

This is a preview of "ISO 15745-1:2003". [Click here to purchase the full version from the ANSI store.](#)

First edition
2003-03-01

Industrial automation systems and integration — Open systems application integration framework —

Part 1: Generic reference description

*Systèmes d'automatisation industrielle et intégration — Charpente
d'intégration d'application de systèmes ouverts —*

Partie 1: Description de la référence générale



Reference number
ISO 15745-1:2003(E)

© ISO 2003

This is a preview of "ISO 15745-1:2003". [Click here to purchase the full version from the ANSI store.](#)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

© ISO 2003

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

This is a preview of "ISO 15745-1:2003". Click here to purchase the full version from the ANSI store.

Contents

Foreword.....	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions.....	2
4 Abbreviated terms.....	5
4.1 General.....	5
4.2 IAS interfaces types.....	6
5 AIF concept.....	6
5.1 Elements and rules	6
5.2 Using the AIF to develop an AIP.....	7
5.2.1 Overview	7
5.2.2 Integration models	7
5.2.3 Profiles	8
6 Integration model types	8
6.1 Process integration model.....	8
6.2 Information exchange integration model	9
6.3 Resource integration model	9
6.3.1 General.....	9
6.3.2 Device integration model	9
6.3.3 Communication network integration model.....	9
6.3.4 Equipment integration model.....	10
6.3.5 Human integration model.....	10
6.3.6 Material integration model	10
7 Profile templates and types	11
7.1 Profile template relationships.....	11
7.2 Master profile template.....	12
7.2.1 Structure	12
7.2.2 Header section	12
7.2.3 Body section.....	14
7.2.4 Header data types	14
7.2.5 ISO 15745 defined data types	14
7.2.6 XML Representation	15
7.3 Generic profile templates.....	17
7.3.1 AIP	17
7.3.2 Process profile	18
7.3.3 Information exchange profile.....	18
7.3.4 Resource profile.....	19
8 Compliance.....	25
Annex A (informative) UML terminology and notation	26
A.1 General.....	26
A.2 UML diagrams	26
A.2.1 Use case diagram.....	26
A.2.2 Class diagram.....	26
A.2.3 Behaviour diagrams.....	26
A.2.4 Implementation diagrams	27
A.3 UML notation	27

This is a preview of "ISO 15745-1:2003". [Click here to purchase the full version from the ANSI store.](#)

Annex B (informative) IAS interface types	28
B.1 IAS interface types (ISO/IEC TR 14252)	28
B.2 IAS interface types (ISO 15745)	28
B.3 User defined IAS interface types	30
Bibliography	31

This is a preview of "ISO 15745-1:2003". [Click here to purchase the full version from the ANSI store.](#)

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 15745-1 was prepared by Technical Committee ISO/TC 184, *Industrial automation systems and integration*, Subcommittee SC 5, *Architecture, communications and integration frameworks*.

ISO 15745 consists of the following parts, under the general title *Industrial automation systems and integration — Open systems application integration framework*:

- *Part 1: Generic reference description*
- *Part 2: Reference description for ISO 11898-based control systems*
- *Part 3: Reference description for IEC 611158-based control systems*
- *Part 4: Reference description for Ethernet-based control systems*

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.

This is a preview of "ISO 15745-1:2003". Click here to purchase the full version from the ANSI store.

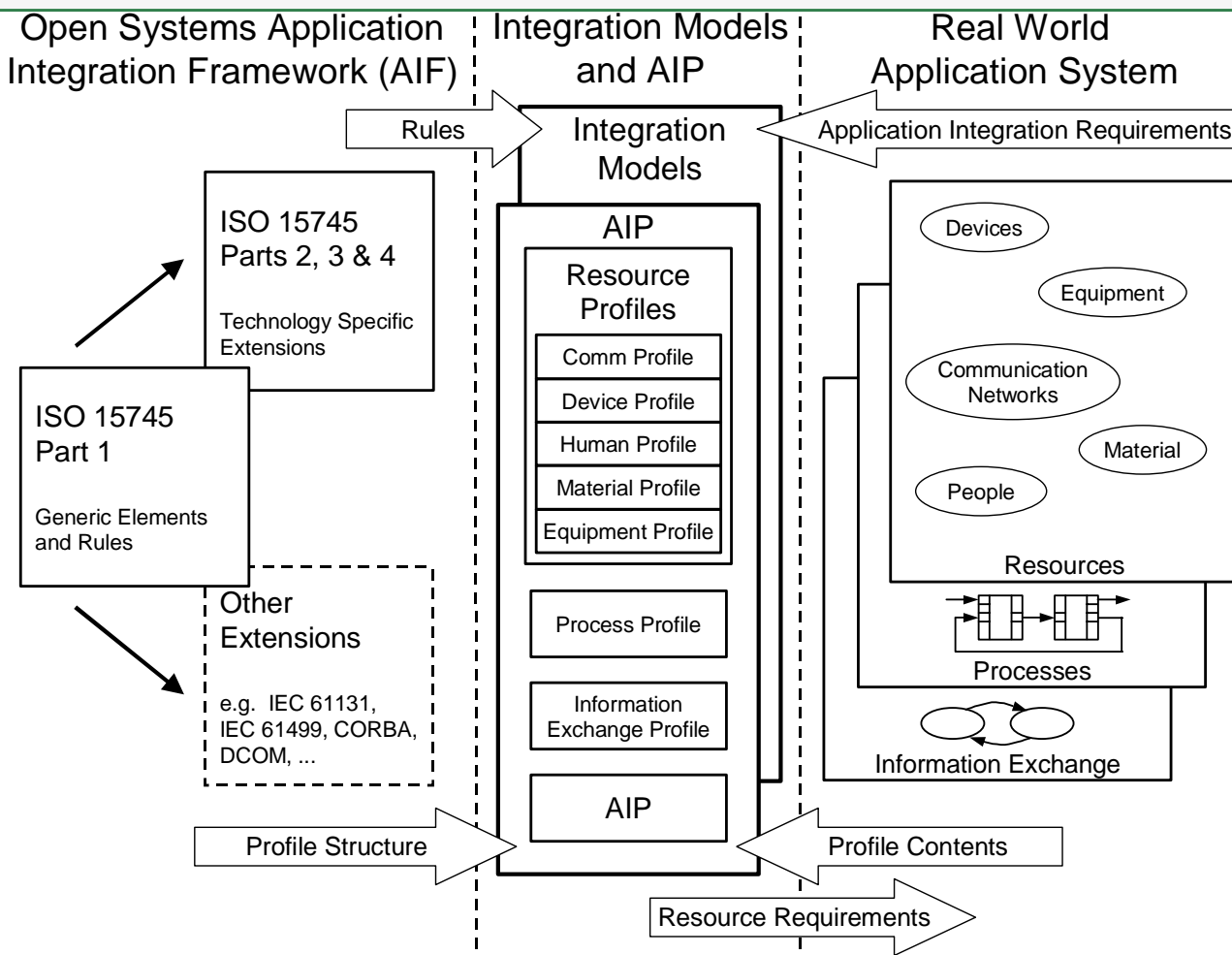


Figure 1 – Context of ISO 15745

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.