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**Information technology —
Metadata Registries Interoperability and Bindings (MDR-IB) —
Part 5: Profiles**

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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ISO/IEC 20944-5 was prepared by Technical Committee ISO/IEC JTC1, *Information Technology*, Subcommittee SC32, *Data Management and Interchange*.

ISO/IEC 20944 consists of the following parts, under the general title *Information technology — Metadata Registries Interoperability and Bindings (MDRIB)*:

- *Part 1: Framework, common vocabulary, and common provisions for conformance*
- *Part 2: Coding bindings*
- *Part 3: API bindings*
- *Part 4: Protocol bindings*
- *Part 5: Profiles*

Introduction

This Part of ISO/IEC 20944 contains provisions that are common to the profiles, and the profiles themselves.

It is intended that this Part will be extended, via amendments, as addition profiles are established.

Information technology — Metadata Registries Interoperability and Bindings (MDR-IB) — Part 5: Profiles

1 Scope

The ISO/IEC 20944 family of standards describe codings, APIs, and protocols for interacting with an ISO/IEC 11179 metadata registry (MDR).

This part specifies the common provisions for profiles using the 20944 family.

This part specifies mapping of metamodel attributes, as specified in ISO/IEC 11179-3, to identifiers for the purpose of navigating metadata registries.

2 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 Guide 2, *Standardization and related activities — General vocabulary*

ISO/IEC TR 10000-1, *Information technology — Framework and taxonomy of International Standardized Profiles — Part 1: General principles and documentation framework*

ISO/IEC 11179-3, *Information technology — Metadata registries (MDR) — Part 3: Registry metamodel and basic attributes*

ISO/IEC 20944-1:—¹, *Information technology — Metadata Registries Interoperability and Bindings (MDRIB) — Framework, common vocabulary, and common provisions for conformance*²

¹ To be published.

² The international standards, technical reports, and drafts of the 11179, 19773, 20943, and 20944 series are available at

<http://metadata-standards.org/11179>
<http://metadata-standards.org/19773>
<http://metadata-standards.org/20943>
<http://metadata-standards.org/20944>

3 Terms and definitions

For the purposes of this document, the terms and definitions given in Part 1 apply³.

4 Attribute mapping for 11179-3 MDR metamodel

4.1 General

The identifiers in this clause provide a common mapping to the attributes of the ISO/IEC 11179-3 metamodel. Although the identifiers describe a hierarchical path, there is no requirement that the metamodel be organized or implemented in a hierarchical structure.

4.2 Value space of labels

The value space of possible labels (i.e., navigable identifiers) is the value space defined by the 11404 datatype:

```
type character_based_multiple_identifier =  
    array (0..*) of ( characterstring(iso-10646) )
```

NOTE The `characterstring` datatype is used for representing labels, such as metamodel attribute identifiers (e.g., "units_of_measure"), and used for representing array indexes (e.g., the string "0" represents the index of the first element of an array).

4.3 Available labels

The value space is the set of `characterstrings`.⁴

4.4 Label formation

The ISO/IEC 11179-3 registry metamodel describes a data model (for metadata) in UML notation. The following conventions apply with respect to mapping 11179-3 metamodel attributes to navigable identifiers that may be used to access the data of the metamodel attribute (i.e., metadata).

4.4.1 Semantic provisions

The 11179-3 metamodel uses a limited set of UML metaobjects (UML features) from the UML notation. The 11179-3 metamodel employs the following constraints or assumptions:

- A limited set of UML metaobjects are used: classes, attributes, containment, relations, objectified relations, specialization.
- Classes only have attributes and relations; classes do not have methods.

³ Users and implementers of this International Standard may find it useful to reference additional terms and definitions from 20944-1.

⁴ The distinction between possible and available is: the "possible" concerns the value space from which the labels are chosen, while the "available" concerns those ones that are valid. For example, in North America, phone numbers come from a possible list of 10-digit numbers "nnn-nnn-nnnn", but not all possible numbers are available, e.g., numbers whose first digits are 0 or 1 are not available ("022-222-2222" is not available).

- All attributes are public.
- Specialized classes only use single inheritance.

