S-100-2

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Introduction

The International Hydrographic Organization (IHO) intends to manage a Registry in conformance with ISO 19135 (Procedures for registration of items of geographic information). This registry will contain a number of registers, many of which will be Feature Data Dictionaries. A feature data dictionary specifies hydrographic definitions that may be used to describe geographic information. The use of a register to store hydrographic definitions will significantly improve the IHO's ability to manage and extend multiple products based on S-100 which can be made available for use in a relatively short timescale. This register will support wider use of registered items by making them publicly available and increase their visibility to potential users.

This component describes the content of the register and specifies procedures to be followed for maintaining registers of items of hydrographic related information. Any organization may apply to establish registers of items of hydrographic related information in the IHO Feature Data Dictionary Registry. The IHO maintains a compound registry mechanism to support such requirements.

Figure 1 illustrates the overall structure of the IHO Registry which contains multiple Registers. The individual Registers must be established and managed by organizations that have a requirement for a hydro-related register and are prepared to comply with the processes detailed in this component. An example of one such procedure is shown in Annex A.
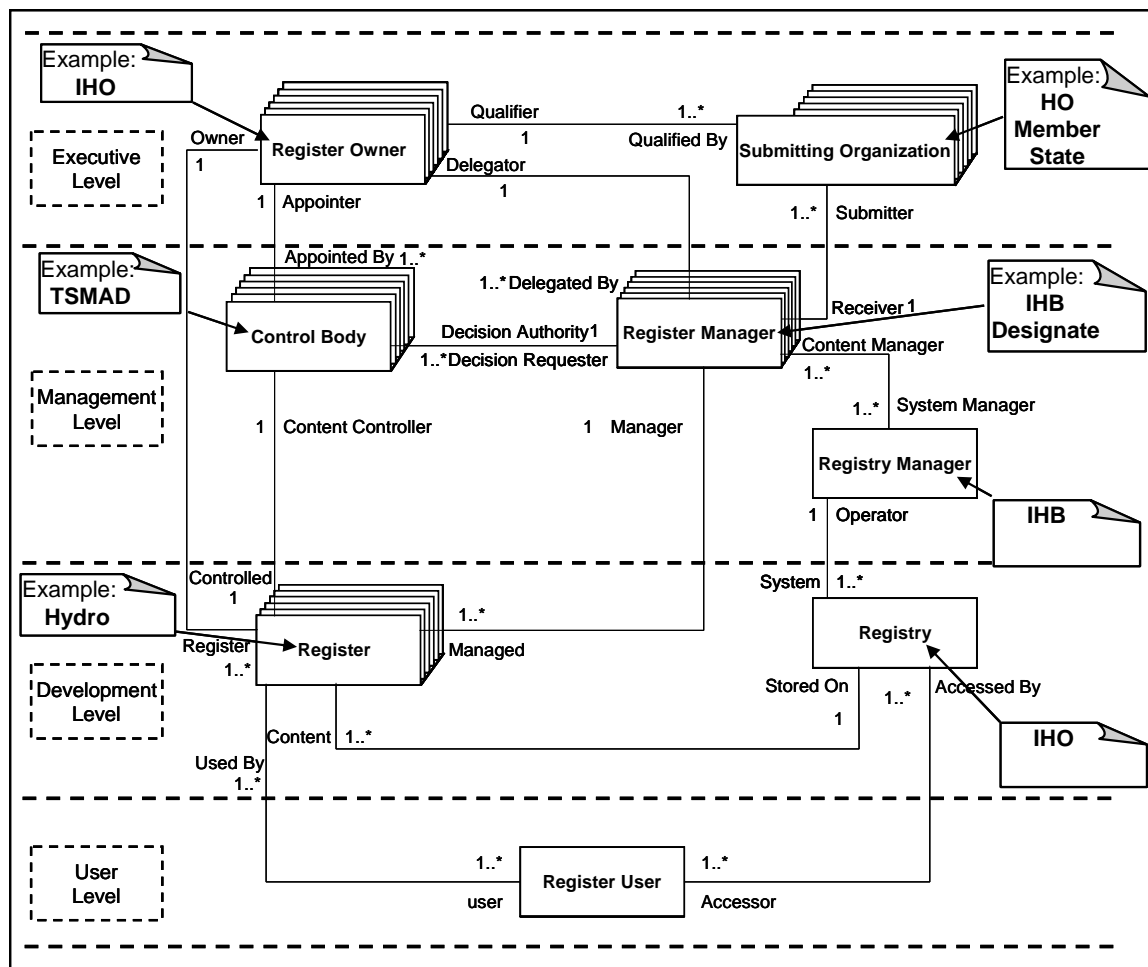

Figure 1 — Organizational relationships

1 Scope

This component specifies procedures to be followed in establishing, maintaining, and publishing registers of unique, unambiguous and permanent identifiers that are assigned to items of geographic, hydrographic and metadata information. In order to accomplish this purpose, this standard specifies elements of information that are necessary to provide identification and definitions to the registered items and to manage the registration of these items.

2 Normative references

ISO 19135:2005, Geographic Information – Procedures for registration of items of geographic information

3 Terms, definitions and abbreviations

3.1 Terms and definitions

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

3.1.1
addition
insertion of an item into the register

3.1.2
association role
indicates the role played by the feature type in terms of the relationships, and specifies the contents for the feature type and its instances

3.1.3
clarification
non-substantive change to a **register** item [ISO 19135]

NOTE   A non-substantive change does not change the semantics or technical meaning of the item. A clarification does not result in a change to the registration status of the register item.

3.1.4
control body
group of technical experts that makes decisions regarding the content of a **register** [ISO 19135]

3.1.5
geographic information
information concerning phenomena implicitly or explicitly associated with a location relative to the Earth [ISO 19101]

3.1.6
identifier
linguistically independent sequence of characters capable of uniquely and permanently identifying that with which it is associated [adapted from ISO/IEC 11179-3]

3.1.7
item class
set of items with common properties [ISO 19135]

EXAMPLE   The class of feature types.

