The eCl@ss workflow
(with the ideas behind and beyond …)

eCl@ss Congress 2019-09-18/19

Cologne

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I have a dream ... about data exchange and a data driven business
with eCl@ss Advanced XML

It would be a real advantage for me and my business, if ...

Dream I

I could do my whole engineering without any paperwork ... and my old fax-machine ...

I could work without my old fax-machine and without badly scanned requests

Dream II

I could send out requests for products and services in a standardized electronic format

I would receive all requests for my products and services in a standardized electronic format
I have a dream ... about data exchange and a data driven business with eCl@ss Advanced XML

It would be a real advantage for me and my business, if ...

Dream III

I could receive all responses (offers) in a standardized electronic format

I would send all my offers in a standardized electronic format

Dream IV

I could compare all the offers in an easy and transparent way on my electronic device

I would receive an order earlier, because my customer is able to decide more quickly
I have a dream ... about data exchange and a data driven business with eCl@ss Advanced XML

It would be a real advantage for me and my business, if ...

Dream V

I could use real product (device) data in an early stage of planning/engineering

I could provide my customer an added value with my product data for his planning/engineering phase

Dream VI

I could use real product (device) data in an early stage for simulation and optimization

I could provide my customer an added value by providing behavioral and simulation data
I have a dream ... about data exchange and a data driven business
with eCl@ss Advanced XML

It would be a real advantage for me and my business, if ...

Dream VII

I could get the instance data of the received product or service for my
operating AND my maintenance system

I could provide all instance data of my manufactured product out of
my data base to the customer and he is satisfied without any call backs

Dream VIII

I could receive data which are validated by the manufacturer/supplier

I could provide my customer checked and validated data out of my data base
Overview of the main players

- It is difficult to exchange product data between different users without a consistent and standardized data format. It leads to additional expenses.
- Aim: Create data only once to exchange these data automatically between different users and systems.
Workflow Process and How it works

- **manufacturer**
  - Equipment data
  - Sales-system

- **Product department**
  - After-Sales-Service
  - Equipment data

- **customer**
  - Internet
  - XML transaction file handled electronically

- **maintenance system**
  - XML file
  - Query data

- **CAE engineer**
  - Equipment data

- **Plant engineer**
  - Equipment data

(Source: NAMUR/IEC, P. Zgorzelski)
eCl@ss Workflow of Product Data

Standards

eCl@ss XML 3.0 is based on the following standards:
- ISO 13584-32 (OntoML): Dictionary
- ISO 29002-5: Concept Identifier
- ISO 29002-10 (Item): Response
- ISO 29002-31 (Query): Query
- ISO 22745-30 (Identification Guide): Template UnitsML: Unit

Examples of Applications which are able to work with eCl@ss Advanced:
- COMOS
- eCatCreator
- ProDOK
- RefApp (for eCl@ss)
- SAP AIN
- Teamcenter

http://wiki.eclass.eu/wiki/eClass_Workflow
Example based on real data

The next pages will present an implementation of the eCl@ss-Workflow in a beta-state.

First we will see a small request for a pressure transmitter (eCl@ss: 27-20-06-14), which could be generated with an engineering system or an eCl@ss-XML-editor.

The second part will be a live demo, how a request file could be processed and a pressure transmitter will be selected. At the end an answer/response file will be generated. (a back-up of the life demo with the main steps is added in this presentation, too).
ISO 29002-31 Query

A short and simple query is generated with an eCl@ss-XML-editor. The pink marked properties and values are requested.
ISO 29002-31 Query (Comparator view)

According to the demands in the relevant standards, several types of queries are possible, like:

- **All/one statement must be true**
- **A comparator setting with =, ≠, ≤, ≥, <, > depending on data type**
- **One or more values are possible (monovalent, multivalent)**
- **The properties can also be combined to some more operations (not shown here)**

<table>
<thead>
<tr>
<th>Property</th>
<th>Comparator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>/Identification /Supplier /name of supplier</td>
<td>=</td>
<td>Siemens</td>
</tr>
<tr>
<td>/Mechanical and electrical construction (67) /Structural design absolute pressure/gauge transmitter / Housing / material of housing</td>
<td>=</td>
<td>aluminum</td>
</tr>
<tr>
<td>/Mechanical and electrical construction (67) /Structural design absolute pressure/gauge transmitter / Housing / degree of protection (IP)</td>
<td>=</td>
<td>IP65</td>
</tr>
<tr>
<td>/Mechanical and electrical construction (67) /Process connection (spec. device list of properties) / Process connection / nominal size/connection size</td>
<td>=</td>
<td>G 1/2 inch</td>
</tr>
<tr>
<td>/Mechanical and electrical construction (67) /Process connection (spec. device list of properties) / Process connection / reference standard for connection</td>
<td>=</td>
<td>EN 837-1</td>
</tr>
<tr>
<td>/Mechanical and electrical construction (67) /Process connection (spec. device list of properties) / Process connection / designation of material</td>
<td>=</td>
<td>stainless steel</td>
</tr>
<tr>
<td>/Structural design absolute pressure/gauge transmitter / Absolute/gage pressure transmitter / fill fluid</td>
<td>=</td>
<td>silicone oil</td>
</tr>
<tr>
<td>/Rated operating conditions (pressure) /Environmental design ratings / Normal environmental conditions / Ambient temperature / min. operating ambient temperature</td>
<td>=</td>
<td>-20 °C</td>
</tr>
<tr>
<td>/Rated operating conditions (pressure) /Environmental design ratings / Normal environmental conditions / Ambient temperature / max. operating ambient temperature</td>
<td>=</td>
<td>50 °C</td>
</tr>
</tbody>
</table>
From a query to a response (acc. ISO 29002-10)

Entry area to the Siemens portal for Process Instruments to upload an eCl@ss-query

1. Upload

Upload your eCl@ss request file. For a single request, the request file can be uploaded as an XML file or compressed into a ZIP file. For a multiple device request at once, all XML request files must be compressed into a single ZIP file.
From a query to a response (acc. ISO 29002-10)

All requested properties and values are recognized and confirmed as valid (this means the properties and values are mapped between eCl@ss dictionary with class, path, property (+value(s)) and Siemens class with properties and values).

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>name of supplier</td>
<td>Siemens</td>
</tr>
<tr>
<td>fill fluid</td>
<td>silicone oil</td>
</tr>
<tr>
<td>degree of protection (IP)</td>
<td>IP65 (0173-1#07-WAA046#003)</td>
</tr>
<tr>
<td>material of housing</td>
<td>aluminum (0173-1#07-WPA010#002)</td>
</tr>
<tr>
<td>reference standard for connection</td>
<td>EN 837-1</td>
</tr>
<tr>
<td>designation of material</td>
<td>stainless steel (0173-1#07-AAT738#001)</td>
</tr>
<tr>
<td>nominal size/connection size</td>
<td>G 1/2 inch (0173-1#07-AAX278#001)</td>
</tr>
<tr>
<td>min. operating ambient temperature</td>
<td>-20 °C</td>
</tr>
<tr>
<td>max. operating ambient temperature</td>
<td>50 °C</td>
</tr>
</tbody>
</table>
From a query to a response (acc. ISO 29002-10)

All products, which are found in the Siemens class of pressure transmitters, are shown and sorted by the amount of properties (Status), which will fulfill the request (highest number is 7 of 9).

2. Product list

Based on your request file we can offer the following products. In the next step you can compare the devices or you can start directly with the configuration.

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>7MF10341...00A.</td>
<td>SITRANS P DSI1 / P410 PA GAUGE PRESSURE</td>
<td>7 of 9</td>
</tr>
<tr>
<td>7MF42331...00A.</td>
<td>SITRANS P DSI1 ABSOLUTE PRESSURE</td>
<td>7 of 9</td>
</tr>
<tr>
<td>7MF42341...00A.</td>
<td>SITRANS P DSI1 PA ABSOLUTE PRESSURE</td>
<td>7 of 9</td>
</tr>
</tbody>
</table>
From a query to a response (acc. ISO 29002-10)

With the input properties and values from the request, a first automatic preselection for some data places of the order number is possible. The rest of the needed configuration has to be done manually (e.g. the silicone oil, the process connection and the housing material are selected by the machine).
From a query to a response (acc. ISO 29002-10)

After the selection and the whole configuration of a product is done, a comparison of the requested and the selected properties is shown. All properties, which are available for the product will be shown additionally. After checking the properties a response file according to ISO 29002-10 can be downloaded.
Thank you for your participation

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