



INCOSE Årsseminarium

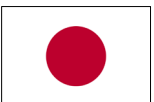
Erik Molin erik.molin@seia.se

SWEDISH INDUSTRIAL INTEROPERABILITY
ASSOCIATION



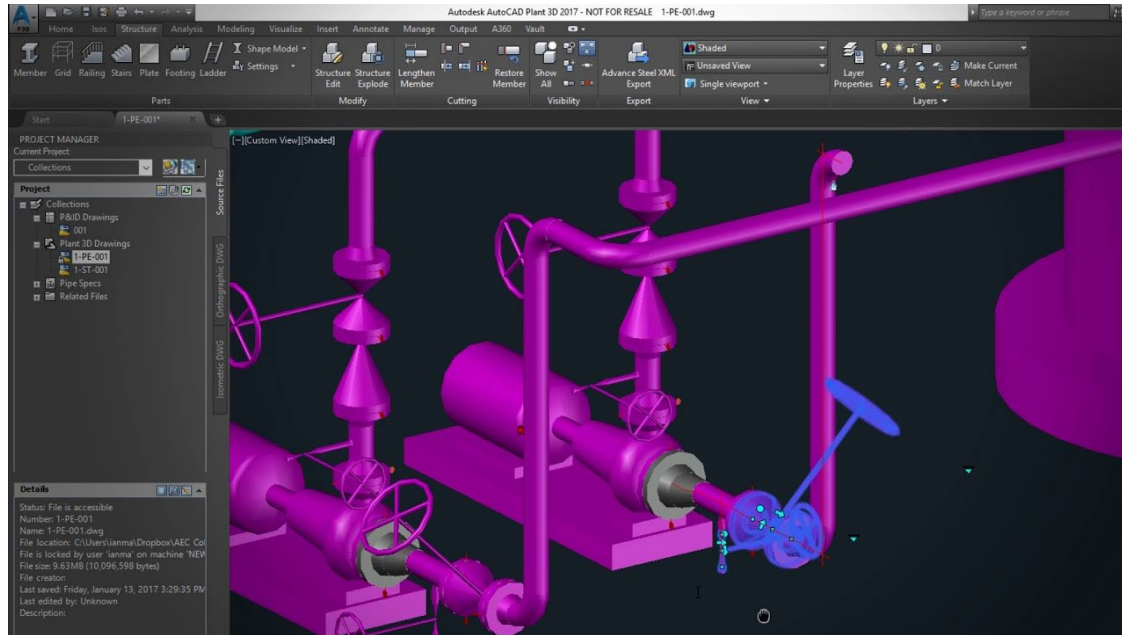
Key is standardization and cooperation

ISO 15926

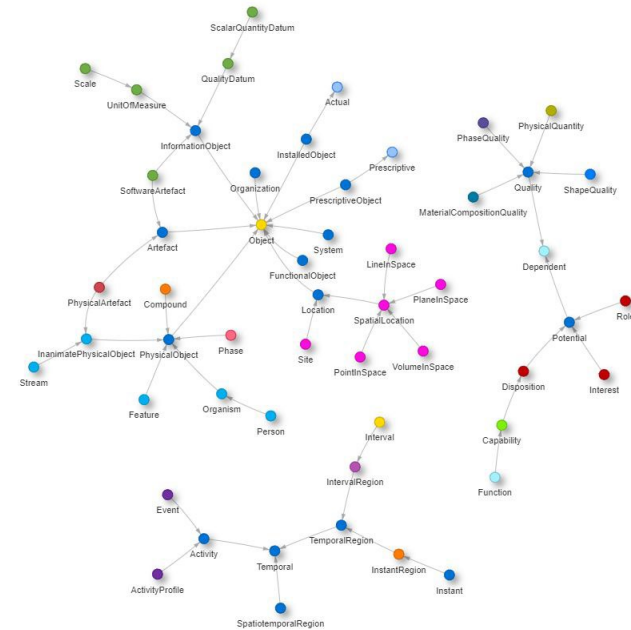


International network and partners - all non-profit

ENGINEERING PERSPECTIVE

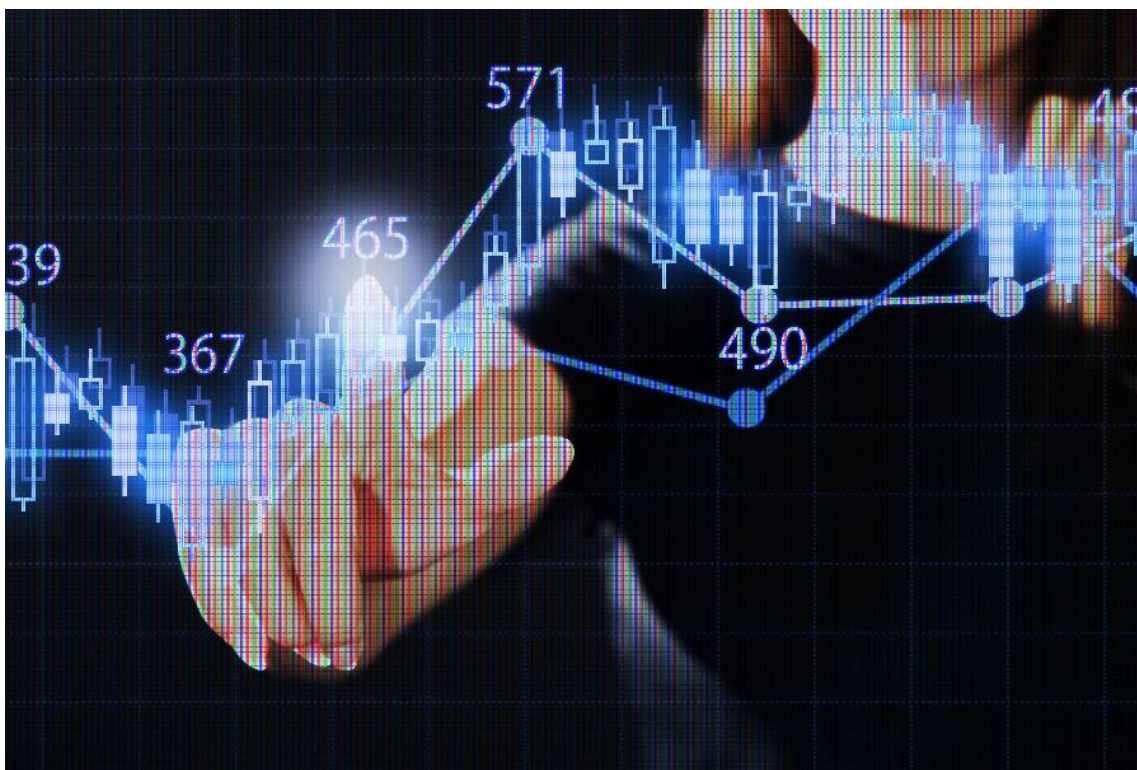


COMPUTER SCIENCE PERSPECTIVE



COMMON CONCEPT DESCRIPTION– COMMON LANGUAGE

WHAT IS SEIIA?



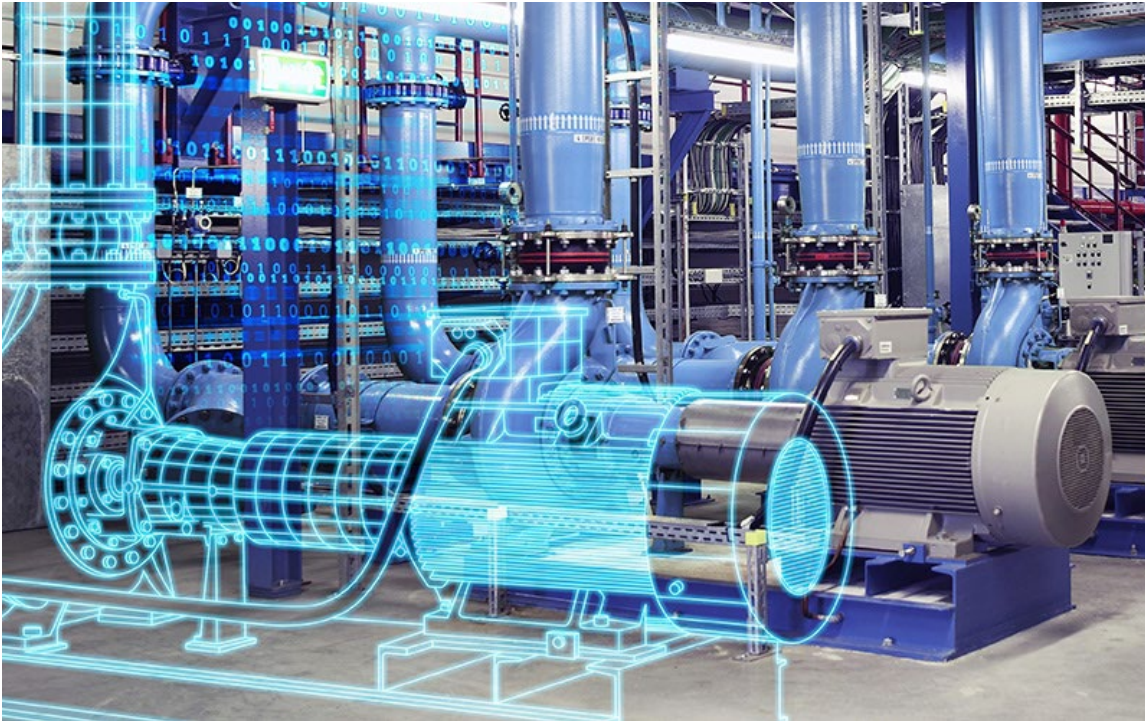
A non profit association for

- increase understanding of interoperability in industry information handover
- adopting international standards and best practice
- participate in international standardization and return Swedish know-how to global development

SEIIA.SE Swedish Industrial
Interoperability Association



FUNDAMENTAL IN SEIIA



Not invent any new wheels

There is lot of industrial standards and ISO/IEC standards that we could adopt and participate in further development instead of develop new.