3.1.8
modification
a substantive semantic change to a **register** item

3.1.9
register
set of files containing identifiers assigned to items with descriptions of the associated items [ISO 19135]

NOTE   Descriptions may consist of many types of information, including names, definitions and codes.

3.1.10
register manager
organization to which management of a **register** has been delegated by the **register owner** [ISO 19135]

NOTE   In the case of an IHO register, the register manager performs the functions of the registration authority specified in the IHO Directives.

3.1.11
register owner
organization that establishes a **register** [ISO 19135]

3.1.12
registration
assignment of a permanent, unique (in the register), and unambiguous **identifier** to an item [ISO 19135]

3.1.13
registry
information system on which a **register** is maintained [ISO 19135]

3.1.14
retirement
declaration that a **register** item is no longer suitable for use in the production of new data [ISO 19135]

NOTE   The status of the retired item changes from 'valid' to 'retired'. A retired item is kept in the register to support the interpretation of data produced before its retirement.

3.1.15
source reference
reference to the source of an item that has been adopted from a source external to the **register** [ISO 19135]

3.1.16
submitting organization
organization authorised by a **register owner** to propose changes to the content of a **register** [ISO 19135]

3.1.17
supersession
replacement of a **register** item by one or more new items [ISO 19135]

NOTE   The status of the replaced item changes from 'valid' to 'superseded.' A superseded item is kept in the register to support the interpretation of data produced before its supersession.

3.2   Abbreviations

IEC   International Electrotechnical Commission

IHO   International Hydrographic Organization

IHB   International Hydrographic Bureau

ISO   International Organization for Standardization

TSMAD Transfer Standard Maintenance and Application Development Working Group

4   General concepts

4.1   Register

A register is simply a managed list. It is easier to maintain than a fixed document, because new items can be added as needed to the register, and existing items in the register can be clarified, superseded or retired. Each register item has one or more dates associated with it that indicate when changes in its status occurred. This means that a product specification, defined at a given date, may reference an item in the register at a specific point in time.

4.2   Feature data dictionary

A feature data dictionary specifies independent sets of definitions of features, attributes, and enumerated values that may be used to describe geographic, hydrographic, and metadata information. A feature data dictionary may be used to develop a feature catalogue. Unlike a feature catalogue, a feature data dictionary does not bind attributes to features.

Registers of feature information may serve as sources of reference for similar registers established by other geographic information communities as part of a system of cross-referencing.

4.3   Feature catalogue

A feature catalogue is a document that describes the content of a data product. It uses item types, for example, features and attributes, from one or more feature data dictionaries and binds them

together. In addition, constraints, units of measurement and format description of attributes can be specified. Feature Catalogues will be described in detail in S-100-3.

5   IHO Feature Data Dictionary

5.1   Types of registered items

The following are types of items that may be registered.

a) Feature Type – abstraction of real world phenomena

b) Attribute Type – characteristic of a feature type

c) Enumerated Value Type – set of mutually exclusive values constituting the domain of an attribute

d) Information Type – an identifiable object that contains attributes, associations to other information types, but no spatial information

e) Association Role Name Type – indicates the role played by a feature or information type in association with another feature or information type.

EXAMPLE   For an association between a buoy and a topmark, the buoy has a role – construction object and the topmark has a role – equipment object.

NOTE   The associations between information types have only one role since the second one is always implicit – "Information Client."

EXAMPLE   A company may have one address with the role "Postal address" and another one with the role named "Delivery address"

5.2   Characteristics of registered items

5.2.1   Common characteristics

The following characteristics are common to all types of registered items listed in clause 5.1. Each characteristic is identified as either mandatory (M), optional (O) or conditional (C).

a) itemIdentifier (M) – each item has its own unique identifier in a register

b) registerIdentifier (M) – each item is assigned to a register which has its own unique identifier in the registry

c) Name (M) – succinct expression of the item concept it denotes

d) definition (M) – shall be a precise statement of the nature, properties, scope, or essential qualities of the concept as realized by the item.

e) camelCase identifier (M) – the name of the feature written in Camel Case. It must:

1) be compound words in which the words are joined without spaces and are capitalized within the compound.
2) be unique within the registry for all registered items that have an camelCase characteristic;

EXAMPLE   beaconCardinal is the Camel Case identifier for Beacon Cardinal.

f)   definitionSource (O) – the source document the item definition was taken from.

The three elements include:

(1) referenceNumber
(2) sourceDocument
(3) similarityToSource (Table 1)

Table 1 — SimilarityToSource

Value	Meaning
identical	No change has been made to the definition.
restyled	The style of the definition has been changed to match the style and structure of other definitions in the register that has imported the definition.
contextAdded	The definition includes information about its context that is not explicit in the specification in the external source.
generalization	The definition of the register item has been generalized to have a broader meaning than the item specified in the external source.
specialization	The definition of the register item has been specialized to have a narrower meaning than the item specified in the external source.
unspecified	The nature of the differences between the register item and the similar item in the external source is unspecified. .

g)   otherReferences (O) – reference to other relevant standards; for example INT1 or M4

h)   remarks (O) - supplementary information

i)   itemStatus (M) – the state in which a registered item exists (Table 2)

Table 2 — itemStatus

Value	Meaning
notValid	The item has been entered into the register, but the control body has not accepted the proposal to add it.
valid	The item has been accepted, is recommended for use, and has not been superseded or retired.
superseded	The item has been superseded by one or more items and is no longer recommended for use.
retired	A decision has been made that the item is no longer recommended for use. It has not been superseded by another item.

j)   dateAccepted (C) – the date a registered item became valid

k)   dateAmended (C) – the date a registered item is clarified, superseded or retired

l)   alias (O) – equivalent name(s) used for the item

5.2.2   Feature type item

They include the common characteristics that are listed in clause 5.2.1.

