ISO 15926 - A Status Report

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A long time ago, in the early nineties, a group of companies, involved in the Process Industries, joined forces to come to a standard for sharing and integrating plant life-cycle information. That appeared to be a herculean task, but by now most 'ducks are in a row': ISO 15926. Here is a status report, including ISO 15926 activities related to CFIHOS, the IOGP JIP36 project for handing over data and documents, and DEXPI.

The companies, involved in the Process Industries, viz Owner/Operators, EPC contractors and subcontractors, and Manufacturer/Suppliers, usually have a rather 'promiscuous' relationship with each other. In the document-centric times that didn't result in serious problems related to information exchange because documents were interpreted by humans. But in the new data-centric era a new Tower of Babel evolved, because computers are supposed to do the interpretation, where each computer system has its own vocabulary and logic. Even identical occurrences of a system often have been configured differently to support the local work processes.

Besides that, the exchange of data isn't without problems because data may lead to different interpretations. Data are implicit, leaving out the details that are supposed to be common knowledge. But that common knowledge isn't formalized in a globally accessible way. By integrating all data these are put into a context, thus creating information in a uniform format.

A process plant is subject to change during its life from cradle to grave, During that life all kinds of parties are involved. They are creating information that others require as input, in the same period in time or twenty years later for an energy optimization study or a revamp. To obtain that input information rekeying and/or endless writing/updating of interfaces are required.

The target was to be able to globally share information, independent of any commercially available system, and to integrate plant life-cycle information for knowledge gathering. **Not** to replace any system, but to interface all software, that is used during the life of a facility, i.e. to provide the means for interoperability, as follows defined by AFUL: "a characteristic of a product or

system, whose interfaces are completely understood, to work with other products or systems, **present or future**, in either implementation or access, without any restrictions".

The solution, offered free of charge by ISO 15926, is to map at the source to a common language and format, and upload that to a common storage. The required input information, created earlier by other applications, can be queried and the query results can be downloaded from that common storage (the latter can also be an ad-hoc federation of two or more storages).

So, a prerequisite for that global interoperability is to have a common language: ISO 15926-2 (upper ontology) + ISO 15926-4 (reference data) + ISO 15926-7+8 (elementary ontologies in the form of 'templates'), and the fact that all relevant apps can "speak and understand" that language. The latter can be achieved to give those apps a compliant interface.

This is illustrated below:
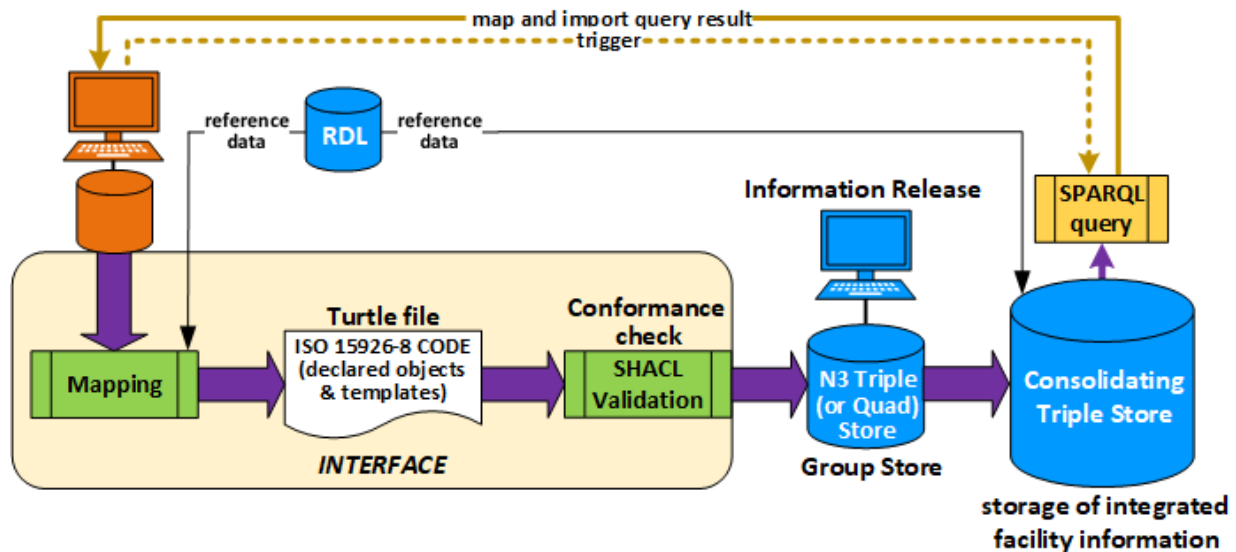
Status

Except for the API of the triple stores (ISO 15926-9) all parts, relevant for the set-up in the above image, have been defined. The Reference Data Library contains some 20,000 classes, and 236 ISO 15926-7 template specifications have been published. A mapping methodology has been designed and a software 'engine', based on that, is nearing completion. SHACL is a W3C Recommendation.

CFIHOS

CFIHOS, the JIP36 project of IOGP, collected an RDL which has been mapped and integrated with the ISO 15926-4 RDL. The RDL of DEXPI also has been harmonized with the ISO 15926-4 RDL.
The CFIHOS data model has been mapped to ISO 15926-7/8 templates, see here for the results so far.

The rationale for that mapping is that CFIHOS data are in fact 'legacy' data in the above set-up. The mapping results are available as an off-the-shelf, free of charge, methodology.

Aveva, one of the major CAE system suppliers, indicated that they will use ISO 15926 for their new Digital Twin software.
Fluor Corporation, one of the major EPC contractors, indicated that they are running various Proof of Concepts with the combination of CFIHOS and ISO 15926.

Uptake

Standards organizations usually have no information about actual deployments. Since the use of Semantic Web technologies is fairly new and requires a paradigm shift, the uptake is expected not to be substantial yet. The role of the Owner/Operators, being at the top of the Information Chain, is of crucial importance in this.

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