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For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

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Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



DRAFT International Standard

ISO/IEC DIS 19763-13

Information technology — Metamodel framework for interoperability (MFI) —

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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ISO/IEC JTC 1/SC 32

Secretariat: **ANSI**

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2025-06-16

Voting terminates on:
2025-09-08

This document is circulated as received from the committee secretariat.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 ISO documents 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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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

For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Joint Technical Committee ISO/IEC JTC1, *Information technology*, Subcommittee SC 32, *Data management and interchange*.

This 2025 edition cancels and replaces the edition (ISO/IEC TS 19763-13:2016), which has been technically revised.

The main changes compared to the previous edition 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

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 is recommended that 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.

Introduction

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 reuses 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 we do not understand the encoding of knowledge in the database schema or we suspect some anomaly in the data captured, we inspect the original form and the context of its use. Furthermore, if we wish 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”. While we recognize these definitions, none precisely matches the needs of this document. Thus, we will define a form 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.

Forms 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 propriety 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.

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 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](#).

Information technology — Metamodel framework for interoperability (MFI) —

Part 13: Metamodel for form design registration

1 Scope

The primary purpose of the ISO/IEC 19763 series is to specify a metamodel framework for interoperability. This document specifies a metamodel for registering form designs.

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 11179-31, *Information technology — Metadata registries (MDR) — Part 31: Metamodel for data specification registration*

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, definitions and abbreviated terms

3.1 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, as well as the following apply.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1.1 General

3.1.1.1

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>.

3.1.1.2

skos:related

semantic relation asserting that the object of the labelled relationship is related to the subject

Note 1 to entry: See <http://www.w3.org/TR/skos-reference>.

3.1.2 Form Structure

3.1.2.1

field

space on a *form* ([3.1.2.2](#)) for the recording of a *response* ([3.1.2.7](#))

3.1.2.2

form

document or human interface comprising a structured collection of *fields* ([3.1.2.1](#)), suitable *instructions* ([3.1.2.6](#)) and *rules* ([3.1.3.6](#)) that support the collection of specific information that can be subsequently compared and processed in a routine fashion

3.1.2.3

form design

specification for the creation of equivalent *forms* ([3.1.2.2](#)) in different languages, applications and media

3.1.2.4

form template

partial *form design* ([3.1.2.3](#)) that establishes a pattern for the creation of other form designs

Note 1 to entry: A form template will often have empty or incomplete *form* ([3.1.2.2](#)) sections with instructions describing what kind of questions are required to create a completed design.

3.1.2.5

question

sentence worded or expressed so as to elicit information from a person

3.1.2.6

instruction

sentence that directs a person in some aspect of the completion or submission of a *form* ([3.1.2.2](#))

3.1.2.7

response

information elicited from a person by a *question* ([3.1.2.5](#))

3.1.2.8

section

subcomponent of a *form* ([3.1.2.2](#)) whose contained *questions* ([3.1.2.5](#)), *instructions* ([3.1.2.6](#)) and *rules* ([3.1.3.6](#)) share a common purpose, meaning or context

3.1.2.9

attachment

digital object that is required as a *response* ([3.1.2.7](#)) to a *question* ([3.1.2.5](#)) on a *form* ([3.1.2.2](#))

Note 1 to entry: Used to indicate that the *response* ([3.1.2.7](#)) to a *question* ([3.1.2.5](#)) includes a file on an accessible file-system that will be loaded when the *form* ([3.1.2.2](#)) transaction is complete.

3.1.2.10**completed form**

form ([3.1.2.2](#)) for which all *response* ([3.1.2.7](#)) elements been completed as required according to its *instructions* ([3.1.2.6](#)) and *rules* ([3.1.3.6](#))

3.1.3 Form Behaviour**3.1.3.1****expression**

statement that evaluates to a string or numeric value

3.1.3.2**compliance rule**

specification for some aspect of a *form design* ([3.1.2.3](#)) that is required to be satisfied for that design to be a correct use of a reusable component

3.1.3.3**constraint**

expression ([3.1.3.1](#)) about *form design* ([3.1.2.3](#)) elements that evaluates to a Boolean value

3.1.3.4**combinator**

operator that joins two *constraints* ([3.1.3.3](#)) (to make a binary constraint) returning a result based upon both

EXAMPLE Conjunction, disjunction, implication.

