

ISO 15926 as OWL

1. PURPOSE

The current PCA system for developing reference data libraries is the Brutus database and editor, implemented using EXPRESS. This system hosts the PCA RDL. It doesn't support development of RDL's in other contexts (companies, projects), even though such development is recognized by everyone in the ISO 15926 community as unavoidable.

For many, the W3C languages RDF and OWL are the default choices for representation of ISO 15926 content. There are two OWL representations of ISO 15926-2 widely recognized today:

- The representation published by PCA and used in the regular export of PCA RDL, available at <https://www.posccaesar.org/wiki/ISO15926inOWL>.

Content Scope = Export of full RDL ontology from PCA Master RDS (aka Brutus)

Content Format = OWL with all Part2 Express content reified in triples.

- The simplified representation of the in-process ISO 15926-8, available (login required) at https://www.posccaesar.org/browser/projects/ISO15926/part_8/RDF.

Content Scope = Content of Part 8, representing Part 7 & Part 2 Model

Content Format = RDF as defined by Part 8

While both approaches have value, neither is a complete solution. In some scenarios, the fact that the PCA representation uses a reified representation form which directly mimics the EXPRESS original, in which classes are represented as individuals, is considered a problem. While in other scenarios, the fact that the Part 8 representation represents every entity type, including those which have relational character, as (unary) classes is considered a problem. These are not necessarily shortcomings in themselves, but design choices supporting specific usage scenarios. It is also true that neither approach is really suitable for the development of an RDL, in the sense of an OWL ontology for an industrial domain, using commonly recognized methodologies.

In order to address the industry need for ISO 15926 as OWL, a new project with the following purpose is being initiated:

- To develop OWL2 representations of ISO 15926-2 suitable for use in the development of industrial ontologies based on the upper ontology of ISO 15926-2, using currently recognized best-practice methods of OWL ontology development.

The custodian of the resulting ontology will be PCA. This secures open access to the ontology, and protection against proprietary interests.

This project has had many precursors, ranging from implemented projects to academic papers. The aim and scope is therefore well known, and design choices are expected to be, in the main, uncontroversial.

2. PROPONENTS

The initiative for this project comes from three entities.

1. PCA wishes to provide a foundation for unified development of RDL's beyond the core PCA RDL, as suitable for federation into a global collaborative effort in industrial content standardization
2. EPIM is developing the ReportingHub system, and wishes the content of this system to be compatible with other ISO 15926 systems and sources, including public databases as well as others planned by EPIM itself
3. DNV IRM is a provider of ISO 15926 services, and wishes to employ a commonly recognized ontology as the basis for RDL development in projects, in order to secure suitability in a federated system.

These entities have agreed to work together to produce an OWL ontology, to be published by PCA. The three entities all possess materials relevant to the development effort: PCA already publishes a reified OWL variant, and funded the ISO 15926-8 ontology development; EPIM has contracted TopQuadrant to develop its ReportingHub, which has an OWL native ISO 15926-2 ontology at its core; and DNV at the Information Risk Management (IRM) department has delivered ISO 15926 content in several projects.

As results from this project and the JORD project interrelate, work done in this project will be coordinated with JORD and iRing.

3. HIGH LEVEL OBJECTIVES

The native OWL 2 representation(s) of ISO 15926-2 will need to conform to a list of requirements and design choices, both formal and pragmatic. The following are among those likely to be adopted.

1. The results needs to support scenarios based in the OWL 2 RDF-Based semantics ("OWL Full"), as given at <http://www.w3.org/TR/owl2-rdf-based-semantics/>
2. The results needs to support scenarios based in the OWL 2 Description Logic semantics, as given at <http://www.w3.org/TR/owl2-direct-semantics/>

Note. It is expected that satisfying both these requirements means that partitioning the ontology into modules that can be used or not for specific scenarios.

3. Rules for translation between the ontology, and the ISO 15926-2 representations given in the reified EXPRESS format as well as the simplified ISO 15926-8 format, need to be specified.

4. AN INVITATION

This announcement included an invitation to participate in this effort. If you or your organization is interested please contact Nils Sandsmark at PCA (nils.sandsmark@posccaesar.org, T.: +47 9585 3220). If you or your organization is interested in following, but not necessarily contributing directly to, this effort please also register that interest with Nils Sandsmark. Industry support by using the results is just as important as contributing to the technical work.