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Information technology — Object management group — Interface definition language (IDL) 4.2

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Contents

Foreword v

Introduction v

1 Scope 1
1.1 Overview 1

2 Conformance Criteria 1

3 Normative References 2

4 Terms and Definitions 2

5 Symbols 2

6 Additional Information 3
6.1 Acknowledgments 3
6.2 History 3

7 IDL Syntax and Semantics 4
7.1 Overview 4
7.2 Lexical Conventions 5
7.2.1 Tokens 8
7.2.2 Comments 8
7.2.3 Identifiers 8
7.2.4 Keywords 9
7.2.5 Other Characters Recognized by IDL 10
7.2.6 Literals 11
7.3 Preprocessing 13
7.4 IDL Grammar 13
7.4.1 Building Block Core Data Types 14
7.4.2 Building Block Any 30
7.4.3 Building Block Interfaces — Basic 31
7.4.4 Building Block Interfaces — Full 37
7.4.5 Building Block Value Types 39
7.4.6 Building Block CORBA-Specific — Interfaces 42
7.4.7 Building Block CORBA-Specific — Value Types 48
7.4.8 Building Block Components — Basic 53
7.4.9 Building Block Components — Homes 56
7.4.10 Building Block CCM-Specific 59
7.4.11 Building Block Components — Ports and Connectors 64
7.4.12 Building Block Template Modules 67
7.4.13 Building Block Extended Data-Types 70
7.4.14 Building Block Anonymous Types 76
7.4.15 Building Block Annotations 77
7.4.16 Relationships between the Building Blocks 80
7.5 Names and Scoping 81
7.5.1 Qualified Names 81
7.5.2 Scoping Rules and Name Resolution 82
7.5.3 Special Scoping Rules for Type Names 84

8 Standardized Annotations 86
8.1 Overview 86
8.2 Introduction 86
8.2.1 Rules for Defining Standardized Annotations 86
8.2.2 Rules for Using Standardized Annotations 86
8.3 Standardized Groups of Annotations 86
8.3.1 Group of Annotations General Purpose 86
8.3.2 Group of Annotations Data Modeling 89

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8.3.3Group of Annotations: Units and Ranges....89
8.3.4Group of Annotations Data Implementation....91
8.3.5Group of Annotations Code Generation....91
8.3.6Group of Annotations Interfaces....92

9 Profiles....93
9.1 Overview....93
9.2 CORBA and CCM Profiles....93
9.2.1Plain CORBA Profile....93
9.2.2Minimum CORBA Profile....94
9.2.3CCM Profile....94
9.2.4CCM with Generic Interaction Support Profile....94
9.3 DDS Profiles....95
9.3.1Plain DDS Profile....95
9.3.2Extensible DDS Profile....95
9.3.3RPC over DDS Profile....95

Annex A Consolidated IDL Grammar....97

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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.

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 document should be noted (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by the Object Management Group (OMG) (as the OMG specification for Interface Definition Language (IDL), v4.2) and drafted in accordance with its editorial rules. It was adopted, under the JTC 1 PAS procedure, by Joint Technical Committee ISO/IEC JTC 1, *Information technology*.

This document is related to:

- ITU-T Recommendation X.902 (1995) | ISO/IEC 10746-2:1995, Information Technology — Open Distributed Processing — Reference Model: Foundations
- ITU-T Recommendation X.903 (1995) | ISO/IEC 10746-3:1995, Information Technology — Open Distributed Processing — Reference Model: Architecture
- ITU-T Recommendation X.920 (1997) | ISO/IEC 14750:1997, Information Technology — Open Distributed Processing — Interface Definition Language

Apart from this Foreword, the text of this document is identical with that for the OMG specification for Interface Definition Language (IDL), v4.2.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

The rapid growth of distributed processing has led to a need for a coordinating framework for this standardization and ITU-T Recommendations X.901-904 | ISO/IEC 10746, the Reference Model of Open Distributed Processing (RM-ODP) provides such a framework. It defines an architecture within which support of distribution, interoperability, and portability can be integrated.

RM-ODP Part 2 (ISO RM-ODP Part 2 (ISO/IEC 10746-2) defines the foundational concepts and modeling framework for describing distributed systems. The scopes and objectives of the RM-ODP Part 2 and the UML, while related, are not the same and, in a number of cases, the RM-ODP Part 2 and the UML specification use the same term for concepts which are related but not identical (e.g., interface). Nevertheless, a specification using the Part 2 modeling concepts can be expressed using UML with appropriate extensions (using stereotypes, tags, and constraints).