3.1.3.5**consequence**

expression ([3.1.3.1](#)) that sets or specifies some property of an element of a *form design* ([3.1.2.3](#)) when its related *constraint* ([3.1.3.3](#)) evaluates to true

3.1.3.6**rule**

principle guiding the behaviour of some aspect of a *form* ([3.1.2.2](#))

3.2 Abbreviated terms**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

MDR Data Definition

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

MFI Form Design Registration

ISO/IEC 19763-13:2025, Information technology — Metamodel framework for interoperability (MFI) — Part 13: Metamodel for form design registration

MDR Mapping

ISO/IEC 11179-3:2023, Information technology — Metadata registries (MDR) - Part 3: Metamodel for registry common facilities, clause 11

4 Conformance

4.1 General

An implementation claiming conformance with this document shall support the metamodel specified in [Clause 5](#), depending on a degree of conformance as described below.

4.2 Degrees of conformance

4.2.1 General

The distinction between “strictly conforming” and “conforming” implementations is necessary to address the simultaneous needs for interoperability and extensions. This document describes specifications that promote interoperability. Extensions are motivated by needs of users, vendors, institutions and industries, but are not specified by this document.

A strictly conforming implementation can be limited in usefulness but is maximally interoperable with respect to this document. A conforming implementation can be more useful, but can be less interoperable with respect to this document.

4.2.2 Strictly conforming implementation

A strictly conforming implementation

- a) shall support the metamodel specified in [Clause 5](#);
- b) shall not support any extensions to the metamodel specified in [Clause 5](#).

4.2.3 Conforming implementation

A conforming implementation

- a) shall support the metamodel specified in [Clause 5](#);
- b) may support extensions to the metamodel specified in [Clause 5](#);
- c) may support the MDR Mapping package specified in ISO/IEC 11179-3:2023, Clause 11.

4.2.4 Implementation Conformance Statement (ICS)

An implementation claiming conformance with this document shall include an Implementation Conformance Statement stating

- a) whether it is a strictly conforming implementation or a conforming implementation (see [4.2.2](#));
- b) what extensions are supported if it is a conforming implementation (see [4.2.3](#)).

Conformance statements for systems that implement this document shall additionally describe the languages used to convey Rules.

5 Structure of MFI form design registration

5.1 Overview of MFI form design registration

In the remainder of this clause and [Annexes A](#) and [B](#), this document uses:

- bold font to highlight terms which represent metadata objects specified by the metamodel;
- normal font for terms which represent concepts defined in [Clause 3](#).

[Figure 1](#) shows the metamodel for the registration of form (3.1.2.2) designs.



Forms have questions and sections that are constrained or unavailable for completion dependent upon the answers given to earlier questions. [Figure 2](#) is a model for the rule (3.1.3.6) language used to describe such dependencies between form (3.1.2.2) elements: textual expressions in this language are used to complete the *rule* attribute of the **Form Design Element 5.5.4** class.