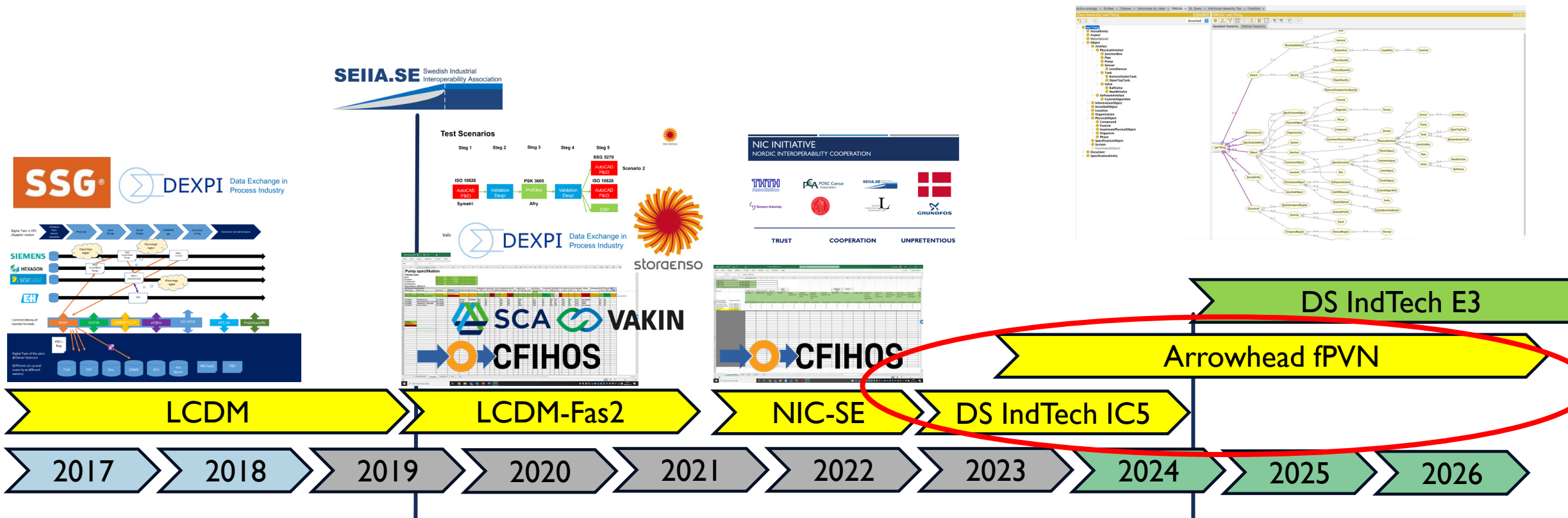
Act Global

The Interoperability issue is not a local, national questions it's a global issue.

Open not closed!

Non proprietary systems and strategies

HISTORY - FUTURE



ISO 15926 - IEC/ISO 81346

ISO 15926-14 to ISO 23726



MEMBERS 2024-10-09



PARTNERS



SEIIA BOARD



Johnny Sundström
Stora Enso /
Chairman SEIIA



Andres Dingvall
Rauchwerger /
WSP



Bo Ottosson /
Siemens



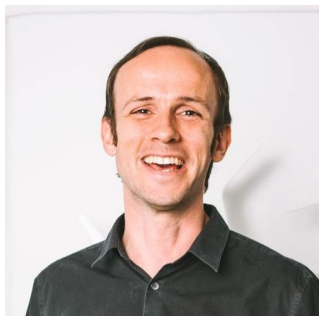
Mats Larsson /
Holmen



Mattias O'Nils /
Mid Sweden
University



Maria Frönell /
Preem



Rogier Jongeling /
Plan B



Hans Rönnbäck /
Endress+Hauser



Micael Simonsson /
EMV Stainless AB



Walter Jonasson /
Vakin



Malin Nerpin /
Boliden



Stefan Malmsten /
Nouryon

PROBLEM STATEMENT:

The lack of a common digital language in the Norwegian oil and gas industry cost several > 10 BNOK, each year*



