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Industrial automation systems and integration — Diagnostics, capability assessment and maintenance applications integration —

Part 3: Applications integration description method

Systèmes d'automatisation industrielle et intégration — Diagnostics, évaluation des moyens et intégration des applications de maintenance —

Partie 3: Méthode de description pour l'intégration d'applications

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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.

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).

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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, *Industrial automation systems and integration*, Subcommittee SC 5, *Architecture, communication and integration frameworks*.

ISO 18435 consists of the following parts, under the general title *Industrial automation systems and integration — Diagnostics, capability assessment, and maintenance applications integration*:

— *Part 1: Overview and general requirements*

— *Part 2: Descriptions and definitions of application domain matrix elements*

— *Part 3: Applications integration description method*

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Introduction

ISO 18435 defines a set of integration methods intended to be used when integrating diagnostics, capability assessment, and maintenance applications with the applications in production, control, and other manufacturing operations.

ISO 18435-1 provides an overview of the elements as shown in Figure 1 and the rules of a method to describe an automation application's integration requirements. The elements include the key aspects when integrating an automation application with other applications and the relationships of these key aspects. The rules include the information exchanges to support interoperability within an application and between applications.

ISO 18435-2 provides the detailed definitions of the Application Interaction Matrix Element (AIME) and Application Domain Matrix Element (ADME) structures and their relationships. In particular, the steps for constructing an ADME from a set of AIMEs are described.

This part of ISO 18435 defines a recommended method based on templates to describe the interoperability between applications in two or more automation domains within an enterprise, at all levels of an enterprise's functional and resource hierarchies. The focus is on the production operations and maintenance operations domains.

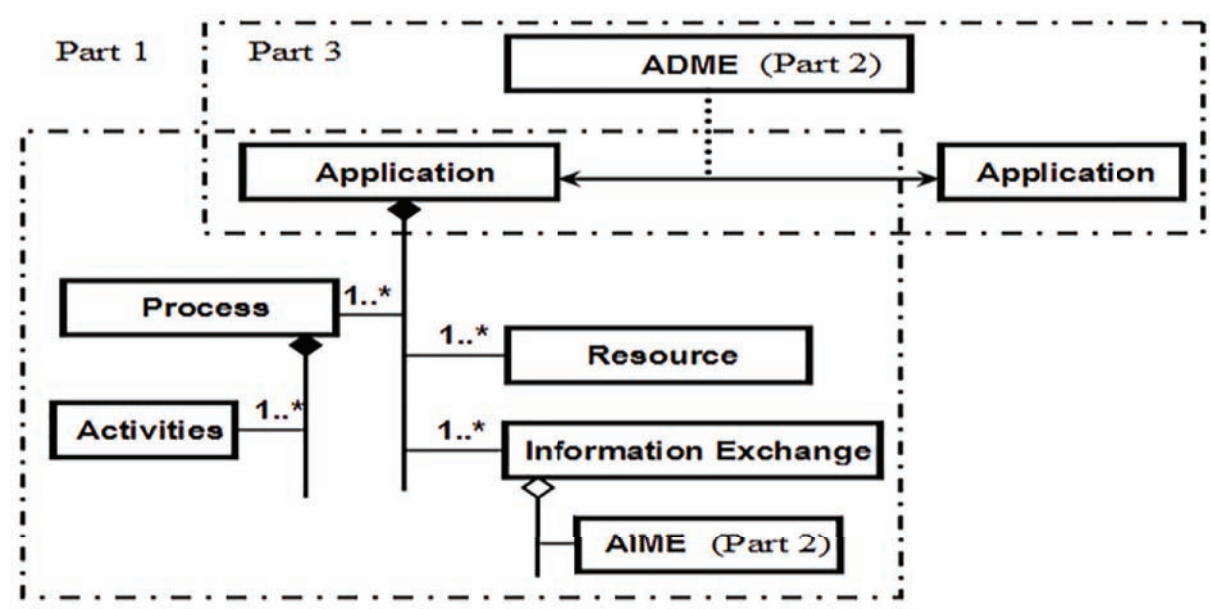


Figure 1 — Relationships between the parts of ISO 18435

UML is used to represent information exchange requirements associated with the interoperability and the integration of plant floor applications, in particular, diagnostics, control, maintenance and production.

The purpose is to focus on how to express the information exchanges:

— about the process, equipment, operators, and materials and other automation assets;

— that are conveyed from control and production systems to various diagnostics and maintenance systems in order to perform asset management.

The intended benefits for representing information exchanges are to:

— facilitate specifying and procuring open systems that support interoperability among diagnostics and maintenance applications;

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— reduce the time to develop diagnostics and maintenance solutions that directly address the well-defined integration requirements;

— provide a means to categorize tools intended to enable and verify interoperability and integration across applications.

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Industrial automation systems and integration — Diagnostics, capability assessment and maintenance applications integration —

Part 3: Applications integration description method

1 Scope

This part of ISO 18435 defines the profiling methodology to use the interoperability templates of ISO 18435-2. These profiling methods describe the construction and the use of application domain matrix elements (ADMEs), application interaction matrix elements (AIMEs), and an open technical dictionary (OTD) to support the information exchange.

In particular, this part of ISO 18435 gives guidance related to profiling the information exchange between two applications by establishing the context, conveyance, and contents defined in ISO 18435-2.

This part of ISO 18435 is intended to be used in conjunction with ISO 18435-1 and ISO 18435-2.

2 Normative reference(s)

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

ISO 8000 (all parts), *Data quality*

ISO/IEC 10646, *Information technology — Universal Coded Character Set (UCS)*

ISO 15745-1, *Industrial automation systems and integration — Open systems application integration framework — Part 1: Generic reference description*

ISO 18435-1:2009, *Industrial automation systems and integration — Diagnostics, capability assessment and maintenance applications integration — Part 1: Overview and general requirements*

ISO 18435-2:2012, *Industrial automation systems and integration — Diagnostics, capability assessment and maintenance applications integration — Part 2: Descriptions and definitions of application domain matrix elements*

ISO/TS 29002 (all parts), *Industrial automation systems and integration — Exchange of characteristic data*

ISO/TS 29002-5:2009, *Industrial automation systems and integration — Exchange of characteristic data — Part 5: Identification scheme*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 18435-1 and ISO 18435-2 and the following apply.

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3.1
ontology
explicit and consensual specification of concepts of an application domain independent of any use of these concepts

[SOURCE: ISO 13584-511:2006, 3.1.20]

4 Abbreviated terms

ADME	Application Domain Matrix Element
AIME	Application Integration Matrix Element
CBM	Condition-Based Maintenance
OTD	Open Technical Dictionary
UML	Unified Modelling Language
XML	eXtensible Markup Language

5 Applications integration description methods

5.1 Introduction to the application integration concept

5.1.1 General

The customer applications integration requirements determine the information exchange profiles that are needed to support the application interoperability requirements. To develop the information exchange profiles for the applications of interest, it is necessary to determine the existing customer domain areas of interest.

Clause 5 describes the method for specifying the information contained in the AIME and the ADME for the information exchange requirements using templates defined in ISO 18435-2. The use of this method will provide interoperability for the applications in the defined context. As this methodology is used for integrating additional applications from various domains, this method can be used for verifying if the information exchange profiles (using the AIME structure) are interoperable as needed by the user. Figure 2 shows an iterative process to verify the intended interoperability of the application integration.

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