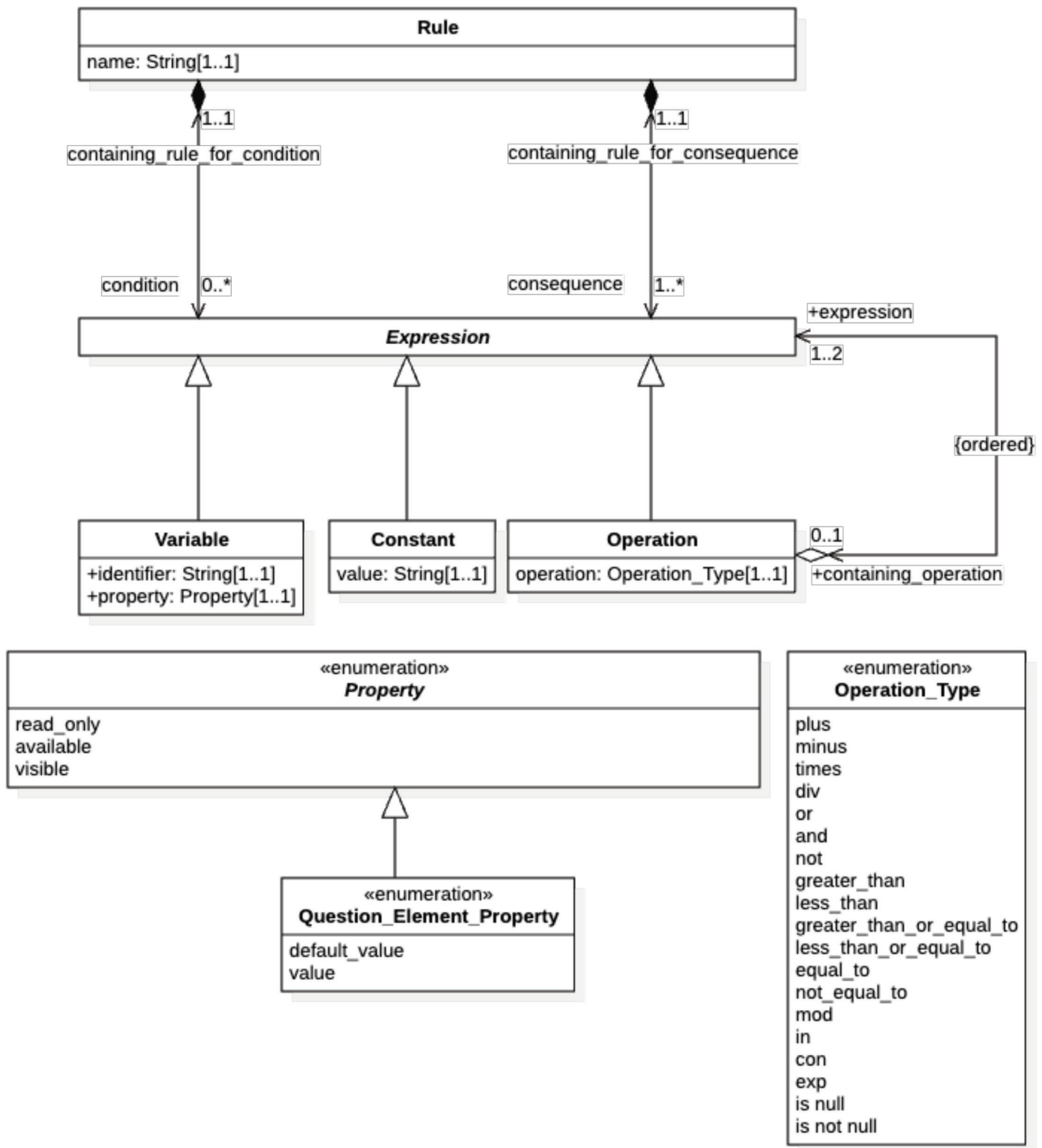


Figure 2 — Rule

The metamodel for form design registration comprises the following metaclasses:

- Attachment_Response_Field [5.5.13](#)
- Constant [5.5.22](#)
- Datatype [5.5.26](#)
- Expression [5.5.21](#)
- Form_Design [5.5.1](#)

