READI?

READI transforms the way we work with documentation

by changing

work processes and business model

# Participatipants in the READI JIP

6 operators

3 contractors

3 organizations













# READI purpose, scope and main deliverables

**Purpose:**

More efficient technical information business processes through digitalization

**Scope:**

- NORSOK standards
- ISO 15926, part 14
- IEC 61355
- JIP36 (CFIHOS)
- JIP33
- IEC/ISO 81346

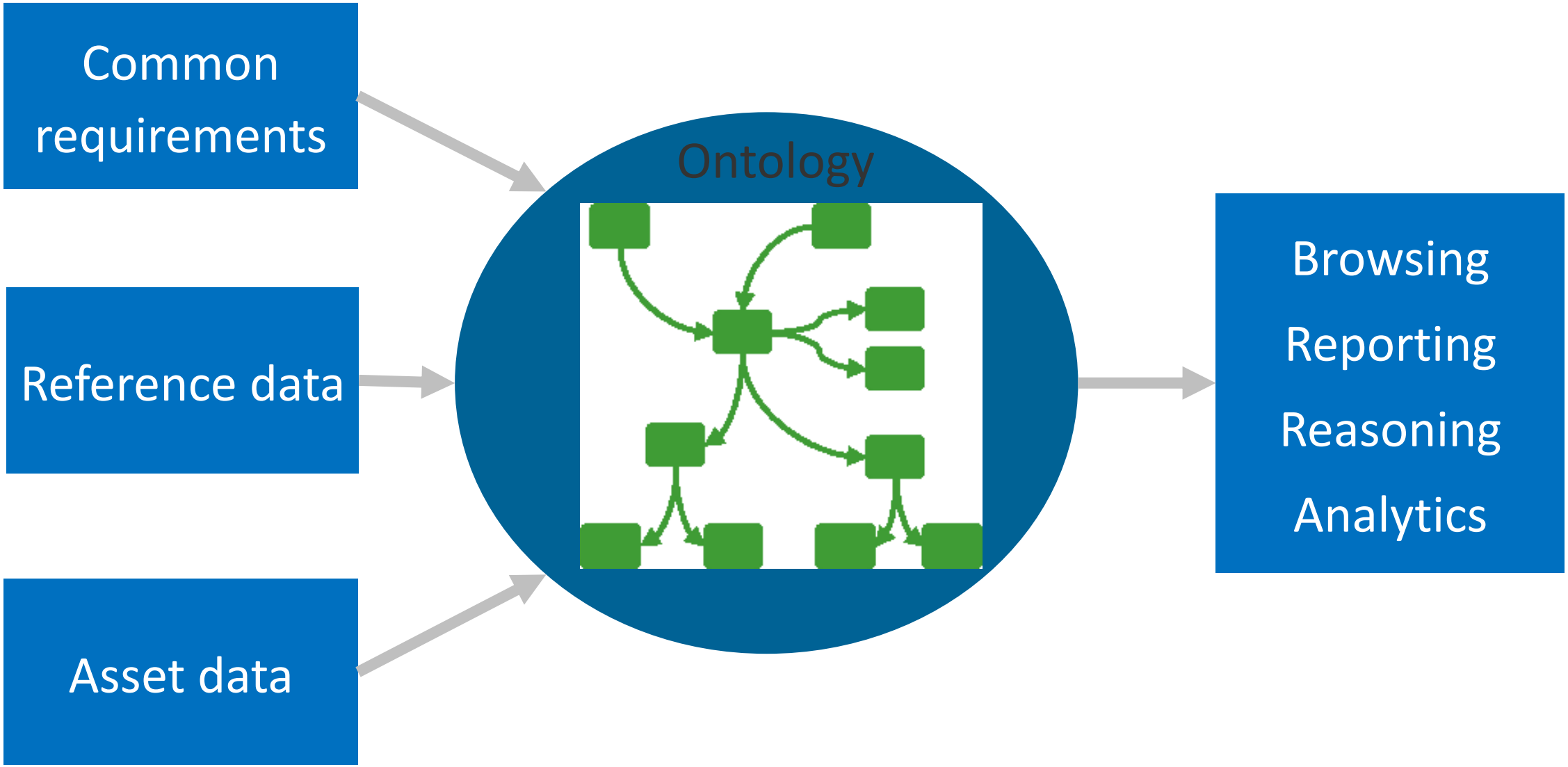
- And other relevant standards

**Establish service for digital NORSOK requirements**

**Transform documentation requirements to machine readable format**

**Agree common documentation requirements**

# Ontology – the enabler to change the industry practice



# Preliminary business case

***Business case elements***



Estimated impact for Norwegian Continental Shelf:

- Annual savings from: 5 – 10 %
- Annual savings from : NOK 3.6 – 7.2 billion

Cost savings due to:

- Clearer and more precise requirements
- Digital control of documentation
- Re-use of concepts
- More effective engineering work processes

# PCA RDL 2

- Include extensions and improvements from:
  - PCA
  - DEXPI
  - MRAIL/SVRDL (Bechtel, Fluor, - - - )
- A private Fluor version also include extensions and improvements from JIP 36 (CFIHOS)
- PCA RDL 2 will be the basis for a new edition of ISO/TS 15926-4 RDL Core reference data

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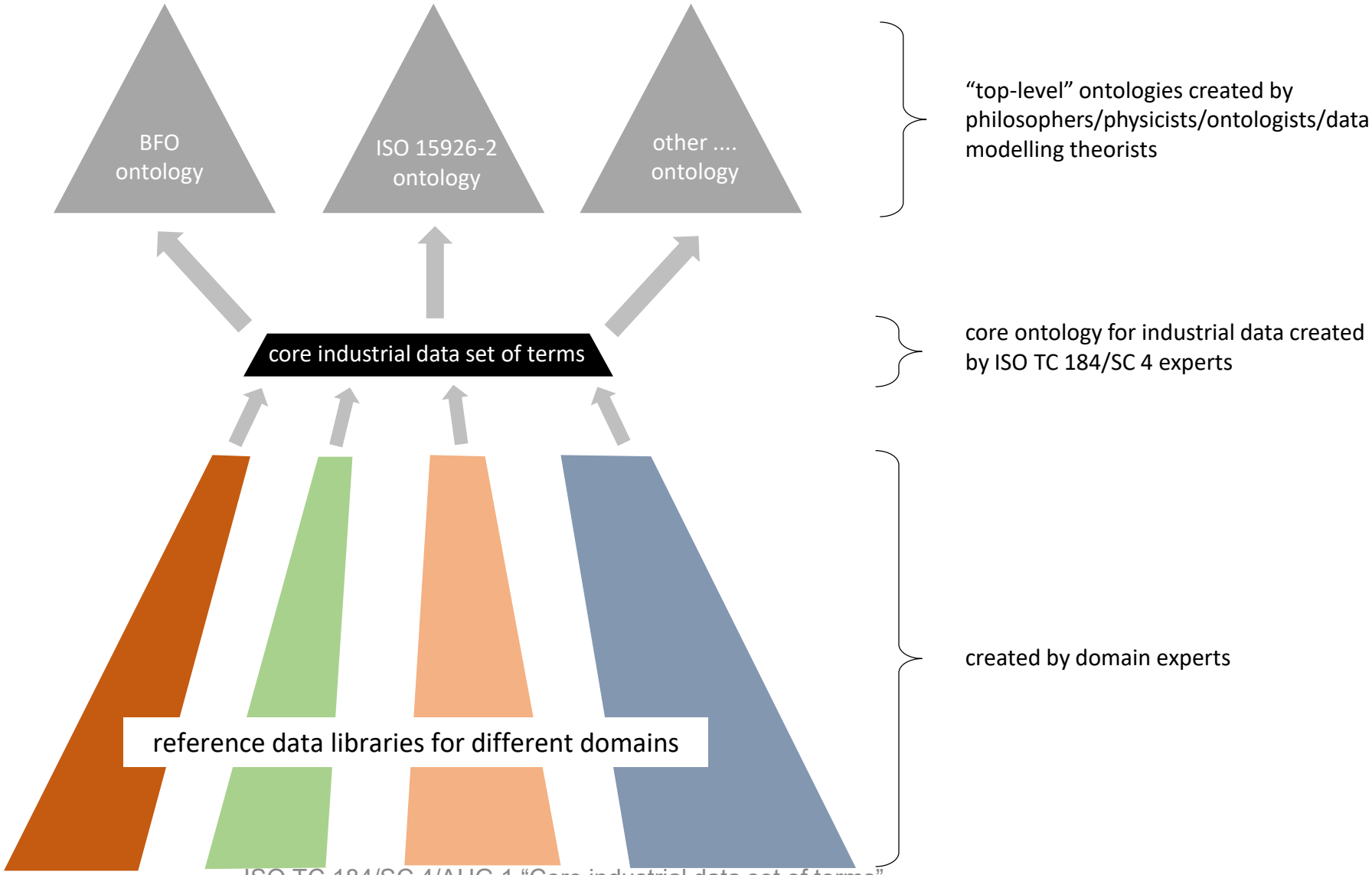
# Main ISO/TC 184 activities for PCA