These UML notational features are transformed as follows:

- UML class notation: UML classes are comprised of UML attributes and UML relations. From the class, this Part describes navigation to the attributes and, if navigable, navigation to the relationship.
- UML attributes: An attribute is navigated according to the access operations supported by its datatype. For example, an array is accessed by its index; a record is accessed by the labels of its components.
- UML relations: A relation may be navigated from its roles (sides) that support navigation. Objectified relations may be navigated from the relation's roles that support navigation.
- UML containment relations: A containment relation may be navigated from its parent.
- UML relations' role's multiplicity: A cardinality of 0..1 or 1..1 may be navigated directly by the relation role. A cardinality of 0..* or 1..* may be navigated as an array of relations for the particular role.

Other constraints and provisions of the 11179-3 metamodel are contained in the normative wording of the 11179-3 standard.

Inheritance is simulated by copying all the attributes and relationships of the base type to the subtype, e.g. if "Y" is derived from the base type "X", and "X" has attributes "A" and "B", and relation "C", and "Y" has attributes "D" and "E", then an instance of "Y" has the navigable identifiers "a", "b", "c_relation", "d", and "e".

A conforming implementation shall map the labels defined in this Clause to a conforming ISO/IEC 11179-3 metadata registry

4.4.2 Syntactic provisions

The following are syntax requirements

- All identifiers that refer to classes have the suffix "_class" added to the identifier, e.g., the "Representation Class" class, becomes "representation_class_class".
- All identifiers that refer to navigable relations have the suffix "_relation" added to the identifier (e.g., "classifying_relation", "classified_by_relation").
- Containment relationships are represented by the component name (and not "Containing"), e.g., the "Classification Scheme" class contains a "Classification Scheme Item" class which is represented by "classification_scheme_membership"; in other words, if "X" represents an instance of the "Classification Scheme" class, then "X/classification_scheme_membership" represents an instance(s) of the "Classification Scheme Item" (see below for more information on indexing notation for this particular class).
- Attributes of objectified relationships are accessed via the "_relation" access token, e.g., if "X" is an instance of an "administered_item_class", then "X/having_relation/P/_relation/terminological_entry" represents a component of the "terminological_entry" objectified relation class.
- Attributes and relationships with cardinality "[1..1]" are represented without indexing.

- Attributes and relationships with cardinality "[0..1]" are represented without indexing. Note: In the case of zero instances, it is assumed that the implementation will have some technique for determining whether or not the optional feature is present.
- Attributes and relationships with other cardinalities (e.g., "[0..*]", "[1..*]") are accessed via an indexing mechanism, e.g., if "X" is an instance of the "language_section_class", then "X/name_entry/0", "X/name_entry/1", "X/name_entry/2", etc., may represent the identifiers associated with each of the "name_entry"s.
- The slash character "/" is used to separate components of a navigation identifier. Note that individual bindings may use different component separators and other syntax conventions.

4.4.3 Lexical provisions

The following are lexical provisions

- All identifier are transformed to lower case, spaces are transformed to underscores, and other punctuation is removed, e.g., "Context (for administered item)" becomes "context_for_administered_item".
- All identifiers that refer to classes have the suffix "_class" added to the identifier, e.g., the "Representation Class" class, becomes "representation_class_class".
- Containment relationships are represented by the component name (and not "Containing"), e.g., the "Classification Scheme" class contains a "Classification Scheme Item" class which is represented by "classification_scheme_membership"; in other words, if "X" represents an instance of the "Classification Scheme" class, then "X/classification_scheme_membership" represents an instance(s) of the "Classification Scheme Item" (see below for more information on indexing notation for this particular class).
- Navigable relationships are represented by their relationship names (e.g., "Classifying", "Classified By") and not their relationship type (e.g., "administered_item_classification").
- All identifiers that refer to navigable relations have the suffix "_relation" added to the identifier (e.g., "classifying_relation", "classified_by_relation").

4.4.4 Lifecycle

Not applicable.

4.4.5 Re-use

Not applicable.

4.5 Resolving conflicts

Not applicable.

