First edition
2004-07-15

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

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 1: Vue d'ensemble et principes fondamentaux

Reference number
ISO 15926-1:2004(E)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Figures

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75% of the member bodies casting a vote.

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.

ISO 15926-1 was prepared by Technical Committee ISO/TC184, *Industrial automation systems and integration*, Subcommittee SC4, *Industrial data*.

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*

0 Introduction

0.1 Background

Information concerning the engineering, construction and operation of process plants is created, used and modified by many different organizations throughout a plant's life. Economic, safety and environmental considerations demand that this information is available to owners and operators of facilities, contractors, and regulatory bodies in a consistent, integrated form. This requirement can be satisfied by specifications that prescribe the structure and meaning of data that is shared by organizations and disciplines involved in all stages of a plant's life-cycle.

The need to increase the cost efficiency of process plants is leading to business practices that depend on the efficient integration and sharing of plant information in a computer processable form. These business practices include the following.

— Many users' needs now span more than one of the traditional information views. Safety and environment are two examples of this.

— Concurrent engineering requires design work to progress in parallel, with the state of the design being available electronically, in computer processable form, to other engineering, planning, purchasing and logistical activities.

— Significant cost savings are expected from standardization of component specifications. The information about these specifications is required in computer processable form for easy incorporation into plant designs and requirements.

— In the past, hand-over of plant design information was often restricted to design drawings and paper documents. Use of this information in managing the operation and modification of the plant was restricted to manual processes, or the information had to be redefined in a format suitable to the required application. Having the plant design and equipment information in computer processable form increases the efficiency and effectiveness of the operational phase of the plant.

— Accurate computer processable information about a plant's performance throughout its lifetime is of high value, for optimising future modifications to the plant and for designing new plants on the basis of experience with existing plants.

By using a consistent context for data definitions, the information used in the various aspects of the plant's life-cycle can be brought together. This allows information to be integrated, shared and exchanged in a consistent, computer processable form.

0.2 Purpose of ISO 15926

The purpose of this International Standard is to facilitate integration of data to support the life-cycle activities and processes of process plants. To do this, this International Standard specifies a data model that defines the meaning of the life-cycle information in a single context supporting all the views that process engineers, equipment engineers, operators, maintenance engineers and other specialists may have of the plant.

Traditionally, data associated with a process plant have been concentrated on some individual view of the plant at a point in time. Such data are usually defined and maintained independently of other groups of users, resulting in duplicated and conflicting data that cannot be shared either within an enterprise or with business partners of an enterprise.

ISO 15926 is an International Standard for the representation of process plant 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 data model is designed to be used in conjunction with reference data, i.e. standard instances that represent information common to a number of users, process plants, or both. The support for a specific life-cycle activity depends on the use of appropriate reference data in conjunction with the data model.

ISO 15926 is organized as a series of parts, each published separately. This part of ISO 15926 provides an overview. It specifies the contents and functions of the different parts of ISO 15926 and the relationships between them, and describes:

— an overview of ISO 15926;

— the fundamental principles that are the basis of ISO 15926;

— the relationship of ISO 15926 to other industrial data standards;

— definitions of terms used throughout ISO 15926.

0.4 Typographical conventions

The following typographical conventions are used in this International Standard.

A numbered reference enclosed in brackets (for example, “[2]”) is a reference to a document that is listed in the Bibliography.

In this International Standard the same English language words may be used to refer to an object in the real world or to a concept, and as the name of an EXPRESS data type that represents this object or concept. The following typographical convention is used to distinguish between these. If a word or phrase occurs in the same typeface as narrative text, the referent is the object or concept. If the word or phrase occurs in a bold typeface, the referent is the EXPRESS data type. Names of EXPRESS schemas also occur in a bold typeface.

The name of an EXPRESS data type may be used to refer to the data type itself, or to an instance of the data type. The distinction between these uses is normally clear from the context. If there is a likelihood of ambiguity, the phrase “entity data type” or “instance(s) of” is included in the text.

Double quotation marks “ ” denote quoted text. Single quotation marks ‘ ’ denote particular text string values.

Some components of this International Standard are available in electronic form. This access is provided through the specification of Universal Resource Locators (URLs) that identify the location of these files on the Internet. If there is difficulty accessing these files contact the ISO Central Secretariat, or contact the ISO TC 184/SC4 Secretariat directly at: sc4sec@tc184-sc4.org.

0.5 Target audiences

The target audiences for this part of ISO 15926 are as follows:

— technical managers wishing to determine whether ISO 15926 is appropriate for their business needs;