Additional characteristics for feature type items.

a) alphaCodeIdentifier (M) - abbreviation designating the feature type. It must:

    1) be unique within the registry for all registered items that have an alpha code characteristic;
    2) be exactly six characters;
    3) conform to ISO 646 with uppercase characters A-Z, 0-9,"_", "$";
    4) begin with A-Z or "$."

EXAMPLE   "PUBREF" is the Alpha Code designating the feature type item named "Publication Reference."

b) featureUseType (M) – a code list (Table 3) that identifies the intended use of a feature type

Table 3 — Definitions of featureUseType values

Value	Meaning
geographic	carries the descriptive characteristics of a real world entity
aggregation	describes the characteristics between different features
cartographic	carries information about the cartographic representation (including text) of a real world entity
meta	contains information about other features

5.2.3   Attribute Type Item

They include the common characteristics that are listed in clause 5.2.1.

Additional fields for attributes:

a) alphaCodeIdentifier (M) - abbreviation designating the attribute type. It must:

    1) be unique within the registry for all registered items that have an alpha code characteristic;
    2) be exactly six characters;
    3) conform to ISO 646 with uppercase characters A-Z, 0-9,"_", "$";
    4) begin with A-Z or "$."

b) dataType (M) – describes representation, interpretation and structure of values (Table 4)

Table 4 — Data Type

Value	Meaning
Boolean	True or False
Complex	an attribute consisting of a set of other attributes either simple or complex
Date	character encoding shall follow the format for date as specified by ISO 8601
DateTime	a combination of a date and time type, character encoding shall follow the format specified by ISO 8601
Enumeration	Defined by an arbitrary value, each value is explicitly listed and described
Integer	numeric value with defined range, units and format.
Real	floating point number
Structured text	a character string whose format and/or values adhere to a structure specified by an associated scheme
Text	a sequence of characters
Time	character encoding shall follow the format for time as specified by ISO 8601

c) lexical (O) - shall be represented as a Boolean that specifies the range of character values that may be used in character string values of the text attribute type. If *lexical* is not specified, then the range of character values is limited to characters from the ASCII code (or, equivalently, ISO 646 International Reference Version alphabet).

NOTE   Lexical character values encompass any character, including accents, diacritical marks, special characters, and any other ISO standardized alphabet. If lexical is specified, the character set must be defined in the feature catalogue.

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d) attributeUseType (M) – a code list (Table 5) that identifies the intended use of a feature type

Table 5 — Definitions of Attribute Use Type values

Value	Meaning
feature	Carries the descriptive characteristics of a feature.
nationalLanguage	Intended to hold text in a national language.
spatialOrMeta	Carries information (for example: accuracy) characterizing information (for example: location) about a feature.

e) stringLength (O) - shall be represented as a positive integer (i.e., greater than zero) that specifies the maximum number of characters that may be assigned to the text and structured text attribute type. If the *length* is not specified, then the text length shall be unconstrained.

f) structureSpecification (O) – a character string that specifies a scheme of one or more constraints on the structure of the text values that may be assigned to the attribute.

EXAMPLE   c2 is the structure specification for AGENCY

g) quantitySpecification (O) – the physical quantity represented by the attribute

EXAMPLE   length, frequency etc.

h) rangeMinimum (O) - specifies the minimum end of the range of allowed numeric values

EXAMPLE   0

i) rangeMaximum (O) – specifies the maximum end of the range of allowed numeric values

EXAMPLE   42

j) rangeClosure (C) – type of the numeric interval specified by the combination of the attributes *rangeMinimum* and/or *rangeMaximum.*

EXAMPLE   For a numeric attribute that captures an angular measurement, the semantic restriction may be that the value must lie between the values zero (inclusive) and 360 (exclusive). That is, the range of valid values is greater than or equal to zero and less than 360.

NOTE   Only when either *rangeMinimum* or *rangeMaximum*, or both, are specified shall *rangeClosure* be specified.

Table 6 — Values of Interval Type

Name	Description

openInterval	The bounded open interval (minimumValue, maximumValue).
geLtInterval	The right half-open bounded interval [minimimValue, maximumValue).
gtLeInterval	The left half-open bounded interval (minimimValue, maximumValue].
closedtInterval	The bounded interval [minimimValue, maximumValue].
gtSemiInterval	The left half-open unbounded interval (minimumValue, +infinity).
geSemiInterval	The unbounded interval [minimumValue, +infinity).
ltSemiInterval	The right half-open unbounded interval (-infinity, maximumValue).
leSemiInterval	The unbounded interval (-infinity, maximumValue].

NOTE   Interval endpoint notation uses the parenthesis to specify that the endpoint is excluded from the interval (the continuous interval extends to, but does not include, the endpoint) and the square bracket to specify that the endpoint is included in the interval (the continuous interval extends to and includes the endpoint).

k)   distinction (O) - similar items that this is distinct from

5.2.4   Enumerated Value Type Item

They include the common characteristics that are listed in clause 5.2.1.

Additional Fields for Enumerated Value Types:

a)   numericCodeIdentifier (M) – a positive integer designating the unique value in the domain.

b)   associatedAttribute (M) – specifies the attribute type item for which this is a domain value.

5.2.5   Information Type Item

They include the common fields that are listed in clause 5.2.1.

Additional fields for information type item:

a)   alphaCodeIdentifier (M) - abbreviation designating the information type item. It must:

    1)   be unique within the registry for all registered items that have an alpha code
         characteristic;
    2)   be exactly six characters;
    3)   conform to ISO 646 with uppercase characters A-Z, 0-9,"_", "$"; begin with A-Z or "$.

5.2.6   Association Role Name Type Item

Association role type items include common characteristics that are listed in clause 5.2.1.

NOTE   The relationship is instantiated in the in the feature catalogue.

