SLOVENSKI STANDARD

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Integracija programskih reģitev korporacij - Okvirne doloļ be o podjetniģkem modeliranju (ISO 19439:2006)

Enterprise integration - Framework for enterprise modelling (ISO 19439:2006)

Unternehmensintegration - Rahmenwerk für die Unternehmensmodellierung - Festlegung (ISO 19439:2006)

Entreprise intégrée - Cadre de modélisation d'entreprise (ISO 19439:2006)

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Enterprise integration - Framework for enterprise modelling (ISO 19439:2006)

Entreprise intégrée - Cadre de modélisation d'entreprise (ISO 19439:2006)

Unternehmensintegration - Rahmenwerk für Unternehmensmodellierung - Festlegung (ISO 19439:2006)

This European Standard was approved by CEN on 3 February 2006.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN ISO 19439:2006) has been prepared by Technical Committee CEN/TC 310 "Advanced Manufacturing Technologies", the secretariat of which is held by BSI, in collaboration with Technical Committee ISO/TC 184 "Industrial 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of an identical text or by endorsement, at the latest by October 2006, and conflicting national standards shall be withdrawn at the latest by October 2006.

This document supersedes ENV 40003:1990.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

INTERNATIONAL STANDARD

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Enterprise integration — Framework for enterprise modelling

Entreprise intégrée — Cadre de modélisation d'entreprise

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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.

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 19439 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 310, *Advanced manufacturing technologies*, in collaboration with Technical Committee ISO/TC 184, *Industrial automation systems and integration*, Subcommittee SC 5, *Architecture, communications and integration frameworks*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Introduction

This framework defines and specifies the generic concepts that are required to enable the creation of enterprise models for industrial businesses and to provide support for the use of frameworks by industrial enterprises.

Enterprise modelling consultancies and tool vendors have developed enterprise modelling methodologies and supporting tools that address phases of the enterprise life cycle and various aspects of enterprise modelling. These methodologies and tools support business decision-making (such as process visualization and simulation), enterprise process management, control and monitoring of operational processes (such as workflow) and performance monitoring (such as visualization of work in progress). This framework provides a unified conceptual basis for model-based enterprise engineering that enables consistency, convergence and interoperability of the various modelling methodologies and supporting tools. The framework does not encompass methodological processes; it is neutral in this regard.

ISO 15704:2000, 4.2.2 (see also A.3.1.2) places requirements on the description of the essential roles of humans. In this International Standard, these are described in terms of:

— organizational roles that are specified in the Organization View, which captures the various assigned responsibilities and required capabilities (skills);

— operational roles that are specified in the Resource View, which captures the operational capabilities (skills) and which are then matched to the ones identified in the Function View.

The Annex A contains a general description of the concepts of enterprise models, modelling frameworks and modelling language constructs (as defined in ENV 12204:1996) as background to the normative content of Clauses 5 and 6. Annex B describes with illustrative examples how the enterprise modelling framework can be used by both enterprise model developers and enterprise model tool developers.

Enterprise integration — Framework for enterprise modelling

1 Scope

This International Standard specifies a framework conforming to requirements of ISO 15704, which serves as a common basis to identify and coordinate standards development for modelling of enterprises, emphasising, but not restricted to, computer integrated manufacturing. This International Standard also serves as the basis for further standards for the development of models that will be computer-enactable and enable business process model-based decision support leading to model-based operation, monitoring and control.

In this International Standard, four enterprise model views are defined in this framework. Additional views for particular user concerns can be generated but these additional views are not part of this International Standard. Possible additional views are identified in ISO 15704.

2 Normative references

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

ISO 15704:2000, *Industrial automation systems — Requirements for enterprise-reference architectures and methodologies*

3 Terms and definitions

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

NOTE Definitions copied verbatim from other standards are followed by a reference in brackets to the source standard. Definitions that have been adapted from other standards are followed by an explanatory note.

3.1
abstraction
shortening in duration or extent with no sacrifice of sense, used to differentiate between a real-world system and a model of the real world

[ISO 14258:1998]

3.2
attribute
piece of information stating a property of an entity

[ISO 15704:2000]

3.3
behaviour
manner in which the whole or part of a system acts and reacts to perform a function

NOTE Adapted from ISO 15704:2000.

3.4
business process
partially ordered set of enterprise activities that can be executed to achieve some desired end-result in pursuit of a given objective of an enterprise or a part of an enterprise

NOTE Adapted from ISO 15704:2000, ENV 12204:1996.

3.5
capability
quality of being able to perform a given activity

[ISO 15531-1]

3.6
component
⟨system⟩ entity, with discrete structure within a system, which interacts with other components of the system, thereby contributing at its lowest level to the system properties and characteristics

[ISO/IEC 15288:2002]

3.7
concept definition
enterprise model phase that defines the business concepts of an enterprise domain to be employed in realizing its business objectives and its operation, including the necessary enterprise domain inputs and outputs

3.8
constraint
restriction or limitation or condition placed upon a system that originates from inside or outside the system under consideration

NOTE Adapted from ISO 14258:1998.

3.9
decision
result of choosing between different courses of action

3.10
decisional
relating to those processes that are concerned with making choices

3.11
decommission definition
enterprise model phase that defines the final state of a decommissioned operational system, all its components for a particular enterprise domain and the processes employed to conduct the decommissioning, so enabling re-use or disposition of those components

3.12
decomposition
breaking an entity into its constituent parts as appropriate to the purpose of the modeller

3.13
design specification
enterprise model phase that specifies the business processes, together with capabilities and rules, that are to be performed to achieve the requirements

3.14
detailing
addition of content, attributes and operations, that more precisely identify the intent of modelling language constructs and partial models

3.15
domain identification
enterprise model phase that identifies the enterprise domain to be modelled with respect to its business objectives, the enterprise domain inputs and outputs and their respective origins and destinations

3.16
domain operation
enterprise model phase that encompasses the operational use of the domain model

3.17
enactment
computer processing of models to facilitate the development of more responsive and coherent enterprises, in particular the use of a model to monitor and control the execution of the business processes of the enterprise

NOTE Adapted from Vernadat [23].

3.18
enterprise
one or more organizations sharing a definite mission, goals and objectives to offer an output such as a product or service

[ISO 15704:2000]

NOTE In this International Standard, a goal is the target resulting from the intention of the enterprise to achieve its mission and objective.

3.19
enterprise activity
all, or part, of process functionality that consists of elementary tasks performed in the enterprise that consume inputs and allocate time and resources to produce outputs

NOTE Adapted from ISO 15704:2000.

3.20
enterprise domain
domain
part of the enterprise considered relevant to a given set of business objectives and constraints for which an enterprise model is to be created

NOTE In this International Standard, *enterprise domain* is abbreviated to *domain* whenever it is used as a qualifier in such terms as *domain identification phase* and *domain model*. Other usages of *domain* have the normal dictionary meaning.

3.21
enterprise engineering
discipline applied in carrying out any efforts to establish, modify or reorganize any enterprise

[ISO 15704:2000]

3.22
enterprise integration
process of ensuring the interaction between enterprise entities necessary to achieve enterprise domain objectives

3.23
enterprise model
abstraction of an enterprise domain that represents enterprise entities, their interrelationships, their decomposition and detailing to the extent necessary to convey what it intends to accomplish and how it operates