4.6 Additional provisions

4.6.1 Mandatory top level identifiers

The following identifiers shall be accessible at the top level navigation of an administered item within a registry; these identifiers represent starting points for navigating the registry metamodel.

```

administered_item_class
classification_scheme_class
conceptual_domain_class
enumerated_conceptual_domain_class
non_enumerated_conceptual_domain_class
context_for_administered_item_class
data_element_class
derivation_rule_class
data_element_concept_class
object_class_class
property_class
representation_class_class
value_domain_class
enumerated_value_domain_class
non_enumerated_value_domain_class
registration_authority_class
organization_class

```

Example

If "X" represents the navigation starting point of an administered item, then the following sample navigation identifiers may be used:

```

X/administered_item_class/administered_item_administration_record/
administered_item_identifier

```

```

X/value_domain_class/value_domain_unit_of_measure/unit_of_measure_precision

```

4.6.2 Optional top level identifiers

The following identifiers may be accessible (i.e., they are optional) at the top level navigation of an administered item within a registry.

```

stewardship_class
submission_class
registrar_class
reference_document_class
registration_authority_identifier_class
language_identification_class
contact_class
item_identifier_class
administration_record_class
terminological_entry_class
language_section_class
designation_of_administered_item_class
definition_of_administered_item_class
classification_scheme_item_class
classification_scheme_item_replationship_class
conceptual_domain_relationship_class
concept_class
concept_relationship_class
value_domain_relationship_class
value_meaning_class
permissible_value_class
unit_of_measure_class

```

```
datatype_class  
data_element_concept_relationship_class  
data_element_example_class  
data_element_derivation_class
```

4.7 Identifier mappings

The follow subclasses are the identifier mappings for each class defined in ISO/IEC 11179-3. The notation "#index" indicates a parameter that is to be replaced with an index. The notation "// optional" indicates a navigation identifier that is optional with respect to conformance.

NOTE The ordering of this subclause is intended to approximate the ordering of definitions in ISO/IEC 11179-3 Clause 4.

4.7.1 Administered item class

```
administered_item_class:  
administered_item_administration_record  
registered_by_relation  
administered_by_relation/#index  
administered_by_relation/#index/_relation/stewardship  
submitted_by_relation/#index  
submitted_by_relation/#index/_relation/submission  
having_relation/#index  
having_relation/#index/_relation/terminological_entry/#index  
classified_by_relation/#index // optional
```

4.7.2 Registration authority class

```
registration_authority_class:  
registration_authority_identifier  
documentation_language_identifier  
represented_by_relation/#index  
registering_relation/#index // optional
```

4.7.3 Organization class

```
organization_class:  
registration_authority_identifier  
documentation_language  
represented_by_relation  
organization_name  
organization_mail_address  
administering_relation/#index // optional  
submitting_relation/#index // optional  
providing_relation/#index // optional
```

4.7.4 Stewardship class

```
stewardship_class:  
stewardship_contact
```

4.7.5 Submission class

```
submission_class:
  submission_contact
```

4.7.6 Registrar class

```
registrar_class:
  registrar_identifier
  registrar_represents_relation
  registrar_contact
```

4.7.7 Reference document class

```
reference_document_class:
  reference_document_identifier
  reference_document_type_description
  reference_document_language_identifier/#index
  reference_document_title
  provided_by_relation/#index
  describing_relation/#index // optional
```

4.7.8 Registration authority identifier class

```
registration_authority_identifier_class:
  international_code_designator
  organization_identifier
  organization_part_identifier
  opi_source
```

4.7.9 Language identification class

```
language_identification_class:
  language_identifier
  country_identifier
```

4.7.10 Contact class

```
contact_class:
  contact_name
  contact_title
  contact_information
```

4.7.11 Item identifier class

```
item_identifier_class:
  item_registration_authority_identifier
  data_identifier
  version
```

4.7.12 Administration record class

```
administration_record_class:
```

```
administered_item_identifier  
registration_status  
administrative_status  
creation_date  
last_change_date  
effective_date  
until_date  
change_description  
administrative_note  
explanatory_comment  
unresolved_issue  
origin
```

4.7.13 Terminological entry class

```
terminological_entry_class:  
terminological_entry/#index
```

4.7.14 Context for administered item class

```
context_for_administered_item_class:  
administered_item_administration_record  
registered_by_relation  
administered_by_relation/#index  
administered_by_relation/#index/_relation/stewardship  
submitted_by_relation/#index  
submitted_by_relation/#index/_relation/submission  
having_relation/#index  
having_relation/#index/_relation/terminological_entry/#index  
classified_by_relation/#index // optional  
context_description  
context_description_language_identifier
```

