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Part 13: Metamodel for form design registration

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

Partie 13: Métamodèle pour l'enregistrement de la conception des formulaires

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Contents

Page

Foreword ..... **v**

Introduction ..... **vii**

1 Scope **1**

2 Normative references **1**

3 Terms and definitions **1**
3.1 General terms 1
3.2 Terms related to form structure 2
3.3 Terms related to form behaviour 3

4 Conformance **3**
4.1 General 3
4.2 Degrees of conformance 3
4.2.1 General 3
4.2.2 Strictly conforming implementation 3
4.2.3 Conforming implementation 4
4.2.4 Implementation Conformance Statement (ICS) 4

5 Structure of MFI form design registration **4**
5.1 Overview of MFI form design registration 4
5.2 Relationship of metaclasses to the MDR Metamodel 7
5.3 Details provided in each metaclass definition 8
5.4 Basic Datatypes and Enumerations in MFI form design registration 8
5.4.1 General 8
5.4.2 Property 9
5.4.3 Question_Element_Property 9
5.4.4 Target_Form_Design_Element_State 10
5.4.5 Operation_Type 10
5.5 Metaclasses in MFI for form design registration 11
5.5.1 Form_Design 11
5.5.2 Form_Language 13
5.5.3 Form_Design_Hierarchy_Constraint 14
5.5.4 Form_Design_Element 14
5.5.5 Form_Design_Template 15
5.5.6 Presentation_Element 16
5.5.7 Section_Element 16
5.5.8 Media_Element 17
5.5.9 Text_Element 18
5.5.10 Localised_Text 19
5.5.11 Question_Element 20
5.5.12 Response_Field 21
5.5.13 Attachment_Response_Field 23
5.5.14 Text_Response_Field 23
5.5.15 Lookup_Response_Field 24
5.5.16 List_Response_Field 25
5.5.17 List_Response_Field_Item 26
5.5.18 List_Response_Field_Item_Selected_State 27
5.5.19 Media_Annotation_Response_Field 28
5.5.20 Rule 28
5.5.21 Expression 29
5.5.22 Constant 30
5.5.23 Variable 30
5.5.24 Operation 31
5.5.25 Datatype 32
5.5.26 Unit_Of_Measure 33

Annex A (informative) **Description of the metamodel** **34**

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Annex B (normative) **Relationship of metaclasses to the MDR Metamodel** **40**
Annex C (informative) **Example form designs** **43**
Annex D (informative) **Mapping between this document and CDISC ODM** **54**
Bibliography **56**

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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. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives or www.iec.ch/members_experts/refdocs).

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 32, *Data management and interchange*.

This first edition of ISO/IEC 19763-13 cancels and replaces ISO/IEC TS 19763-13:2016, which has been technically revised.

The main changes are as follows:

— Formal association between ISO/IEC 19763-10:2023 and ISO/IEC 11179-3:2023 requires that Form_Design and Form_Design_Element instances are identified.

— An association class has been created - Form_Design_Hierarchy_Constraint - to allow form definitions to be composed directly from other form definitions.

— A new response type - Media_Annotation_Response_Field - describing metadata about media annotation fields makes it easier to describe these structures.

— Response class names have received minor edits to make the sub-type hierarchy more clear.

— Order number attributes have been added to Form_Design_Element to make explicit the item order in ordered Section and Form instances.

— Annex A has been removed, having become a part of ISO/IEC 11179.

Future revisions of this edition will replace the rule model, and definitions of the classes Datatype, and Unit_of_Measure with those specified in ISO/IEC 11179-3:2023 and ISO/IEC 11179-3:2023/Amd1.

Conformant ISO/IEC TS 19763-13:2016 Form Designs will also conform to this revision if Form_Design and Form_Design_Element instances are identified and the designs are unordered, but ordered designs will require the generation of an explicit ordinal number for the place of ordered elements in their sequence. It

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is recommended that registrars transform designs that require media annotation to use the new response kind.

A list of all parts in the ISO/IEC 19763 series can be found on the ISO and IEC websites.

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 and www.iec.ch/national-committees.

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Introduction

0.1 General

There is an increasing demand for systems to interoperate by exchanging data, and for data to be reused outside of the original context of its collection. For data exchange or reuse to be meaningful, the business information requirements that are met by the data stored in these systems must be understood so that suitable data exchange mechanisms can be developed and interpretation of the data is reliable.

Not only does this require a clear understanding of the meaning of the data, it also frequently requires the coordination of data capture. Where data input is manual, the definitive source of data semantics is the design of the data entry form. Indeed if the encoding of knowledge in the database schema is not understood, or if some anomaly in the data captured is suspected, the original form design and the context of its use frequently provide answers. Furthermore, in order to gather interoperable data, it is frequently necessary to harmonize aspects of form design before information systems are developed and data is captured. However, there is no abstract, universal metamodel for form designs that supports the registration, comparison or harmonization of form designs and faithful implementation of these designs in information systems. This is the intent of this document.