*Konkraft report (2018), Konkurranskraft – norsk sokkel i endring, page 58 - 60

```
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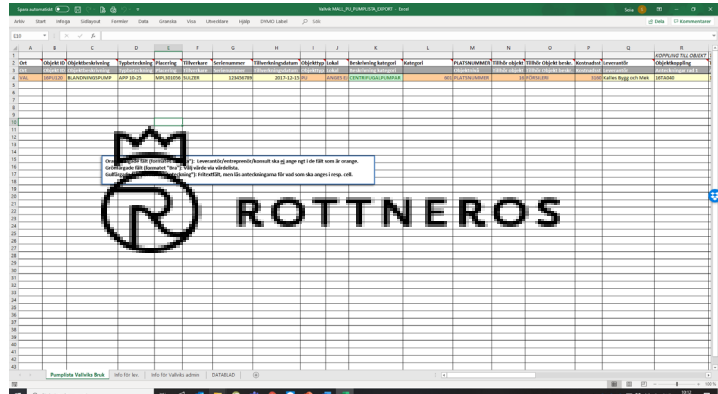
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Excel spreadsheet showing a table with columns for 'Tank specifikation' and 'Tekniska Data'. The table contains technical specifications and data points.

Excel spreadsheet showing a table with columns for 'Pump specifikation' and 'Tekniska Data'. The table contains technical specifications and data points.

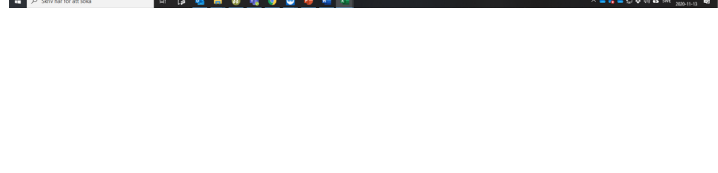
Excel spreadsheet showing a table with columns for 'Rör specifikation' and 'Tekniska Data'. The table contains technical specifications and data points.

Excel spreadsheet showing a table with columns for 'Material' and 'KOMMENTARER'. The table lists various materials and their corresponding comments.



Excel spreadsheet showing a table with columns for 'PUMPLISTA' and 'FLOODESCHEMA PROJEKTOR'. The table contains project data and scheduling information.

Excel spreadsheet showing a table with columns for 'VENTIL OCH ARMATURLISTA' and 'ARBETSHANLING'. The table contains technical specifications for valves and piping, along with work order details.



Excel spreadsheet showing a table with columns for 'GRUNDDATA' and 'Pump'. The table contains basic project data and pump specifications.



LCDM PHASE 2 – CFIHOS PILOTER

Spara automatiskt Pump per projekt demo 1 - Sparad

Arktiv Start Info Sida layout Formler Data Granska Visa Utvecklare Hjälp

B30

1 Pump specifikation

2 Tekniska Data

3 Bruk: [CFIHOS-1000094](#) [http://data.15326.org/utthos/1000094](#)

4 Projektnr: [CFIHOS-1000091](#) [http://data.15326.org/utthos/1000091](#)

5 Projektamn: [CFIHOS-1000094](#) [http://data.15326.org/utthos/1000094](#)

6 Rapportdatum: 2020.05.12

Objektnummer	Beskrivning	Schema ref	Tillverkare	Typbeteckning	Serienummer	Mediakod	Temp	Konc.	Dens.	Hjuldiameter (mm)	Flöde (m3/h)	Varvtal (rpm)	Tryckhöjd	Effekt (kW)	Fro	Dimension (mm)	Axelhopp	Hjultyp	Tätningstyp	NPSH	Tryckkl.	Wikt
						SSGI	IC	%	(kg/m3)	Instal	Max	Min	Normal	Max	Instal	DN	DN in	DN ut	(mm)	(m)	(Bar)	(kg)
11																						
12																						
14	211PU0001	Råvattenpump 1	SBT-200411	A60-600	100169690	W03	Z5		525	525	3200	770	51	200	127	500	600	90 m7	Specialöppet	4,0	10	
15	211PU0005	Brandvattenpump 1 El-Drivet	SBT-210534	A32-80		W23	Z5		270	330	225	2850	90	90	75	125	80	42 k7	Öppet	4,8	16	
16	211PU0010	Tättningspump 3 i Remv-tank	SBT-201365	A22-80	100169846	W20	Z5		230	265	250	2733	75	64	125	80	32 k7	Öppet	4,6	16		
17	211PU0030	Pump 1 Kylvatt	SBT-200428	A63-600	100169794	W03	Z5		635	635	4000	1635	50	600	607	500	500	90 m7	Specialöppet	7,2	10	



Spara automatiskt QQQQQQ_Objektmall_AAMDD Idus - Demo (version 1) - Excel

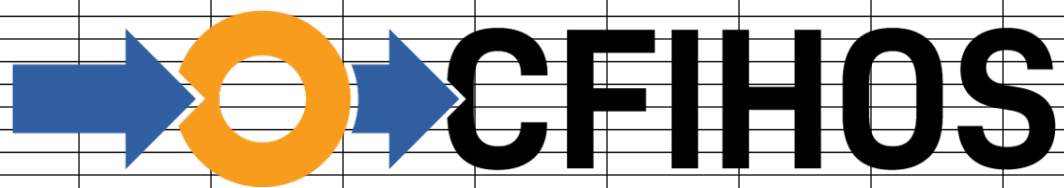
Arktiv Start Info Sida layout Formler Data Granska Visa Utvecklare Hjälp

A20

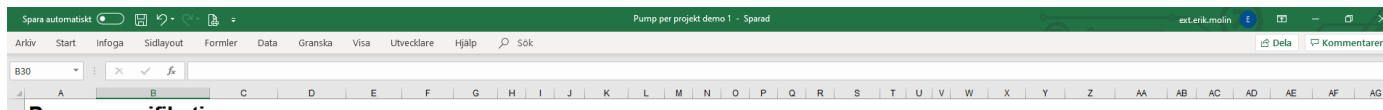
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
OBJECTTYPE	DUSID	TREEPOSITION	POSID	A1	I1	I2	GROUPS	NOTES	RUNTIME	A2	A3	A4	A5	A6	B1
Fält enligt "Objektlista"															
Objekttyp				Beteckning	Funktion + Komplettering text					Typbeteckning				Fabrikat	
					Grunddata										
Objekttyp = Bladnamn	Dusidentitel	Nivå	Pos.Id	Benämning	Information	Grupp	Anteckningar			Typbeteckning	Till.nr / Serie nr.	Version / Asmodell	Fabrikat	Leverantör (befintlig)	Monter
CFIHOS-1000094				CFIHOS-1000098	CFIHOS-1000017					CFIHOS-1000053	CFIHOS-1000093		CFIHOS-1000094	CFIHOS-1000094	
http://data.15326.org/utthos/1000094				http://data.15326.org/utthos/1000017						http://data.15326.org/utthos/1000053	http://data.15326.org/utthos/1000093		http://data.15326.org/utthos/1000094		



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	Pumpspecifikation based on CFIHOS 1.4																		
2	Plant name	CFIHOS-10000006																	
3	Project code	CFIHOS-10000161																	
4	Project name	CFIHOS-10000084																	
5	Project Management and Engineering	CFIHOS-20000001																	
6																			
7	Svenska																		
8	Tag class name	Tag class name ID																	
9	CFIHOS-10000040																		
10	centrifugal pump	CFIHOS-30000521	X																
