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ISO 15745-1:2003

Australian Standard™

Industrial automation systems and integration—Open systems application integration framework

Part 1: Generic reference description

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PREFACE

This Standard was prepared by the Standards Australia Committee IT-006, Information Technology for Industrial Automation and Integration.

This Standard is identical with, and has been reproduced from, ISO 15745-1:2003, *Industrial automation systems and integration—Open systems application integration framework,* Part 1*: Generic reference description*.

The objective of this Standard is to provide an application integration framework—a set of elements and rules for describing integration models and application interoperability profiles.

This Standard is Part 1 of AS ISO 15745—2004, *Industrial automation systems and integration—Open systems application integration framework*, which is published in parts as follows:

Part 1: Generic reference description (this Standard)
Part 2: Reference description for ISO 11898-based control systems
Part 3: Reference description for IEC 61158-based control systems
Part 4: Reference description for Ethernet-based control systems

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ISO/IEC		AS	
7498-4	Information processing systems; Open Systems Interconnection; basic reference model; Part 4: Management framework	2777.4	Information processing systems; Open Systems Interconnection; basic reference model; Part 4: Management framework

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INTRODUCTION

Real world application systems are developed from application specifications (i.e. specifications that describe the functionality and performance that are required for the application). Such application specifications typically contain textual descriptions, drawings, diagrams, and references to other specifications. Many system integrators and end users who frequently operate in specific market sectors either generate multiple similar application specifications (one for each project), or generate a master application specification with variants for each project.

The application integration framework (AIF) defines elements and rules that facilitate:

— the systematic organization and representation of the application integration requirements using integration models;

— the development of interface specifications in the form of application interoperability profiles (AIPs) that enable both the selection of suitable resources and the documentation of the "as built" application.

Figure 1 depicts the relationship between the AIF (specified in ISO 15745), the integration models and AIP (developed by an AIP developer), and a real world application system.

The left section of Figure 1 shows a generic AIF that is specified in part 1 of ISO 15745 and is extended in subsequent parts to cover specific technologies.

The middle section of Figure 1 shows the AIP (which can contain one or more other AIPs) consisting of one process profile, one or more resource profiles, and one or more information exchange profiles. Underlying the AIP are the relevant integration models which represent the application requirements.

The right section of Figure 1 shows the real world application system consisting of:

— resources (devices, communication networks, equipment, humans, materials);

— processes;

— exchanges of information.