5.3   Management Information

Each registered item has one or more sets of management information associated with it along with the information contained in clause 5.2.1

5.3.1 Common Management Information

a) Decision Status – the current status of a proposal is one of those shown in Table 7

Table 7 — Values of Decision Status

Value	Meaning
Pending	No decision has been made.
Tentative	A decision has been made, but it is still subject to appeal.
Final	A decision has been made and the time limit for appeal has run out or an appeal has been resolved.

b) Proposal Type - the values of proposal type are shown in Table 8

Table 8 — Values of Proposal Type

Value	Meaning
Addition	The item is to be added to the register
Clarification	A non-substantive change to an item in the register
Supersession	The item has been superseded by another item and is no longer recommended for use.
Retirement	A decision has been made that the item is no longer recommended for use. It has not been superseded by another item

c) Submitting Organization – name of the proposal's sponsor

d) Date Proposed – the date the proposal was made

e) Date Disposed – the date the proposal was adjudicated

f) Justification – primary reason for the item proposal including how it is proposed to be used

g) Disposition – provides values for describing the disposition of a proposal to add or modify a register item. The values of disposition are shown in Table 9

Table 9 — Values of Disposition

Value	Meaning
withdrawn	The submitting organization has withdrawn the proposal.
accepted	The control body decided to accept the proposal.
notAccepted	The control body decided not to accept the proposal.

h) Decision – additional decision comments

i) Control Body Notes – supplementary management information

5.4   Proposals for item registration

5.4.1   Common elements of Information to be included in all proposals

The following characteristics are common to all proposals. Each characteristic is identified as either mandatory (M), optional (O) or conditional (C). Each proposal includes mandatory and optional information contained in clause 5.2.1.

5.4.1.1 Administration information

The following information must be included in any proposal to add a new item to the register:

a) Proposed Register (M) – the existing register to the item being proposed

b) Proposal Type (M) – the values of proposal type are shown in Table 7

c) Date Proposed (M) – the date the proposal was made

d) Submitting Organization (M) - name of the sponsor

e) Proposed change (C) – brief description of the proposed change. Mandatory if an existing item is proposed to be changed.

f) Justification (M) - primary reason for the item proposal including how it is proposed to be used

6   Roles and responsibilities in the management of registers

6.1   Registry Owner

The Registry Owner is the organization that is responsible for the registry. It has the authority to host the registers and establish the policy for access.   The Feature Concept Dictionary Registry is owned by the IHO. The Registry Owner decides whether a proposed register shall be hosted on the IHO Registry. The relevant IHO body will approve an additional register being added to the IHO registry.

6.2   Registry Manager

The Registry Manager is responsible for the day-to-day operation of the Registry. This includes:

a) providing Registry access for Register Managers, Control Bodies, and Register Users

b) ensuring that information about items in the Registers is readily available to users in regard to those items that are valid, superseded, or retired

c) accepting proposals and forwarding them to all Register Managers

The appointment of the Feature Data Dictionary Registry Manager is the responsibility of the IHB on behalf of IHO.

6.3   Register Owner

The Register Owner is an organization that:

a) Establishes one or more registers

b) Has primary responsibility for the management, dissemination, and intellectual content of those registers

c) May appoint another organization to serve as the register manager

d) Shall establish a procedure to process proposals and appeals made by submitting organizations.

NOTE   Annex A shows an example of the procedure to process proposals into the hydrographic register.

6.4   Register Manager

The Register Manager is responsible for the administration of a register. This includes:

a) Coordinating with other Register Managers, Submitting Organizations, the related Control Body, Register Owner and the Registry Manager

b) Maintaining items within the register.

c) Maintain and publish a List of Submitting Organizations

d) Distributing an information package containing a description of the register and how to submit proposals

e) Providing periodic reports to the Register Owner and/or the Control Body. Each report shall describe the proposals received and the decisions taken since the last report. The interval between those reports must not exceed 12 months

f) May manage multiple registers.

6.5   Register User

A Register User is any person or organization interested in accessing or determining the content of a register.

6.6   Control Body

A Control Body is a group of technical experts appointed by a Register Owner to decide on the acceptability of proposals for changes to the content of a register. The group must comprise of experts in the related field that makes up the contents of the register.

6.7   Submitting Organizations

6.7.1   Eligible submitting organizations

A submitting organization is an organization that is qualified under criteria determined by the register owner to propose changes to the content of a register. The register manager shall determine whether a submitting organization is qualified in accordance with the criteria established by the register owner.

A Submitting Organization manages the submission of proposals for registration from within the respective communities or organizations. Proposed changes to the Register must meet the submission procedures established by the Register Owner. (See Annex A for an example)

6.8   Proposers

Any stakeholders (e.g., government, industry, academia, and user groups) who submit a proposal to a submitting organization.

7   Management of Registers

7.1   Establishment of Registers

Any recognized organization (e.g., an International Non-governmental Organization or a National Non-governmental Organization) can propose a hydrographic-related register. To do so, the following information shall be provided to the Registry Owner (IHO):

a) short description of the organization (name, purpose, etc.)

b) official point of contact, including email and other contact details as appropriate.

c) register manager

d) implementation of procedures for proposal approval and appeal process

e) a clear statement of the intended scope of the register

7.2   Processing of Proposals

7.2.1   Introduction

Submitting organizations may submit requests for addition, clarification, supersession, and retirement of registered items.

7.2.2   Addition of registered items

Addition is the insertion into a register of an item that describes a concept not adequately described by an item already in the register.

7.2.3   Clarification of registered items

Clarifications correct errors in spelling, punctuation, grammar or improvements to content or wording. A clarification shall not cause any substantive semantic change to a registered item. The three characteristics that can be clarified are definition, other references, and remarks.

7.2.4   Supersession of registered items

Supersession of an item means any proposal that would result in a substantive semantic change to an existing item. Supersession shall be accomplished by including one or more new items in the register with new identifiers and a more recent date. The original item shall remain in the register but shall include the date at which it was superseded, and a reference to the items that superseded it.