11	reciprocating pump	CFIHOS-30000862	X																
12	rotary pump	CFIHOS-30000864	X																
13	eductor	CFIHOS-30000038	X																



LCDM PHASE 2 – CFIHOS PILOTER



In principle, we could transfer data from our tools more or less automatically to the desired standard specification!

From a big EPC in Swedish P&P industry.

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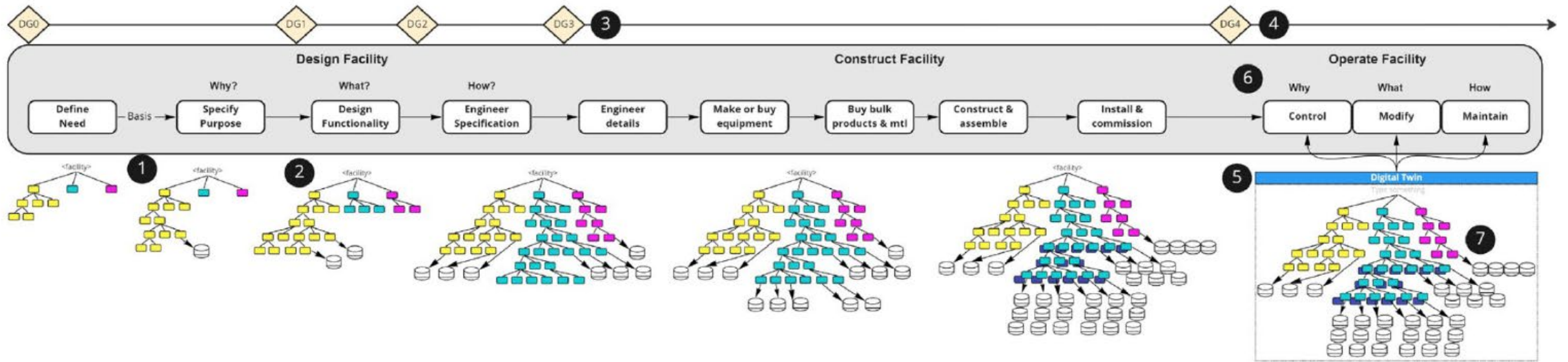


ISO 23726 Ontology based interoperability (OBI) parts

- Part 1: Overview and fundamental principles (PWI*) Propose in SC4 88th plenary
- Part 2: Vocabulary(NWIP**) Propose in SC4 88th plenary
- Part 3: Industrial Data Ontology (IS) Ongoing – currently CD
- Part 101: Ontology for scheduling (NWIP**) Proposal in SC4 88th plenary

* Preliminary Work Item
** New Work Item Proposal

IDO is the "grammar" of a digital language that enables a transition from documents to information models as carriers of information in work processes



[Source: "The Information Modelling Framework Manual", v2.0.1, DISC/Equinor Spine, ...]

VAD ÄR EN ONTOLOGI OCH VAD HAR MAN FÖR NYTTA AV DEN

SEIIA IC5-2

2024-09-24

Bubbles Notetaker

Bubbles Notetaker

- OW Oskar Wi...
- PS Söderbe...
- OL Lindén, ...
- TH Torbjörn...
- JD Jan Van ...
- SD Sören Da...
- PR Rylandsh...
- WJ Walter J...
- DI Ingvarss...
- Erik Molin
- SG Shalin G...
- +6



<https://youtu.be/JMV2KgXtybU?si=lg0PhHroo2HldFmf>

Länk till SEIIAs YouTube
kanal och slutredovisning IC5

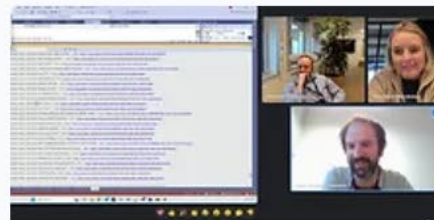
Creating a common understanding of what things are

Eliminate misalignments and embrace a structured ecosystem for information, where operational efficiency and accurate decisions are the norm.

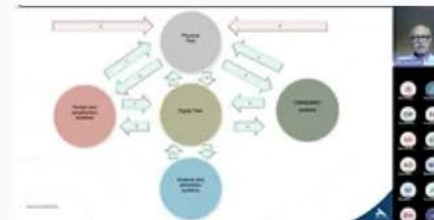
News



Want to learn about IMF?



Draga uploads new data to PCA library



OBI and IDO Training Videos Now Available

<https://www.posccaesar.org>

Libraries

PCA Library Services

Beta testing

Our latest library is still under development, but have now reached a point where it is ready to undergo beta testing. The library consists of reference terms and IMF types. The reference terms are the building blocks for the IMF Types.

About the library

Explore the new library

PCA RDL

Production

Extends ISO 15926-4 reference data based on the ISO 15926-2 data model. You can search the entire library or run structured queries (SPARQL) against the content. If you don't know where to start, search for PUMP.

Go to library

PCA RDL

Staging 3

PCA RDL2 including extensions and improvements to PCA RDL – Production implemented over the last 5 years.

Go to library

IDO & PLM

Staging

The Industrial Data Ontology (IDO) is a W3C OWL 2 ontology.
IDO is the initial part of the new multipart ISO standard ISO/NP 23726 Ontology Based Interoperability with the number ISO/NP 23726-3.

Go to library

ISO 15926-4 (edition 3)

Staging

The purpose of this site is to make reference data available to the DISC project.

Working draft.

Go to library

IMF Types

Bulk read

The available data is intended for demo and test purposes only.

Do not use in production applications.

Go to library

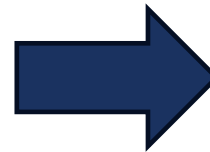
PCA RDL

Staging

This endpoint provides access to PCA RDL core classes. The RDL core has been migrated from ISO 15926-2 to ISO 15926-12 (OWL 2 native). You can search the entire library or run structured queries (SPARQL) against the content.

N/A

ISO 15926-12



SEIIA

OM SEIIA SAMARBETEN PROJEKT EVENT IN ENGLISH

Swedish Industrial Interoperability Association

Svensk industri lider idag av att vi definierar samma sak olika och det gör att våra IT-system inte kan utbyta data automatiskt. Med ett industriellt och internationellt referensdata skulle våra anläggningsintensiva industriföretag kunna etablera gränssnitt som säkerställde datautbyte med hög automatiseringsgrad i alla delar i livsryckeln. SEIIA stödjer detta både nationellt och internationellt genom adoption och implementation av standarder och koncept inom Industriell Interoperabilitet.

SEIIA på LinkedIn Engagera dig i SEIIA

Letter of Intent (Lol)

Navigation

- Home ▼
- Features
- Getting started
- Documentation ▼
- Presentations ▼
- Workshop 2022-02-18
- ISO 15926-14 PCA RDL
- MS Office usage <
- Modelling patterns ▼
- Artefact, function, and activity
- Unit of Measure Context
- Datum Type
- Junction Box Product Type
- Features
- Block Activity
- Area, Rooms, Wall
- Stream Components
- Product Documentation
- Use cases <
- Background <
- Reference Data Library <
- Services <
- Templates <

Welcome

The [POSC Caesar Association \(PCA\)](#) provides reference data that is developed in a collaboration between the [READI](#) Joint Industry Project and the KRAFLA and NOA Oil & Gas field development projects in Norway.

The reference data provided in form of ontologies represented in W3C's Web Ontology Language [OWL 2](#) and it is compliant with the Industrial Data Ontology (IDO).

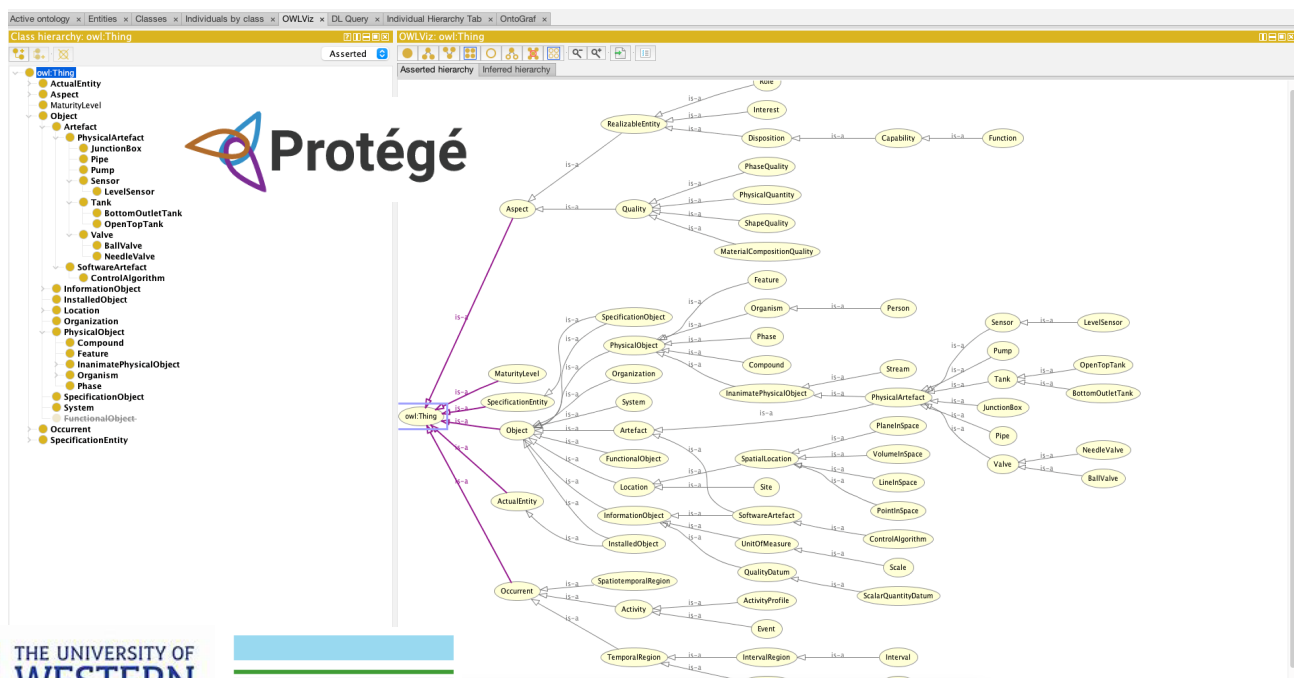
Contact: pca@posccaesar.org. See <https://www.posccaesar.org/wiki/PCA/Contact>



DS IndTech IC5 – Gemensam sematik

Sverige har deltagit i ett internationella utvecklingsarbetet av Industrial Data Ontology – IDO ISO 23726

- Pumplabb -> Modellering med Protegé av en Pump-lab modell
- Nouryon -> Leveransöverensstämmelse och produktkvalitet med hjälp av AI
- Siemens Energy Asset Model -> Befintlig ontologi i UML flyttas till IDO-baserad W3C/OWL-ontologi



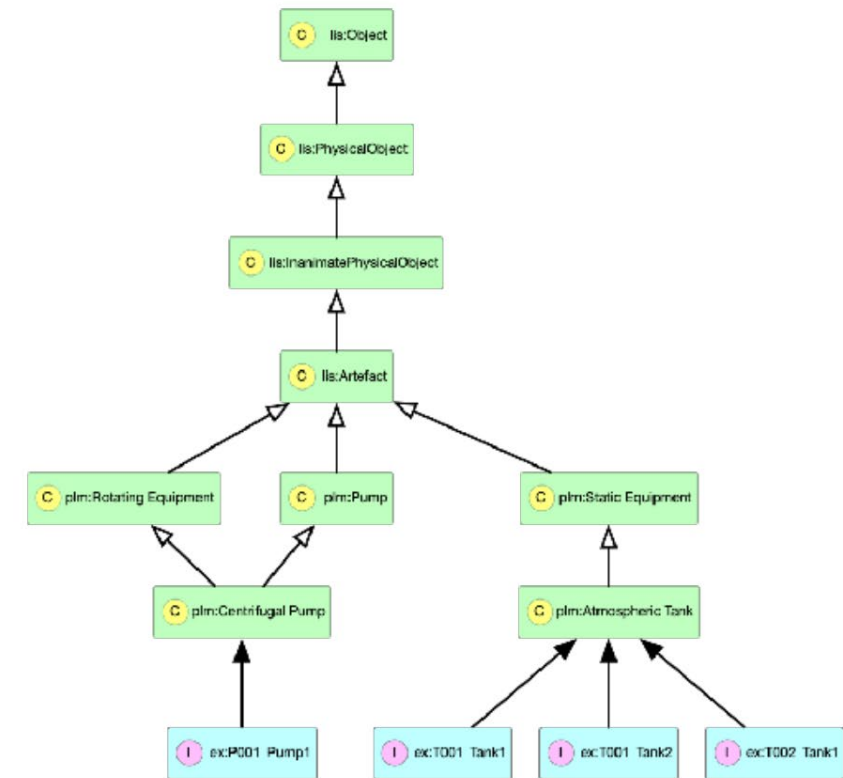
Pump Station

- Semantic model
 - Pump
 - Tanks
 - Pipes
- Model with IDO & PLM



Pump Station

- Classes & Individuals
- Interoperability through alignment



Raw material for a specific mouthwash

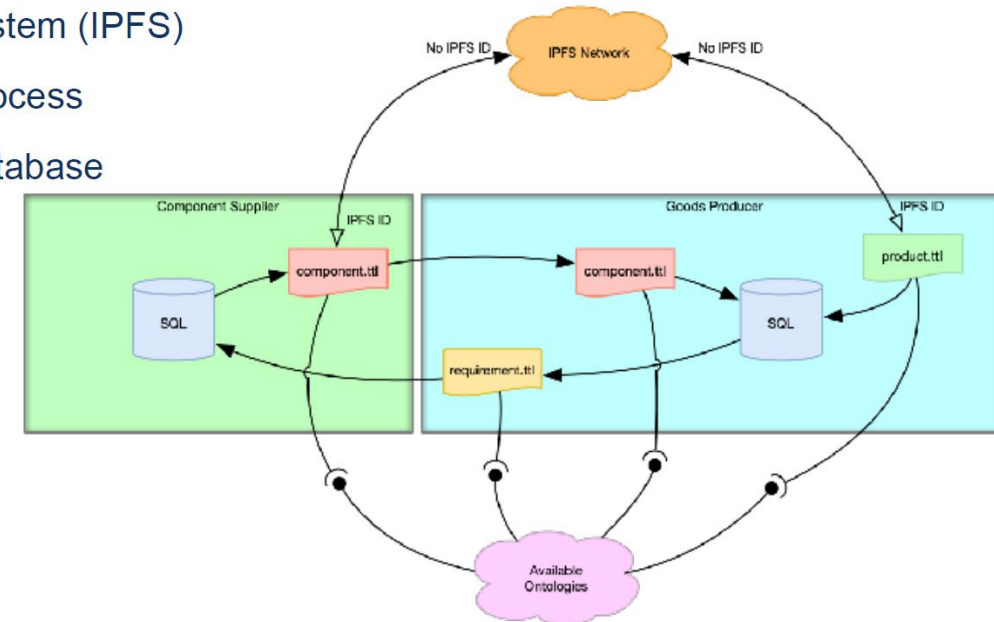
- The scenario:

- Customer requests a green mouthwash with a given density and viscosity.
- With your knowhow, you determine the quality of the raw products and make a request for information to your suppliers for:
 - Alcohol
 - Sorbitol
 - Water



Digital Product Passport (DPP)

- Interplanetary File System (IPFS)
- Model product and process
- Apply on relational database
- Demonstration of SPARQL & SQL



Nouryon

Going from UML (ISO 10303) to IDO

Torbjörn Holm TBHK AB

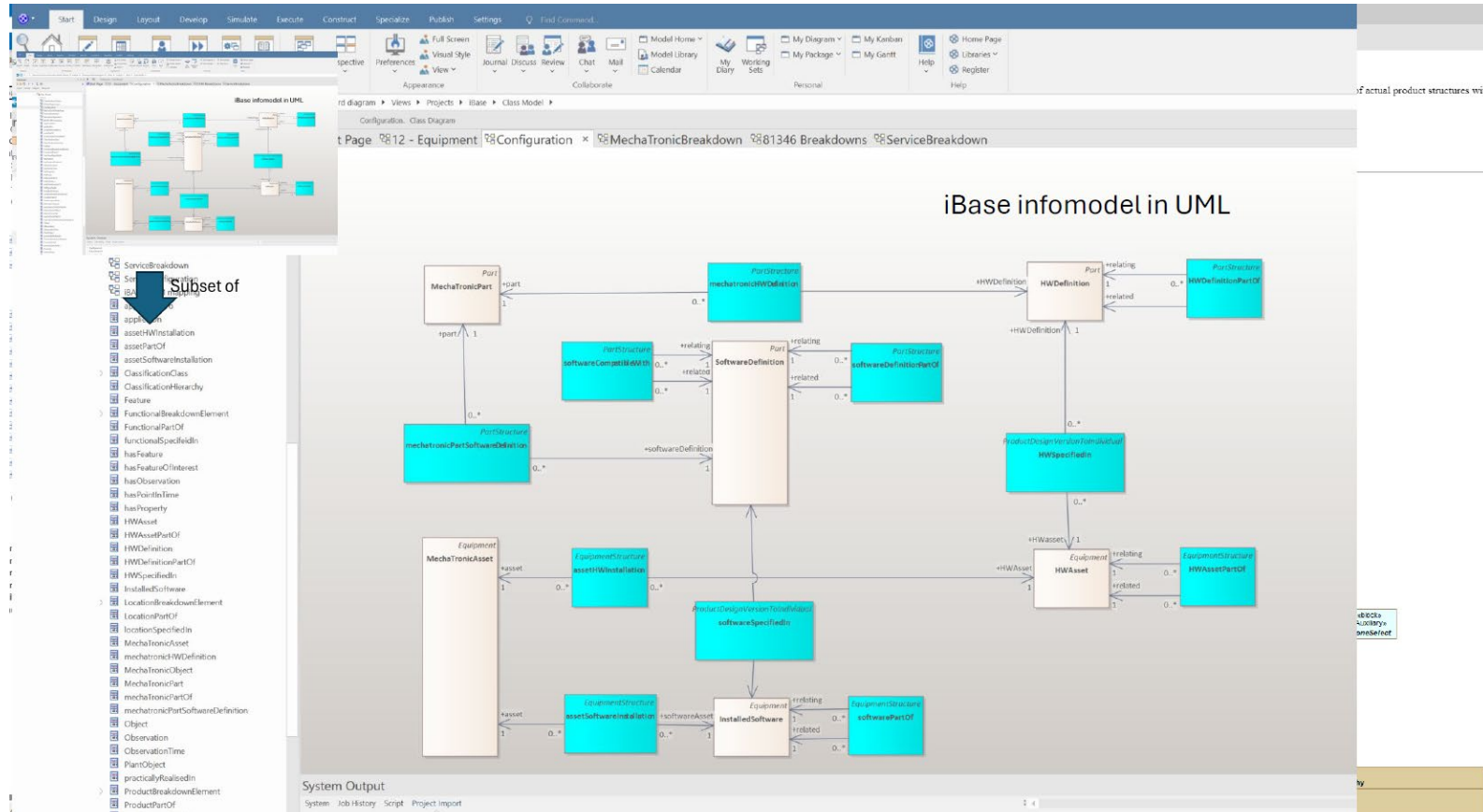


Agenda

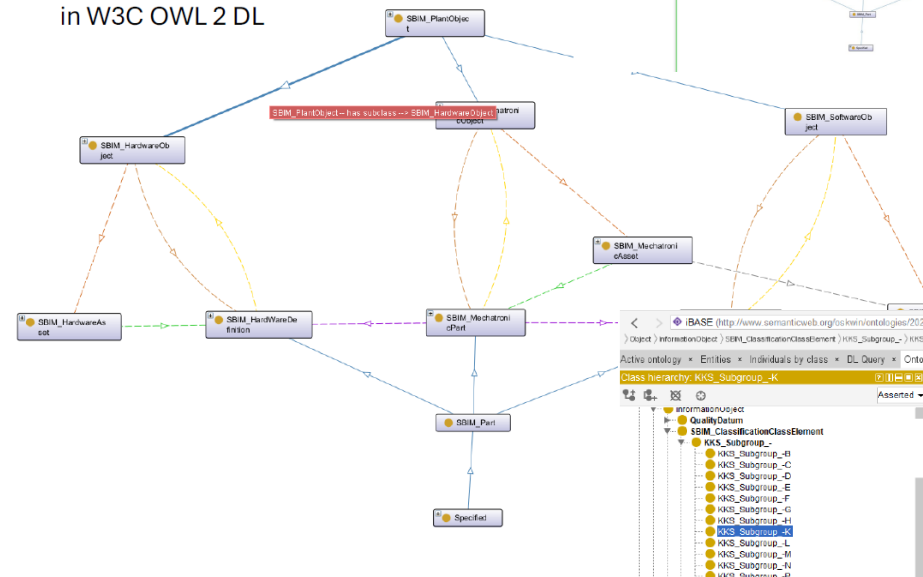
- Introduction
- Siemens Energy Installed Base knowledge graph
- Arrowhead fPVN WP3 work on ISO 10303 ontology with IDO as an Upper Ontology
- Plans
- Discussion

Agenda

- Introduction
- Siemens Energy Installed Base knowledge graph
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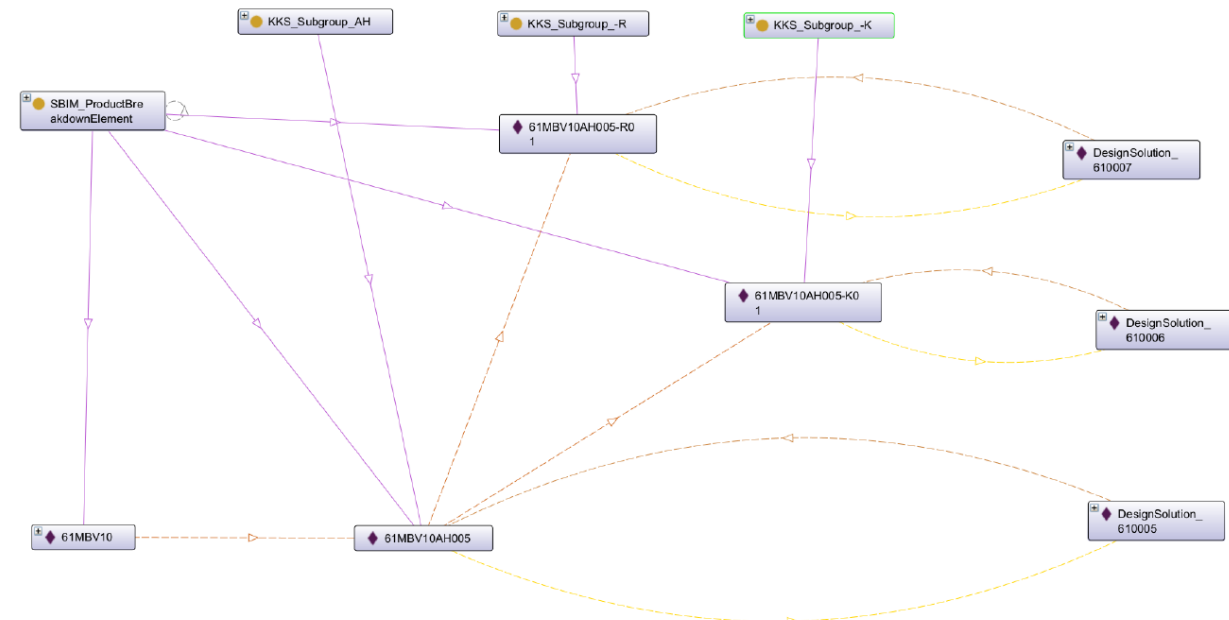


iBASE Ontology in W3C OWL 2 DL



- SBIM_ClassificationClassElement
 - KKS_Subgroup_A
 - KKS_Subgroup_AA
 - KKS_Subgroup_AB
 - KKS_Subgroup_AC
 - KKS_Subgroup_AD
 - KKS_Subgroup_AE
 - KKS_Subgroup_AF
 - KKS_Subgroup_AG
 - KKS_Subgroup_AH
 - KKS_Subgroup_AI
 - KKS_Subgroup_AJ
 - KKS_Subgroup_AK
 - KKS_Subgroup_AL
 - KKS_Subgroup_AM
 - KKS_Subgroup_AN
 - KKS_Subgroup_AP
 - KKS_Subgroup_AQ
 - KKS_Subgroup_AR
 - KKS_Subgroup_AS
 - KKS_Subgroup_AT
 - KKS_Subgroup_AU
 - KKS_Subgroup_AV
 - KKS_Subgroup_AW
 - KKS_Subgroup_AX
 - KKS_Subgroup_AZ
 - KKS_Subgroup_B
 - KKS_Subgroup_C
 - KKS_Subgroup_D
 - KKS_Subgroup_E
 - KKS_Subgroup_F
 - KKS_Subgroup_G
 - KKS_Subgroup_H
 - KKS_Subgroup_I
 - KKS_Subgroup_J
 - KKS_Subgroup_K
 - KKS_Subgroup_L
 - KKS_Subgroup_M
 - KKS_Subgroup_N
 - KKS_Subgroup_O
 - KKS_Subgroup_P
 - KKS_Subgroup_Q
 - KKS_Subgroup_R
 - KKS_Subgroup_S
 - KKS_Subgroup_T
 - KKS_Subgroup_U
 - KKS_Subgroup_V
 - KKS_Subgroup_W
 - KKS_Subgroup_X
 - KKS_Subgroup_Y
 - KKS_Subgroup_Z
 - SBIM_System_A
 - SBIM_System_B
 - SBIM_System_C
 - SBIM_System_D
 - SBIM_System_E
 - SBIM_System_F
 - SBIM_System_G
 - SBIM_System_H
 - SBIM_System_I
 - SBIM_System_J
 - SBIM_System_K
 - SBIM_System_L
 - SBIM_System_M
 - SBIM_ClassificationClassTable
 - SBIM_Document
 - SBIM_FunctionalBreakdown
 - SBIM_FunctionalBreakdownElement
 - SBIM_LocationBreakdown

Lubrication oil system knowledge graph



Arrowhead fPVN WP3 work on ISO 10303 ontology with IDO as an Upper Ontology

- A part of the EU project Arrowhead fPVN
- The team working on this is:
 - Judith Crockford, experienced STEP project leader, Eurostep
 - Phil Spiby, main architect and modeler of ISO 10303 Core model, Eurostep (supervisor)
 - Oskar Wintercorn, modeler and implementer, Luleå Technical University
 - Dirk Walther, Ontologist and IDO expert (supervisor)
 - Torbjörn Holm TBHK AB

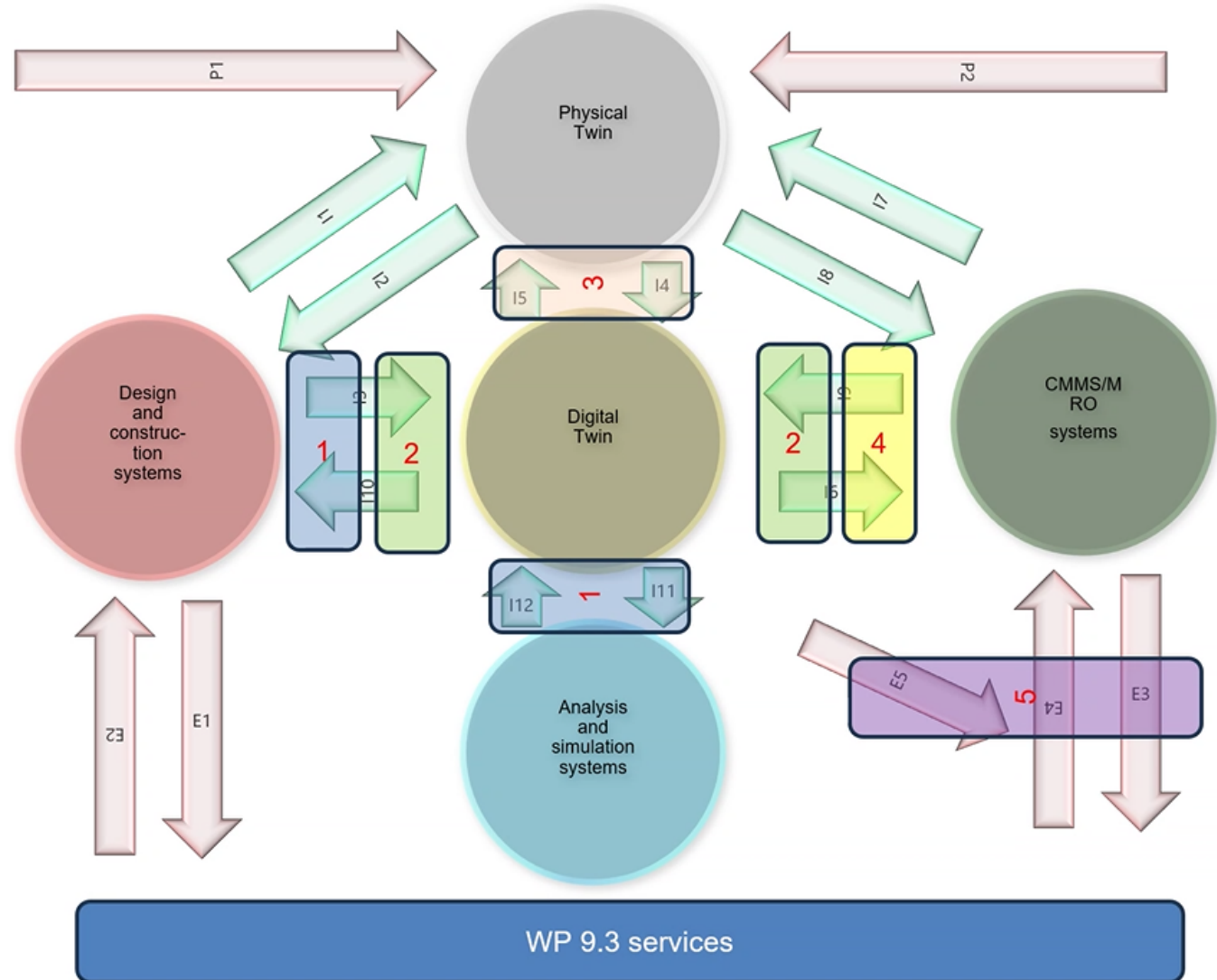