- Form_Design_Element [5.5.4](#)
- Form_Design_Hierarchy_Constraint [5.5.3](#)
- Form_Design_Template [5.5.5](#)
- Form_Language [5.5.2](#)
- Image_Annotation_Response_Field [5.5.19](#)
- List_Response_Field [5.5.16](#)
- List_Response_Field_Item [5.5.17](#)
- List_Response_Field_Item_Selected_State [5.5.18](#)
- Localised_Text [5.5.10](#)
- Lookup_Response_Field [5.5.15](#)
- Media_Element [5.5.8](#)
- Operation [5.5.24](#)
- Presentation_Element [5.5.6](#)
- Question_Element [5.5.11](#)
- Response_Field [5.5.12](#)
- Reference_Document [5.5.25](#)
- Rule [5.5.20](#)
- Section_Element [5.5.7](#)
- Text_Element [5.5.9](#)
- Text_Response_Field [5.5.14](#)
- Unit_of_Measure [5.5.27](#)
- Variable [5.5.23](#)

The purpose and use of the metamodel is described in detail in [Annex A](#). Detailed specifications of the metaclasses are provided in the remainder of this clause.

5.2 Relationship of metaclasses to the MDR Metamodel

The major classes in [Figure 1](#) are subclassed from one or other of the classes in the MFI Core model (see ISO/IEC 19763-10:2023, Clause 6), which in turn are subclassed from the **Item** class (see ISO/IEC 11179-3:2023, 6.4.2.1) allowing instances of these classes to be identified, registered, administered, named, defined and classified.

Typically, a **Form_Design** [5.5.1](#) instance will be registered as an **Administered_Item**, while associated **Form_Design_Element** [5.5.4](#) instances will be registered as **Attached_Items**, unless a **Form_Design_Element** instance is intended to be shared across multiple **Form_Design** instances, in which case it should be registered as an **Administered_Item** in its own right. In addition:

- any instance of a **Form_Design_Element** [5.5.4](#) can be mapped to an instance of a **Concept**;
- any instance of a **Question_Element** [5.5.11](#) can be mapped to an instance of a **Data_Element**;
- any instance of a **List_Response_Field_Item** [5.5.17](#) can be mapped to a **Concept** and/or a **Permissible_Value**.

5.3 Details provided in each metaclass definition

For each metaclass, the following details are shown:

- a definition that describes the role or significance of instances of the metaclass;
- the name of its immediate supertype;
- any alternative names (synonyms or aliases) for the metaclass;
- a list of attributes;
- a list of references.

For each attribute, the following details are shown:

- the name of the attribute; where the attribute is one that is provided by a class defined in the MDR metamodel, the name is italicized;
- the datatype for values of the attribute;
- the multiplicity of the attribute;
- a description that describes the role or significance of values of the attribute.

For each reference, the following details are shown:

- the name of the reference; this is the role name that describes the role played by the referenced metaclass with respect to the association identified by this reference;
- the name of the referenced metaclass;
- the multiplicity of the reference;
- a description that describes the role or significance of the instance, or instances, of the referenced metaclass with respect to an instance of this metaclass;
- the name of the reference in the referenced metaclass that provides the inverse definition for the association;
- an indication as to whether this metaclass is responsible for the maintenance of the association, i.e. the precedence of the metaclass with respect to the association.

5.4 Basic Datatypes and Enumerations in MFI form design registration

5.4.1 General

Basic Datatypes specify common datatypes for use in the metaclasses. A datatype is a set of distinct values, characterized by properties of those values and by operations on those values (see ISO/IEC 11404:2007[3]). The datatypes used in the specification of the metaclasses (see 5.5) are restricted to Boolean, Integer, Date, Value, Sign, Postal_Address, String, Natural_Range, Datetime, String, Notation and Phone_Number (see ISO/IEC 11179-3:2023, 6.2). The datatypes used in the metaclasses are based on this core set of datatypes, with a single addition of the datatype Binary Large Object (BLOB), and any compliant implementation of a metadata registry should include an implementation of the semantics specified in these core datatypes.

NOTE These datatypes are used in specification of the metaclass attributes themselves, and are not intended to constrain the datatypes that can be used in specifying responses.

Enumerations specify the list of value for use with metaclass attributes.