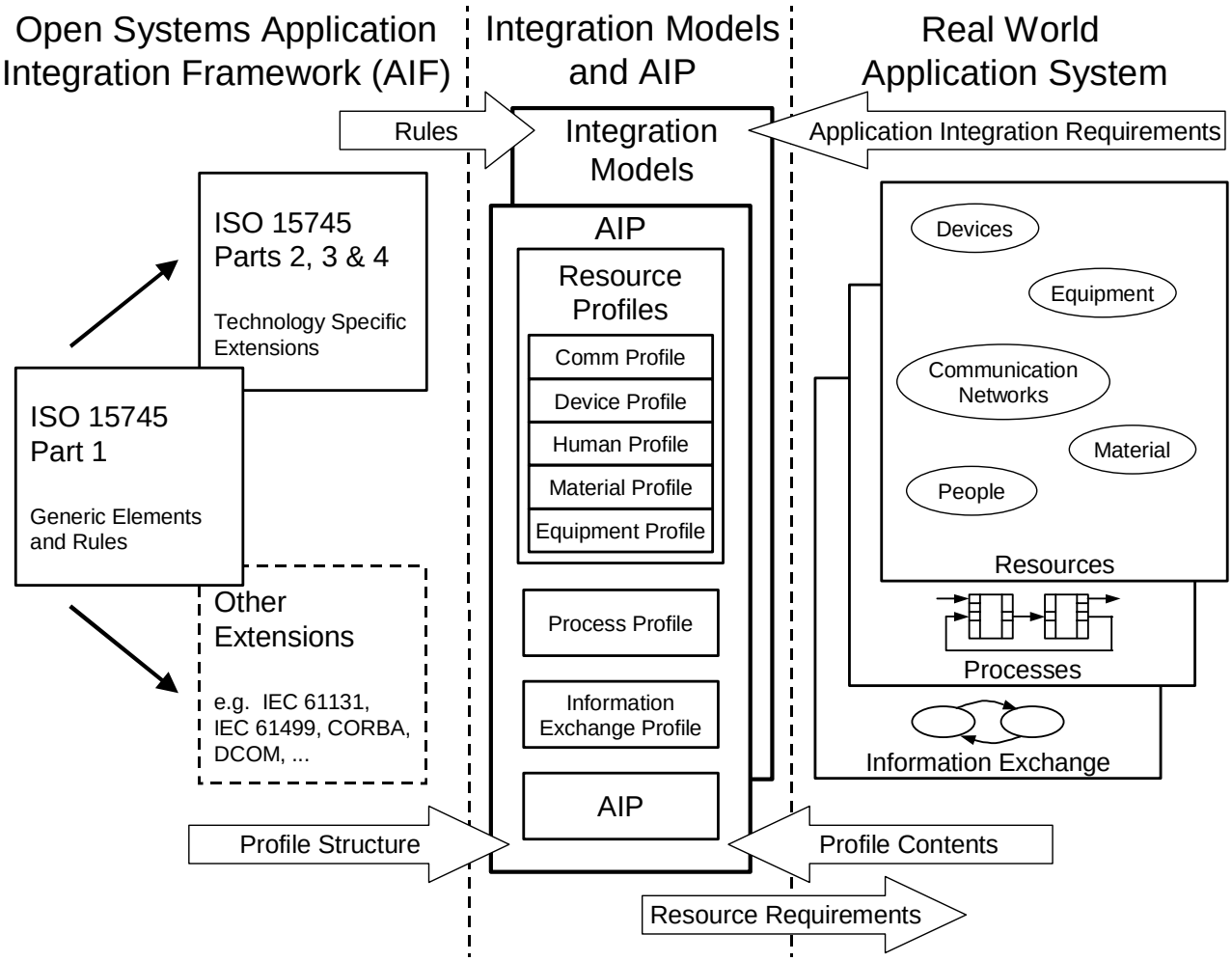


Figure 1 – Context of ISO 15745

Some of the benefits to be gained are that:

— end users can facilitate the specification and procurement of open systems by referencing pre-defined AIPs;

— system integrators can reduce the time to develop a solution based on open systems by using generic tools based on the AIF;

— automation vendors can provide and develop new products using generic tools based on the AIF e.g. an automation vendor can demonstrate that his products support the application requirements by referencing the resource profiles of an AIP.

The primary users of this International Standard will be developers of AIPs, using a variety of system platforms and product technologies in application domains such as:

— continuous process control systems;

— batch process control systems;

— machine control systems;

— discrete control systems;

— diagnostic systems.

AUSTRALIAN STANDARD

Industrial automation systems and integration — Open systems application integration framework — Part 1: Generic reference description

1 Scope

This International Standard defines an application integration framework - a set of elements and rules for describing integration models and application interoperability profiles.

This part of ISO 15745 defines the generic elements and rules for describing integration models and application interoperability profiles, together with their component profiles - process profiles, information exchange profiles, and resource profiles.

NOTE Parts 2, 3 and 4 of this International Standard define the technology specific elements and rules for describing both communication network profiles and the communication related aspects of device profiles based upon particular fieldbus technologies - these parts can be used in conjunction with this part to form an application integration framework for a specific fieldbus technology.

This International Standard is applicable to industrial automation applications such as discrete manufacturing, process automation, electronics assembly, semiconductor fabrication, and wide-area material handling. It may also be applicable to other automation and control applications such as utility automation, agriculture, off-road vehicles, medical and laboratory automation, and public transport systems.

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/IEC 7498-1:1994, *Information technology – Open Systems Interconnection – Basic Reference Model: The Basic Model*

ISO/IEC 7498-4:1989, *Information processing systems – Open Systems Interconnection – Basic Reference Model – Part 4 : Management framework*

IEC 61069-1:1991, *Industrial-process measurement and control – Evaluation of system properties for the purpose of system assessment – Part 1: General considerations and methodology*

REC-xml-20001006, *Extensible Markup Language (XML) 1.0 Second Edition – W3C Recommendation 6 October 2000*

REC-xmlschema-1-20010502, *XML Schema Part 1: Structures – W3C Recommendation 02 May 2001*

REC-xmlschema-2-20010502, *XML Schema Part 2: Datatypes – W3C Recommendation 02 May 2001*

UML V1.4, *OMG - Unified Modeling Language Specification (Version 1.4, September 2001)*

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