7.2.5   Retirement of registered items

Retirement shall be effected by leaving the item in the register, marking it retired, and including the date of retirement.

7.2.6 Submission of proposals

7.2.6.1 The process for submitting proposals for registration of items of geographic information is illustrated in Figure 2.

7.2.6.2 Submitting organizations shall

a) receive proposals for the registration of items from Proposers within their respective communities or organizations;

b) ensure that all proposals are logical and complete and are consistent with other features, attributes and enumerated values; and

c) submit proposals to the appropriate register.

7.2.6.3 The Register manager shall

a)   receive proposals from submitting organizations

b)   review proposals for completeness

c)   return proposals to the submitting organization if incomplete.

d)   check within the register for similar proposals, and if similar, the register manager shall contact the submitting organizations

e)   coordinate proposals with other Register Managers within two calendar weeks from the date received

f)   generate a proposal management record, with the status set to 'pending'; and

g)   initiate the approval process.

7.2.6.4 The Register Manager shall use the following criteria to determine if the proposal is complete and reject the proposal if:

a)   the submitter is not a qualified submitting organization

b)   the proposed item does not belong to an item class assigned to this register manager

c)   the proposed item does not fall within the scope of the Register
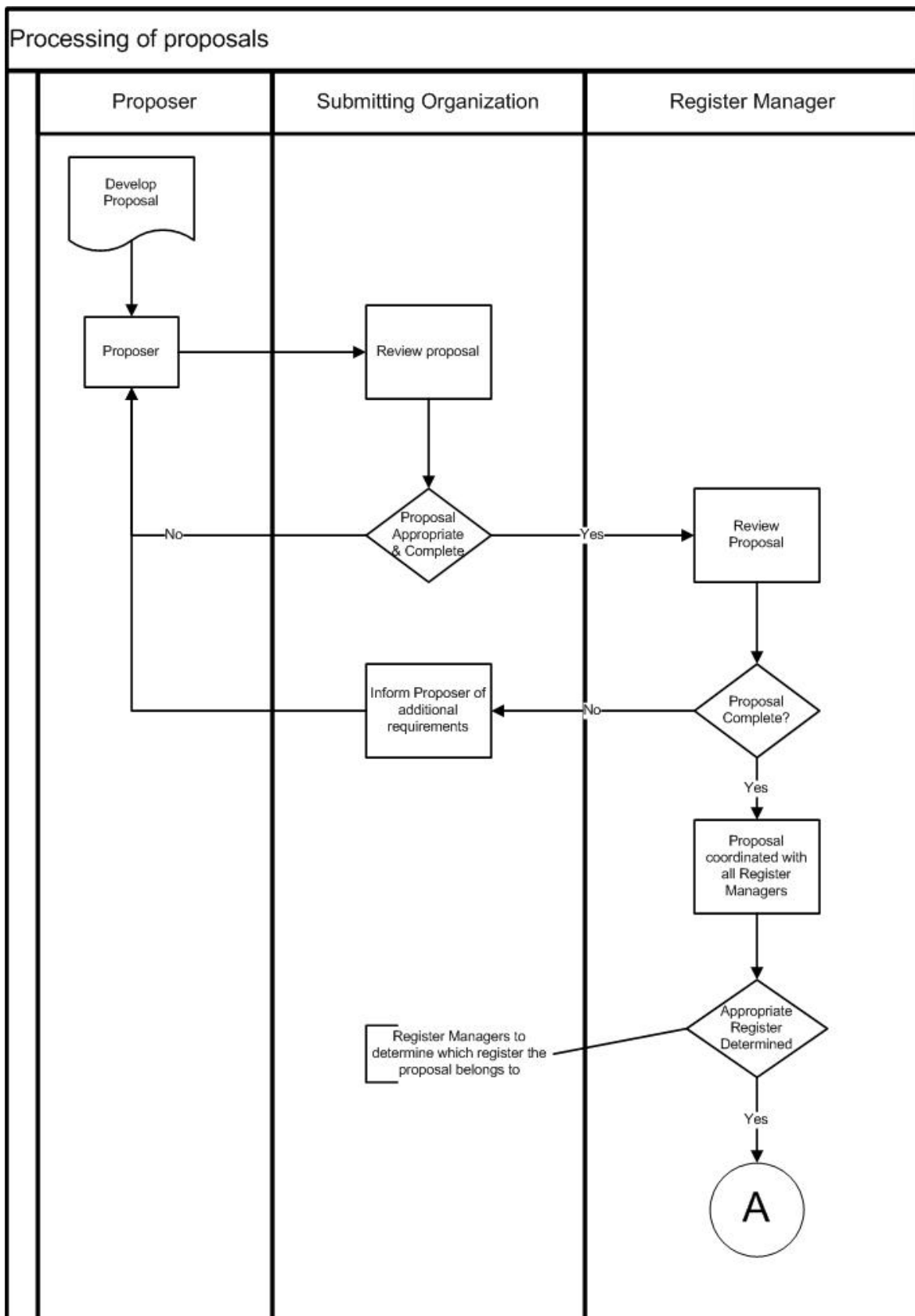
d)   the proposed item has already been proposed

Figure 2 – Processing of proposals

7.2.7   Approval process

7.2.7.1   The process for determining the acceptability of proposals is illustrated in Figure 3. It shall be completed within a time period specified by the register owner.

7.2.7.2   The register manager shall ensure the following:

a)   if the proposal is for clarification or retirement of a register item, forward the proposal to the control body; or

b)   if the proposal is for registration of a new item or supersession of an existing register item:

   1)   assign an *itemIdentifier* to the new or superseding item

   3)   set the *status* of the item to 'notValid'; and

   4)   forward the proposal to the control body.

7.2.7.3   The control body shall:

a)   decide to accept the proposal without change, to accept the proposal subject to changes negotiated with the submitting organization, or not to accept the proposal. Criteria for not accepting a proposal include:

   1)   the specification of the item is incomplete or incomprehensible;

   2)   an identical or very similar item already exists in the register or in another register of this registry.