The Oxford English dictionary defines a form as "a formulary document with blanks for the insertion of particulars". Other ISO definitions of a form include ISO 5127[1], "document (printed or otherwise produced), with pre-designated spaces for the recording of specific information", and ISO 9241-143[2], "structured display of fields and other user-interface elements that the user reads, fills in, selects entries for (e.g. through check boxes or radio buttons) or modifies". These definitions are recognisable, but do not precisely match the needs of this document. Thus, a form is defined as a structured collection of spaces, suitable instructions and rules that support the collection of specific information that can be subsequently compared and processed in a routine fashion. A form design is thus a description of a particular form such that it can be rendered in any suitable information system, and the metamodel for registration of form designs contained within this document describes the attributes that are necessary to represent the semantics and syntax of form designs.

Form designs can be implemented on paper, or encoded in electronic format. Electronic forms can be rendered natively in standard formats such as HTML, XForms or PDF, or proprietary ones such as Windows forms, Cocoa or Java Swing. They can also be implemented in a common survey framework such as Survey Monkey or Lime Survey. Despite this diversity, it is eminently possible to create forms in different formats that support the same comparisons and downstream processing provided the spaces and instructions share the same semantic intent. Such a collection of forms can be said to share the same design. A model that is adequate to record these form designs is the subject of this document.

The primary purpose of the ISO/IEC 19763 series is to specify a metamodel framework for interoperability. Given a standard metamodel for the registration of form designs, ISO/IEC 19763-10:2023 and ISO/IEC 11179-3:2023 provide important facilities for the creation and annotation of form designs. ISO/IEC 19763-10:2023 supports the registration of form designs and section elements as models and model elements, and allows the association of form designs with the data models that are used to store data captured by their instances. ISO/IEC 11179-3:2023 provides classes and types that support the identification, naming, classification, registration, completion logic and administration of form designs and supporting documents, provides facilities to record associations between the components of two or more form designs, particularly derivation, specialization, extension and reuse, and provides a model either for an associated, standardized question bank or a rich source of question-level metadata attributes with which to explain the meaning of individual data items. When used together, these International Standards support the rapid design and reuse of form designs, wrap and hide the complexity of semantic annotation from subject matter experts, and provide a ready reference of associations and transformations for users seeking to collect and use interoperable data.

This document does not supplant or replace computer languages such as XForms, Windows Forms, Adobe Forms or relevant parts of HTML, which describe how a form design is implemented, and is deliberately devoid of domain or content specific semantics to ensure wide applicability. However, given the universal applicability of forms, it should be of no surprise that elements of the model can be recognized in many forms standards. Some of these have been mapped to this document in Annex A to Annex D.

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0.2 Key standards

Throughout this document, the key standards are referred to in the following short form to aid readability.

MFI Core: ISO/IEC 19763-10:2023, Information technology — Metamodel framework for interoperability (MFI) — Part 10: Core model and basic mapping

MDR Metamodel: ISO/IEC 11179-3:2023, Information technology — Metadata registries (MDR) — Part 3: Metamodel for registry common facilities

MFI Form Design Registration: ISO/IEC 19763-13:2026, Information technology — Metamodel framework for interoperability (MFI) — Part 13: Metamodel for form design registration

MDR Mapping: ISO/IEC 11179-3:2023/Amd1, Information technology — Metadata registries (MDR) - Part 3: Metamodel for registry common facilities, Amendment 1: Enhancements to Item Mapping, clause 11

MDR Data Definition: ISO/IEC 11179-31:2023, Information technology — Metadata registries (MDR) — Part 31: Metamodel for data specification registration

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Information technology — Metamodel framework for interoperability (MFI) —

Part 13:
Metamodel for form design registration

1 Scope

This document provides a metamodel to describe the structure and semantics of an implemented form devoid of any specific, domain semantics, e.g. in healthcare, social science, e-government and e-business, or representation format so that data can be faithfully exchanged between systems and system components, and associations expressed between sets of form designs whose data can be compared, joined or composed for analysis.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 11179-3:2023, *Information technology — Metadata registries (MDR) — Part 3: Metamodel for registry common facilities*

ISO/IEC 11179-3:2023/Amd 1, *Information technology — Metadata registries (MDR) — Part 3: Metamodel for registry common facilities Amendment 1: Enhancements to Item Mapping*

ISO/IEC 19763-1:2023, *Information technology — Metamodel framework for interoperability (MFI) — Part 1: Framework*

ISO/IEC 19763-10:2023, *Information technology — Metamodel framework for interoperability (MFI) — Part 10: Core model and basic mapping*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 19763-1:2023, ISO/IEC 19763-10:2023, ISO/IEC 11179-3:2023 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1 General terms

3.1.1
owl:sameAs
property of the Web Ontology Language that indicates that individuals in an OWL DL ontology refer to the same thing, or in OWL Full to additionally indicate that two classes are equal

Note 1 to entry: See http://www.w3.org/TR/owl-ref/#sameAs-def.

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