4.7.15 Language section class

```
language_section_class:  
language_section_language_identifier  
name_entry/#index  
definition_entry/#index
```

4.7.16 Designation of administered item class

```
designation_of_administered_item_class:  
name  
preferred_designation  
specifically_using_relation // optional
```

4.7.17 Definition of administered item class

```
definition_of_administered_item_class:  
definition_text  
preferred_definition  
definition_source_reference  
specifically_using_relation // optional
```

4.7.18 Classification scheme class

```

classification_scheme_class:
administered_item_administration_record_class
registered_by_relation
administered_by_relation/#index
administered_by_relation/#index/_relation/stewardship
submitted_by_relation/#index
submitted_by_relation/#index/_relation/submission
having_relation/#index
having_relation/#index/_relation/terminological_entry/#index
classified_by_relation/#index // optional
classification_scheme_type_name
classification_scheme_membership/#index

```

4.7.19 Classification scheme item class

```

classification_scheme_item_class:
classification_scheme_item_type_name
classification_scheme_item_value
classification_scheme_association_relation/#index
classification_scheme_association_relation/#index/_relation/classification_scheme_item
_relationship_type_description
classifying_relation/#index

```

4.7.20 Conceptual domain class

```

conceptual_domain_class:
administered_item_administration_record_class
dimensionality
registered_by_relation
administered_by_relation/#index
administered_by_relation/#index/_relation/stewardship
submitted_by_relation/#index
submitted_by_relation/#index/_relation/submission
having_relation/#index
having_relation/#index/_relation/terminological_entry/#index
classified_by_relation/#index // optional
having_relation/#index
related_to_relation/#index
related_to_relation/#index/_relation/data_element_concept_relationship_type_descriptio
n
related_to_relation/#index/_relation/concept_domain_relationship_type_description

```

4.7.21 Data element concept class

```

data_element_concept_class:
administered_item_administration_record
registered_by_relation
administered_by_relation/#index
administered_by_relation/#index/_relation/stewardship
submitted_by_relation/#index
submitted_by_relation/#index/_relation/submission

```

```
having_relation/#index
having_relation/#index/_relation/terminological_entry/#index
classified_by_relation/#index // optional
data_element_concept_object_class
object_class_qualifier
data_element_concept_property
property_qualifier
specifying_relation
expressed_by_relation // optional
```

4.7.22 Property class

```
property_class:
administered_item_administration_record
registered_by_relation
administered_by_relation/#index
administered_by_relation/#index/_relation/stewardship
submitted_by_relation/#index
submitted_by_relation/#index/_relation/submission
having_relation/#index
having_relation/#index/_relation/terminological_entry/#index
classified_by_relation/#index // optional
```

4.7.23 Object class class

```
object_class_class:
administered_item_administration_record
registered_by_relation
administered_by_relation/#index
administered_by_relation/#index/_relation/stewardship
submitted_by_relation/#index
submitted_by_relation/#index/_relation/submission
having_relation/#index
having_relation/#index/_relation/terminological_entry/#index
classified_by_relation/#index // optional
```

4.7.24 Concept class

```
concept_class:
administered_item_administration_record
registered_by_relation
administered_by_relation/#index
administered_by_relation/#index/_relation/stewardship
submitted_by_relation/#index
submitted_by_relation/#index/_relation/submission
having_relation/#index
having_relation/#index/_relation/terminological_entry/#index
classified_by_relation/#index // optional
using_relation/#index
using_relation/#index/_relation/administered_item_administration_record
using_relation/#index/_relation/registered_by_relation
using_relation/#index/_relation/administered_by_relation/#index
using_relation/#index/_relation/administered_by_relation/#index/_relation/stewardship
```

```

using_relation/#index/_relation/submitted_by_relation/#index
using_relation/#index/_relation/submitted_by_relation/#index/_relation/submission
using_relation/#index/_relation/having_relation/#index
using_relation/#index/_relation/having_relation/#index/_relation/terminological_entry/
#index
using_relation/#index/_relation/classified_by_relation/#index // optional
using_relation/#index/_relation/concept_relationship_type_description
used_in_relation/#index // optional
used_in_relation/#index/_relation/registered_by_relation
used_in_relation/#index/_relation/administered_by_relation/#index
used_in_relation/#index/_relation/administered_by_relation/#index/_relation/stewardshi
P
used_in_relation/#index/_relation/submitted_by_relation/#index
used_in_relation/#index/_relation/submitted_by_relation/#index/_relation/submission
used_in_relation/#index/_relation/having_relation/#index
used_in_relation/#index/_relation/having_relation/#index/_relation/terminological_entr
y/#index
used_in_relation/#index/_relation/classified_by_relation/#index // optional
used_in_relation/#index/_relation/concept_relationship_type_description

