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**Information technology — Open  
distributed processing — Reference  
model: Foundations**

*Technologies de l'information — Traitement réparti ouvert — Modèle de  
référence: Fondements*

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Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

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## Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national 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 and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 10746-2 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*, in collaboration with ITU-T. The identical text is published as Rec. ITU-T X.902 (10/2009).

This second edition cancels and replaces the first edition (ISO/IEC 10746-2:1996), which has been technically revised.

ISO/IEC 10746 consists of the following parts, under the general title *Information technology — Open distributed processing — Reference model*:

- *Part 1: Overview*
- *Part 2: Foundations*
- *Part 3: Architecture*
- *Part 4: Architectural semantics*

## Introduction

The rapid growth of distributed processing has led to a need for a coordinating framework for the standardization of open distributed processing (ODP). This reference model of ODP provides such a framework. It creates an architecture within which support of distribution, interworking, and portability can be integrated.

The reference model of open distributed processing (RM-ODP), Recommendations ITU-T X.901 | ISO/IEC 10746-1 to X.904 | ISO/IEC 10746-4, is based on precise concepts derived from current distributed processing developments and, as far as possible, on the use of formal description techniques for specification of the architecture.

The RM-ODP consists of:

- Recommendation ITU-T X.901 | ISO/IEC 10746-1: Overview: Contains a motivational overview of ODP, giving scoping, justification and explanation of key concepts, and an outline of the ODP architecture. It contains explanatory material on how the RM-ODP is to be interpreted and applied by its users, who may include standards writers and architects of ODP systems. It also contains a categorization of required areas of standardization expressed in terms of the reference points for conformance identified in Rec. ITU-T X.903 | ISO/IEC 10746-3. This part is not normative.
- Recommendation ITU-T X.902 | ISO/IEC 10746-2: Foundations: Contains the definition of the concepts and analytical framework for normalized description of (arbitrary) distributed processing systems. It introduces the principles of conformance to ODP standards and the way in which they are applied. This is only to a level of detail sufficient to support Rec. ITU-T X.903 | ISO/IEC 10746-3 and to establish requirements for new specification techniques. This part is normative.
- Recommendation ITU-T X.903 | ISO/IEC 10746-3: Architecture: Contains the specification of the required characteristics that qualify distributed processing as open. These are the constraints to which ODP standards must conform. It uses the descriptive techniques from Rec. ITU-T X.902 | ISO/IEC 10746-2. This part is normative.
- Recommendation ITU-T X.904 | ISO/IEC 10746-4: Architectural semantics: Contains a formalization of the ODP modelling concepts defined in this Recommendation | International Standard (clauses 8 and 9). The formalization is achieved by interpreting each concept in terms of the constructs of the different standardized formal description techniques. This part is normative.

This Recommendation | International Standard does not contain any annexes.

**INTERNATIONAL STANDARD  
ITU-T RECOMMENDATION****Information technology – Open Distributed Processing –  
Reference model: Foundations****1 Scope**

This Recommendation | International Standard covers the concepts which are needed to perform the modelling of ODP systems (see clauses 6 to 14), and the principles of conformance to ODP systems (see 15).

The concepts defined in clauses 6 to 14 are used in the reference model of open distributed processing to support the definitions of:

- a) the structure of the family of standards which are subject to the reference model;
- b) the structure of distributed systems which claim compliance with the reference model (the configuration of the systems);
- c) the concepts needed to express the combined use of the various standards supported;
- d) the basic concepts to be used in the specifications of the various components which make up the open distributed system.

Clause 15 defines how the various standards supported constrain an implementation and how such an implementation can be tested.

**2 Normative references**

The following Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of this Recommendation | International Standard. At the time of publication, the editions indicated were valid. All Recommendations and Standards are subject to revision, and parties to agreements based on this Recommendation | International Standard are encouraged to investigate the possibility of applying the most recent edition of the Recommendations and Standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards. The Telecommunication Standardization Bureau of the ITU maintains a list of currently valid ITU-T Recommendations.

**2.1 Identical Recommendations | International Standards**

- Recommendation ITU-T X.903 (1995) | ISO/IEC 10746-3:1996, *Information technology – Open Distributed Processing – Reference Model: Architecture*.