RM-ODP Part 3 (ISO/IEC 10746-3) specifies a generic architecture of open distributed systems, expressed using the foundational concepts and framework defined in Part 2. Given the relation between UML as a modeling language and Part 3 of the RM-ODP standard, it is easy to show that UML is suitable as a notation for the individual viewpoint specifications defined by the RM-ODP.

This International Standard defines a method for automating the counting of Function Points that is generally consistent with the Function Point Counting Practices Manual, Release 4.3.1 (IFPUG CPM) produced by the International Function Point Users Group (IFPUG). Guidelines in this International Standard may differ from those in the IFPUG CPM at points where subjective judgments have to be replaced by the rules needed for automation. The IFPUG CPM was selected as the anchor for this International Standard because it is the most widely used functional measurement specification with a large supporting infrastructure maintained by a professional organization.

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1 Scope

1.1 Overview

This International Standard specifies the OMG Interface Definition Language (IDL). IDL is a descriptive language used to define data types and interfaces in a way that is independent of the programming language or operating system/processor platform.

The IDL specifies only the syntax used to define the data types and interfaces. It is normally used in connection with other standards that further define how these types/interfaces are utilized in specific contexts and platforms:

- Separate “language mapping” standards define how the IDL-defined constructs map to specific programming languages, such as, C/C++, Java, C#, etc.
- Separate “serialization” standards define how data objects and method invocations are serialized into a format suitable for network transmission.
- Separate “middleware” standards, such as, DDS or CORBA leverage the IDL to define data-types, services, and interfaces.

The description of IDL grammar uses a syntax notation that is similar to Extended Backus-Naur Format (EBNF).

2 Conformance Criteria

This International Standard defines IDL such that it can be referenced by other standards. It contains no independent conformance points. It is up to the standards that depend on this International Standard to define their own conformance criteria. However, the general organization of the clauses (by means of atomic building blocks and profiles that group them) is intended to ease conformance description and scoping. That means that no standard using IDL 4.0 will be forced to be compliant with IDL constructs that are not relevant in its usage of IDL.

Conformance to this International Standard must follow these rules:

1. Future standards that use IDL shall reference this IDL International Standard or a future revision thereof.
2. Future revisions of current standards that use IDL may reference this IDL International Standard or a future revision thereof.
3. Reference to this International Standard shall result in a selection of building blocks possibly complemented by groups of annotations.

    a. All selected building blocks shall be supported entirely.

    b. Selected annotations shall be either supported as described in 8.2.2 Rules for Using Standardized Annotations, or fully ignored. In the latter case, the IDL-dependent standard shall not define a specific annotation, either with the same name and another meaning or with the same meaning and another name.

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3 Normative References

The following referenced documents are indispensable for the application of this International Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments):

- ISO/IEC 14882:2003, *Information Technology — Programming languages — C++*
- [RFC2119] IETF RFC 2119, "*Key words for use in RFCs to Indicate Requirement Levels*", S. Bradner, March 1997. Available from http://ietf.org/rfc/rfc2119
- [CORBA] Common Object Request Broker Architecture. OMG specification: formal/2012-11-12 (part1), formal/2012-11-14 (part2), formal/2012-11-16 (part3)

The following referenced documents were used as input to this International Standard:

- [DDS-XTypes]. Extensible and Dynamic Topic Types for DDS, Version 1.2. Available from: http://www.omg.org/spec/DDS-XTypes/1.2
- [DDS]. Data Distribution Service, Version 1.4. Available from: http://www.omg.org/spec/DDS/1.4
- [DDS-RPC]. Remote Procedure Call over DDS, Version 1.0. Available from: http://www.omg.org/spec/DDS-RPC/1.0

4 Terms and Definitions

In this International Standard:

- A building block is a consistent set of IDL rules that together form a piece of IDL functionality. Building blocks are atomic, meaning that if selected, they must be totally supported. Building blocks are described in Clause 7, IDL Syntax and Semantics.
- A group of annotations is a consistent set of annotations, expressed in IDL. Groups of annotations are described in Clause 8, Standardized Annotations.
- A profile is a selection of building blocks possibly complemented with groups of annotations that determines a specific IDL usage. Profiles are described in Clause 9, Profiles.

5 Symbols

The following abbreviations are used throughout this International Standard.

Acronym	Meaning
ASCII	American Standard Code for Information Interchange
BIPM	Bureau International des Poids et Mesures
CCM	CORBA Component Model
CORBA	Common Object Request Broker Architecture
DDS	Data Distribution Service
EBNF	Extended Backus Naur Form

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