- ISO/TC184/WG6: Asset intensive industry interoperability
- ISOTTC184/SC4 Industrial Data
  - Improve ISO/TR 15926-4 Core RDL
    - PCA RDL 2
  - Living Lab for triple store for reference data
    - Reference data for ISO 10303-239 & 242 (Aerospace, Defense and Automotive) and ISO 15926 (Oil, Gas, Process and Power)
  - Core industrial data set of terms
    - Common ontology for SC4 (see next slide)
  - New standards
    - ISO/TR 15926-14: *Data model adapted for OWL 2 Direct Semantics* (PCA)
  - Geometry and Topology Ontology Efforts – Joint SC4 activity
- ISO/IEC JWG 21 Smart Manufacturing Reference Model(s)

# Opportunities for cooperation

- ISO/TC184/WG6: Asset intensive industry interoperability
  - ISO 18101 parts
  - Use Cases
  - Pilots
- Projects:
  - Mapping between ISDD and RDL 2 (“New IIMM” WG)
  - ILAC – Extending ILAP – integrating schedule, cost weight and estimation
  - ILAP – *Integrated Lifecycle Asset Planning* Ed.2

# Making reference data reusable



# Core industrial data set of terms

## a “Dublin Core” for engineering?

- Enables the definition of classes, relationships, and properties that are equally applicable to all ISO/TC 184/ SC 4 standards including IEC CDD

- A terminology that is not only understandable by ISO/TC 184/SC 4 experts, but also by domain engineers and by business decision makers;
  - Enables the development of **reference data** that are equally applicable to all ISO/TC 184/SC 4 standards
  - Allows **domain experts** will produce detailed taxonomies that specialise generic items in the core industrial data ontology **without knowledge of any particular ISO/TC 184/SC 4 standard or of any particular “top level” ontology**
  - **Defines an interface to reference data developed outside ISO/TC 184/SC 4**, and thereby enable its use by all ISO/TC 184/ SC 4 standards

# Status November 2019

- Participants:
  - ISO 10303-239&242 (Aerospace, Defense and Automotive)
  - ISO 8000 (Data Quality)
  - ISO 15926 (Oil, Gas, Process and Power)
  - IEC CDD (Common Data Dictionary)
- Asked each of the 4 participating teams to propose 20 initial terms
- Got 132 terms
- 47 terms defined
- Seek to boil these down into a “Dublin Core for industrial data”
- Activity to be completed by end of April 2020
  - Will be published as an ISO Technical repot

# Terms defined so far

- activity
- activity breakdown
- assembly
- asset
- breakdown
- capability
- collection
- complete breakdown
- component
- component of a system
- component of assembly
- design
- function
- functional breakdown
- kind
- kind of state
- maintenance condition
- material object
- material product
- method
- network
- organization
- organization status
- part
- part of assembly
- partial breakdown
- participant
- particular
- person
- person status
- physical breakdown
- plan
- position in organization
- process
- product
- requirement
- role
- role in organization
- service
- shape feature
- specification
- state
- sub-assembly
- sub-system
- system
- system breakdown
- system element

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  - ISO 18101 parts
  - Use Cases
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- Projects:
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  - ILAC – Extending ILAP – integrating schedule, cost weight and estimation
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# Thank you for your attention