```

4.7.25 Concept relationship class

```

concept_relationship_class:
administered_item_administration_record
registered_by_relation
administered_by_relation/#index
administered_by_relation/#index/_relation/stewardship
submitted_by_relation/#index
submitted_by_relation/#index/_relation/submission
having_relation/#index
having_relation/#index/_relation/terminological_entry/#index
classified_by_relation/#index // optional
concept_relationship_type_description

```

4.7.26 Enumerated conceptual domain class

```

enumerated_conceptual_domain_class:
administered_item_administration_record
registered_by_relation
administered_by_relation/#index
administered_by_relation/#index/_relation/stewardship
submitted_by_relation/#index
submitted_by_relation/#index/_relation/submission
having_relation/#index
having_relation/#index/_relation/terminological_entry/#index
classified_by_relation/#index // optional
represented_by_value_domain_relation/#index // optional
value_meaning_set/#index

```

4.7.27 Value meaning class

```

value_meaning_class:
value_meaning_identifier
value_meaning_description
value_meaning_begin_date

```

```
value_meaning_end_date  
used_in_relation/#index // optional
```

4.7.28 Permissible value class

```
permissible_value_class:  
permissible_value_begin_date  
permissible_value_end_date  
permissible_value_has_value_meaning_relation  
permissible_value_has_value_relation
```

4.7.29 Value domain class

```
value_domain_class:  
administered_item_administration_record  
registered_by_relation  
administered_by_relation/#index  
administered_by_relation/#index/_relation/stewardship  
submitted_by_relation/#index  
submitted_by_relation/#index/_relation/submission  
having_relation/#index  
having_relation/#index/_relation/terminological_entry/#index  
classified_by_relation/#index // optional  
value_domain_datatype  
value_domain_unit_of_measure  
value_domain_maximum_character_quantity  
value_domain_format  
representing_conceptual_domain_relation  
typed_by_relation // optional  
represented_by_data_element_relation#index // optional
```

4.7.30 Enumerated value domain class

```
enumerated_value_domain_class:  
administered_item_administration_record  
registered_by_relation  
administered_by_relation/#index  
administered_by_relation/#index/_relation/stewardship  
submitted_by_relation/#index  
submitted_by_relation/#index/_relation/submission  
having_relation/#index  
having_relation/#index/_relation/terminological_entry/#index  
classified_by_relation/#index // optional  
value_domain_datatype  
value_domain_unit_of_measure  
value_domain_minimum_character_quantity  
value_domain_data_format  
representing_conceptual_domain_relation  
typed_by_relation  
represented_by_data_element_relation#index // optional  
permissible_value_set/#index
```

4.7.31 Non enumerated value domain class

```

non_enumerated_value_domain_class:
administered_item_administration_record
non_enumerated_value_domain_description
registered_by_relation
administered_by_relation/#index
administered_by_relation/#index/_relation/stewardship
submitted_by_relation/#index
submitted_by_relation/#index/_relation/submission
having_relation/#index
having_relation/#index/_relation/terminological_entry/#index
classified_by_relation/#index // optional
value_domain_datatype
value_domain_unit_of_measure
value_domain_minimum_character_quantity
value_domain_data_format
typed_by_relation
represented_by_data_element_relation#index // optional
representing_conceptual_domain_relation
representing_non_enumerated_conceptual_domain_relation

