SLOVENSKI STANDARD

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Napredne avtomatizirane tehnologije in njihova uporaba - Zahteve za uvedbo interoperabilnosti proizvodnega procesa podjetja - 1. del: Okvir za interoperabilnost podjetij (ISO 11354-1:2011)

Advanced automation technologies and their applications - Requirements for establishing manufacturing enterprise process interoperability - Part 1: Framework for enterprise interoperability (ISO 11354-1:2011)

Fortgeschrittene Automatisierungstechnologien und deren Anwendung - Teil 1: Rahmenwerk für die Unternehmensinteroperabilität (ISO 11354-1:2011)

Technologies d'automatisation avancées et leurs applications - Exigences relatives à l'établissement d'un processus d'interopérabilité pour les entreprises de fabrication - Partie 1: Cadre pour l'interopérabilité d'entreprise (ISO 11354-1:2011)

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Contents

Page

Foreword

This document (EN ISO 11354-1:2011) has been prepared by Technical Committee CEN/TC 310 "Advanced automation technologies and their applications", the secretariat of which is held by BSI, in collaboration with Technical Committee ISO/TC 184 "Automation systems and integration".

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2012, and conflicting national standards shall be withdrawn at the latest by March 2012.

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INTERNATIONAL STANDARD

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Advanced automation technologies and their applications — Requirements for establishing manufacturing enterprise process interoperability —

Part 1: Framework for enterprise interoperability

Technologies d'automatisation avancées et leurs applications — Exigences relatives à l'établissement d'un processus d'interopérabilité pour les entreprises de fabrication —
Partie 1: Cadre pour l'interopérabilité d'entreprise

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Contents

Page

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.

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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.

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ISO 11354-1 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 310, *Advanced automation technologies and their applications*, in collaboration with Technical Committee ISO/TC 184, *Automation systems and integration*, Subcommittee SC 5, *Interoperability, integration, and architectures for enterprise systems and automation applications*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement). This part of ISO 11354 is based on work carried out in European projects such as ATHENA[11] and INTEROP NoE[20].

ISO 11354 consists of the following parts, under the general title *Advanced automation technologies and their applications — Requirements for establishing manufacturing enterprise process interoperability*:

— *Part 1: Framework for enterprise interoperability*

The following parts are planned:

— *Part 2: Maturity model for assessing enterprise interoperability*

— *Part 3: Requirements for information and communication technology-enabled enterprise interoperability*

Introduction

The ability of an enterprise to interoperate with others is not only a recognized quality and advantage for gaining competitiveness in today's market, but is becoming a question of survival for many companies, especially for small or medium size enterprises (SMEs). Enterprises require more interoperations during the entire life cycle of a product to reduce cost and shorten delays. Increased interoperations enable an enterprise to propose new products for the market in a network of organizations. Many stakeholders believe that enterprise interoperability is an area in which research can lead to outstanding results in terms of innovation, leading to economic growth and employment (see Reference [16]).

Enterprise interoperability as an engineering discipline is not yet well defined; interoperability is still a vague concept that has many definitions and connotations in different sectors and domains. This leads to communication difficulties and misunderstandings. Consequently, it is essential to define the concept of interoperability as relevant to enterprise interoperation.

Enterprise systems fail to interoperate because of barriers of various categories. Interoperability barriers are therefore an important concept, and this part of ISO 11354 identifies three categories of interoperability barriers, namely: conceptual, technological and organizational. Interoperability barriers need to be categorized in standard ways and existing interoperability knowledge and solutions need to be related to these barriers in order to facilitate interoperability in design and implementation for industry.

ISO 11354 considers interoperability as a generic concept, and it is assumed that common problems of interoperability failure and solutions to overcome them can be identified and developed for any particular enterprise. Therefore, ISO 11354 considers enterprise interoperability to be an engineering discipline, separating it from other business-related issues. Interoperability is seen as a necessary support to enable business collaboration, but interoperability is not the business collaboration itself.

Advanced automation technologies and their applications — Requirements for establishing manufacturing enterprise process interoperability —

Part 1: **Framework for enterprise interoperability**

1 Scope

The purpose of this part of ISO 11354 is to specify a Framework for Enterprise Interoperability (FEI) that establishes dimensions and viewpoints to address interoperability barriers, their potential solutions, and the relationships between them.

ISO 11354 applies to manufacturing enterprises, but can also apply to other kinds of enterprises. It is intended for use by stakeholders who are concerned with developing and deploying solutions based on information and communication technology for manufacturing enterprise process interoperability. It focuses on, but is not restricted to, enterprise (manufacturing or service) interoperability.

This part of ISO 11354 specifies the following:

— viewpoints for addressing stakeholder concerns for the exchange of entities (information objects or physical objects) at the operational levels of enterprises at which interoperability is required;

— a framework for structuring these stakeholder concerns (business, process, service, data), the barriers relating to enterprise interoperability (conceptual, technological, organizational) and the approaches to overcome barriers (integrated, unified, federated), with contents identifying the various kinds of solutions available to enable interoperability.

This part of ISO 11354 does not specify the specific mechanisms for the exchange of entities (information objects or physical objects), nor the manner in which interoperability solutions are implemented.

Three annexes provide additional information. Annex A describes how existing interoperability frameworks can be related to the concepts of this framework. Annex B shows examples of using the FEI to identify and categorize interoperability barriers, knowledge and solutions. Annex C provides a methodological guideline on how the FEI can be used in an interoperability engineering project.

2 Terms and definitions

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

2.1
enterprise interoperability
ability of enterprises and entities within those enterprises to communicate and interact effectively

NOTE Interoperability is considered as significant if the interactions can take place in at least one of the four areas of interoperability concerns: data, service, process and business.