INTERNATIONAL STANDARD

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Information technology — Open Distributed Processing — Protocol support for computational interactions

Technologies de l'information — Traitement distribué ouvert — Support du protocole pour les interactions d'ordinateurs

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CONTENTS

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. 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 International Standard may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

International Standard ISO/IEC 14752 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software engineering*, in collaboration with ITU-T. The identical text is published as ITU-T Recommendation X.931.

Annex A forms a normative part of this International Standard. Annex B is for information only.

INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

INFORMATION TECHNOLOGY – OPEN DISTRIBUTED PROCESSING – PROTOCOL SUPPORT FOR COMPUTATIONAL INTERACTIONS

1 Scope

This Recommendation | International Standard is based on the framework of abstractions and concepts developed in the Reference Model for Open Distributed Processing (ITU-T Rec. X.902 | ISO/IEC 10746-2 and ITU-T Rec. X.903 | ISO/IEC 10746-3).

This Recommendation | International Standard defines how interactions between computational objects in a computational specification of a system relate to protocol support for those interactions in an engineering specification of that system. In particular it:

- defines a General Interworking Framework (GIF);
- within the GIF, defines a set of facilities each comprising a set of functionally-related service primitives as abstract definitions of the interactions of basic engineering objects and channel objects;
- defines the parameters of the service primitives of the GIF;
- defines the permitted sequence of the service primitives by means of state tables;
- specifies, in annexes, the mapping of the GIF service primitives and their parameters to the messages and fields of particular protocols.

As specified in this Recommendation | International Standard, the GIF defines protocol support for a pragmatic subset of the possible computational interactions defined in ITU-T Rec. X.903 | ISO/IEC 10746-3. It is also restricted in the features of the protocol support and the supported transparencies.

The GIF, as specified here, defines:

- support for computational operations, but not for streams;
- support using stub, binder and protocol objects hierarchically, such that any interaction at the interworking reference point of the supporting protocol object supports liaisons of one of those objects or of the basic engineering object, and any interaction to support those liaisons is passed via that interworking reference point; and
- interactions at a single interworking reference point, from the perspective of one side; interceptors are not explicitly considered;

NOTE 1 – It is intended that the GIF could be extended, in a future amendment, to support streams and flows. The present specification is restricted to areas that are technically stable.

The GIF supports at least some forms of:

- access transparency; and
- location transparency.

The GIF as specified here also supports a limited equivalent of relocation transparency. Other transparencies are not addressed in this present specification.

NOTE 2 – It is intended that the GIF could be extended, in future amendments, to support additional transparencies.

The GIF does not explicitly model Quality of Service requirements.

The application of security-related issues to the GIF are not included in the current text and are for further study.

The set of mappings to particular protocols specified in annexes to this Recommendation | International Standard is not exhaustive. The GIF could be mapped to other protocols.

NOTE 3 – In particular, a mapping to the DCOM protocol family would be a candidate for an additional annex.

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 Recommendation | International Standards

- ITU-T Recommendation X.210 (1993) | ISO/IEC 10731:1994, *Information technology – Open systems interconnection – Basic Reference Model – Conventions for the definition of OSI services*.
- ITU-T Recommendation X.902 (1995) | ISO/IEC 10746-2:1996, *Information technology – Open distributed processing – Reference Model: Foundations*.
- ITU-T Recommendation X.903 (1995) | ISO/IEC 10746-3:1996, *Information technology – Open distributed processing – Reference Model: Architecture*.
- ITU-T Recommendation X.920 (1997) | ISO/IEC 14750:1999, *Information technology – Open distributed processing – Interface definition language*.
- ITU-T Recommendation X.930 (1998) | ISO/IEC 14753:1999, *Information technology – Open distributed processing – Interface references and bindings*.

2.2 Other Specifications

The edition of [CORBA 2] indicated below was valid at the time of publication of this Recommendation | International Standard. [CORBA 2] is subject to revision, and parties to agreements based on this Recommendation | International Standard are encouraged to investigate the possibility of applying later editions of [CORBA 2] when they become available.

- [CORBA 2] – *The Common Object Request Broker: Architecture and Specification, Revision 2.3, Object Management Group, December 1998 (OMG Doc Number: Formal/98-12-01).*
- RFC 793, "Transmission Control Protocol", 1981.