```

4.7.32 Non enumerated conceptual domain class

```

non_enumerated_conceptual_domain_class:
administered_item_administration_record
registered_by_relation
administered_by_relation/#index
administered_by_relation/#index/_relation/stewardship
submitted_by_relation/#index
submitted_by_relation/#index/_relation/submission
having_relation/#index
having_relation/#index/_relation/terminological_entry/#index
classified_by_relation/#index // optional
dimensionality
represented_by_value_domain_relation/#index // optional
non_enumerated_conceptual_domain_description
represented_by_non_enumerated_value_domain_relation/#index // optional

```

4.7.33 Representation class class

```

representation_class_class:
administered_item_administration_record
registered_by_relation
administered_by_relation/#index
administered_by_relation/#index/_relation/stewardship
submitted_by_relation/#index
submitted_by_relation/#index/_relation/submission
having_relation/#index
having_relation/#index/_relation/terminological_entry/#index
classified_by_relation/#index // optional
typing_value_domain_relation/#index // optional
typing_data_element_relation/#index // optional

```

4.7.34 Unit of measure class

```
unit_of_measure_class:  
unit_of_measure_name  
unit_of_measure_precision
```

4.7.35 Datatype class

```
datatype_class:  
datatype_name  
datatype_description  
datatype_scheme_reference  
datatype_annotation
```

4.7.36 Data element class

```
data_element_class:  
administered_item_administration_record  
registered_by_relation  
administered_by_relation/#index  
administered_by_relation/#index/_relation/stewardship  
submitted_by_relation/#index  
submitted_by_relation/#index/_relation/submission  
having_relation/#index  
having_relation/#index/_relation/terminological_entry/#index  
classified_by_relation/#index // optional  
expressed_by_relationship // optional  
representation_class_qualifier  
data_element_precision  
expressing_relation  
representing_relation  
typed_by_relation // optional  
exemplified_by_relation/#index // optional  
derived_from_relation/#index // optional  
input_to_relation/#index // optional
```

4.7.37 Data element example class

```
data_element_example_class:  
exemplifying_relation  
data_element_example_item
```

4.7.38 Data element derivation class

```
data_element_derivation_class:  
deriving_relation  
applying_relation  
inputting_relation/#index
```

4.7.39 Data element derivation rule class

```
data_element_derivation_rule_class:  
derivation_rule_specification  
applied_to_relation/#index // optional
```

4.8 Conformance label

The following label indicates conformity to this Clause: "ISO/IEC 20944-5/P/URI".

The location of the placement of conformance labels is outside the scope of this International Standard.

5 Profile for 11179-3 MDR metamodel

5.1 General

The ISO/IEC 20944 family of standards describe codings, APIs, and protocols for interacting with an ISO/IEC 11179 metadata registry (MDR).

This part specifies mapping of metamodel attributes, as specified in ISO/IEC 11179-3, to identifiers for the purpose of navigating metadata registries.

5.2 Profile

This Part identifies ISO/IEC 11179-3 as the referenced data interchange specification. This Part incorporates, normative reference, the following standards:

- ISO/IEC 11179-3
- ISO/IEC 20944-1

NOTE 1 The purpose of normative referencing these standards is to incorporate the provisions that describe the 11179 metamodel (i.e., 11179-3) and the terminology (i.e., 20944-2).

NOTE 2 The result of this profile is (1) a set of navigable identifiers that correspond to the 11179-3 metamodel, and (2) the implicit data model is the 11179-3 metamodel. The intent is to combine this Part with coding, API, and protocol bindings. For example, requiring 20944-5/P/MDR (this Clause) and 20944-2/B/XML (XML coding binding) gives a specification that describes an XML rendering of the 11179-3 metamodel; requiring 20944-5/P/MDR and 20944-3/B/C (C API binding) gives a specification that describes a set of C programming language services that access an 11179-3 metamodel (i.e., C APIs for access to a metadata registry).

5.3 Conformance label

The following label indicates conformity to this Clause: "ISO/IEC 20944-5/P/MDR".

The location of the placement of conformance labels is outside the scope of this International Standard.

Annex A: Developing and using profiles (informative)

6 Developing and using profiles

A profile is defined in ISO/IEC TR 10000-1 as a "set of one or more base standards and/or ISPs, and, where applicable, the identification of chosen classes, conforming subsets, options and parameters of those base standards, or ISPs necessary to accomplish a particular function".

Profiles reference other standards. References may be dated or undated.