For each enumeration, the following details are shown:

- the name of the referenced enumeration;

- a description of the enumeration;
- the datatype of the values in the enumeration;
- the name of each value in the enumeration;
- a description of the semantics of each enumeration value;
- the name of the metaclass where this enumeration is used;
- the name of the attribute where this enumeration is used.

5.4.2 Property

Property is an enumeration of values listing properties of a **Presentation_Element** [5.5.6](#), **Section_Element** [5.5.7](#), **Question_Element** [5.5.11](#) or a **List_Response_Field_Item** [5.5.17](#) that can be addressed by a **Rule** [5.5.20](#) (see [Figure 2](#)).

Datatype

String

The values of the Property enumeration are specified in [Table 1](#).

Table 1 — Values in the Property enumeration

Value	Description
read_only	Indicates that the Form_Design_Element 5.5.4 read_only property is to be tested or set as part of an Expression 5.5.21 in a Rule
available	Indicates that the Form_Design_Element 5.5.4 available property is to be tested or set as part of an Expression 5.5.21 in a Rule 5.5.20 The state of the available property can also be set by a List_Response_Field_Item that has a dependent_element association with the respective Form_Design_Element 5.5.4
visible	Indicates that a Form_Design_Element 's 5.5.4 visibility to the user interacting with the form (3.1.2.2) is to be tested or set as part of an Expression 5.5.21 in a Rule 5.5.20
style	Indicates that the Form_Design_Element 5.5.4 style property is to be tested or set as part of an Expression in a Rule 5.5.20

5.4.3 Question_Element_Property

Question_Element_Property is an enumeration of values listing additional properties of a **Question_Element** [5.5.11](#) that can be addressed in a **Rule** [5.5.20](#) (see [Figure 2](#)).

Supertype

Property [5.4.2](#)

Datatype

String

The values of the **Question_Element_Property** enumeration are specified in [Table 2](#).

Table 2 — Values in the Question_Element_Property enumeration

Value	Description
default_value	Indicates that the Question_Element 5.5.11 default_value property is to be tested or set as part of an Expression 5.5.21 in a Rule 5.5.20
value	Indicates that the Question_Element 5.5.11 value property is to be tested or set as part of an Expression 5.5.21 in a Rule 5.5.20

5.4.4 Target_Form_Design_Element_State

Target_Form_Design_Element_State is an enumeration of values listing the possible states that a dependent **Form_Design_Element 5.5.4** can take when a **List_Response_Field_Item 5.5.17** is selected.

Datatype

String

The values of the **Target_Form_Design_Element_State** enumeration are specified in [Table 3](#).

Table 3 — Values in the Target_Form_Design_Element_State enumeration

Value	Description
revealed	Indicates that the dependent Form_Design_Element 5.5.4 should be visible or available for input when the List_Response_Field_Item 5.5.17 is selected
hidden	Indicates that the dependent Form_Design_Element 5.5.4 should be hidden or unavailable for input when the List_Response_Field_Item 5.5.17 is selected

5.4.5 Operation_Type

Operation_Type is an enumeration of values describing the operation between two items in an **Expression 5.5.21** (see [Figure 2](#)).

Datatype

String

The values of the **Operation_Type** enumeration are specified in [Table 4](#).

Table 4 — Values in the Operation_Type enumeration

Value	Description
plus	Indicates the mathematical addition operation between the two items in the Expression 5.5.21
minus	Indicates the mathematical subtraction operation between the two items in the Expression 5.5.21
times	Indicates the mathematical multiplication operation between the two items in the Expression 5.5.21
div	Indicates the mathematical division operation between the two items in the Expression 5.5.21
or	Indicates a logical “or” between the two items in the Expression 5.5.21
and	Indicates a logical “and” between the two items in the Expression 5.5.21
not	Indicates a logical “not” between the two items in the Expression 5.5.21
greater_than	Indicates the mathematical “greater-than” operation between the two items in the Expression 5.5.21
less_than	Indicates the mathematical “less-than” operation between the two items in the Expression 5.5.21