   3)   the proposed item does not belong to an item class included in this register;

   4)   the proposed item does not fall within the scope of this Register; or

   5)   the justification for the proposal is inadequate.

b)   inform the register manager of the decision, and the rationale for the decision, within a time limit specified by the register owner.

7.2.7.4   The register manager shall:

a)   serve as the point of contact if there is a need for negotiations between the submitting organization and the control body regarding changes to the proposal that are specified by the control body as a condition of acceptance; and

b)   inform the submitting organization of the results of processing a proposal.

c)   If the decision of the control body is positive, the register manager shall in accordance with policies for this register:

   1)   complete the proposal management record with *status* set to 'final', *disposition* set to 'accepted', and *dateDisposed* to the date of the control body's decision;

   2)   make approved changes to the content of the register item;

3) set the Register item *status* to 'valid', 'superseded', or 'retired', as appropriate.

d) If the decision of the control body is negative:

1) update the proposal management record by setting *status* to 'tentative', *disposition* to 'notAccepted', and *dateDisposed* to the date of the control body's decision;

2) inform the submitting organization of the deadline for appealing the decision of the control body.

e) Disseminate the results of the approval process to the public.

7.2.7.5 Submitting organizations shall:

a) negotiate with the control body through the Register Manager, with regard to changes to their proposal that are specified by the control body as a condition of acceptance; and

b) make known within their respective communities or organizations the decisions taken on proposals by the control body as transmitted to them by the register manager.
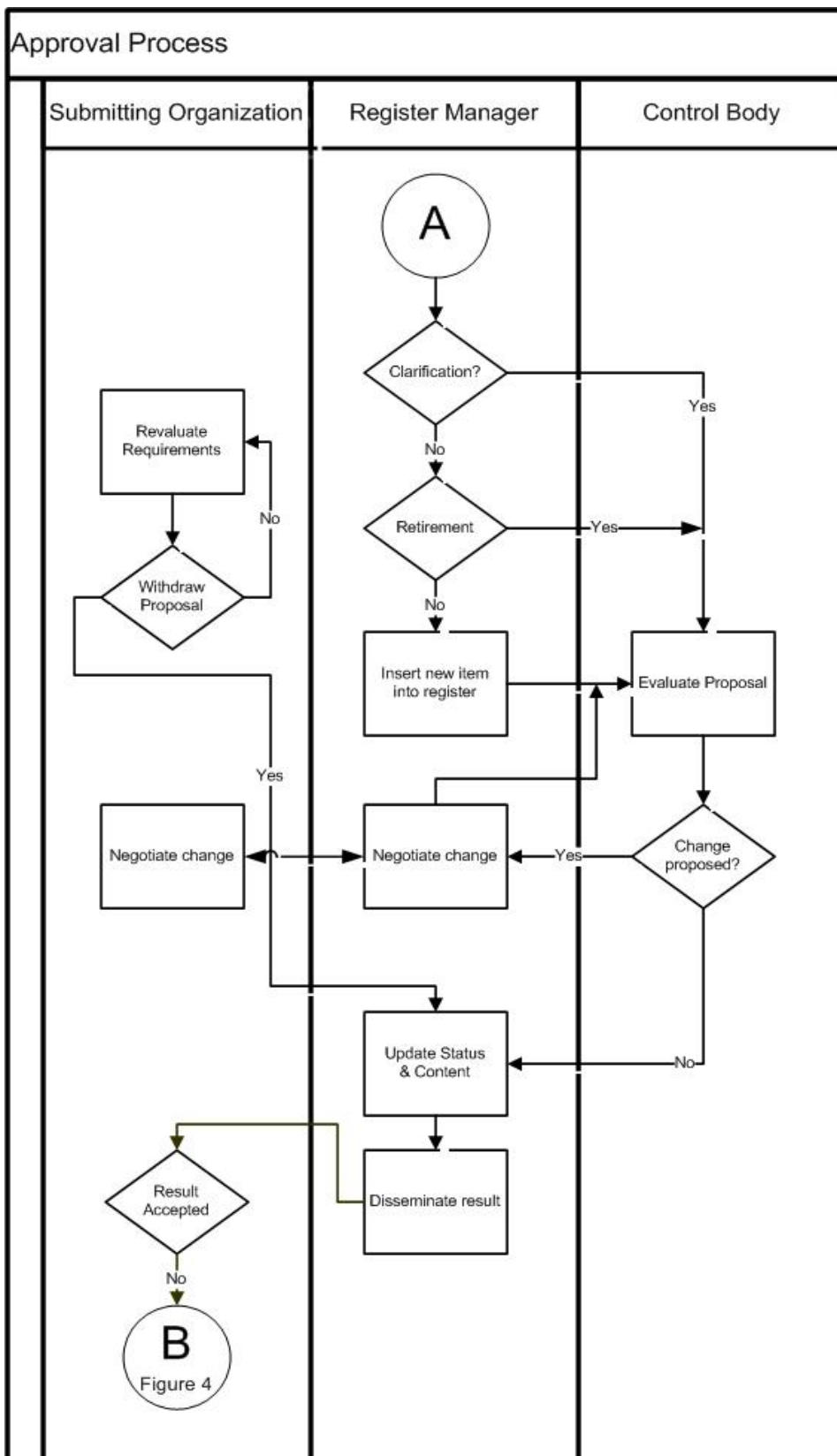
Figure 3 – Approval Process

7.2.8   Withdrawal

Submitting organizations may decide to withdraw a proposal at any time during the approval process.

The Register Manager shall:

a)   change the proposal management *status* from 'pending' to 'final'; and

b)   change the proposal management *disposition* to 'withdrawn' and the value for *dateDisposed* to the current date.