WP 9.2 (and part of 9.3) standards in scope

1. DEXPI P&ID
Semantum enriched
2. STEP Part 4000
3. OPC UA
4. SAP work order management
Notification ?
5. Peppol
Enriched with technical data



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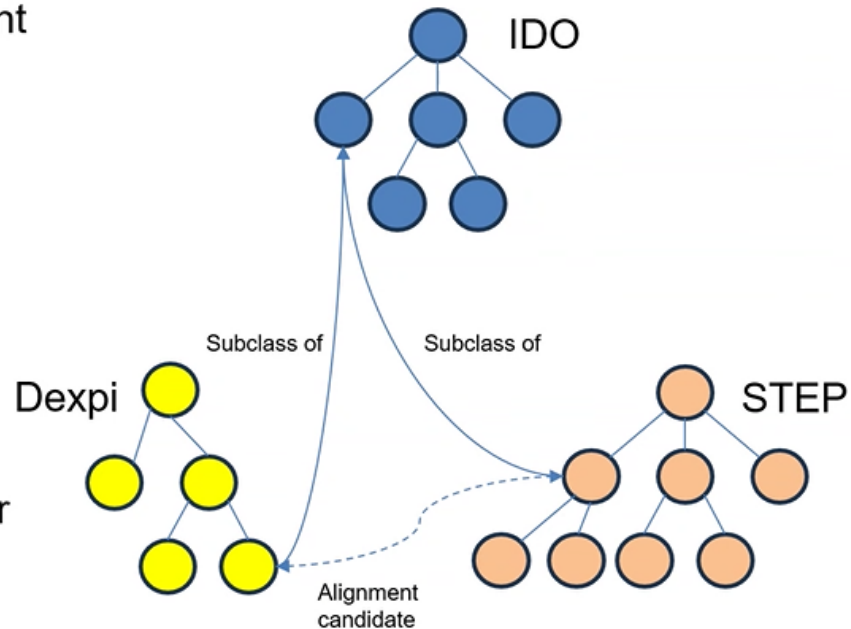


Team 2 – ISO 10303-242/239 to DEXPI and vice versa

Activity 3: Use IDO to create alignment ontologies for mapping to DEXPI P&ID

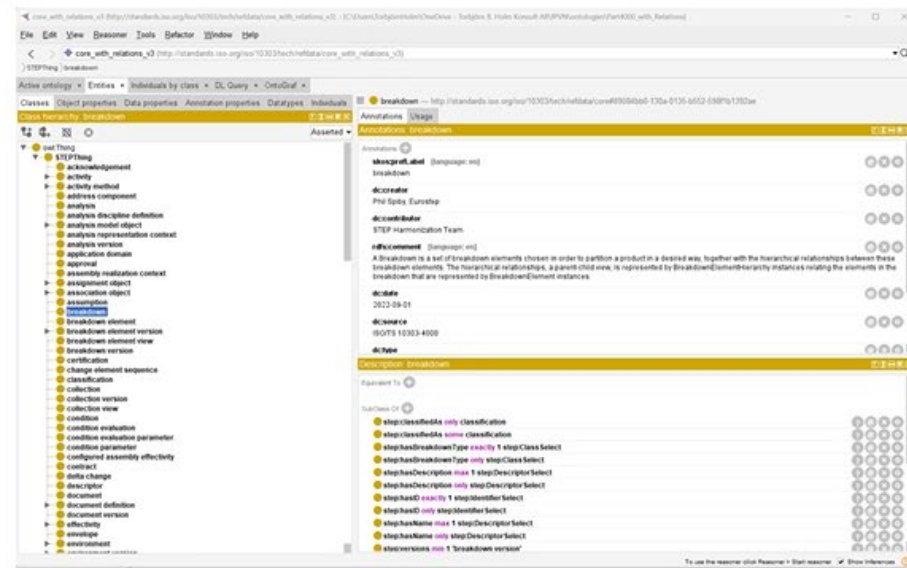
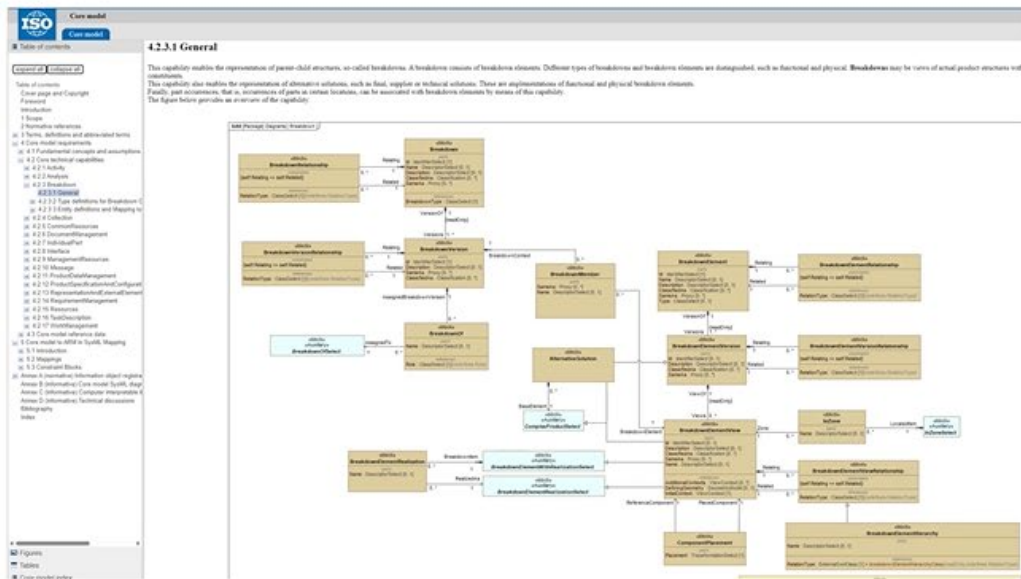
The interaction between upper and alignment ontologies:

- Upper ontologies provide a common reference point
- Alignment ontologies uses the reference point to map domain-specific concepts.
- The principle is to use so specific IDO classes as possible to reduce the number of alignment candidates for a specific alignment ontology



Team 2 – ISO 10303-242/239 to IDO Ontology

Activity 1: SysML v1 to OWL 2 DL ontology



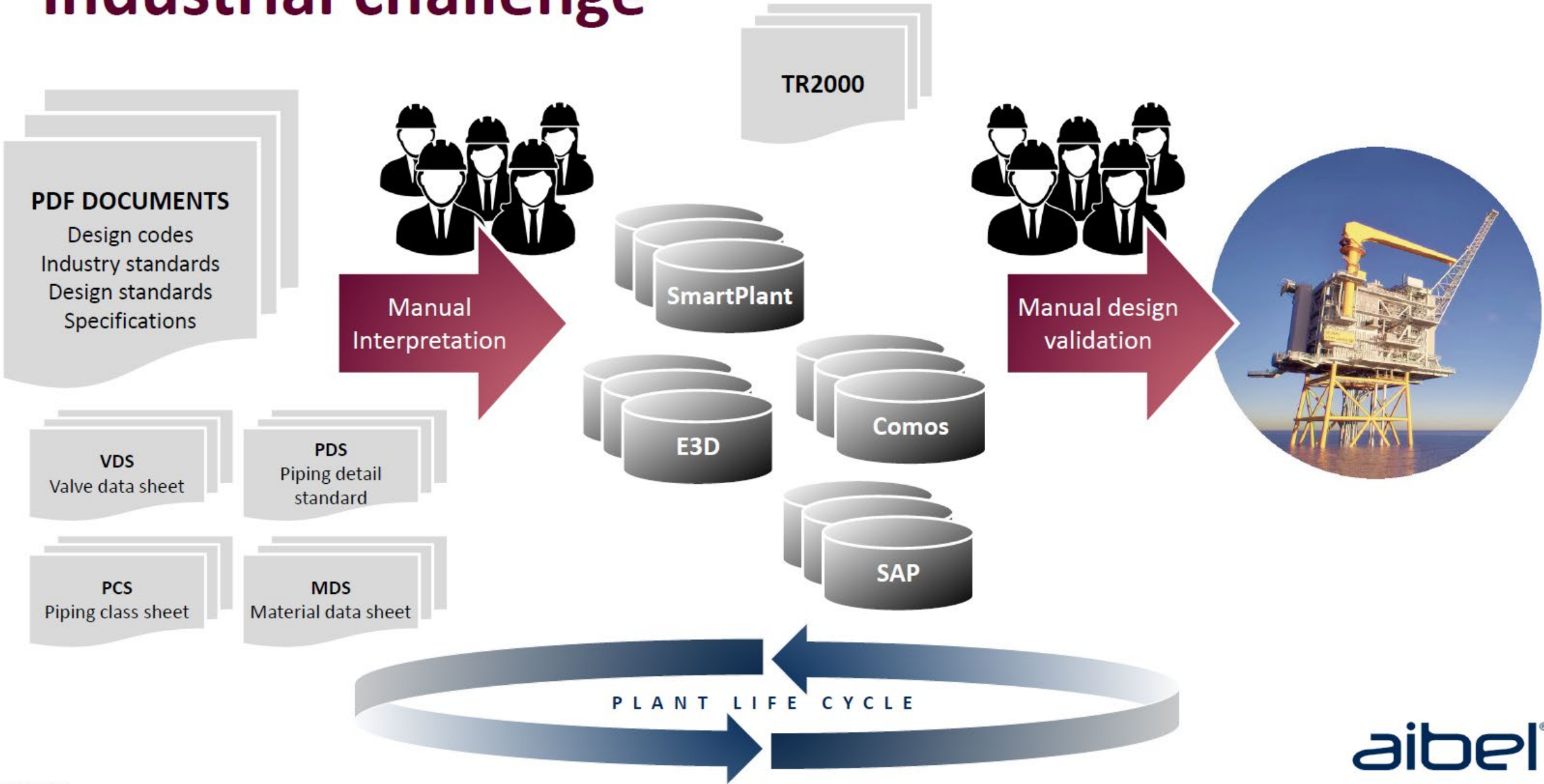
Industrial Data Ontology

Valve use case

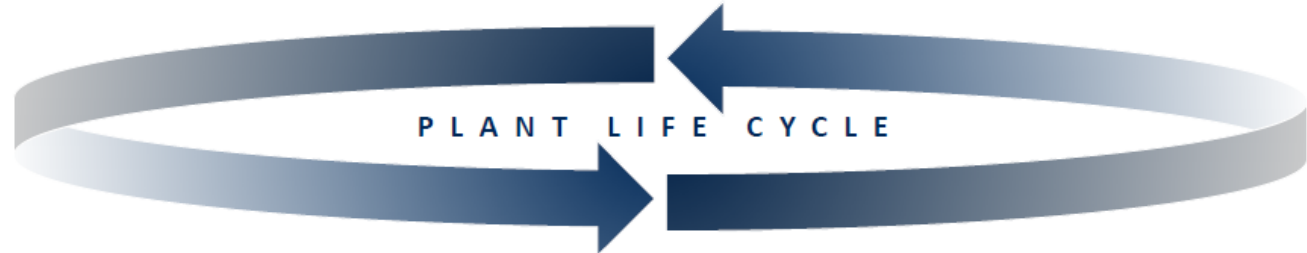
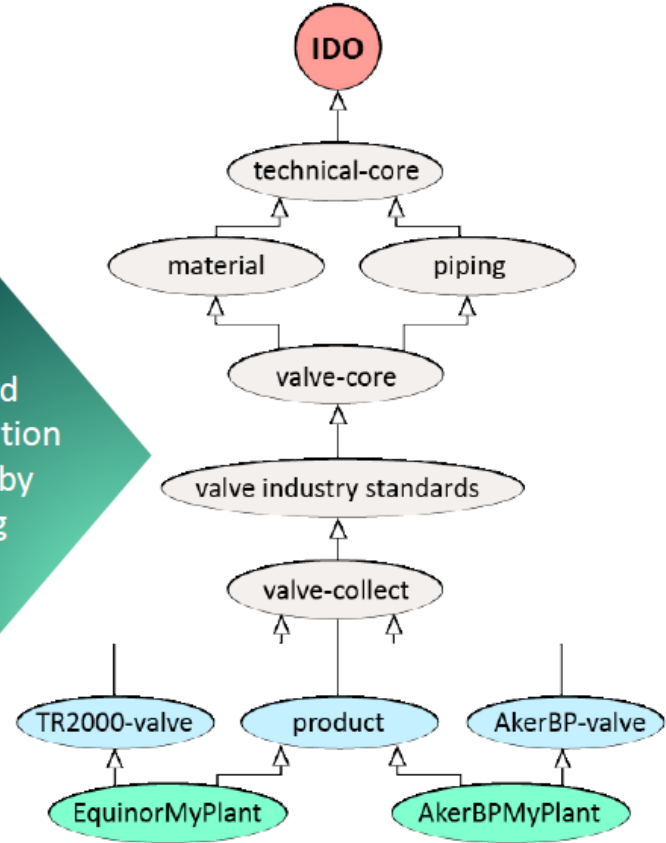
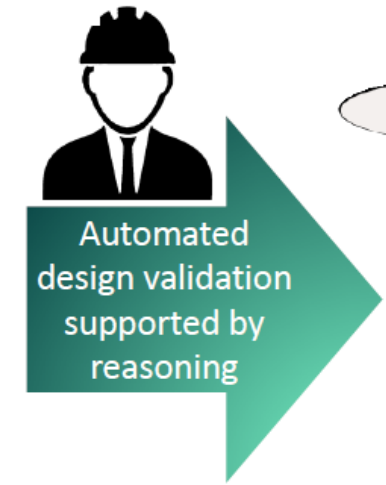
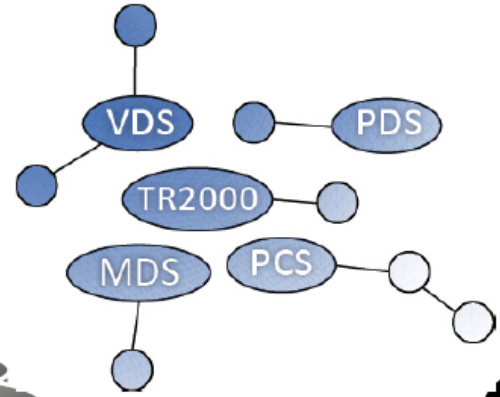
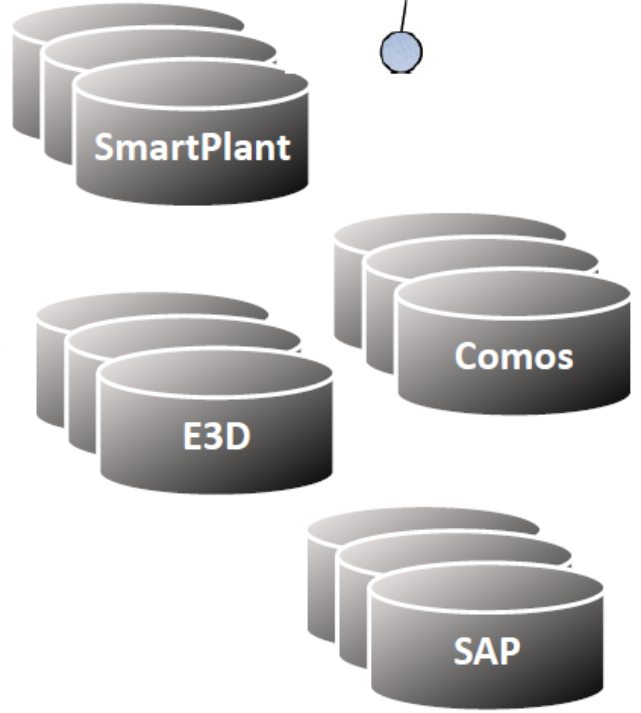
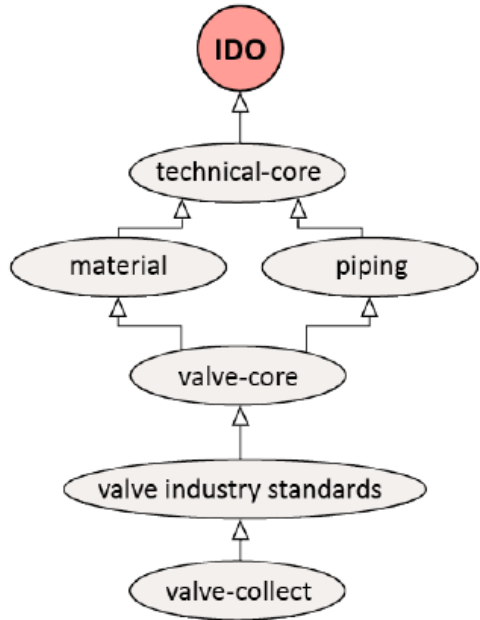
ISO 184 SC4 WG26 meeting Stavanger

October 2024

Industrial challenge



IDO based approach



Semantic definition - VDS

TR2000

Start | Plants | Datasheets | Pipe Components | Doc Space | PED | Manufacturers | Bolt Tension

Equinor Europe
Gudrun
Europe

Plant Specific Datasheets
Official Issue
Master Copy
Subset of Issue
Section of Issue
Changes in Issue
Replaced Issues

All Datasheets
Export

Piping and valve specification		Doc.no.	Sec.no.	Equinor			
Valve data sheet: BCAS302R		TR2000	4	Area	Rev.no.	Rev.date	Status
		Europe	D			14.01.2015	R
				Pages	Of		
				1	1		

VALVETYPE : Ball Floating, Soft Seats / O-ring Design
CODE : API 6D or ISO 14313
SIZE RANGE : 0.5" - 24"
RATING : CL150

Maximum design pressure :	Barg	19.0	19.0	18.4	16.2	14.8	13.7				
At temperature :	°C	-46	38	50	100	150	200				
Minimum operating temperature:		-20						Maximum operating temperature:		150	

PORT DESIGN : Full bore
END CONNECTION : RF Flanges to ASME B16.5
END TO END DIM : ASME B16.10 Long pattern - any non defined sizes to be agreed with Purchaser
HOUSING DESIGN : Split body, bolted
TRIM DESIGN : Floating or trunnion mounted ball
: Floating or fixed seats
: Bi directional sealing
: The resilient seat shall be secured in a pocket in the valve body or a metal seat ring for valve sizes " > "

STEM SEAL DESIGN : Packed gland, stuffing box or O-ring
STATIC SEALS : Manufacturer standard
SPECIAL DESIGN REQ. : Pressure to API 6FA or ISO 10497

MATERIALS

ITEM	SUBITEM	MATERIAL	MDS
HOUSING	Body/bonnet	ASTM A182 F316	SF305
	Body/bonnet	ASTM A351 CF8M	SC301
	Body/bonnet	ASTM A479 TP316	SB301
INSIDE TRIM	Stem	AISI 316	SV301
	Ball	AISI 316	SV301
	Ball	ASTM A351 CF8M	SC302
	Seat	PTFE	
	Other materials	AISI 316	SV301
SEALS	Packed gland	PTFE based rings	PG102
	O-rings	Viton GLT or HNBR	PG301
	Stuffing box	Graphite packing: T < 300degC	PG201
PRESSURE RETAINING BOLTING	Bolting	Bolt material shall be selected according to MDS	DN501
AUXILIARY CONNECTION	Plugs	ASTM A182 F316	SF306
OUTSIDE TRIM	Bolting	Min SS316 for bolts 10mm and smaller, min hot dip galvanized carbon steel for larger	VN105
SPECIAL MAT.REQ.	Wrench/handwheel	SS304/316 or HDG and painted CS/modular iron	
	Wetted parts suitable for sour service to NACE MR0175 / ISO 15156-2		

MISCELLANEOUS REQUIREMENTS

ITEM	VSK Reference	DESCRIPTION
GENERAL	V 742	
TESTING	V 740	
EXTERNAL COAT	V 732	If not otherwise specified in order, this valve shall be supplied without any external valve coating
MARKING	V 718	
OPERATOR	V 719	
SHIPMENT	V 715	
DOCUMENTATION	V 743	

label

BCAS302R EQUINOR VALVE

'Is defined in Edition of Specification'

[VDS BCAS302R REV'E](#)

'Maximum Nominal Pipe Size (NPS) of VDS Size Range'

[DN 600 - NPS 24'](#)

'Minimum Nominal Pipe Size (NPS) of VDS Size Range'

[DN 15 - NPS 1/2'](#)

'Short Description'

BCAS302R

- 'API 6D B.14 Floating Ball Valve'
- 'API 6D CL150 Ball Valve'
- 'ASME B16.10 Long Pattern Ball Valve'
- 'has Flanged End' some 'ASME B16.5 Raised Flange Face CL150'
- 'TR2000 Stainless steel Type SS 316 Valve'
