



BSI Standards Publication

Industrial automation systems and integration — Integration of life-cycle data for process plants including oil and gas production facilities

Part 11: Methodology for simplified
industrial usage of reference data

National foreword

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**Industrial automation systems and
integration — Integration of life-cycle
data for process plants including oil
and gas production facilities —**

Part 11:

**Methodology for simplified industrial
usage of reference data**

*Systèmes d'automatisation industrielle et intégration — Intégration
de données de cycle de vie pour les industries de "process", y compris
les usines de production de pétrole et de gaz —*

*Partie 11: Méthodologie pour un usage industriel simplifié des
données de référence*



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is Technical Committee ISO/TC 184, *Automation systems and integration*, Subcommittee SC 4, *Industrial data*.

ISO 15926 is organized as a series of parts, each published separately. The structure of ISO 15926 is described in ISO 15926-1.

ISO 15926 consists of the following parts, under the general title *Industrial automation systems and integration — Integration of life-cycle data for process plants including oil and gas production facilities*:

- *Part 1: Overview and fundamental principles*;
- *Part 2: Data model*;
- *Part 3: Reference data for geometry and topology* [Technical Specification];
- *Part 4: Initial reference data* [Technical Specification];
- *Part 6: Methodology for the development and validation of reference data* [Technical Specification];
- *Part 7: Implementation methods for the integration of distributed systems: Template methodology* [Technical Specification];
- *Part 8: Implementation methods for the integration of distributed systems: Web Ontology Language (OWL) implementation* [Technical Specification];
- *Part 11: Methodology for simplified industrial usage of reference data* [Technical Specification]

The following parts are under preparation:

- *Part 9: Implementation methods for the integration of distributed systems: Facade implementation* [Technical Specification];
- *Part 10: Conformance testing* [Technical Specification]

Introduction

ISO 15926 is an International Standard for the representation of process industries facility life-cycle information. This representation is specified by a generic, conceptual data model that is suitable as the basis for implementation in a shared database or data warehouse. The model is designed to be used in conjunction with reference data, that is, standard instances that represent information common to a number of users, production facilities, or both. The support for a specific life-cycle activity depends on the use of appropriate reference data in conjunction with the model.

This part of ISO 15926 focuses on a simplified implementation of the afore mentioned data model in the context of engineering data in the area of the process industry, including the oil, gas, process and power industry and is intended for developers of configuration management processes and systems in general.

This part of ISO 15926 provides the capability to express a product model with RDF triples, RDF Named Graphs and a standardized set of natural language relationships resulting in a model that can be exchanged and shared easily in industry.

There is an industry need for this part of ISO 15926.

- The triple relationships are easy to understand by an engineer so that an engineer can understand the product model. This has been proven by the NL Ship Building group who developed a Gellish-RDF based implementation for standardized exchange of product data of HVAC equipment on a daily basis.
- The standard data sheets from API, NORSOK, etc. used in industry for pumps, compressors, instruments, etc. can be supported by a Gellish-RDF product model enabling industry to continue to work with their specific data sheets and yet exchanging the data in standardized way according this new standard. This has been proven by the ICAAMC compressor group who pilot for the API 617 data sheet.
- It is used in some projects, e.g. in the Pearl project for oil and gas.
- This part of ISO 15926 can be used as a front end engineering layer for the template methodology used by ISO/TS 15926-7 and ISO/TS 15926-8, e.g. in the FIATECH project IIP. This will make the content of those projects easier to access by engineers.
- An EPC contractor has used the draft of this part of ISO 15926 in various tunnel projects for information modelling in the area of systems engineering which was required by the Dutch authority regulations. With this part of ISO 15926 enriched by the knowledge from ISO/IEC 15288, this became possible. They have built a performance measuring system for operational data in tunnel installations where the methodology of this part of ISO 15926 is used to justify the performance to the ministry of transportation in the Netherlands.

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Industrial automation systems and integration — Integration of life-cycle data for process plants including oil and gas production facilities —

Part 11:

Methodology for simplified industrial usage of reference data

1 Scope

This part of ISO 15926 enables a flexible creation of product knowledge models that can be exchanged in the plant engineering supply chain by combining RDF triples within named graphs, reference data dictionaries and a standardized set of relationships.

This part of ISO 15926 is appropriate for use with ISO 15926 reference data libraries, and it is applicable to the oil, gas, process and power industries.

The following are within the scope of this part of ISO 15926:

- process plants in accordance with ISO 15926-1;
- use of RDF triples representing statements as defined in the ISO 15926 series;
- an initial set of relationships required for process plant life cycle representation;
- rules for the use of RDF Named Graphs for product data representation and exchange;
- examples of possible implementations.

The following are outside the scope of this part of ISO 15926:

- definition of reference data libraries;
- the syntax and format of implementations of product data models and/or instance data using this part of ISO 15926;
- any specific methods and guidelines other than RDF Named Graphs for implementing ISO 15926-2.

2 Normative references

The following referenced documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/TS 15926-4, *Industrial automation systems and integration — Integration of life-cycle data for process plants including oil and gas production facilities — Part 4: Initial reference data*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.