7.2.9   Appeals

7.2.9.1   A submitting organization may appeal to the register owner if it disagrees with the decision of a control body to reject a proposal for addition, clarification, modification, retirement, or supersession of an item in a register. An appeal shall contain at a minimum a description of the situation, a justification for the appeal, and a statement of the impact if the appeal is not successful. The appeal process is illustrated in Figure 4.

7.2.9.2   The submitting organization shall:

a)   determine if the decision regarding a proposal for registration is acceptable; and

b)   if not, submit an appeal to the register manager.

7.2.9.3   The register manager shall:

a)   forward the appeal to the register owner.

b)   If there is no appeal by the deadline for submitting an appeal, the register manager shall change the *status* of the proposal management record to 'final' and change the *dateDisposed* to the current date.

7.2.9.4   The register owner shall:

a) process the appeal in conformance with its established procedures ; and

b) decide whether to accept or reject the appeal.

c) return the result to the register manager

7.2.9.5   The register manager shall:

a)   update the proposal management record fields *disposition* and *dateDisposed*;

b) update the register item *status*; and

c) provide the results of the decision to the control body and to the submitting organization.

7.2.9.6 The submitting organization shall:

a) make the results of the appeal known within their community or organization.
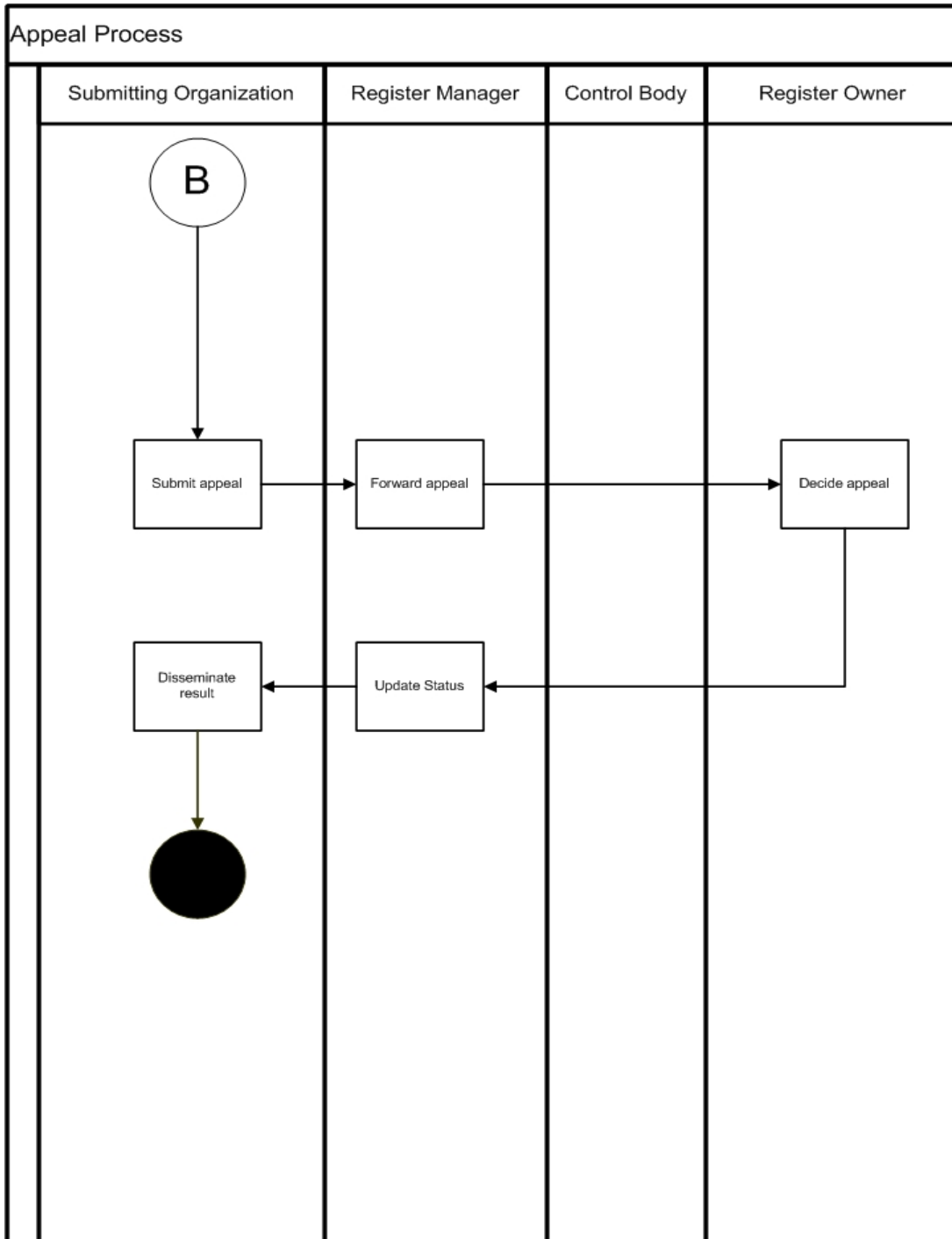
Figure 4 – Appeal process

7.3 List of submitting organizations

The register manager shall maintain and publish a register-specific list of all qualified submitting organizations (6.7) that may submit proposals for changes to the content of each register that it manages. Each list shall include the name and contact information for each submitting organization.

The registry shall contain an application to become a submitting organization. The register owner will be responsible for accepting or rejecting the application.

7.4   Publication

The registry manager shall ensure that information about valid, superseded, or retired items in the register is readily available to users. The method for providing this information may depend upon the requirements of the members of the user community.

7.5   Integrity

The register manager shall ensure that, for each register being managed:

a)   all aspects of the registration process are handled in accordance with good business practice

b)   the content of the register is accurate

c)   only authorized persons can make changes to the register content

The registry manager shall ensure the security and integrity of the registry using IT best practices.

Annex A (Informative)

Management Process for Proposal Submission

Process for submitting proposals to the Hydrographic register within the IHO Registry

1) Only an IHO Member State's Hydrographic Office may act as the Submitting Authority for submitting proposals to the Hydrographic register.
   a. The proposal shall contain the following:
      i. The contact information from the Submitting Authority;
      ii. The proper information as mandated in the proposal form [need to include all the information specified];
      iii. Justification for the proposal
      iv. Implications for other existing features, attributes or enumerated values
2) On the proposal interface there will be a statement informing proposers that they can contact an official HO for submitting a proposal. The website will have a maintained list of HO contacts that can sponsor a proposal.
3) Each Submitting Organization will have an official log-on to the register.
4) Once a proposal has been submitted to the hydro register, the proposal is automatically sent to the other Register Managers. The control body has two calendar weeks in which to determine if the hydro register is the appropriate place for the proposal.
5) If the Register Managers agree that the proposal belongs to the Hydrographic Register then the Hydro Register Manager shall take responsibility for its subsequent processing. An email will then be sent to the Control Body to start discussion on the register-associated forum.
6) The moderator of the discussion shall be the TSMAD chair
7) The Control Body will then have a 30 day discussion period. Comments shall be facilitated via the register-associated forum.
8) After 30 days, if a consensus has been reached, the proposal will be accordingly processed.
   a. If accepted then the Register Manager shall revise the Register accordingly.
   b. If rejected then the Register Manager shall notify the Submitting Organization and revise the Register accordingly.
9) If consensus is not reached after 30 days, the moderator may extend the discussion period for another 30 days or until the next TSMAD meeting.
10) If consensus has not been reached after 60 days of the above discussions then the Register Manager shall inform the Submitting Organization that the proposal shall be adjudicated at the next TSMAD meeting.
11) Results shall be disseminated to the Submitting Organization and published via the register.

Registry Owner: IHO
Registry Manager: IHB nominee
Register Owner: IHO CHRIS
Register Manager: IHB nominee
Control Body: IHO TSMAD members (as a specialized sub-group)
Submitting Organizations: IHO Member State's Hydrographic Office

Annex B (informative)

Process to become submitting organization to the Hydrographic register

- For the Hydrographic Register, only an IHO Member State's Hydrographic Office may become a submitting organization.
- The application to become a submitting organization is available via the user interface on the IHO Registry.
- The application shall contain the following:
    - Organization Name
    - Individual Name
    - Position
    - Phone Number
    - Fax Number
    - Address
    - City
    - Post Code
    - Country
    - EMAIL Address
- The register manager shall process the application and inform the applicant of approval or disproval
- The register manager shall grant appropriate access to the register

NOTE   The criteria may be different for other Registers contained within the IHO Registry

Annex C (informative)

Information model of Hydrographic Feature Data Dictionary

Disposition <<enumeration>>
+withdrawn
+accepted
+notAccepted

DecisionStatus <<enumeration>>
+pending
+tentative
+final

Register
+name: CharacterString
+operatingLanguage: RE_Locale
+contentSummary: CharacterString
+uniformResourceIdentifier: CI_OnlineResource
+dateOfLastChange: Date

SimilarityToSource <<enumeration>>
+identical
+restyled
+contextAdded
+generalization
+specialization
+unspecified

ProposalType <<enumeration>>
+addition
+clarification
+supersession
+retirement

ItemStatus <<enumeration>>
+notValid
+valid
+superseeded
+retired

RegisterItem
+itemIdentifier: Integer
+name: CharacterString
+definition: CharacterString
+camelCaseIdentifier: CharacterString
+alias: CharacterString[0..*]
+remarks: CharacterString[0..1]
+status: ItemStatus
+dateAccepted: Date[0..1]
+dateAmended: Date[0..1]

DefinitionSource
+referenceNumber: CharacterString[0..1]
+source Document: CI_Citation
+similarity: SimilarityToSource

ManagmentInfo
+decisionStatus: DecisionStatus
+proposalType: ProposalType
+submittingOrganisation: CharacterString
+proposedChange: CharacterString
+jusitification: CharacterString
+dateProposed: Date
+dateDisposed: Date
+disposition: Disposition
+decision: CharacterString
+controlBodyNotes: CharacterString[0..*]

Reference
+referenceNumber: CharacterString[0..1]
+sourceDocument: CI_Citation

EnumeratedValueType
+numericCode: Integer

AttributeType
+alphaCodeIdentifier: ACode
+dataType: AttributeDataType

FeatureType
+alphaCodeIdentifier: ACode
+useType: FeatureUseType
+distinction: ACode[0..*]

InformationType
+alphaCodeIdentifier: ACode

AssociatedAttribute

SimpleAttributeType
+lexical: Boolean
+stringLength: UnsignedInteger
+structureSpecification: CharacterString
+quantitySpecification: Quantity
+nonNegativeNumeric: Boolean
+rangeMinimum: Number
+rangeMaximum: Number
+rangeClosure: IntervalType

AttributeUsage
+cType: CardinaltyType
+c1: UnsignedInteger[0..1]
+c2: UnsignedInteger[0..1]
+ordered: Boolean[0..1]
+unique: Boolean[0..1]

AssociationRolesName

+subAttributes

ComplexAttributeType

cType = any -> [0..*]
cType = number -> [c1]
cType = range -> [c1 .. c2]
cType = openRange -> [c1 .. *]

dataType = complex

ACode
+code: Character[6]

Quantity <<enumeration>>
+length
+angle
+temperature
+...

IntervalType <<enumeration>>
+openInterval
+geLtInterval
+gtLeInterval
+closedInterval
+gtSemiInterval
+geSemiInterval
+ltSemiInterval
+leSemiInterval

AttributeDataType <<enumeration>>
+enumeration
+integer
+real
+formattedText
+text
+complex

FeatureUseType <<enumeration>>
+geographic
+meta
+cartographic
+aggregation

CardinalityType <<enumeration>>
+any
+number
+range
+openRange

Full list in document