TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CEN/TS 14818

August 2004

ICS 03.100.01

English version

Enterprise integration - Decisional reference model

This Technical Specification (CEN/TS) was approved by CEN on 9 March 2004 for provisional application.

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Ref. No. CEN/TS 14818:2004: E

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Foreword

This document (CEN/TS 14818:2004) has been prepared by Technical Committee CEN/TC 310, “Advanced manufacturing technologies”, the secretariat of which is held by BSI.

During its preparation, contributions have also been received from ISO/TC 184/SC5, “Industrial automation systems and integration/Architecture, communications and integration frameworks”, ISO/TC 184/SC 5 – IEC/SC 65 A /JWG15, “Enterprise control-system integration”, and the IFAC/IFIP Task Force on Enterprise Integration.

The concepts, rules and model defined in this document are an implementation of the requirements defined in ISO 15704. It also constitutes an input for the work on enterprise control system integration being undertaken by ISO/TC 184/SC 5 – IEC/SC 65 A /JWG15.

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Introduction

This document defines the generic concepts and rules in terms of a decisional reference model that are needed to enable the creation of a particular enterprise decisional model for industrial business and to provide support for the use of the reference model by industrial enterprises to achieve better enterprise integration.

Enterprise integration can be achieved in various manners and at various levels. It can be obtained by:

a) data (data modelling), in ISO 10303 (STEP) and ISO 15531 (MANDATE);

b) organization (modelling of systems, processes, etc.), as in prEN ISO 19439 (former ENV 40003), prEN ISO 19440 [1] (former ENV 12204);

c) communication (modelling of networks), as in the OSI seven-layer model.

This document addresses the integration as being dealt with by consistent and integrated enterprise-wide decision-making [2] [3]. The approach is based on and contains selected elements from the GRAI decisional model.

It is not the intention of this document to suggest users should abandon their own method of handling decision-making, but to define the set of decisions that are necessary to control production and provide a structured decision-making environment leading to a better coordination and synchronization of these decisions.

This document aims at supporting the development of Decisional Hierarchy Model defined in ISO/IEC 62264 – *Enterprise-Control System Integration*. It contains definitions and descriptions of the common concepts, rules and principles necessary to model enterprise-wide decision-making structure, focusing on the production management and control system. The decisional model defined in this document is a reference model which is consistent and complementary to: prEN ISO 19439 (revision of ENV 40003), *Framework for enterprise modelling*, prEN ISO 19440 (revision of ENV 12204) [1], *Language constructs for enterprise modelling*, and ISO 15704, *Requirements for enterprise reference architecture and methodologies*.

1 Scope

This document gives guidelines for enterprise integration by using concepts and rules for modelling enterprise-wide decision-making structures, focusing on the production of management and control systems.

This document does not deal with standard decision processes, or how each individual decision is taken, but defines an integrated decision-making structure within which decisions are consistently made system-wide.

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.

prEN ISO 19439 [1)] *Enterprise integration - Framework for enterprise modelling - Specification (ISO/FDIS 19439:2004).*

ISO 10303-1:1994, *Industrial automation systems and integration — Product data representation and exchange — Part 1: Overview and fundamental principles.*

ISO 15531-1, *Industrial automation systems and integration — Industrial manufacturing management data — Part 1: General overview.*

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

IEC 62264–1:2003, *Enterprise-control system integration — Part 1 : Models and terminology.*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply. Some of the terms defined in ISO 15704:2000, ISO 15531-1:2000, and prEN ISO 19439:2003 are repeated below for convenience.

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

3.1
activity
part (or all) of functionality that transforms an input to an output using allocated resource(s)

NOTE Adapted from ISO 15704:2000.

3.2
activity cycle
total elapsed time to complete an activity

3.3
decision
result of choosing between different courses of action

[prEN ISO 19439]

[1)] To be published