6.1 General principles of a profile

The general principles of a profile are specified in ISO/IEC TR 10000-1, subclause 6.3.1:

6.3.1 General Principles

A profile makes explicit the relationships within a set of base standards used together (relationships which can be implicit in the definitions of the base standards themselves), and may also specify particular details of each base standard being used. A profile may refer to other International Standardized Profiles in order to make use of the functions and interfaces already defined by them, and thus limit its own direct reference to base standards. It follows that a profile

a) shall restrict the choice of base standard options to the extent necessary to maximise the probability of achieving the objective of the profile; for example to facilitate interworking between IT systems, or porting an application between them, where they have implemented different selections of options of the profile. Thus a profile may retain base standard options as options of the profile provided that they do not affect interworking or portability.

b) shall not specify any requirements that would contradict or cause non-conformance to the base standards to which it refers;

c) may contain conformance requirements which are more specific and limited in scope than those of the base standards to which it refers. Whilst the capabilities and behaviour specified in a profile will always be valid in terms of the base standards, a profile may exclude some valid optional capabilities and optional behaviour permitted in those base standards.

Thus conformance to a profile implies by definition conformance to the set of base standards which it references. However, conformance to that set of base standards does not necessarily imply conformance to the profile.

While the last paragraph above summarizes one important aspect of interoperability and compatibility (i.e., conformance to the profile implies conformance to the base standard), from the perspective of the developer of profile, a more important interoperability and compatibility issue is item b above: *[a profile] shall not specify any requirements that would contradict or cause non-conformance to the base standards to which it refers.* This requirement has a profound effect upon profiles of data interchange standards because profiles inherit certain *implicit* requirements from base standards.

6.2 Main elements of a profile definition

The main elements of a profile definition are specified in ISO/IEC TR 10000-1, subclause 6.3.2:

6.3.2 Main elements of a profile definition

The definition of a profile shall comprise the following elements:

- a) a concise definition of the scope of the function for which the profile is defined and the user requirements which it will satisfy, which is capable of being used as an Executive Summary of the profile;
- b) an illustration of the scenario within which the profile is applicable, giving, where possible, a diagrammatic representation of the IT systems, applications and interfaces which are relevant;
- c) normative reference to a single set of base standards or ISPs, including precise identification of the actual texts of the base standards or ISPs being used; also identification of any approved amendments and technical corrigenda (errata), conformance to which is identified as potentially having an impact on achieving interoperability or portability using the profile;
- d) specifications of the application of each referenced base standard or ISP, stating the choice of classes or conforming subsets, and the selection of options, ranges of parameter values, etc, and reference to registered objects;
- e) a statement defining the requirements to be observed by IT systems claiming conformance to the profile, including any remaining permitted options of the referenced base standards or ISPs, which thus become options of the profile;
- f) if relevant, a reference to the specification of conformance tests for the profile;
- g) informative reference to any amendments or technical corrigenda to the base standards referenced in the profile, which have been determined to be not applicable to the profile, and to any other relevant source documents

6.3 Derived standards

A derived standard is a normative document that has provisions in common with a base standard. In comparison to profiles, a derived standard makes no requirements concerned the relationship between conformance to the base standard and conformance to the derived standard (or vice versa). This an implementation that conforms to the derived standard is not required to conform to the base standard (and vice versa).

6.4 Copy-paste vs. incorporation via normative reference

From the perspective of standards interpretation and the meaning of a profile, there is no difference between copying and pasting normative wording into the profile vs. incorporating provisions via normative reference (i.e., reference to Clause, subclause, etc.). This non-distinction applies to both profiles and derived standards.

The decision of copy/paste vs. incorporation via normative reference is affected by standards maintenance and the availability of base standards. Generally, incorporation via normative reference is preferred because (1) it minimizes the editing and review work of the profile or derived standard, (2) the maintenance is (largely) the responsibility of the committee that developed the base standard, (3) technical corrigenda and amendments of the base standard may be incorporated into the profile or derived standard without modifying (and balloting) the new document. In some cases copy/paste may be preferable, such as (1) when, due to

the structure of the base standard, the normative referencing is complex or impractical, (2) when the normative wording in the base document may be unavailable, such as references to specifications other than international standards (see document JTC1/N4046 and JTC1/N4047).