This is a preview of "ANSI/INCITS/ISO/IEC ...". Click here to purchase the full version from the ANSI store.

American National Standard

ANSI/INCITS/ISO/IEC 19763-1-2007
(ISO/IEC 19763-1:2007 IDT)

Information technology — Metamodel framework for interoperability (MFI) — Part 1: Reference model

Developed by

incits SM

Where IT all begins

Approved American National Standard

ANSI

This is a preview of "ANSI/INCITS/ISO/IEC ...". 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.

Adopted by INCITS (InterNational Committee for Information Technology Standards) as an American National Standard.

Date of ANSI Approval: 4/13/2007

Published by American National Standards Institute,
25 West 43rd Street, New York, New York 10036

Copyright 2007 by Information Technology Industry Council (ITI).
All rights reserved.

These materials are subject to copyright claims of International Standardization Organization (ISO), International Electrotechnical Commission (IEC), American National Standards Institute (ANSI), and Information Technology Industry Council (ITI). Not for resale. No part of this publication may be reproduced in any form, including an electronic retrieval system, without the prior written permission of ITI. All requests pertaining to this standard should be submitted to ITI, 1250 Eye Street NW, Washington, DC 20005.
Printed in the United States of America

© ITIC 2007 – All rights reserved

This is a preview of "ANSI/INCITS/ISO/IEC ...". Click here to purchase the full version from the ANSI store.

Contents

Page

Foreword ..... **v**

Introduction ..... **vi**

1 Scope **1**

2 Conformance **1**

3 Normative references **1**

4 Terms, definitions and abbreviated terms **1**
4.1 Terms and definitions **1**
4.2 Abbreviated terms **3**

5 Metamodel framework architecture **4**
5.1 Structure of ISO/IEC 19763 ..... **4**
5.2 Objectives of ISO/IEC 19763 ..... **5**
5.3 Exclusions **5**
5.4 Area of applicability **5**
5.5 Metamodel framework architecture **7**
5.6 Part 2: Core model **11**
5.7 Part 3: Metamodel for ontology registration **15**
5.8 Part 4: Metamodel for model mapping **17**
5.9 Part 5: Metamodel for model constructs **18**

Bibliography **19**

Figures

Figure 1 — Overall structure of ISO/IEC 19763 4

Figure 2 — Registry federation with metamodel framework 5

Figure 3 — Metamodel framework to support sharing of models 6

Figure 4 — Registry federation by the metamodel frameworks 7

Figure 5 — Metamodel framework architecture 7

Figure 6 — Metamodel framework architecture and overall structure of meta hierarchy 9

Figure 7 — Structure of the metamodel framework architecture 10

Figure 8 — MFI registration concept 11

Figure 9 — Core model as a successor of both MOF and common facilities of MDR 11

Figure 10 — Concept of the four quadrant registration scheme 12

Figure 11 — High level view of MFI core model 13

Figure 12 — Scheme for model registration 13

Figure 13 — Representation of concept 14

© ITIC 2007 – All rights reserved

This is a preview of "ANSI/INCITS/ISO/IEC ...". Click here to purchase the full version from the ANSI store.

Figure 14 — Registration of metamodels as an upper model 14

Figure 15 — Registration of detailed model following upper model 15

Figure 16 — Relationship between ISO/IEC 19763-3 (MFI-3) and MDR (ISO/IEC 11179) 16

Figure 17 — Metamodel for ontology registration 17

Figure 18 — Metamodel for model mapping 18

© ITIC 2007 – All rights reserved

This is a preview of "ANSI/INCITS/ISO/IEC ...". Click here to purchase the full version from the ANSI store.

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 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: Reference model*

— *Part 2: Core model*

— *Part 3: Metamodel for ontology registration*

— *Part 4: Metamodel for model mapping*

© ITIC 2007 – All rights reserved

This is a preview of "ANSI/INCITS/ISO/IEC ...". Click here to purchase the full version from the ANSI store.

Introduction

Due to the spread of E-business (EB) and E-commerce (EC) over the Internet, the effective exchange of business transactions and other related information across countries and cultures has become a prime concern for people both inside and outside the IT industry.

To follow the current trends of EB or EC, industrial consortia have engaged in the standardization of domain-specific objects including business process models and software components using common modeling facilities and interchange facilities such as UML and XML. They are very active in standardizing domain-specific business process models and standard modeling constructs such as data elements, entity profiles, and value domains.

Following these trends, many standardization activities have focused on the facilities or schema that could enable the collaborations among different organizations, such as

a) modeling facilities or modeling architectures such as UML or MDA;

b) E-Business procedures and exchange formats such as ISO/IEC 15944, ebXML, XMI and SOAP;

c) description facilities of information resources such as XML, RDF and WSDL;

d) business process integration facilities such as BPEL and BPMN;

e) registry facilities such as ISO/IEC 11179 (MDR), ebXML-R&R, UDDI;

f) meta-modeling facilities such as MOF;

g) ontology descriptive facilities such as OWL, DAML+OIL;

h) facilities for logic such as CL, CG and DL.

In addition to the above, other activities which focus on the contents to be treated by facilities have emerged as subjects of standardization.

These include

a) common models for various business domains, such as GCI, CPFR and HL7;

b) modeling profiles or modeling patterns such as UML profile for EDOC and EAI;

c) registry metamodels such as ebXML RIM and HL7 RIM;

d) metamodels such as CWM for data warehouse and ODM for ontology;

e) metadata specifications, such as Dublin Core or ebXML Core Component;

f) ontology models, such as SNOMED in healthcare, SUO in engineering and ISO/IEC 15944-4 E-Business economic and accounting ontology.

These contents could be stored in registries in order to enable the effective sharing among different organizations.

NOTE UML and OMG are trademarks of the Object Management Group.

© ITIC 2007 – All rights reserved

This is a preview of "ANSI/INCITS/ISO/IEC ...". Click here to purchase the full version from the ANSI store.

Many registries and repositories have been developed and implemented. However, due to differences in their metamodels or disharmony in their semantics, effective collaboration among organizations or communities has been difficult. New facilities are required that enable a harmonized federation among these registries.

To satisfy these requirements, ISO/IEC 19763 provides the facilities for describing various types of registries or metamodels as a consolidated set of metamodel frameworks.

This consolidated metamodel framework will provide the following features:

a) metamodel registering mechanisms for enabling the federation of registries;

b) description and registering mechanisms for various modeling constructs to facilitate their reuse;

c) description and registering mechanisms for rules of model mapping and transformation to enable the harmonization of registry contents.

This part of ISO/IEC 19763 describes the basic concept of metamodel framework which should be used in the development of other parts of ISO/IEC 19763. The issues and requirements to be considered in this development are also described.

© ITIC 2007 – All rights reserved