INTERNATIONAL STANDARD

ISO/IEC 19763-1

Second edition
2015-06-15

Information technology — Metamodel framework for interoperability (MFI) —

Part 1: Framework

Technologies de l'information — Cadre du métamodèle pour l'interopérabilité (MFI) —

Partie 1: Structure

Reference number
ISO/IEC 19763-1:2015(E)

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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.

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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 19763-1 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information Technology*, Subcommittee SC 32, *Data management and Interchange*.

ISO/IEC 19763 consists of the following parts, under the general title *Information technology — Metamodel framework for interoperability (MFI)*:

Part 1: Framework

Part 3: Metamodel for ontology registration

Part 5: Metamodel for process model registration

Part 6: Registry summary

Part 7: Metamodel for service model registration

Part 8: Metamodel for role and goal model registration

Part 9: On demand model selection [Technical Report]

Part 10: Core model and basic mapping

Part 12: Metamodel for information model registration

Part 13: Metamodel for form design registration

Introduction

Due to the proliferation of internet-enabled communication aided by mobile devices, social network systems and cloud computing, both the efficient and effective sharing of information and the handling of business transactions across countries and cultures has become easier.

In the private sector the handling of these business transactions using Electronic Data Interchange (EDI) has been common for a long time. Companies hold large quantities of structured, semi-structured and unstructured data – the "Big Data" explosion. It is in their interest to make effective use of this data to extract business intelligence and knowledge.

In the public sector, governments in many countries and territories are working on the establishment of new schemes that enable interoperation and collaboration among different departments or agencies, materialising the semantic interoperability of data and surmounting border and/or language differences. At the same time, many governments and agencies are attempting to make their data available to their citizens over the internet, the "Open Data" initiatives. These "Open Data" initiatives could be the driver for similar innovations in the private sector. One of the issues for users is to access the various sets of open data easily and integrate them for analysis so as to create new value through added information or knowledge.

These trends have produced new needs for standards that enable effective information sharing in both private and public sectors.

One of the key enablers of this sharing of the information that is used by different communities through the interoperability of systems is a registry, or a network of inter-connected registries, that provides for the discovery and sharing of meta-information, such as metadata or models. The Metamodel Framework for Interoperability (MFI) provides the specifications for such registries.

The MFI specifications can be considered as an extension of those for a Metadata Registry (MDR) as defined in ISO/IEC 11179-3 because MFI and MDR share the same registration mechanism and procedures. In 2010 a special study project was initiated to consider the harmonisation of MDR and MFI and a key recommendation of that study project was that the common facilities should be identified and used for both MDR and MFI. It is anticipated that MDR and MFI could be more closely related and integrated, leading to benefits for the users who need more effective sharing of information and models, or more sophisticated interoperation of systems.

This new edition of Part 1 has been developed to provide a clear overview of MFI and to illustrate the overall architecture of the MFI family of standards to reflect the major changes described above.

Information technology – Metamodel framework for interoperability (MFI) – Part 1: Framework

1 Scope

1.1 Inclusions

This is a part of the ISO/IEC19763 (Metamodel framework for interoperability) (MFI) family of standards. As the first part of MFI, this part provides an overview of the whole of MFI. In particular, the purpose, the underlying concepts, the overall architecture and the requirements for the development of other standards within the MFI family are described.

MFI provides a set of normative metamodels to enable the registration of many different types of model. Each of these metamodels is expressed as a UML Class Diagram.

MFI is evolving. Currently, in addition to this part, the MFI family comprises:

- A core model and facilities for the basic mapping of models (Part 10)
- A metamodel for ontology registration (Part 3)
- A metamodel for process model registration (Part 5)
- A metamodel for service model registration (Part 7)
- A metamodel for role and goal model registration (Part 8)
- A Technical Report describing on demand model selection based on RGPS (Role, Goal, Process and Service) (Part 9)
- A metamodel for information model registration (Part 12)
- A metamodel for form design registration (Part 13)
- A metamodel for a registry summary (Part 6)

These parts are described in more detail in Annex A.

1.2 Exclusions

The MFI does not specify any physical structure of the registry where model information is to be recorded. MFI metamodels define standard views as models to be used in the registering of model instances in a model registry while actual instance documents could be stored in a model repository.

2 Conformance

This part of ISO/IEC 19763 specifies no conformance requirements. Other parts of the ISO/IEC 19763 family of standards specify their own conformance requirements as appropriate.

3 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 11179-3, Information technology – Metadata registries (MDR) – Part 3: Registry metamodel and basic attributes

ISO/IEC 11179-6, Information technology – Metadata registries (MDR) – Part 6: Registration

ISO/IEC 19505-1:2012, Information technology -- Object Management Group Unified Modeling Language (OMG UML) -- Part 1: Infrastructure

ISO/IEC 19505-2:2012, Information technology -- Object Management Group Unified Modeling Language (OMG UML) -- Part 2: Superstructure

4 Terms, definitions and abbreviated terms

4.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

4.1.1
11179-3 Common Facilities
combination of the Registration package and the Basic package and the Identification Designation and Definition package on which the first package is dependent

4.1.2
concept
unit of knowledge created by a unique combination of characteristics

NOTE Concepts are not necessarily bound to particular languages. They are, however, influenced by the social or cultural background which often leads to different categorizations.

[ISO 1087-1:2000, 3.2.1]

4.1.3
cloud computing
paradigm for enabling network access to a scalable and elastic pool of shareable physical or virtual resources with self-service provisioning and administration on-demand

NOTE Examples of resources include servers, operating systems, networks, software, applications, and storage equipment.

[ISO/IEC 17788, 3.2.4]