- 'TR2000 Valve with Lip Seal or V-packing Stem Seal'
- 'Valve Ball Two Piece Split Body'
- 'Valve Soft Seated'
- 'Valve with Full Bore'
- 'VDS Specified Valve'
- ((hasSpecifiedMaxDesignPressureBarg value 13.7) and (hasSpecifiedMaxDesignTemperatureDegC value 200)) or ((hasSpecifiedMaxDesignPressureBarg value 14.8) and (hasSpecifiedMaxDesignTemperatureDegC value 150)) or ((hasSpecifiedMaxDesignPressureBarg value 16.2) and (hasSpecifiedMaxDesignTemperatureDegC value 100)) or ((hasSpecifiedMaxDesignPressureBarg value 18.4) and (hasSpecifiedMaxDesignTemperatureDegC value 50)) or ((hasSpecifiedMaxDesignPressureBarg value 19) and (hasSpecifiedMaxDesignTemperatureDegC value 38))
- hasValveBody some (ASTM A 182 Grade F316 Compliant Object' or 'ASTM A 351 Grade CF8M Compliant Object')
- hasValveBonnet some (ASTM A 182 Grade F316 Compliant Object' or 'ASTM A 351 Grade CF8M Compliant Object')
- hasValveClosureMember some 'ASTM A 351 Grade CF8M Compliant Object'
- hasValveSeat some 'Polytetrafluoreten PTFE'

SUPPORT SEIIA AND BECOME A MEMBER

[HTTPS://SEIIA.SE/MEDLEMMAR](https://seia.se/medlemmar)



SEIIA.SE Swedish Industrial
Interoperability Association





THANKS

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Features

Purpose

Enabling unambiguous product specification is a key object for ISO 15926-14 ontology. Specifying product features, in addition to product types is necessary to manage the complexity. The Features modelling pattern exemplifies how relations between physical object and product featured can be managed. Relationships between versions of industry standards and feature or artefact classes is also exemplified.

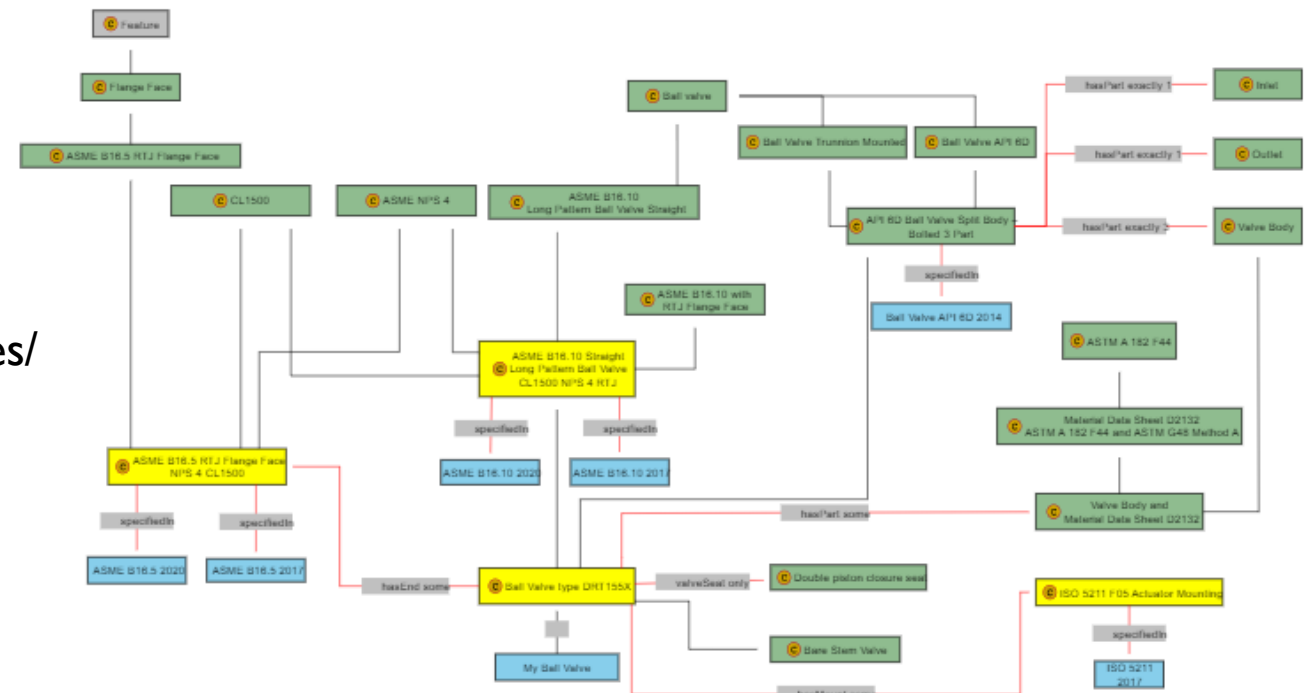
Model content

The yellow ASME B16.5 RTJ Flange Face NPS 4 CL1500 is an end feature applicable for a variety of product types within multiple domains. The dimensional specification is found in ASME B16.5 Pipe Flanges and Flanged Fittings, and the feature has remained unchanged through many issues of the standard. References to the versions of a standard applicable for a reference data artefact class or feature class is done to assure compliance with correct versions of standards. Many specification and industry standards make references to the ASME B16.5 standard, hence, in a digital specification ASME B16.5 RTJ Flange Face NPS 4 CL1500 must be available as part a shared resource.

My Ball Valve is of type Ball Valve type DRT155X. This valve type is an OWL 2 class specified as a subclass of multiple RDL classes. Some of these classes will again have reference to versions of industry standards. Such digital specification of product specification will enable lifting product datasheet, in this case valve datasheet, information to machine interpretable structured data. Such structured data is suitable for use in all life cycle phases.

When standards are revised most of its content will typically remain the same, the reference data update rules will ensure that:

- Reference data classes not affected by the new version is update of annotation property relation to the latest version of a standard.
- Reference data classes no longer covered by the new version of the standard will be deprecated.
- Reference data classes that represent additions in a new version of the standard are added.



Att möjliggöra entydig produktspecifikation är ett nyckelobjekt för IDO ontologi. Specificering av produkttegenskaper, utöver produkttyper som är nödvändiga för att hantera komplexiteten. Funktionsmodelleringsmönstret exemplifierar hur relationer mellan fysiskt objekt och produkt som presenteras kan hanteras. Relationer mellan versioner av industristandarder och funktions- eller artefaktklasser exemplifieras också.

https://rds.posccaesar.org/doc/patterns/pattern_features/

Relationer mellan anläggningsobjekt och enskilda delar av anläggningsobjekt exemplifieras i modellmodellen Junction Box Product Type. Detta modelleringsmönster inkluderar också ett exempel på typisk användning av IDO installedAs-relationen mellan en fysiskt tillverkad produktindivid på en anläggningsplats.

https://rds.posccaesar.org/doc/patterns/pattern_junction_box

Navigation

- Documentation >
- Presentations <
- MS Office usage <
- Modelling patterns >
 - Artefact, function, and activity
 - Unit of Measure Context
 - Datum Type
 - Junction Box Product Type
 - Features
 - Block Activity
 - Area, Rooms, Wall
 - Stream Components
 - Product Documentation
- Use cases <
- Background <
- Reference Data Library <
- Services <
- Templates <

Junction Box Product Type

Purpose

Relationships between plant objects and individual parts of plant objects is exemplified in the *Junction Box Product Type* modelling pattern. This modelling pattern also includes an example of typical use of the ISO 15926-14 *installedAs* relation between a physical manufactured product individual at a plant location.

Model content

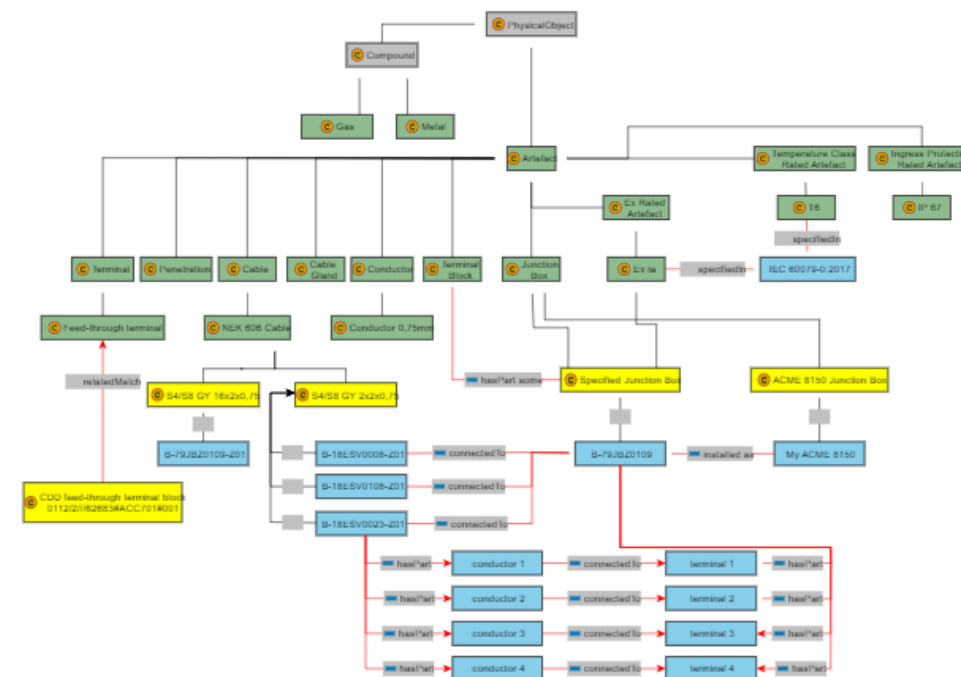
Junction boxes are standard product that often is sourced as tagged bulk items. Tagged bulk have a product specification for procurement, and an individual identification of its location on the plant.

Required number connectors, type of cable and area conditions and restrictions are key parameters for establishment of a junction box specification. By referencing PCA RDL resources the junction box specification can be machine interpretable. The yellow class *Specified Junction Box* is a specification for such product type properties. The blue B-79JBZ0109 is a what we would refer to as "functional location" or TAG. B-79JBZ0109 can be one of many junction boxes for which the *Specified Junction Box* specification applies.

ACME 8150 Junction Box is an example of a manufacturer's type of junction box. By referencing PCA RDL resources the junction box product properties can be machine interpretable. The blue My ACME 8150 is one of the junction boxes of that product type. With an asset model approach this product will become an individual installed at B-79JBZ0109. That an individual is identified in the *asset* does however not imply a requirement for follow up of such products as individuals.

The yellow S4/S8 GY 2x2x0,75 is an example of a NEK 606 specified cable type. The three blue boxes with the type relation are cables terminating in the junction box B-79JBZ0109. The *connectedTo* object property type is used to specify the relationship between the cable and the junction box. The *connectedTo* object property type is also used for conductors within the cable that are connected to specific terminals on a terminal block within the junction box.

The yellow CDD feed-through terminal block is added to demonstrate how PLM RDL references to Common Data Dictionary can be utilised to support interpretation of CDD specified product data.



Area, Rooms, Wall

Purpose

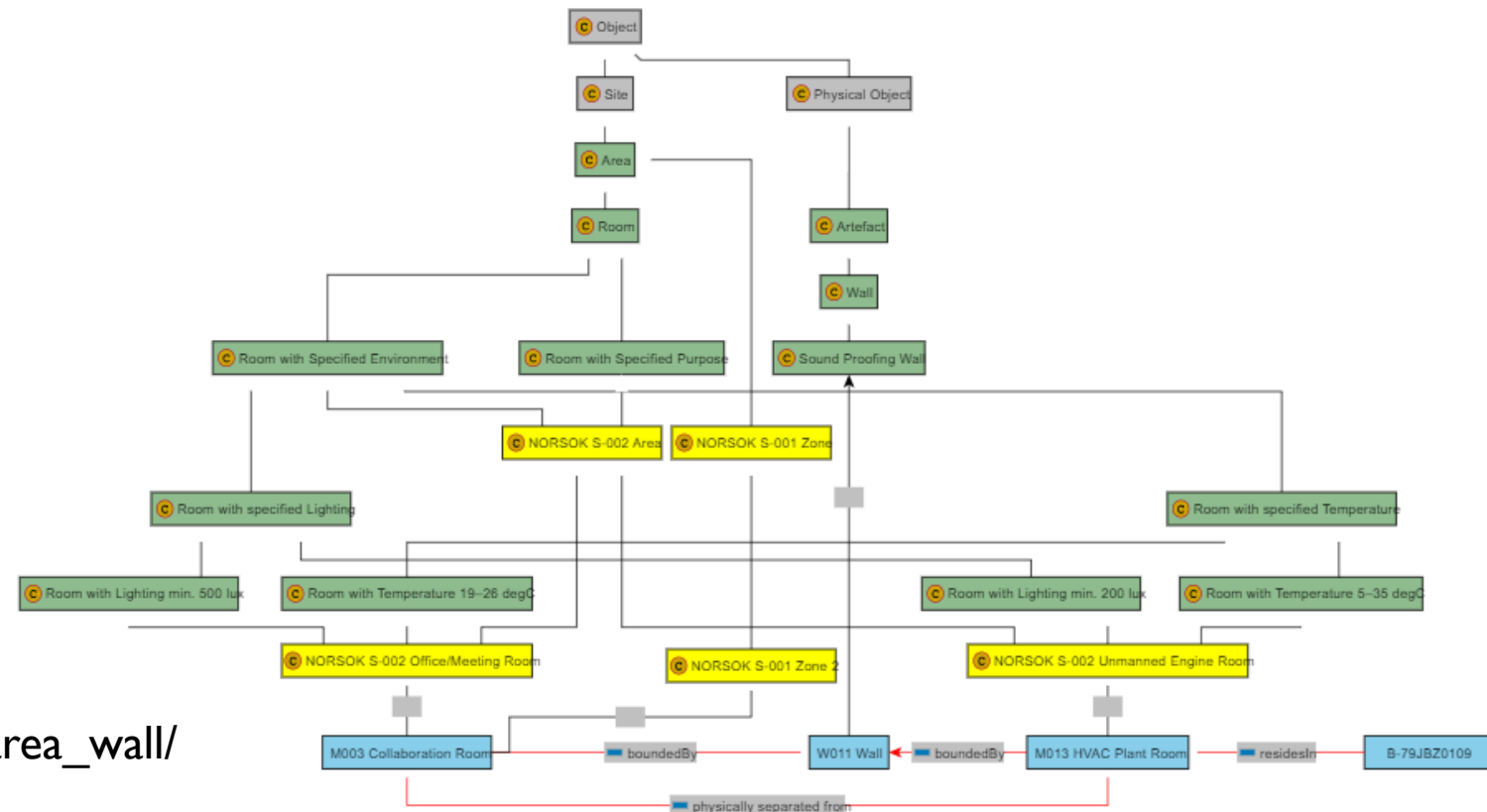
Unambiguous area specification is required in a digital version of an asset model. The environment at a location regulates parts of the product specification for a product to be used at that location. "Area, Rooms, Wall" describes the semantic representation of such relationships. When both areas and product types are classified, machine executable reasoner-based design rules may be utilised to determine compliance.

Model content

Representation of area types and area restrictions and barrier types from standards such as NORSOK S-001, Technical safety, and NORSOK S-002, Working environment. The blue M003 Collaboration Room and M013 HVAC Plant Room both are examples of such classified areas. A specified plant area becomes an individual in the asset model. The plant topology is described using object property relations between areas, boundaries and objects that residesIn areas. NORSOK S-002 Office/Meeting Room is a semantic representation of the document content. The same applies for the other yellow classes.

The blue B-79JBZ0109 is an example of a junction box located in the M013 HVAC Plant Room. See modelling pattern [Junction Box Product Type](#).

Entydig områdesspecifikation krävs i en digital version av en tillgångsmodell. Miljön på en plats reglerar delar av produktspecifikationen för en produkt som ska användas på den platsen. "Area, Rooms, Wall" beskriver den semantiska representationen av sådana relationer. När både områden och produkttyper är klassificerade kan maskinkörbara resonemangsbaserade designregler användas för att fastställa efterlevnad.



https://rds.posccaesar.org/doc/patterns/pattern_area_wall/