

This is a preview of "ISO/TS 15926-11:2015". [Click here to purchase the full version from the ANSI store.](#)

First edition
2015-05-01

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



Reference number
ISO/TS 15926-11:2015(E)

© ISO 2015



COPYRIGHT PROTECTED DOCUMENT

© ISO 2015, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

This is a preview of "ISO/TS 15926-11:2015". Click here to purchase the full version from the ANSI store.

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms, definitions and abbreviated terms	1
3.1 Terms and definitions.....	1
3.2 Abbreviated terms.....	4
4 Fundamental concepts and assumptions	4
4.1 Purpose and objectives.....	4
4.2 Positioning of this part of ISO 15926.....	5
4.3 Use of statements within ISO 15926.....	6
4.4 Requirements of statements.....	7
4.5 Representing statements in RDF triples.....	8
4.6 RDF Named Graph.....	11
4.7 Connecting RDF with a Reference Data Library (RDL).....	13
4.8 Use of RDF with a RDL of relationships.....	15
5 Methodology for using Named Graphs	16
5.1 Building constructs of the methodology.....	16
5.2 Named Graph methodology.....	17
5.3 Metadata of a Named Graph.....	19
5.4 Example Named Graph methodology within projects.....	19
5.4.1 Introducing the basic types of Named Graphs within this part of ISO 15926.....	19
5.4.2 Introducing project specific individuals.....	21
5.4.3 Introducing project specific relationships.....	22
5.4.4 Introducing project specific statements.....	25
5.5 Example Named Graph methodology within product knowledge modelling.....	29
5.5.1 Introducing product specific individuals.....	29
5.5.2 Introducing project specific relationships.....	30
5.5.3 Introducing product specific statements.....	31
6 Reference Data	34
6.1 Origin of the initial set of relationships.....	34
6.2 Reference information models representing Systems Engineering.....	37
7 Initial set of reference relationships	53
8 Position of this part in relation with other parts and standards	54
8.1 The relationship of this part of ISO 15926 with ISO 15926-2 and ISO/TS 15926-7.....	54
8.2 The relationship of this part of ISO 15926 with ISO 10303-233.....	56
Annex A (normative) Initial set of relationships	57
Annex B (normative) Possible syntax formats of Named Graphs	58
Annex C (informative) Examples of application areas for this part of ISO 15926	60
Annex D (informative) Origin of representation engineering data by triples	64
Bibliography	66

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]

This is a preview of "ISO/TS 15926-11:2015". [Click here to purchase the full version from the ANSI store.](#)

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 table 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 in a 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 also 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.