Part 2 - Management of Registers

**Contents**

2-1 Scope .............................................................................................................................. 1

2-2 Conformance ................................................................................................................... 1

2-3 Normative references ...................................................................................................... 1

2-4 General concepts ............................................................................................................ 1

2-4.1 Registry ........................................................................................................................... 1

2-4.2 Register ........................................................................................................................... 2

2-5 Roles and responsibilities in the management of registers............................................. 2

2-5.1 Register Owner ............................................................................................................... 2

2-5.2 Register Manager ............................................................................................................ 2

2-5.3 Register User .................................................................................................................. 2

2-5.4 Domain Control Body....................................................................................................... 2

2-5.5 Executive Control Body.................................................................................................... 2

2-5.6 Submitting Organizations ................................................................................................ 3

2-5.7 Processing of Proposals.................................................................................................. 3

2-6 Process of Proposals………............................................................................................ 4

2-6.1 Process of Concept Register........................................................................................... 4

2-6.2 Process of Data Dictionary Register, Portrayal Register................................................. 5

2-6.3 Process for each step...................................................................................................... 6

2-6.4 List of Submitting Organizations...................................................................................... 7

2-6.5 Publication....................................................................................................................... 7

2-6.6 Integrity............................................................................................................................ 7

2-7 Register Schema ............................................................................................................. 7

2-7.1 Introduction...................................................................................................................... 7

2-7.2 S100\_RE\_Register.......................................................................................................... 9

2-7.3 S100\_RE\_RegisterItem................................................................................................... 9

2-7.4 RE\_ItemStatus ................................................................................................................ 10

2-7.5 S100\_RE\_ReferenceSource ........................................................................................... 11

2-7.6 RE\_SimilarityToSource ................................................................................................... 11

2-7.7 S100\_RE\_Reference ...................................................................................................... 12

2-7.8 S100\_ RE \_ManagementInfo .......................................................................................... 12

2-7.9 RE \_DecisionStatus ........................................................................................................ 13

2-7.10 S100\_ RE \_ProposalType............................................................................................... 13

Part 2 - Management of Registers

Page intentionally left blank

Part 2 - Management of Registers

**2-1 Scope**

This part of S-100 specifies procedures to be followed in 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 part describes the roles and responsibilities for the management of a registry and its registers. Specific administrative details of the IHO Geospatial Information Registry and registers is documented in IHO Publication S-99.

**2-2 Conformance**

This profile conforms to level 2 of ISO 19106:2004. The following is a brief description of the specializations and generalizations where the profile differs from ISO 19135:2005.

1) S100\_RE\_Register constrains the use of the attribute alternativeLangauges.

2) S100\_RE\_RegisterItem constrains the use of the attributes fieldOfApplication and alternativeExpression.

3) S100\_RE\_RegisterItem renames the attribute description to remarks.

4) S100\_RE\_ManagementInfo is a new class which amalgamates the classes RE\_DecisionStatus, S100\_RE\_ProposalType, S100\_RE\_SubmittingOrganization, RE\_ItemStatus and RE\_Disposition.

5) S100\_RE\_ProposalType is a new class which amalgamates the 19135 classes RE\_AdditionInformation, RE\_ClarificationInformation, RE\_AmendmentInformation and RE\_AmendmentType.

**2-3 Normative references**

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

ISO 8601:2004, Data elements and interchange formats - Information interchange – Representation of dates and times.

IHO S-99:2012, Operational Procedures for the Organization and Management of the S-100

Geospatial Information Registry.

**2-4 General concepts**

**2-4.1 Registry**

A registry is the information system on which a register is maintained.

**2-4.1.1 Registry Owner**

A Registry Owner has the authority to host the registers and establish the policy for access. The Registry Owner decides whether a proposed register shall be hosted on the registry.

**2-4.1.2 Registry Manager**

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

1) providing registry access for Register Managers, Control Bodies, and Register Users;

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

3) accepting proposals and forwarding them to all Register Managers;

4) managing the resolution of persistent URI identifiers to appropriate resources, but only if resolution services are provided on a registry server.

**2-4.2 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.

**2-5 Roles and responsibilities in the management of registers**

**2-5.1 Register Owner**

The Register Owner is an organization that:

1) Establishes one or more registers;

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

3) May appoint another organization to serve as the register manager;

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

**2-5.2 Register Manager**

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

1) Coordinating with other Register Managers, Submitting Organizations, the related

Control Body, Register Owner and the Registry Manager;

2) Maintaining items within the register;

3) Maintain and publish a List of Submitting Organizations;

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

5) 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.

A Register Manager may manage multiple registers.

**2-5.3 Register User**

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

**2-5.4 Domain Control Body**

A Domain 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.

**2-5.5 Executive Control Body**

A Executive Control Body (ECB) shall consist of a representative of each of the domain. Executive Control Body will monitor and advise the Register Manager(s) and act as arbiters for any decisions or disputes in the Register process. In the event that a resolution cannot be achieved, the ECB may ask for the decision of the HSSC.

**2-5.6 Submitting Organizations**

**2-5.6.1 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.

**2-5.7 Processing of Proposals**

**2-5.7.1 Introduction**

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

**2-5.7.2 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.

**2-5.7.3 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.

**2-5.7.4 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.

**2-5.7.5 Retirement of registered items**

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

**2-6 Process of Proposals**

**2-6.1 Process of Concept Register**

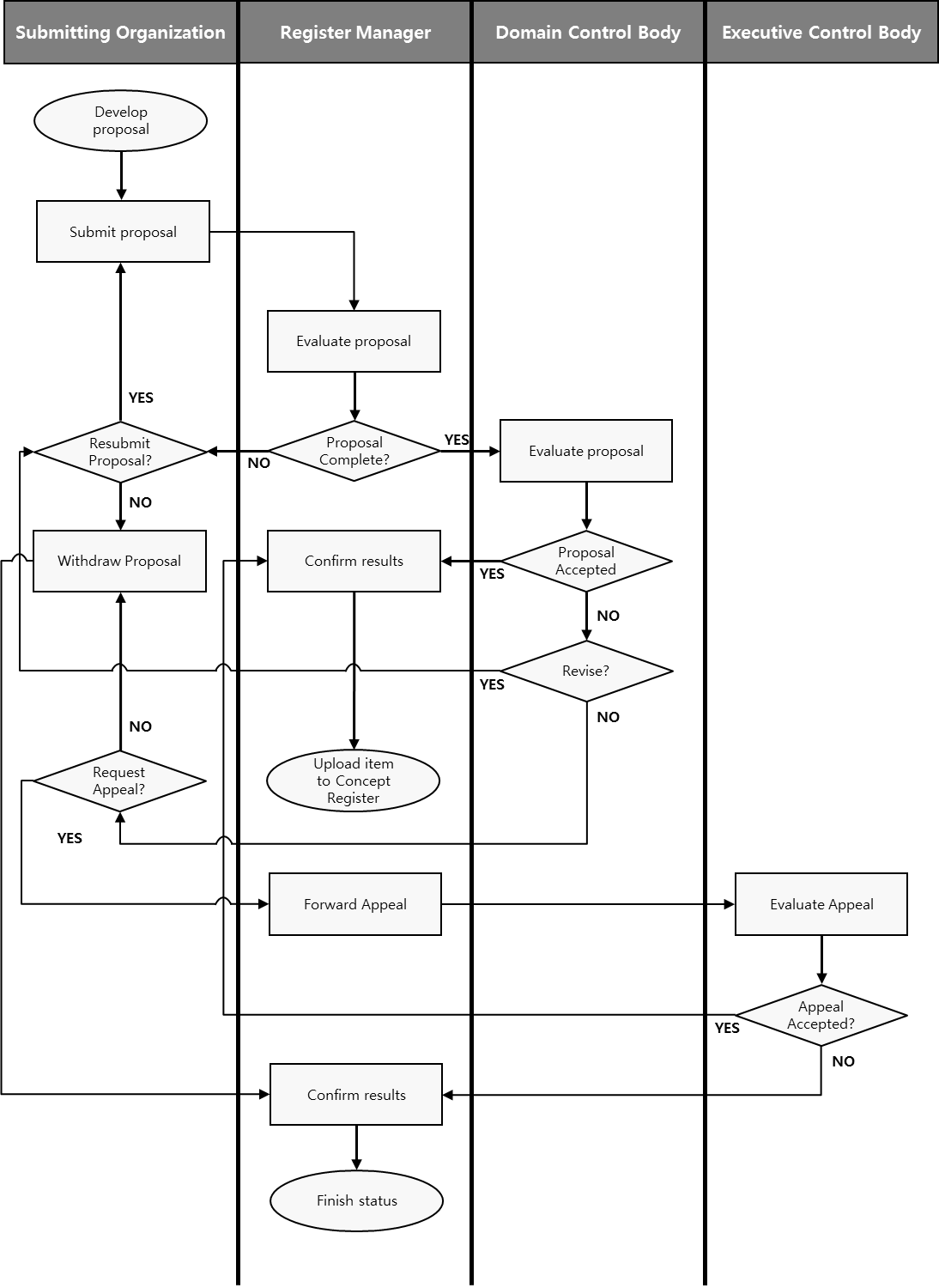


Figure 2-1 – Proposal process of Concept Register

**2-6.2 Process of Data Dictionary Register, Portrayal Register**

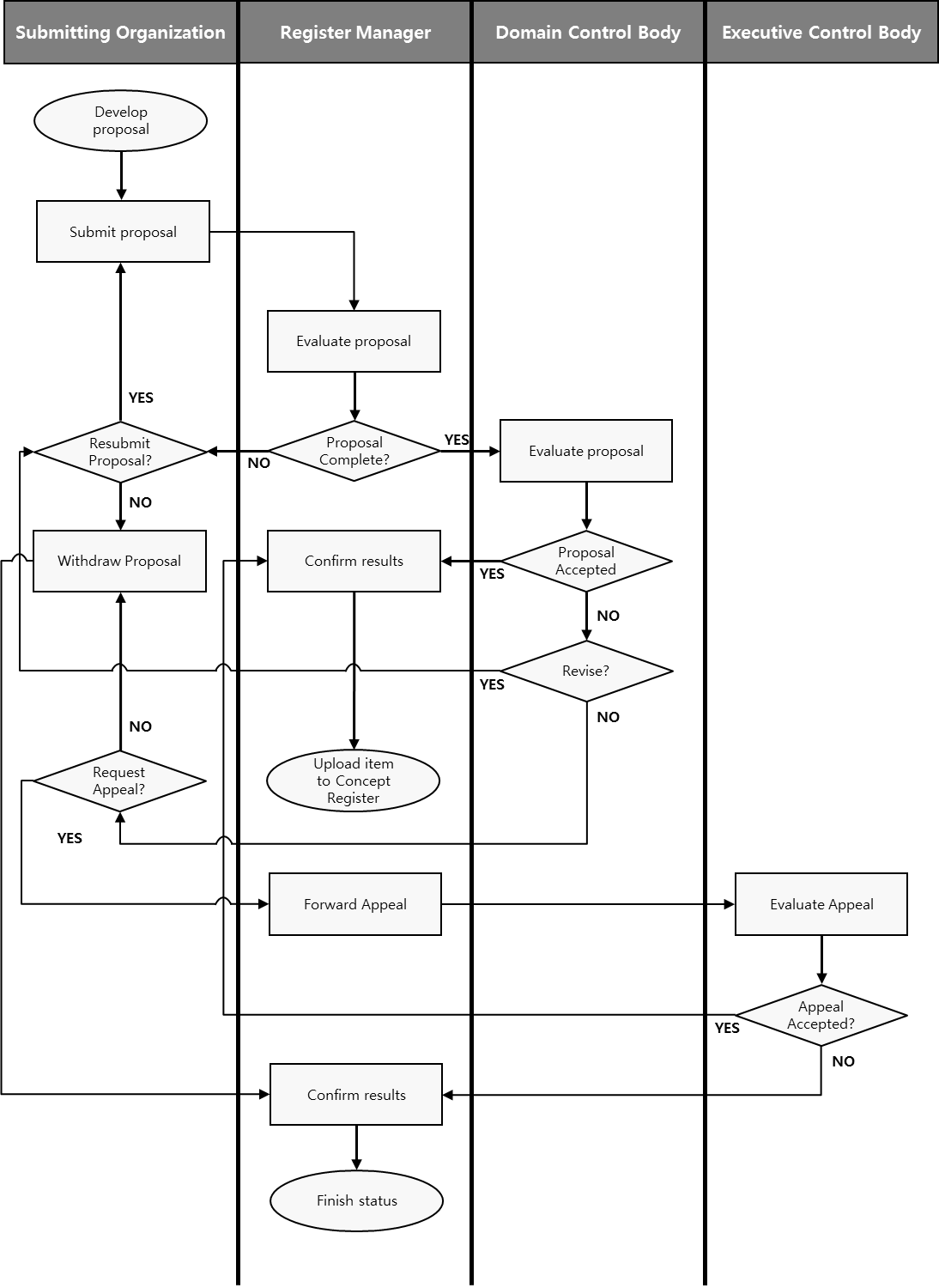


Figure 2-2 – Proposal process of Data Dictionary, Portrayal Register

**2-6.3 Process for each step**

**2-6.3.1 Approval process**

The process for determining the acceptability of proposals is illustrated in Figure 2-2. It shall be completed within a time period specified by the Register Owner.

The Register Manager shall ensure the following:

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

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

a) Assign an *itemIdentifier* to the new or superseding item;

b) Set the *status* of the item to ‘notValid', and forward the proposal to the

Control Body.

The Control Body shall:

1) 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:

a) The specification of the item is incomplete or incomprehensible;

b) An identical or very similar item already exists in the register or in another register of this registry;

c) The proposed item does not belong to an item class included in this register;

d) The proposed item does not fall within the scope of this Register; or e) The justification for the proposal is inadequate.

2) Inform the Register Manager of the decision, and the rationale for the decision, within a time limit specified by the Register Owner.

The Register Manager shall:

1) 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

2) Inform the Submitting Organization of the results of processing a proposal.

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; and

3) Set the register item *status* to ‘valid', 'superseded', or 'retired', as appropriate.

If the decision of the Control Body is negative, the Register Manager shall:

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; and

2) Inform the Submitting Organization of the deadline for appealing the decision of the

Control Body.

Submitting Organizations shall:

1) 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

2) 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.

**2-6.3.2 Withdrawal**

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

The Register Manager shall:

1) Change the proposal management *status* from ‘pending’ to ‘final'; and

2) Change the proposal management *disposition* to ‘withdrawn’ and the value for

*dateDisposed* to the current date.

**2-6.3.3 Appeals**

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, 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 2-3.

The Submitting Organization shall:

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

2) If not, submit an appeal to the Register Manager.

The Register Manager shall:

1) Forward the appeal to the Register Owner.

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.

The Register Owner shall:

1) Process the appeal in conformance with its established procedures;

2) Decide whether to accept or reject the appeal; and

3) Return the result to the Register Manager.

The Register Manager shall:

1) Update the proposal management record fields *disposition* and *dateDisposed*;

2) Update the register item *status*; and

3) Provide the results of the decision to the Control Body and to the Submitting

Organization.

The Submitting Organization shall:

1) Make the results of the appeal known within their community or organization.

**2-6.2 List of Submitting Organizations**

The Register Manager shall maintain and publish a register-specific list of all qualified Submitting Organizations 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.

**2-6.3 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.

**2-6.4 Integrity**

The Register Manager shall ensure that, for each Register being managed:

1) All aspects of the registration process are handled in accordance with good business practice;

2) The content of the register is accurate; and

3) Only authorised persons can make changes to the Register content.

The Registry Manager shall ensure the security and integrity of the Registry using IT best practices.

**2-7 Register Schema**

**2-7.1 Introduction**

The schema specified in this clause describes the structure of an IHO Geospatial Information

Register.

Information about the Register and items in the Register shall be:

1) Accessible through an on-line interface to the Register;

2) Included in any copy of the Register; and

3) Included in any information package about the Register.

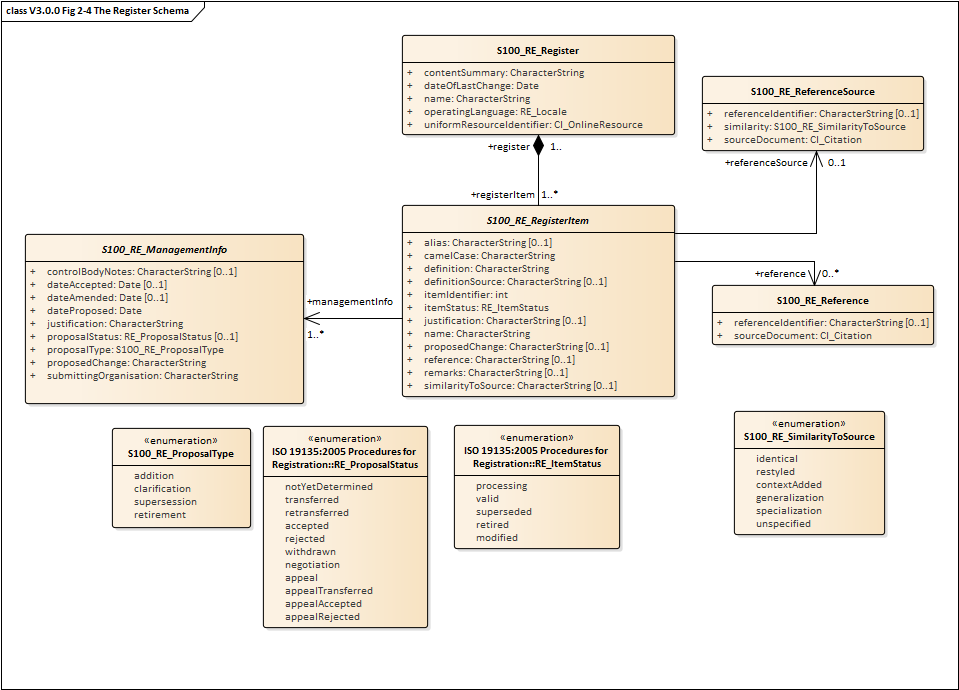


Figure 2-4 – The register schema

10 Part 2 - Management of Registers

**2-7.2 S100\_RE\_Register**

The class S100\_RE\_Register specifies information about the Register itself.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Data Type** | **Remarks** |
| Class | S100\_RE\_Register |  | - | - |  |
| Attribute | name | The name of the Register | 1 | CharacterString | Unique within the Registry |
| Attribute | operatingLanguage | The language used in this Register | 1 | RE\_Locale |  |
| Attribute | contentSummary | Summary of the content | 1 | CharacterString |  |
| Attribute | uniformResourceIdentifier | The link to the interface of the Register in the Internet | 1 | CI\_OnlineResource |  |
| Attribute | dateOfLastChange | The date when the last change was made to this Register | 1 | Date |  |
| Association | registerItem | The items of the Register | 1..\* | S100\_RE\_RegisterItem |  |

**2-7.3 S100\_RE\_RegisterItem**

The class S100\_RE\_RegisterItem carries the characteristics that are common to all types of registered items. Domain specific extensions may be added in the appropriate part of S-100; for example Part 2a – Feature Concept Dictionary.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Data Type** | **Remarks** |
| Class | S100\_RE \_RegisterItem |  | - | - | Class is abstract |
| Attribute | itemIdentifier | Each item has its own unique identifier in a Register | 1 | Integer |  |
| Attribute | name | Succinct expression of the item concept it denotes | 1 | CharacterString |  |
| Attribute | definition | Shall be a precise statement of the nature, properties, scope, or essential qualities of the concept as realized by the item. | 1 | CharacterString |  |
| Attribute | remarks | Supplementary information | 0..1 | CharacterString | Remarks |

Part 2 - Management of Registers 11

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Data Type** | **Remarks** |
| Attribute | itemStatus | The state in which a registered item exists | 1 | RE\_ItemStatus |  |
| Attribute | Alias | 별칭 | 0..1 | CharacterString |  |
| Attribute | camelCase | Nam의 낙타표기법 | 1 | CharacterString |  |
| Attribute | DefinitionSource | 정의 참고문서 | 0..1 | CharacterString |  |
| Attribute | Justification | 변경이유 | 0..1 | CharacterString |  |
| Attribute | proposedChange | 변경내용 | 0..1 | CharacterString |  |
| Attribute | Reference | 참고 | 0..1 | CharacterString |  |
| Attribute | similarityToSource | 참고문서 | 0..1 | CharacterString |  |
| Association | register | The Register that contains the item | 1 | S100\_RE\_Register |  |
| Association | referenceSource | The source information the item definition was taken from. | 0..1 | S100\_RE\_ReferenceSourc e |  |
| Association | reference | Reference to other relevant standards or documents | 0..\* | S100\_RE\_Reference | For example INT1 or M4 |
| Association | managmentInfo | Sets of information describing the management of the item in the Register | 1..\* | S100\_RE\_ManagmentInfo |  |

**2-7.4 RE\_ItemStatus**

The enumeration RE\_ItemStatus identifies the registration status of a register item.

|  |  |  |  |
| --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Remarks** |
| Enumeration | RE\_ItemStaus |  |  |
| Literal | Processing | 아이템이 결재 진행중인 상태 |  |
| Literal | Valid | 아이템이 결재승인된 상태 |  |
| Literal | superseded | 아이템이 다른 아이템으로 대체된 상태 |  |
| Literal | retired | A decision has been made that the item is no longer recommended for use. It has not been superseded by another item |  |
| Literal | Modified | 아이템이 수정되어 사용되지 않는 상태 |  |

**2-7.5 S100\_RE\_ReferenceSource**

The class S100\_RE\_ReferenceSource specifies information about the source of a register item taken from an external document or register.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Data Type** | **Remarks** |
| Class | S100\_RE\_ReferenceSourc e |  | - | - |  |
| Attribute | referenceIdentifier | An identifier of the place in the source document that is referenced | 0..1 | CharacterString |  |
| Attribute | sourceDocument | The source document. | 1 | CI\_Citation |  |
| Attribute | similarity | Indicates how the definition is related to the source document | 1 | S100\_RE\_SimilarityToSou rce |  |

**2-7.6 S100\_RE\_SimilarityToSource**

The enumeration S100\_RE\_SimilarityToSource identifies the type of change that has been made to an item specification relative to an item specification in an external source.

|  |  |  |  |
| --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Remarks** |
| Enumeration | S100\_RE\_SimilarityToSou rce |  |  |
| Literal | identical | No change has been made to the definition |  |
| Literal | 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 |  |
| Literal | contextAdded | The definition includes information about its context that is not explicit in the specification in the external source |  |
| Literal | generalization | The definition of the register item has been generalized to have a broader meaning than the item specified in the external source |  |
| Literal | specialization | The definition of the register item has been specialized to have a narrower meaning than the item specified in the external source |  |
| Literal | unspecified | The nature of the differences between the register item and the similar item in the external source is unspecified |  |

**2-7.7 S100\_RE\_Reference**

The class S100\_RE\_Reference specifies information about the source and/or lineage of a specific register item derived from an external document or Register.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Data Type** | **Remarks** |
| Class | S100\_RE\_Reference |  | - | - |  |
| Attribute | referenceIdentifier | An identifier of the place in the source document that is referenced | 0..1 | CharacterString |  |
| Attribute | sourceDocument | The source document | 1 | CI\_Citation |  |

**2-7.8 S100\_ RE \_ManagementInfo**

The class S100\_RE\_ManagementInfo specifies the management record of a register item.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Data Type** | **Remarks** |
| Class | S100\_RE\_ManagmentInfo |  | - | - |  |
| Attribute | proposalType | The type of the proposal | 1 | S100\_RE\_ProposalType |  |
| Attribute | submittingOrganisation | The proposal’s sponsor | 1 | CharacterString |  |
| Attribute | proposedChange | The text of the proposed change | 1 | CharacterString |  |
| Attribute | justification | Primary reason for the proposal including how it is proposed to be used | 1 | CharacterString |  |
| Attribute | dateAccepted | Date the proposal was accepted | 0..1 | Date |  |
| Attribute | dateProposed | Date the proposal was made | 1 | Date |  |
| Attribute | dateAmended | Date the proposal was adjudicated | 1 | Date |  |
| Attribute | proposalStatus | Provides values for describing the disposition of a proposal to add or modify a register item | 1 | RE\_ProposalStatus |  |
| Attribute | controlBodyNotes | Supplementary management information | 0..\* | CharacterString |  |

**2-7.9 S100\_ RE \_ProposalType**

The enumeration S100\_RE\_ProposalType species the type of proposal for a register item.

|  |  |  |  |
| --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Remarks** |
| Enumeration | S100\_RE\_ProposalType |  |  |
| Literal | Addition | The item is to be added to the Register |  |
| Literal | Clarification | A non-substantive change to an item in the Register |  |
| Literal | Supersession | The item has been superseded by another item and is no longer recommended for use. |  |
| Literal | Retirement | A decision has been made that the item is no longer recommended for use. It has not been superseded by another item |  |

**2-7.10 RE \_ProposalStatus**

The enumeration RE\_ProposalStatus specifies the disposition of a proposal to add or change a register item.

|  |  |  |  |
| --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Remarks** |
| Enumeration | RE\_ProposalStatus |  |  |
| Literal | notYetDetermined | The Submitting Organization has submitted the proposal |  |
| Literal | transferred | The Register Manager requests Domain Control Body to review the proposal |  |
| Literal | retransferred | The Register Manager requests Submitting Organization to supplement the proposal |  |
| Literal | Accepted | The Domain Control Body decided to accept the proposal. |  |
| Literal | rejected | The Domain Control Body decided not to accept the proposal. |  |
| Literal | withdrawn | The Submitting Organization has withdrawn the proposal. |  |
| Literal | negotiation | The Domain Control Body requests Submitting Organization to supplement the proposal |  |
| Literal | appeal | The Submitting Organization appeals to Register Manager |  |
| Literal | appealTransferred | The Register Manager transfers the appealed proposal to Executive Control Body |  |
| Literal | appealAccepted | The Executive Control Body accepts appealed proposal of Submitting Organization |  |
| Literal | appealRejected | The Executive Control Body rejects appealed proposal of Submitting Organization |  |

Page intentionally left blank

18 Part 2 - Management of Registers

**S-100 – Part 2a**

**Concept Registers**

Part 2a - Feature Concept Dictionary Registers

Page intentionally left blank

Part 2a - Feature Concept Dictionary Registers

**Contents**

2a-1 Scope ..................................................................................................................... 1

2a-2 Normative references............................................................................................. 1

2a-3 General concepts ................................................................................................... 1

2a-3.1 Register .................................................................................................................. 1

2a-3.2 Concept Register …............................................................................................... .1

2a-4 IHO Concept Register……………........................................................................... 1

2a-4.1 Types of registered items....................................................................................... 1

2a-4.2 Data model of a Feature Concept Dictionary......................................................... 2

2a-4.2.1 UML Model ............................................................................................................. 2

2a-4.2.2 S100\_RE\_Register................................................................................................ 4

2a-4.2.3 S100\_CD\_RegisterItem......................................................................................... 4

2a-4.2.4 RE\_ItemStatus....................................................................................................... 4

2a-4.2.5 S100\_Concept……………….................................................................................. 5

Part 2a - Feature Concept Dictionary Registers

Page intentionally left blank

Part 2a - Feature Concept Dictionary Registers

**2a-1 Scope**

The IHO Registry will contain a number of Registers, many of which will be based on Concept Register (CR). A Concept Register specifies hydrographic basic information (definitions, camelcase, etc.) 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 is the primary resource where all registered concepts are stored and managed with stateless i.e. items should not be classified as feature types, information types, attributes, enumerated values or codelists. Each concept should be included into only one instance and should be the single/common source from which data dictionary concepts will be derived and used to model features, attributes etc.

**2a-2 Normative references**

The following referenced documents are required 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 amendments) applies.

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

ISO 19126:2009, Geographic Information – Feature concept dictionaries and registers.

ISO 8601:2004, Data elements and interchange formats - Information interchange - Representation of dates and times.

RFC 3986, *Uniform Resource Identifier (URI): Generic Syntax*. T. Berners-Lee, R. Fielding, L. Masinter. Internet Standard 66, IETF. URL: <http://www.ietf.org/rfc/rfc3986.txt>or

[http://www.rfc-editor.org/info/std66.](http://www.rfc-editor.org/info/std66)

RFC 2141, *URN Syntax*. R. Moats. IETF RFC 2141, May 1997. URL: http://www.rfc- editor.org/info/rfc2141.

**2a-3 General concepts**

**2a-3.1 Register**

As described in Part 2, 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 that specific point in time.

**2a-3.2 Concept Register**

A Concept Register specifies independent sets of primary resource for basic information that may be used to describe geographic, hydrographic, and metadata information. A Feature Concept Dictionary may use concept of Concept Register to define features. Unlike a Data Dictionary, a Concept Register does not make associations or classified as feature types, information types, attribute types.

The Concept Register defines the basic common information (name, definition, camel case, etc.) corresponding to the concept, and the registered concept can be utilized and registered as a feature referring to the Data Dictionary Register.

**2a-4 IHO Concept Register**

**2a-4.1 Types of registered items**

The following things are the required information for submitting a Concept:

1) Name

2) Alias

3) Camel Case

4) Definition

5) Reference

6) Definition Source

7) Similarity to Source

8) Remarks

9) Proposed Change

10) Justification

**2a-4.2 Data model of a Concept Register**

**2a-4.2.1 UML Model**

The following figure shows the information model of the hydrographic Concept Register:

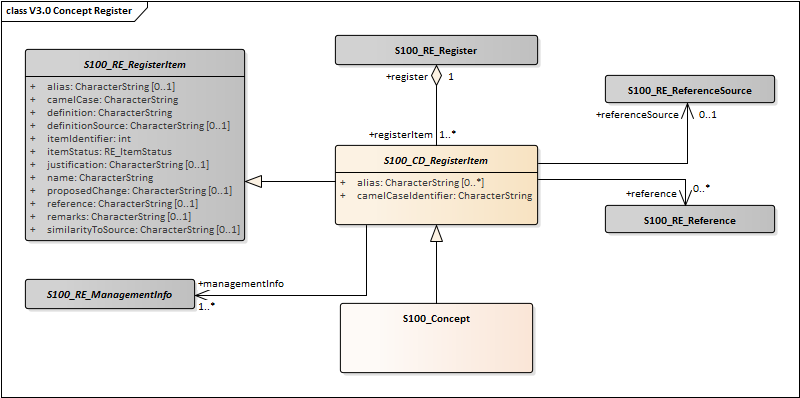
****

Figure 2-5 – The Concept Register UML

**2a-4.2.2 S100\_RE\_Register**

The class S100\_RE\_Register models a register in a feature concept dictionary. Further details can be found in S-100 Part 2.

**2a-4.2.3 S100\_CD\_RegisterItem**

The class S100\_CD\_RegisterItem is a specialization of the class S100\_RE\_RegisterItem and carries the characteristics that are common to all types of registered items listed in clause 2a-4.1.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Data Type** | **Remarks** |
| Attribute | camelCaseIdentifier | Identifier of the item using camelCase notation. | 1 | CharacterString | See below |
| Attribute | alias | Equivalent name(s) used for the item | 0..\* | CharacterString |  |

The camelCaseIdentifier 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.

3) Conform to ISO 646 with uppercase characters A-Z, 0-9,”\_”; and lowercase characters a-z.

4) Features and Information types must begin with uppercase A-Z.

5) Attributes and enumerated values must begin with lowercase a-z.

Example 1 BeaconCardinal is the Camel Case identifier for the feature Beacon Cardinal

Example 2 categoryOfLandmark is the Camel Case identifier for the attribute Category of Landmark

**2a-4.2.4 RE\_ItemStatus**

The class RE\_ItemStatus identifies the registration status of the S100\_CD\_RegisterItem. Further details can be found in S-100 Part 2.

**2-a-4.2.5 S100\_Concept**

The class S100\_Concept identifies the required information for Concept Register. Further details can be found in S-100 Part 2.

Page intentionally left blank

**S-100 – Part 2b**

**Data Dictionary Register**

Part 2a - Feature Concept Dictionary Registers

Page intentionally left blank

Part 2a - Feature Concept Dictionary Registers

**Contents**

2b-1 Scope ..................................................................................................................... 1

2b-1.1 Conformance.......................................................................................................... 1

2b-2 Normative references............................................................................................. 1

2b-3 General concepts ................................................................................................... 2

2b-3.1 Register .................................................................................................................. 2

2b-3.2 Data Dictionary ...................................................................................................... 2

2b-3.3 Feature Catalogue ................................................................................................. 2

2b-4 IHO Feature Concept Dictionary ............................................................................ 2

2b-4.1 Types of registered items....................................................................................... 2

2b-4.2 Data model of a Data Dictionary……………........................................................... 3

2b-4.2.1 UML Model ............................................................................................................. 3

2b-4.2.2 S100\_RE\_Register ................................................................................................ 4

2b-4.2.3 S100\_CD\_RegisterItem ......................................................................................... 4

2b-4.2.4 RE\_ItemStatus ....................................................................................................... 4

2b-4.2.5 S100\_CD\_FeatureConcept.................................................................................... 5

2b-4.2.6 S100\_CD\_FeatureUseType................................................................................... 5

2b-4.2.7 S100\_CD\_AttributeConcept................................................................................... 5

2b-4.2.8 S100\_CD\_SimpleAttributeConcept........................................................................ 6

2b-4.2.9 S100\_CD\_QuantitySpecification............................................................................ 6

2b-4.2.10 S100\_CD\_AttributeValueType ............................................................................... 8

2b-4.2.11 S100\_CD\_AttributeConstraints .............................................................................. 9

2b-4.2.12 S100\_CD\_ComplexAttributeConcept .................................................................... 9

2b-4.2.13 S100\_CD\_AttributeUsage.................................................................................... 10

2b-4.2.14 S100\_CD\_EnumeratedValueConcept ................................................................. 10

2b-4.2.15 S100\_CD\_InformationConcept ............................................................................ 10

2b-4.2.16 S100\_CD\_AlphaCode.......................................................................................... 11

2b-4.2.17 S100\_RE\_ReferenceSource................................................................................ 12

2b-4.2.18 S100\_RE\_Reference ........................................................................................... 12

2b-4.2.19 S100\_RE\_ManagementInfo................................................................................. 12

Appendix 2b – A Example of a complex attribute (informative) .............................................. 13

Part 2a - Feature Concept Dictionary Registers

Page intentionally left blank

Part 2a - Feature Concept Dictionary Registers

**2b-1 Scope**

The IHO Registry will contain a number of Registers, many of which will be Data Dictionary (DD) Register. A 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 Part describes the content of the Register and 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 Part specifies elements of information that are necessary to provide identification and definitions to the registered items.

**2b-1.1 Conformance**

This profile conforms to conformance class 2 of ISO 19106:2004. The following is a brief description of the specializations and generalizations where the profile differs from ISO

19126:2008.

1) A new class, S100\_CD\_InformationConcept is introduced.

2) New classes, S100\_CD\_FeatureBinding, S100\_CD\_InformationBinding and

S100\_FC\_AttributeBinding are introduced.

3) A new class, S100\_CD\_AttributeConstraints is introduced.

4) The class FC\_FeatureAttribute is specialized to be the abstract class

S100\_CD\_Attribute.

5) New classes, S100\_CD\_SimpleAttributeConcept and

S100\_CD\_ComplexAttributeConcept are introduced.

6) A new class, S100\_CD\_InformationRole is introduced.

7) The classes CD\_InheritanceRelation, CD\_FeatureOperation CD\_Binding, CD\_Constraint and CD\_BoundFeatureAttribute are not used.

**2b-2 Normative references**

The following referenced documents are required 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 amendments) applies.

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

ISO 19126:2009, Geographic Information – Feature concept dictionaries and registers.

ISO 8601:2004, Data elements and interchange formats - Information interchange - Representation of dates and times.

RFC 3986, *Uniform Resource Identifier (URI): Generic Syntax*. T. Berners-Lee, R. Fielding, L. Masinter. Internet Standard 66, IETF. URL: <http://www.ietf.org/rfc/rfc3986.txt>or

[http://www.rfc-editor.org/info/std66.](http://www.rfc-editor.org/info/std66)

RFC 2141, *URN Syntax*. R. Moats. IETF RFC 2141, May 1997. URL: http://www.rfc- editor.org/info/rfc2141.

Part 2a - Feature Concept Dictionary Registers 1

**2b-3 General concepts**

**2b-3.1 Register**

As described in Part 2, 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 that specific point in time.

**2b-3.2 Data Dictionary**

A Data Dictionary specifies independent sets of definitions of features, attributes, enumerated values, and information types that may be used to describe geographic, hydrographic, and metadata information. A Data Dictionary may be used to develop a Feature Catalogue. Unlike a Feature Catalogue, a Data Dictionary does not make associations or 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.

**2b-3.3 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 Data Dictionaries and binds them together. In addition, constraints, units of measurement and format description of attributes can be specified. Feature Catalogues are described in detail in S-100 Part 5.

**2b-4 IHO Data Dictionary**

**2b-4.1 Types of registered items**

The following are types of items that may be registered:

1) Feature Type – abstraction of real world phenomena.

2) Information Type – an identifiable object that contains attributes, associations to other information concepts, but no spatial information.

3) Attribute Type – characteristic of a feature concept.

4) Complex Type – a combination of types, for instance a combination of measure types and units of measurement.

5) Enumerated Value Type – one of a set of mutually exclusive values constituting the domain of an attribute.

6) Codelist Value Type– an open enumeration, or the identifier of a vocabulary (mapping between codes, labels and definitions).

2 Part 2a - Feature Concept Dictionary Registers

**2b-4.2 Data model of a Data Dictionary**

**2b-4.2.1 UML Model**

The following figure shows the information model of the hydrographic Data Dictionary:

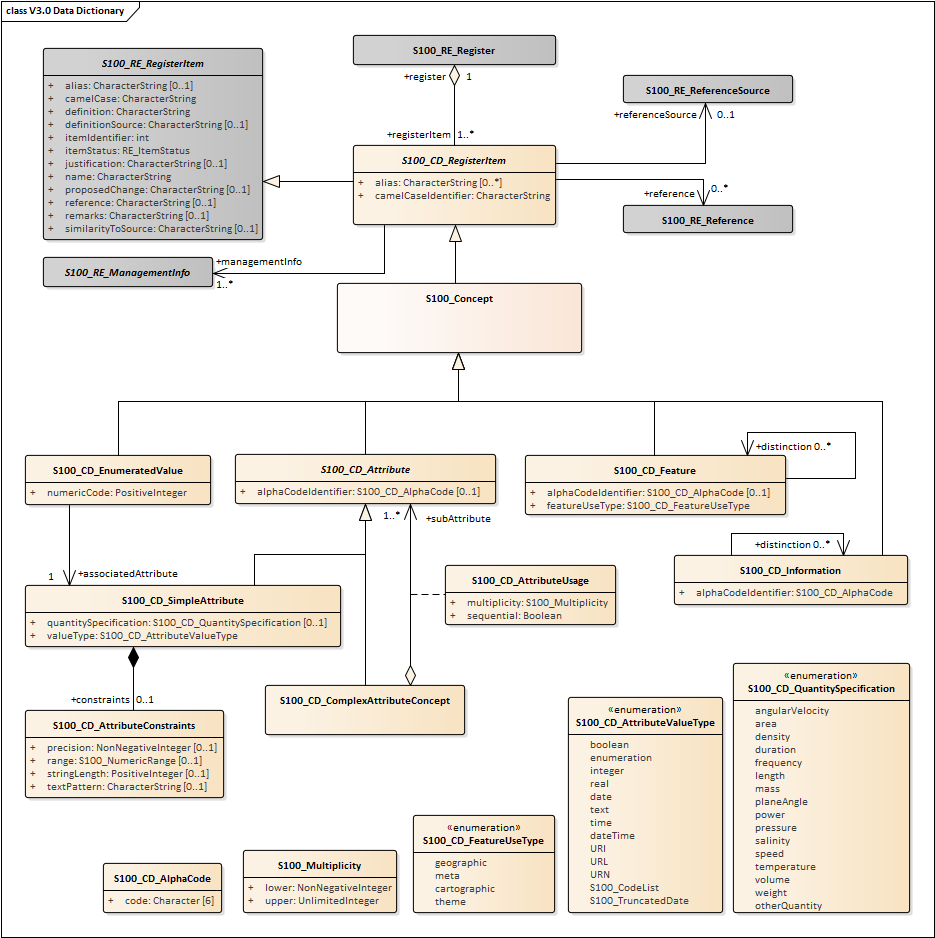


Figure 2b-1 – Feature Concept Dictionary

Part 2a - Feature Concept Dictionary Registers 3

**2b-4.2.2 S100\_RE\_Register**

The class S100\_RE\_Register models a register in a feature concept dictionary. Further details can be found in S-100 Part 2.

**2b-4.2.3 S100\_CD\_RegisterItem**

The class S100\_CD\_RegisterItem is a specialization of the class S100\_RE\_RegisterItem and carries the characteristics that are common to all types of registered items listed in clause 2a-4.1.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Data Type** | **Remarks** |
| Attribute | camelCaseIdentifier | Identifier of the item using camelCase notation. | 1 | CharacterString | See below |
| Attribute | alias | Equivalent name(s) used for the item | 0..\* | CharacterString |  |

The camelCaseIdentifier 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.

3) Conform to ISO 646 with uppercase characters A-Z, 0-9,”\_”; and lowercase characters a-z.

4) Features and Information types must begin with uppercase A-Z.

5) Attributes and enumerated values must begin with lowercase a-z.

Example 1 BeaconCardinal is the Camel Case identifier for the feature Beacon Cardinal

Example 2 categoryOfLandmark is the Camel Case identifier for the attribute Category of Landmark

**2b-4.2.4 RE\_ItemStatus**

The class RE\_ItemStatus identifies the registration status of the S100\_CD\_RegisterItem. Further details can be found in S-100 Part 2.

**2b-4.2.5 S100\_Concept**

The class S100\_Concept. Further details can be found in S-100 Part 2.

4 Part 2a - Feature Concept Dictionary Registers

**2b-4.2.5 S100\_CD\_FeatureConcept**

This class is derived from S100\_CD\_RegisterItem. It defines the following additional properties:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Data Type** | **Remarks** |
| Class | S100\_CD\_FeatureConcept | A feature type in a Feature Concept Dictionary | - | - | Derived from S100\_Concept |
| Attribute | featureUseType | The intended use of a feature type | 1 | S100\_CD\_FeatureUseType |  |
| Attribute | alphaCodeIdentifier | Abbreviation designating the feature type | 0..1 | S100\_CD\_AlphaCode | See below |
| Association role | distinction | References to feature types that this feature type is distinct from | 0..\* | S100\_CD\_FeatureConcept |  |
| Association | conceptReference | Refer to S100\_Concept as base-class | 1 | S100\_Concept |  |

**2b-4.2.6 S100\_CD\_FeatureUseType**

|  |  |  |  |
| --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Remarks** |
| Enumeration | S100\_CD\_FeatureUseType | Categories of feature types |  |
| Literal | geographic | carries the descriptive characteristics of a real world entity |  |
| Literal | meta | Delineates geographic location where meta information is applicable” distinct from an Information Type which carries information related to features which are related. |  |
| Literal | cartographic | carries information about the cartographic representation  (including text) of a real world entity |  |
| Literal | theme | Grouping features thematically. |  |

**2b-4.2.7 S100\_CD\_AttributeConcept**

Attributes may either be simple or complex. A simple attribute carries a specific value such as a date. A complex attribute is an aggregation of other attributes either simple or complex. Examples of complex attributes are in Appendix 2a-A. This class is derived from S100\_CD\_RegisterItem and describes the common characteristics of all attribute types.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Data Type** | **Remarks** |
| Class | S100\_CD\_AttributeConcept | Base class of all attribute types in a Feature  Concept Dictionary | - | - | Derived from S100\_Concept |
| Attribute | alphaCodeIdentifier | Abbreviation designating the attribute type | 0..1 | S100\_CD\_AlphaCode | See below |
| Association | conceptReference | Refer to S100\_Concept as base-class | 1 | S100\_Concept |  |

**2b-4.2.8 S100\_CD\_SimpleAttributeConcept**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult.** | **Data Type** | **Remarks** |
| Class | S100\_CD\_SimpleAttribute  Concept | A simple attribute type in a Feature Concept  Dictionary | - | - | Derived from  S100\_CD\_AttributeConcept |
| Attribute | valueType | Describes representation, interpretation and structure of values | 1 | S100\_CD\_AttributeValueType | See below |
| Attribute | quantitySpecification | Specification of the quantity, for example length, volume, depth, weight etc. | 0..1 | S100\_CD\_QuantitySpecification |  |
| Association | constraints | Constraints of the attribute type | 0..1 | S100\_CD\_AttributeConstraints | Must be consistent with dataType |

If the *valueType* is S100\_Codelist exactly one of the following must be true:

1) There is an associated S100\_RE\_Reference with the namespace of a dictionary that is listed in the GI Register.

2) There is at least one S100\_CD\_EnumeratedValueConcept associated to the attribute concept.

Condition 1 identifies the dictionary for codelists of type “open dictionary” or “closed dictionary”. Condition 2 provides the enumerated value(s) for codelists of type “open enumeration”. The precise codelist type is determined in individual Product Specifications.

**2b-4.2.9 S100\_CD\_QuantitySpecification**

|  |  |  |  |
| --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Remarks** |
| Enumeration | S100\_CD\_QuantitySpecification | Types of quantity measures | Adapted from ISO 19103 Measure Types |
| Literal | angularVelocity | The instantaneous rate of change of angular displacement with time | From ISO 19103 |
| Literal | area | The measure of the physical extent of any two-dimensional geometric object | From ISO 19103 |
| Literal | density | Mass per unit volume; number per unit area. Also: specific gravity (S-32). Density of soundings is the intervals between lines of sounding and soundings in the same line (S-32) | “Density” can be used in different senses, the unit of measure and attribute definition must make it clear which is intended |
| Literal | duration | Interval of time |  |
| Literal | frequency | Number of vibrations or cycles per unit time | IHO S-32 |
| Literal | length | The longest dimension of an object; distance measured along a line or curve |  |
| Literal | mass | A numerical measure of the inertia of an object; the quantity of matter which a body contains, irrespective of its bulk or volume |  |
| Literal | planeAngle | The amount of rotation needed to bring one line or plane into coincidence with another, generally measured in radians or degrees | From ISO 19103 “angle” |

|  |  |  |  |
| --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Remarks** |
| Literal | power | Rate of doing work or transferring energy; magnification | S-32 refers “power” to “magnifying power: the ratio of the apparent length of a linear dimension as seen through an optical instrument to that seen by the unaided eye”. The unit of measure and attribute definition must make it clear which sense is intended |
| Literal | pressure | Force per unit area |  |
| Literal | salinity | A measure of the quantity of dissolved salts | IHO S-32 (abbrev.) |
| Literal | speed | Rte of change of position with time | Usually calculated using the simple formula, the change in position during a given time interval. Speed is a scalar physical quantity, having magnitude but not direction. Contrast to “velocity” which is a vector quantity having both magnitude and direction. (Adapted from ISO 19103 “velocity”) |
| Literal | temperature | The intensity or degree of heat | IHO S-32 |
| Literal | volume | The measure of the physical space of any 3-D geometric object | From ISO 19103 |
| Literal | weight | The force experienced by an object due to gravity |  |
| Literal | otherQuantity | A quantity different from the other literals of this enumeration |  |

**2b-4.2.10 S100\_CD\_AttributeValueType**

|  |  |  |  |
| --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Remarks** |
| Enumeration | S100\_CD\_AttributeValueType | Value types of simple attributes |  |
| Literal | boolean | True or False |  |
| Literal | enumeration | List of predetermined values that can be expanded and contracted |  |
| Literal | integer | Numeric value with defined range, units and format |  |
| Literal | real | Floating point number |  |
| Literal | text | A sequence of characters |  |
| Literal | date | Character encoding shall follow the format for date as specified by ISO 8601 |  |
| Literal | time | Character encoding shall follow the format for time as specified by ISO 8601 |  |
| Literal | dateTime | Character encoding shall follow the format for date and time as specified by ISO 8601 |  |
| Literal | URI | Character encoding shall follow the format for URI as specified by RFC 3986 |  |
| Literal | URL | Character encoding shall follow the format for URL as specified by RFC 3986 |  |
| Literal | URN | Character encoding shall follow the format for URN as defined by RFC 2141 |  |
| Literal | S100\_CodeList | Open enumeration or identifier of entry in a vocabulary |  |
| Literal | S100\_TruncatedDate | Truncated format for date |  |

**2b-4.2.11 S100\_CD\_AttributeConstraints**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult.** | **Data Type** | **Remarks** |
| Class | S100\_CD\_AttributeConstraints | Constraints of a simple attribute | - | - |  |
| Attribute | stringLength | Shall be represented as a positive integer (that is, greater than zero) that specifies the maximum number of characters that may be assigned to the text attribute type. If not specified, then the text length shall be unconstrained | 0..1 | PositiveInteger |  |
| Attribute | textPattern | 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. This shall be achieved by using a regular expression. W3C XML Standard Part 2 Appendix F (Regular Expressions) shall be used to define text patterns in this standard | 0..1 | CharacterString |  |
| Attribute | range | Specifies the range of allowed numeric values | 0..1 | S100\_NumericRange |  |
| Attribute | precision | Specifies the precision of a real number | 0..1 | NonNegativeInteger |  |

**2b-4.2.12 S100\_CD\_ComplexAttributeConcept**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Data Type** | **Remarks** |
| Class | S100\_CD\_ComplexAttributeC  oncept | A complex attribute type in a Feature Concept  Dictionary | - | - | Derived from  S100\_CD\_AttributeConcept |
| Association | subAttribute | References the sub attribute | 1..\* | S100\_CD\_AttributeConcept | Characteristics defined by  S100\_CD\_AttributeUsage |

**2b-4.2.13 S100\_CD\_AttributeUsage**

This class specifies the characteristics of the association between a complex attribute type and its sub attributes.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Data Type** | **Remarks** |
| Class | S100\_CD\_AttributeUsage | Characteristics of the association between a complex attribute and its sub attributes | - | - |  |
| Attribute | multiplicity | Number of occurrences of the sub attribute | 1 | S100\_Multiplicity |  |
| Attribute | sequential | Boolean value that indicates if the sub attributes of a complex attribute are in a particular order | 1 | Boolean | It is only applicable if a sub attribute has multiplicity > 1 |

**2b-4.2.14 S100\_CD\_EnumeratedValueConcept**

This class is derived from S100\_CD\_RegisterItem and describes the characteristics of an enumerated value type.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Data Type** | **Remarks** |
| Class | S100\_CD\_EnumeratedValueCo ncept | Characteristics of an enumerated value type in a  Feature Concept Dictionary | - | - |  |
| Attribute | numericCode | A positive integer designating the unique value in the domain | 1 | PositiveInteger |  |
| Association | associatedAttribute | Specifies the attribute type item for which this is a domain value | 1 | Boolean |  |
| Association | conceptReference | Refer to S100\_Concept as base-class | 1 | S100\_Concept |  |

**2b-4.2.15 S100\_CD\_InformationConcept**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Data Type** | **Remarks** |
| Class | S100\_CD\_InformationConcept | Characteristics of an information type in a Feature  Concept Dictionary | - | - |  |
| Attribute | alphaCodeIdentifier | Abbreviation designating the information type item | 0..1 | S100\_CD\_AlphaCode | See below |
| Association | distinction | Similar information types that this is distinct from | 0..1 | S100\_CD\_InformationConce pt |  |
| Association | conceptReference | Refer to S100\_Concept as base-class | 1 | S100\_Concept |  |

**2b-4.2.16 S100\_CD\_AlphaCode**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Data Type** | **Remarks** |
| Class | S100\_CD\_AlphaCode | Abbreviation designating the item | - | - |  |
| Attribute | code | The code | 6 | Character | See below |

The code 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,”\_”, “$”; and lowercase characters a-z;

4) Begin with uppercase A-Z, lowercase a-z, or “$.”

Example “PUBREF” is the Alpha Code designating a feature type item named “Publication Reference”.

**2b-4.2.17 S100\_RE\_ReferenceSource**

Each item in a Feature Concept Dictionary has a definition. If the definition is taken from an external source, this class describes the reference(s) to the source document. Further details can be found in S-100 Part 2.

**2b-4.2.18 S100\_RE\_Reference**

This class defines the references to other documents where additional information regarding a registered item can be found. Further details can be found in S-100 Part 2.

**2b-4.2.19 S100\_RE\_ManagementInfo**

This class contains the management information of a register item. Further details can be found in S-100 Part 2.

Appendix 2b – A **Example of a complex attribute** (informative)

A light may have several sectors. All of them share the same light characteristic and sequence. Other common attributes are the height and the name.

All attributes describing one sector in a complex attribute are structured “Light sector”. A complex attribute for the “Rhythm of light” is also defined.

The simple attributes used in “lightSector” are:

 sectorLimit1 (type Real)

 sectorLimit2 (type Real)

 colour (type Enumeration)

 valueOfNominalRange (type Real) Therefore the complex attribute is:

|  |  |  |
| --- | --- | --- |
| **Characteristic** | **Value** | |
| Name | Light sector | |
| Definition | A sector is the part of a circle between two straight lines drawn from the centre to the circumference. (Advanced Learner’s Dictionary, 2nd Edition). | |
| Remarks | n/a | |
| CamelCase | lightSector | |
| AlphaCode | LITSEC | |
| **Sub Attributes** | **Attribute Binding** | |
| **CamelCode Identifier** | **multiplicity** | **sequential** |
| sectorLimit1 | 1 | n/a |
| sectorLimit2 | 1 | n/a |
| colour | 1 | n/a |
| valueOfNominalRange | 0..1 | n/a |

Note: The multiplicity and sequence are carried in the attribute between the complex and sub- attribute.

The “Rhythm of light” consists of:

 lightCharacteristic

 signalPeriod

 signalGroup

|  |  |  |
| --- | --- | --- |
| **Characteristic** | **Value** | |
| Name | Rhythm of light | |
| Definition |  | |
| Remarks | n/a | |
| CamelCase | rhythmOfLight | |
| AlphaCode | RHYLGT | |
| **Sub Attributes** | **Attribute Binding** | |
| **CamelCode Identifer** | **multiplicity** | **sequential** |
| lightCharacteristic | 1 | n/a |

Part 2a - Feature Concept Dictionary Registers 13

|  |  |  |
| --- | --- | --- |
| signalPeriod | 0..1 | n/a |
| signalGroup | 0..1 | n/a |

A second way of describing the rhythm of light is the “signal sequence” as it is currently done with the SIGSEQ attribute. A signal sequence consists of intervals where the signal is either on or off (here light or eclipse)

|  |  |  |
| --- | --- | --- |
| **Characteristic** | **Value** | |
| Name | Signal sequence interval | |
| Definition | tbd. | |
| Remarks | n/a | |
| CamelCase | signalSequenceInterval | |
| AlphaCode | SGSQIN | |
| **Sub Attributes** | **Attribute Binding** | |
| **CamelCode Identifer** | **multiplicity** | **sequential** |
| signalStatus | 1 | n/a |
| duration | 1 | n/a |

A Signal sequence is then just an ordered list of those intervals.

|  |  |  |
| --- | --- | --- |
| **Characteristic** | **Value** | |
| Name | Signal sequence | |
| Definition | The sequence of times occupied by intervals of light and eclipse for all “light characteristics”. (Adapted from S-57 Edition 3.1, Appendix A – Chapter 2, Page 2.191, November 2000). | |
| Remarks | n/a | |
| CamelCase | signalSequence | |
| AlphaCode | SIGSEQ | |
| **Sub Attribute** | **Attribute Binding** | |
| **CamelCode Identifier** | **multiplicity** | **sequential** |
| signalSequenceInterval | 1..\* | True |

A light object would now consist of: Light:

 rhythmOfLight [1..\*]

 lightSector [1..\*]

 signalSequence [0..1]

 objectName[0..1]

 height[0..1]

This definition would be in the feature catalogue, although the definition of the attributes is in the data dictionary.

14 Part 2a - Feature Concept Dictionary Registers

**S-100 – Part 2c**

**Portrayal Register**

Part 2b – Portrayal Register

Page intentionally left blank

Part 2b – Portrayal Register

**Contents**

2b-1 Scope ..................................................................................................................... 1

2b-1.1 Conformance.......................................................................................................... 1

2b-2 Normative references............................................................................................. 1

2b-3 General concepts ................................................................................................... 2

2b-3.1 Register .................................................................................................................. 2

2b-3.2 Portrayal Register .................................................................................................. 2

2b-3.3 Portrayal catalogue ................................................................................................ 2

2b-4 IHO Portrayal Register ........................................................................................... 2

2b-4.1 Types of registered items....................................................................................... 2

2b-4.2 Data model of a Portrayal Register ........................................................................ 3

2b-4.2.1 UML Model ............................................................................................................. 3

2b-4.2.2 S100\_PR\_Register ................................................................................................ 4

2b-4.2.3 S100\_PR\_RegisterItem ......................................................................................... 4

2b-4.2.4 RE\_ItemStatus ....................................................................................................... 4

2b-4.2.5 S100\_PR\_ColorToken ........................................................................................... 4

2b-4.2.6 S100\_PR\_ColorProfile ........................................................................................... 4

2b-4.2.7 S100\_PR\_VisualItem ............................................................................................. 5

2b-4.2.8 S100\_PR\_Font....................................................................................................... 5

2b-4.2.9 S100\_PR\_DisplayPlane......................................................................................... 6

2b-4.2.10 S100\_PR\_ContextParameter ................................................................................ 6

Part 2b – Portrayal Register

Page intentionally left blank

Part 2b – Portrayal Register

**2b-1 Scope**

The IHO Registry will contain a number of registers, one of which will be for portrayal. A Portrayal Register specifies the portrayal of data. The portrayal of data is independent of the data but closely related to the data. That is the attributes within the data set drive the portrayal process, but there may be many different portrayals for the same data. The use of a register to store aspects of portrayal 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 Part describes the content of the Portrayal Register.

**2b-1.1 Conformance**

This profile conforms to conformance class 2 of ISO 19106:2004.

**2b-2 Normative references**

The following referenced documents are required 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 amendments) applies.

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

ISO 19126:2009, Geographic Information – Feature concept dictionaries and registers. ISO 19117:2012. Geographic Information – Portrayal.

Part 2b – Portrayal Register 1

**2b-3 General concepts**

**2b-3.1 Register**

As described in Part 2, 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 that specific point in time.

**2b-3.2 Portrayal Register**

A portrayal register specifies independent sets of definitions of point symbols, pattern symbols, complex line styles, and colour symbols. In addition, the portrayal register may be subdivided into different domains. The portrayal register may be used to develop the portrayal catalogue. Unlike the portrayal catalogue, a portrayal register does not define the portrayal rules or bind the portrayal to a feature.

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

**2b-3.3 Portrayal catalogue**

The Portrayal Catalogue contains portrayal functions that map the features to symbology it also contains symbol definitions, colour definitions, portrayal parameters and portrayal management concepts such as viewing groups. Portrayal Catalogues are described in detail in S-100 Part 9.

**2b-4 IHO Portrayal Register**

**2b-4.1 Types of registered items**

The following are types of items that may be registered:

1) Pixmap

2) Color Token

3) Color Profile

4) Symbol

5) Line Style

6) Area Fill

7) Font

8) Viewing Group

9) Viewing Group Layer

10) Display Mode

11) Display Plane

12) Context Parameter

13) Symbol Schema

14) Line Style Schema

15) Area Fill Schema

2 Part 2b – Portrayal Register

16) Pixmap Schema

17) Color Profile Schema

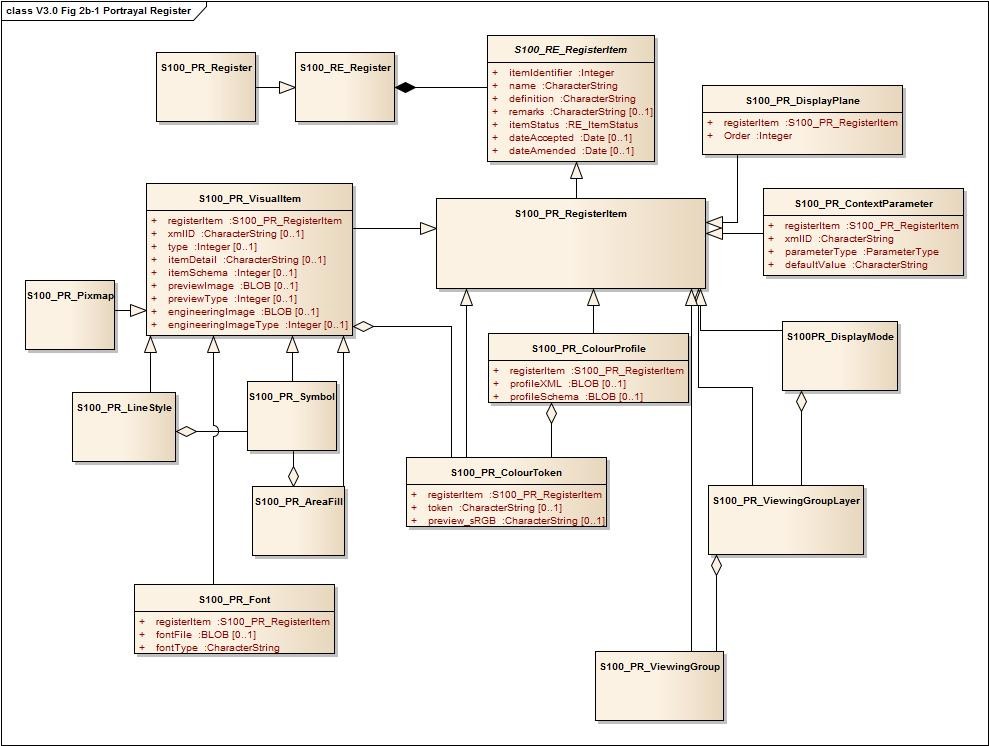
18) Cascading Style Sheet

19) Display priority

**2b-4.2 Data model of a Portrayal Register**

**2b-4.2.1 UML Model**

The following figure shows the information model of the hydrographic Portrayal Register:



**Figure 2b-1 – Portrayal Register**

Part 2b – Portrayal Register 3

**2b-4.2.2 S100\_PR\_Register**

This class S100\_PR\_Register is derived from S100\_RE\_Register. It is extended with an ‘owner’ and ‘domain’. The intention is that each domain or organization may have a dedicated Register.

**2b-4.2.3 S100\_PR\_RegisterItem**

The class S100\_PR\_RegisterItem is a specialization of the class S100\_RE\_RegisterItem and carries the characteristics that are common to all types of registered items listed in clause 2a-4.1.

**2b-4.2.4 RE\_ItemStatus**

The class RE\_ItemStatus identifies the registration status of the S100\_PR\_RegisterItem. Further details can be found in S-100 Part 2.

**2b-4.2.5 S100\_PR\_ColorToken**

This class is derived from S100\_PR\_RegisterItem. The definition of a color token as a register item of type ‘colorToken’ and carries the token string and a preview RGB value in Hex encoding. Specific color CIE values etc are stored in a color profile structure.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Data Type** | **Remarks** |
| Class | S100\_PR\_ColorToken | Definition of a color token | - | - |  |
| Attribute | registerItem |  | 1 | S100\_PR\_RegisterItem |  |
| Attribute | token |  | 0..1 | CharacterString |  |
| Attribute | Preview\_sRGB |  | 0..1 | CharacterString |  |

**2b-4.2.6 S100\_PR\_ColorProfile**

. This class is derived from S100\_PR\_RegisterItem.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Data Type** | **Remarks** |
| Class | S100\_PR\_ColorProfile | The specific content for a colour profile as a register item of type ‘colorProfile’ | - | - |  |
| Attribute | registerItem |  | 1 | S100\_PR\_RegisterItem |  |
| Attribute | profileXML | XML file for the color profile | 0..1 |  |  |
| Attribute | profileSchema | Schema for the XML file of the color profile | 0..1 |  |  |

4 Part 2b – Portrayal Register

**2b-4.2.7 S100\_PR\_VisualItem**

The specific content for a register item of type ‘symbol’, ‘lineStyle’, ‘areaFill’ or ‘pixmap’ defined in PR\_VisualType. The visual items each have an XML identifier string and XML document defining the item details as well as a preview image and an engineering Image with dimensions.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Data Type** | **Remarks** |
| Class | S100\_CD\_FeatureConcept | A feature type in a Feature Concept Dictionary | - | - |  |
| Attribute | registerItem |  | 1 | S100\_PR\_RegisterItem |  |
| Attribute | xmlID |  | 0..1 |  |  |
| Attribute | type |  | 0..1 | Integer | symbol, lineStyle, areaFill, or pixmap |
| Attribute | itemDetail |  | 0..1 | CharacterString |  |
| Attribute | itemSchema |  | 0..1 | Integer |  |
| Attribute | previewImage |  | 0..1 | Blob |  |
| Attribute | previewType |  | 0..1 | Integer |  |
| Attribute | engineeringImage |  | 0..1 | Blob |  |
| Attribute | engineeringImageType |  | 0..1 | Integer |  |

**2b-4.2.8 S100\_PR\_Font**

This is a specialization of S100\_PR\_VisualItem.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Data Type** | **Remarks** |
| Class | S100\_PR\_Font | The specific content for a font file definition as a register item of type ‘font’. | - | - |  |
| Attribute | registerItem |  | 1 | S100\_PR\_RegisterItem |  |
| Attribute | fontFile |  | 0..1 | Blob |  |
| Association role | fontType |  | 0..1 | CharacterString |  |

Part 2b – Portrayal Register 5

**2b-4.2.9 S100\_PR\_DisplayPlane**

S100\_PR\_DisplayPlane is a specialization of S100\_PR\_RegisterItem.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Data Type** | **Remarks** |
| Class | S100\_PR\_DisplayPlane | The specific content for a display plane definition as a register item of type ‘displayPlane’ | - | - |  |
| Attribute | registerItem |  | 1 | S100\_PR\_RegisterItem |  |
| Attribute | Order |  | 1 | Integer |  |

**2b-4.2.10 S100\_PR\_ContextParameter**

S100\_PR\_ContextParameter is a specialization of S100\_PR\_RegisterItem.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult.** | **Data Type** | **Remarks** |
| Class | S100\_PR\_ContextParamet er | The specific content for a context parameter as a register item of type ