

Ongoing work in PCA's SIGs

Introduction

2010-06-03

Magne Valen-Sendstad

Agenda

- **Introduction** **Magne Valen-Sendstad**
- **SIG Instrumentation** **Magne Valen-Sendstad**
- **SIG Drilling** **Jens Ingvald Ornæs**
- **SIG Production** **Frédéric Verhelst**
- **SIG O&M** **Pål Rylandsholm**
- **SIG Geometry** **Manoj Dharwadkar**

Introduction

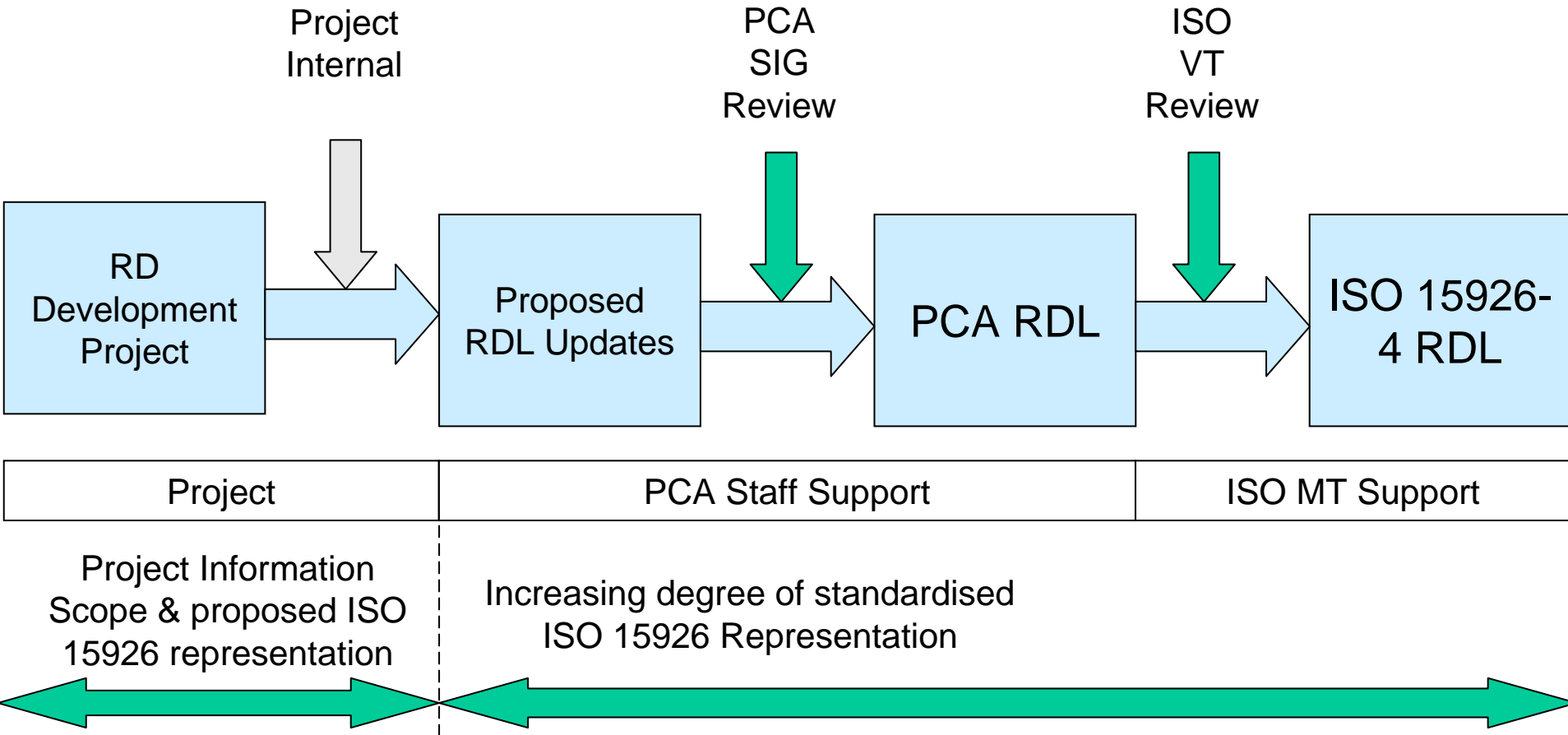
Objective of the PCA SIGs

- In order to assure high quality of its Reference Data (RD), PCA has established Special Interest Groups (SIG) for some business domains in the upstream sector of Oil and Gas industry and for discipline areas in Process Plants.
- The SIG's will maintain and develop domain-specific areas of the POSC Caesar Reference Data Library, and review RD proposed for standardisation (by projects or other submissions)
- PCA's Technical Advisory Board (TAB) is accountable for the consistency and quality of the Reference Data across domains.
- A 3 step quality process has been defined by PCA:
 - Submission of terminology from research or industry projects
 - Work-In-Progress (WIP)/PCA RD
 - ISO standard

Axis Of Reference Data

- **ISO 15926-1:2004 3.1.18 reference data**
 - process plant life-cycle data that represents information about classes or individuals which are common to many process plants or of interest to many users
 - and are instances of ISO 15926-2 (Data Model)
- **“ISO 15926 RD” are instances of ISO 15926-2 (Data Model)**
 - But this does not necessarily make it “Standard Reference Data”
- **“Standard Reference Data” is standardised in ISO 15926-4 (or subsequent parts)**
- **PCA Reference Data is ISO 15926 RD, but it is not “Standard Reference Data”**
 - It will be progressed to become so in due course, but is not so by default
 - It is, when standardised by PCA “Industry Standard Reference Data”
- **Domain Reference Data can become PCA or ISO 15926-4 RD by being subject to the appropriate level of standardisation**
- **Company specific RD is not standard in any way unless it has been progressed through some levels of standardisation**
- **Work in-progress (WIP) RD is new RD Items being processed.**

RD Standardisation Process



ISO 15926-4 Initial Set (Included in PCA RDL)

- ISO TS 15926-4 (2007) ACTIVITY
- ISO TS 15926-4 (2007) BASICS
- ISO TS 15926-4 (2007) CLASS OF CLASS
- ISO TS 15926-4 (2007) CONNECTION MATERIAL
- ISO TS 15926-4 (2007) CONTROL FUNCTION
- ISO TS 15926-4 (2007) ELECTRICAL
- ISO TS 15926-4 (2007) ENCODED INFORMATION
- ISO TS 15926-4 (2007) HEAT TRANSFER
- ISO TS 15926-4 (2007) INFORMATION
- ISO TS 15926-4 (2007) INSTRUMENT
- ISO TS 15926-4 (2007) PIPING
- ISO TS 15926-4 (2007) PROPERTY
- ISO TS 15926-4 (2007) PROTECTION
- ISO TS 15926-4 (2007) ROTATING EQUIPMENT
- ISO TS 15926-4 (2007) SOLID HANDLING
- ISO TS 15926-4 (2007) STATIC EQUIPMENT
- ISO TS 15926-4 (2007) TRANSPORT
- ISO TS 15926-4 (2007) UOM
- ISO TS 15926-4 (2007) VALVES

POSC Caesar Special Interest Groups (SIG)

For assuring high quality of the reference data, POSC Caesar (PCA) has established Special Interest Groups (SIG) for some business domains in the upstream sector of Oil and Gas industry and for discipline areas in Process Plants. The SIGs are accountable for their domains. PCA's Technical Advisory Board (TAB) is accountable for the consistency and quality of the reference data across domains.

A 3 step quality process has been defined by PCA:

- Submission of terminology from research or industry projects
- Work-In-Progress (WIP)
- ISO standard

The [IIP](#) and [IDS projects](#) are examples of projects delivering terminologies of high quality. To obtain status as an ISO standard (become a Part of [ISO 15926](#)) for ontology in one or more domains, an ISO standardization process has been carried out. Part 3 and 4 are examples of existing ontology parts in ISO 15926.

This Trac system was initially set up to serve the PCA SIGs. The SIG's will maintain and develop domain-specific areas of the POSC Caesar Reference Data Library.

The SIGs have a [mandate](#).

POSC Caesar Special Interest Groups: [edit](#)

- [Modelling, Methods and Technology](#)
- [Drilling and Completion](#)
- [Health, Safety, Security and Environment](#)
- [Development and Modifications](#)
- [Operation and Maintenance](#)
- [Procurement and Logistics?](#)
- [Reservoir and Production?](#)
- [Subsea Equipment?](#)
- [Instrumentation and Control](#)
- [SIG Technical Advisory Board](#)

Ongoing Work Instrumentation SIG

Magne Valen-Sendstad

EqHub Data Standardization

- **Objectives**

The EqHub RDL needs to be synchronized with ISO 15926. This involves assigning new RDS codes and maintaining internal and external standardization processes.

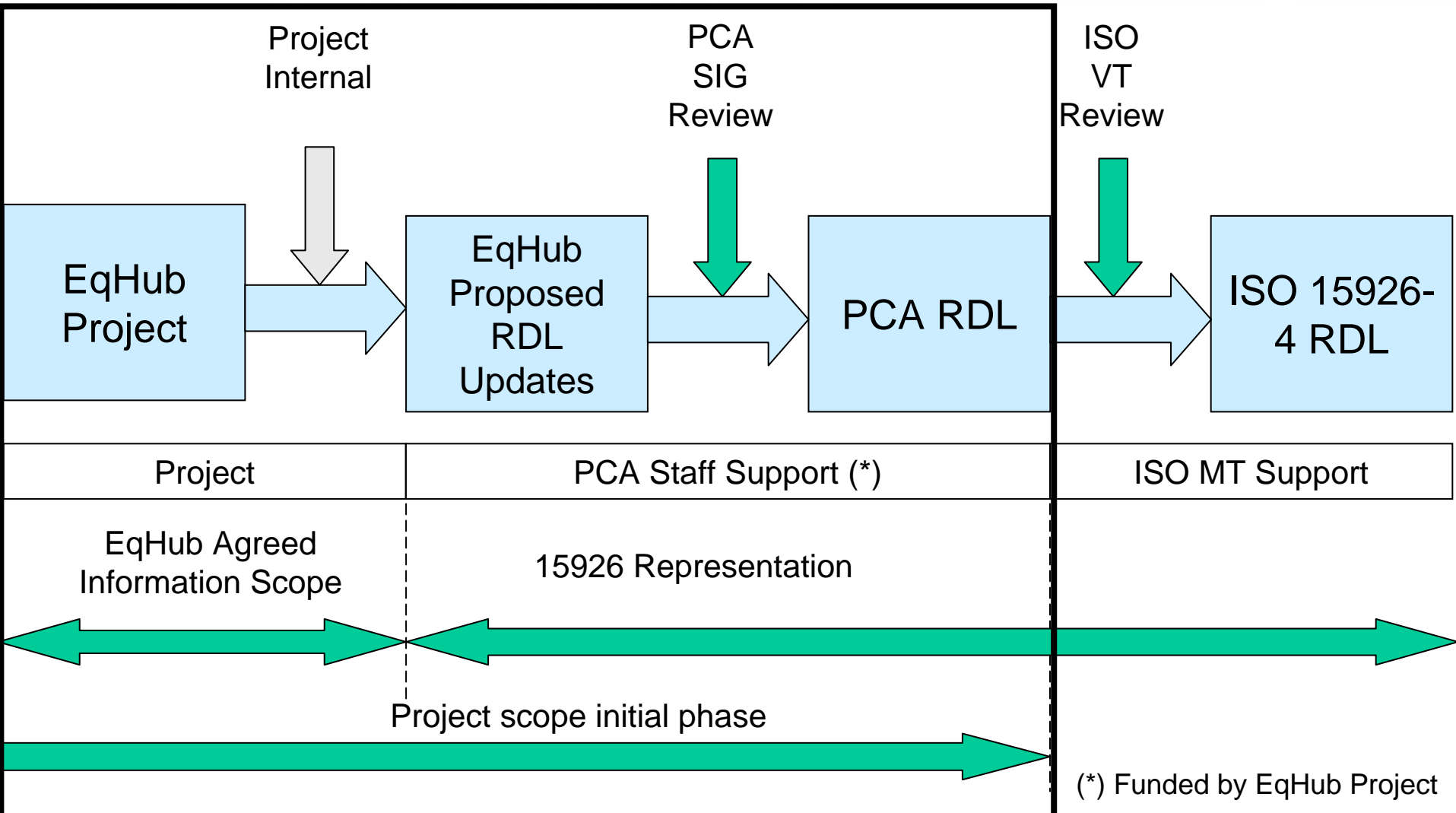
- **The following main activities are all part of the EqHub implementation project:**

- 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 Special Interest Groups (SIG) (called Work Groups in EqHub context), approval of NorHub extensions
- Support ISO standardization of EqHub extensions
- Technical support of EqHub from PCA Reference Data Services including necessary enhancements of the Reference Data System
- Coordination and Quality Control

- **The first phase is instrumentation**

- **See EqHub presentation**

EqHub Standardisation Process



Catalog - Microsoft Internet Explorer provided by Det Norske Veritas

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites

Address https://www.sharecat.com/Catalog/Default.asp?strFunction=GlobalCat&SID=C73DAC2F&ca=1&s=4&Sel=Press&ch=3277



Catalog - Instrument - Transmitter - Press

Class: Transmitter, Pressure, Electric
Status: Draft



Iso15926 Reference: **RDS5769585**

Definition: A pressure transmitter measuring pressure and generating a standardized electrical output signal representing the detected pressure.

Attribute	Sample Value	Guidelines	ISO 15926
Connections:			
Process connection	1/2 - 14 NPT	Specifies the size, thread pitch and the design of the process connection.	RDS1442432351
Supply connection	M20 x 1.5	Specifies the size, thread pitch and the design of the supply connection.	RDS1443193881
General:			
Body material	Stainless Steel	The material of construction for the pressure raised main structural part of a functional or physical object.	
Approximate operating weight	4.5 kg	An objects approximate calculated operational weight without process fluid.	RDS1443397941
Ambient temperature	-40 - 85 °C	The temperature which is the lowest and highest ambient temperature under wich a functional and physical object is supposed to operate.	RDS1411476491

Catalog - Microsoft Internet Explorer provided by Det Norske Veritas

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Refresh Print Mail Stop

Address <https://www.sharecat.com/Catalog/Default.asp?strFunction=GlobalCat&SID=C73DAC2F&ca=25&s=4&Sel=&ch=1498> Go Links

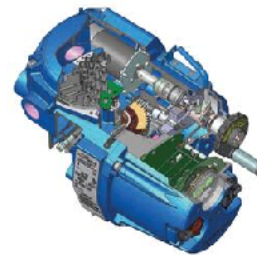


Catalog - Instrument - Actuator

Class: Actuator, Electric
Status: Draft

Iso15926 Reference: **RDS430379**

Definition: An actuator intended to convert an electric signal into a signal of any kind, such as mechanical displacement.



Attribute	Sample Value	Guidelines	ISO 15926
Actuator module:			
Actuator service	Modulating	Specify what kind of service the actuator is suppose to do.	
Fail action	Open	Give the failure action when de-energized.	
Shut-off mechanism	Rack & Pinion	Describe the principle of the open close mechanism.	
Manual override	Wrench	Specify what kind of overriding available or if it's no override.	
Supply voltage range	220 - 240 V AC	The rated or nominal, lowest and highest voltage which can be supplied to an object.	RDS1411426101
Power consumption	18 - 36 mW	The power which is the lowest and highest power consumption a functional or physical object is suppose to consume.	RDS1411653161
Communication standard	FOUNDATION Fieldbus	A standard protocol for communication with another device.	RDS1422650281

Hazardous Area:

CE marking	CE 0081	Identification of the notify body responsible for the approval	RDS1387343801
ATEX group	II	Specifies in which group the physical object is divided in accordance with the directive 94/9/EC.	RDS1400292951
ATEX category	1	Specifies in which category the physical object is divided in accordance with the directive 94/9/EC.	RDS1400293391
ATEX explosive atmosphere	G	Specifies in which explosive atmosphere the physical object is divided in accordance with the directive 94/9/EC.	RDS1400874491
Explosion protection	EEx ia	Specifies the identification of electrical equipments explosion protection and type of ignition protection in accordance to a known standard.	RDS1422547761
Gas-group	IIC	Specifies the gas group classification of the physical object in accordance to a known standard.	RDS1400246091
Temperature class	T5	Specifies the temperature classification of the physical object in accordance to a known standard.	RDS1398418861
Approval authority	BASEEFA	The name of the nationally accredited approval body that has issued the examination certificate for the physical object.	RDS1387136651
EX certificate number	BAS 97ATEX1089X	The examination certificate number for the physical object issued by a notified body.	RDS1387306211

Miscellaneous:

Diaphragm seals	Two remote diaphragm seals	Specify seal configuration.
Manifolds	Yes	Specify if manifolds are in use.

Pressure module:

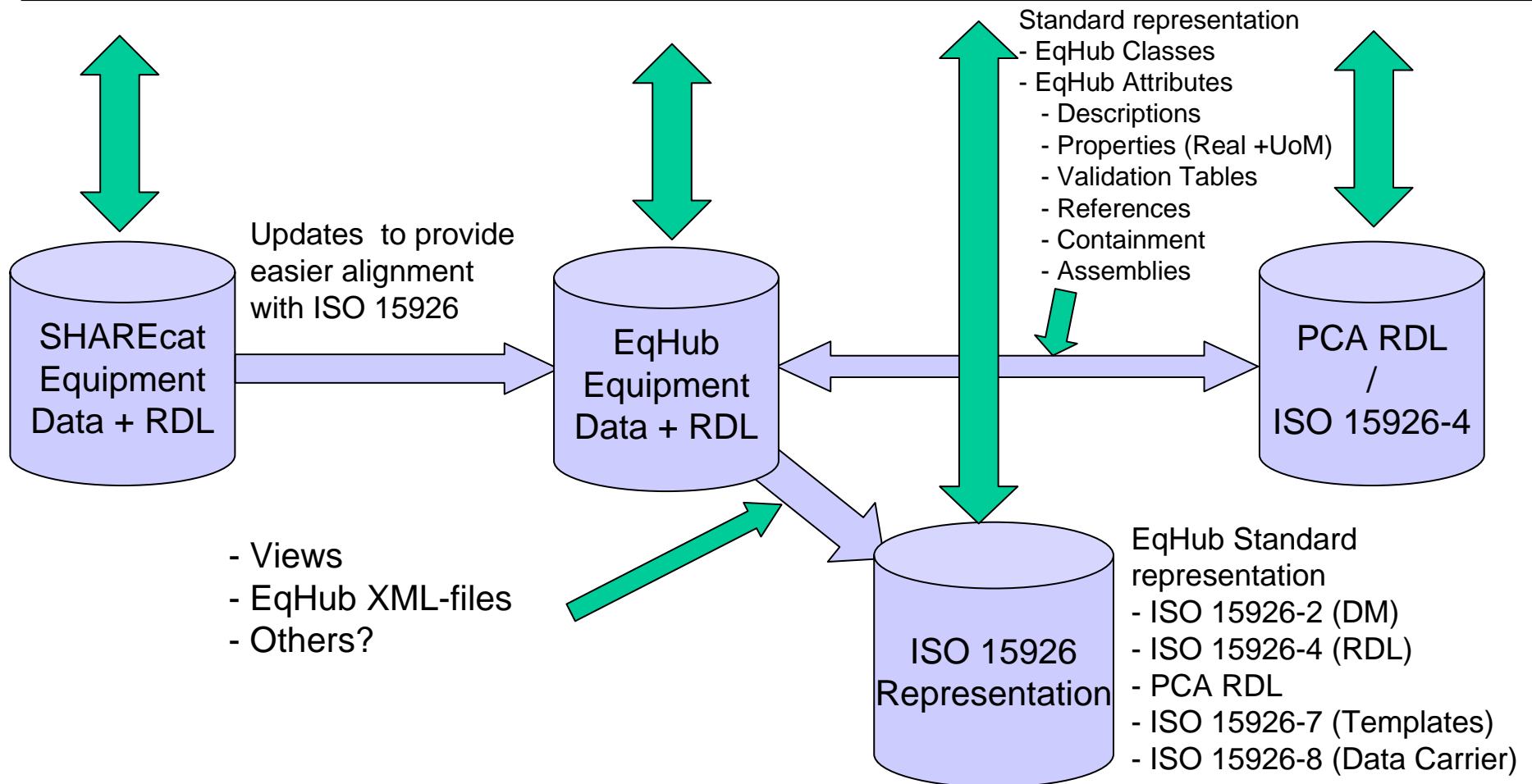
Measuring method	Absolute	The system of measuring methods and principles used.	
Sensing element material	316	The material of construction for the processed exposed sensing part of a functional or physical object.	
Sour service specification	NACE MR 01-75	Reference to standards promoting the control and prevention of corrosion. Used for materials in oil and gas production where H ₂ S and pressure above 3 mbar occurs.	RDS1416766731
Filling fluid	Silicone Oil	Specifies the medium the measuring element are filled with.	RDS1416711571
Span limit minimum, pressure	1,38 bar	Specifies the minimum pressure interval (within the range) the device can be calibrated to measure.	RDS1413237391
Span limit maximum, pressure	138 bar	Specifies the maximum pressure interval (within the range) the device can be calibrated to measure.	
Adjustable pressure range	0 - 138 bar	A pressure range which is the adjustable range between the lower and upper pressure limit a physical object is intended to operate.	RDS1413202731

Transmitter module:

Communication standard	FOUNDATION Fieldbus	A standard protocol for communication with another device.	RDS1422650281
Accuracy range	+/- 0.075 %	The closeness of agreement between the result of a measurement and the conventionally true value of the quantity being measured.	RDS1415829671
Indicator	Yes	Assign if an indicator is included.	
Output signal	4 - 20 mA	A standardized signal representing the measured value from the process.	RDS1423284961
Zero adjustment	Yes	Assign if the instrument can be zero adjusted.	
Supply voltage range	220 - 240 V AC	The rated or nominal, lowest and highest voltage wich can be supplied to an object.	RDS1411426101
Power consumption	18 - 36 mW	The power which is the lowest and highest power consumption a functional or physical object is suppose to consume.	RDS1411653161
Load limitation	500 Ohm		

EqHub RD Development Process

Users




```
<?xml version="1.0" encoding="utf-8" ?>
```

```
<Equipment>
```

```
<Teknumber>
```

```
<TekNoKeyData>
```

```
<TekNo>TEK-00741608</TekNo>
```

```
<Manufacturer>EMERSON PROCESS MANAGEMENT</Manufacturer>
```

```
<Model>3051CG</Model>
```

```
<Partnumber>3051CG-3-A-2-3-B-2-B-E8-Q8</Partnumber>
```

```
<Class>Transmitter, Pressure, Electric</Class>
```

```
</TekNoKeyData>
```

```
<TekNoAttribs>
```

```
<TeknoAttrib sn="ATECAT" In="ATEX category" v1="1/2" v2="" da="1/2" uom="" />
```

```
<TeknoAttrib sn="ATEXAT" In="ATEX explosive atmosphere" v1="GD" v2="" da="GD" uom="" />
```

```
<TeknoAttrib sn="ATEGRO" In="ATEX group" v1="II" v2="" da="II" uom="" />
```

```
<TeknoAttrib sn="TEMAMB" In="Ambient temperature" v1="-40" v2="85" da="-40 - 85 °C" uom="°C" />
```

```
<TeknoAttrib sn="APPROV" In="Approval authority" v1="Kema" v2="" da="KEMA" uom="" />
```

```
<TeknoAttrib sn="CERT" In="Certificate" v1="KEMA 00ATEX2013X" v2="" da="KEMA 00ATEX2013X" uom="" />
```

"Semantic" Mapping User Interface

Select RDL
Class or
Project Data

Select from
standard/
customised
list of RDL
Instance

(Created by
the system)

Select from
standard/
customised
list of RDL
Instances

Id #	Something	Property Type	Property Range	UoM	Input 1	Input 2
XYZ	3051CG	Ambient operating temperature	(Created by the system)	C	-40	85

- Input to the *template* signature can be a simple table, e.g. .xls
- The *template* expansion provides verified interpretation
- Break down complex statements into proper ISO 15926-2 statements
- Ultimately, we end up with atomic 15926 statements

Applicable to any data representation.
This approach is used when mapping to the EqHub xml formats

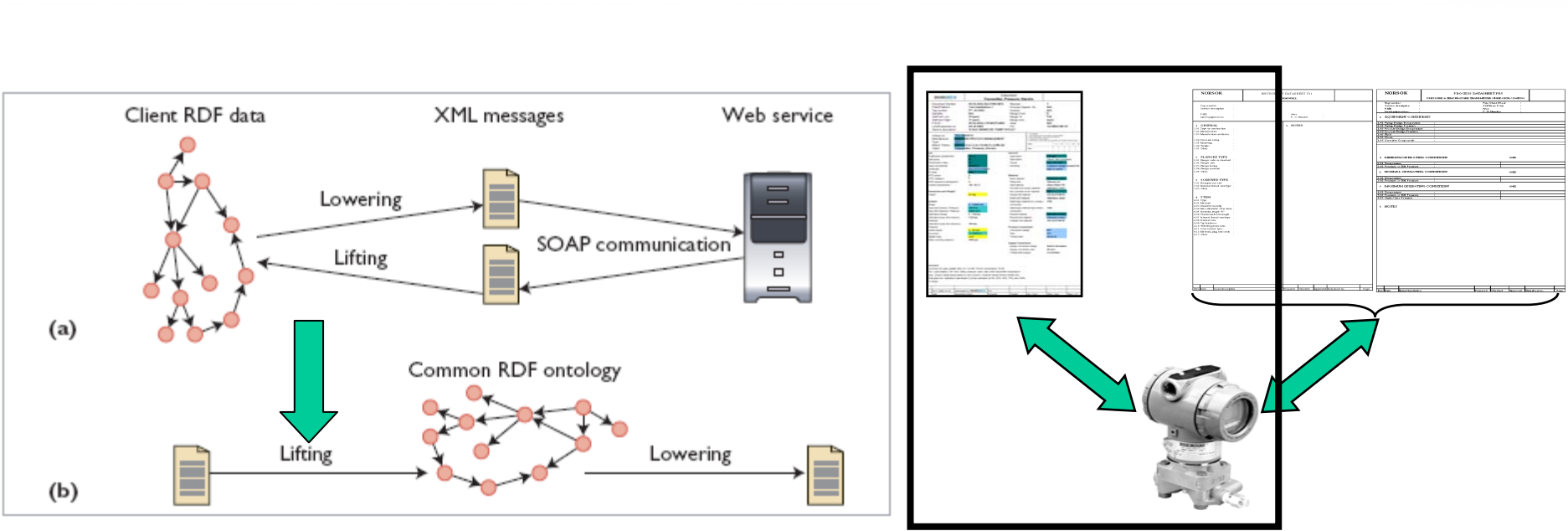
A "Mapping Guide" can be developed
(Not EqHub project scope)

Template Signatures (EqHub Stage 1)

RDS100193927126	ISO 15926-7 SPECIALIZATION
RDS1406266331	IDENTIFIER REFERENCE SIGNATURE
RDS1406276661	MANUFACTURING COMPANY NAME REFERENCE SIGNATURE
RDS14062766610	MANUFACTURERS IDENTIFICATION CODE SIGNATURE
RDS14062766619	APPROVAL AUTHORITY NAME REFERENCE SIGNATURE
RDS14062766628	EX CERTIFICATE IDENTIFICATION CODE REFERENCE SIGNATURE
RDS14062766637	CE IDENTIFICATION CODE REFERENCE SIGNATURE
RDS1406276677	INGRESS PROTECTION CLASS SIGNATURE
RDS14062766716	TEMPERATURE CLASS SIGNATURE
RDS14062766725	ATEX GROUP SIGNATURE
RDS14062766734	ATEX CATEGORY SIGNATURE
RDS14062766743	ATEX EXPLOSIVE ATMOSPHERE SIGNATURE
RDS14062766752	GAS-GROUP SIGNATURE
RDS14062766761	EXPLOSION PROTECTION SIGNATURE
RDS14062766839	NOMINAL OPERATING WEIGHT SIGNATURE
RDS14062766779	PERCENTAGE ACCURACY RANGE SIGNATURE
RDS140627667142	AMBIENT OPERATING TEMPERATURE RANGE SIGNATURE
RDS14062766788	SIGNAL LOOP NOMINAL RANGE SIGNATURE
RDS14062766797	LOWER LIMIT PRESSURE MEASURING SPAN SIGNATURE
RDS1443404521	UPPER LIMIT PRESSURE MEASURING SPAN SIGNATURE
RDS140627667106	ADJUSTABLE PRESSURE RANGE SIGNATURE
RDS140627667115	SUPPLY VOLTAGE RANGE SIGNATURE
RDS140627667133	ELECTRICAL LOAD LIMITATION SIGNATURE
RDS140627667124	POWER CONSUMPTION RANGE SIGNATURE
RDS14062766770	COMMUNICATION STANDARD REFERENCE SIGNATURE
RDS140627667160	BODY MATERIAL SIGNATURE
RDS14062766830	FILL FLUID SIGNATURE
RDS140627668156	PROCESS CONNECTION SIGNATURE
RDS14062766848	SOUR SERVICE SPECIFICATION REFERENCE SIGNATURE
RDS1406276683	SENSING ELEMENT MATERIAL SIGNATURE
RDS14062766812	NON PROCESS COVER MATERIAL SIGNATURE
RDS140627668147	SUPPLY CONNECTION SIGNATURE
RDS14062766857	MEASURED VALUE INDICATOR ABSENCE SIGNATURE
RDS14062766866	MEASURED VALUE INDICATOR TYPE SIGNATURE
RDS14062766875	ZERO ADJUSTMENT DEVICE PRESENCE SIGNATURE
RDS14062766884	ZERO ADJUSTMENT DEVICE TYPE SIGNATURE
RDS14062766893	MOUNTING DEVICE PRESENCE SIGNATURE
RDS140627668102	MOUNTING DEVICE TYPE SIGNATURE
RDS140627668111	MANIFOLD PRESENCE SIGNATURE
RDS140627668120	MANIFOLD TYPE SIGNATURE
RDS140627668129	DIAPHRAGM SEAL PRESENCE SIGNATURE
RDS140627668138	DIAPHRAGM SEAL TYPE SIGNATURE

101010101010010101010100101101

10101010001011010101010101010101



- The approach developed here is applicable to any mapping from external sources to ISO 15926.
- SW is currently not in scope.

Next Steps

- **The results from the EqHub Project is planned to be presented to the PCA Instrumentation SIG (EqHub Working Group) June 22nd.**
- **We encourage other companies to join the process**
- **PCA Standardisation will follow from this**
- **Submission to ISO in due course**

