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(ICS 25.040.40)

SINGAPORE STANDARD

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

– Part 3 : Applications integration description method

Singapore Standards Council

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

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National Foreword

This Singapore Standard was prepared by the Working Group on Smart Manufacturing Readiness Level set up by the Technical Committee on Smart Manufacturing under the purview of MSC.

This standard is identical with ISO 18435-3:2015, "Industrial automation systems and integration – Diagnostics, capability assessment and maintenance applications integration – Part 3: Applications integration description method", published by the International Organization for Standardization.

NOTE – Reference to International Standards are replaced by applicable Singapore Standards and Technical References.

This standard is expected to be used by system integrators, government agencies, testing, inspection and certification bodies, professional institutions, institutes of higher learning and training providers.

Attention is drawn to the possibility that some of the elements of this Singapore Standard may be the subject of patent rights. Enterprise Singapore shall not be held responsible for identifying any or all of such patent rights.

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*

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.

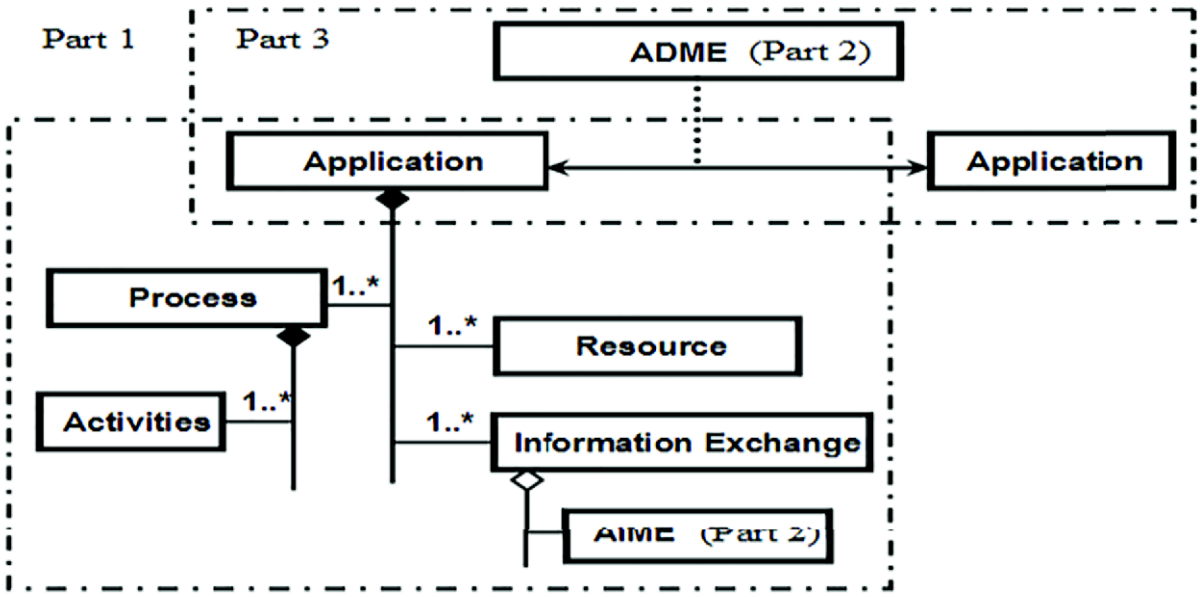

Figure 1 — Relationships between the parts of ISO 18435

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;

— 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.

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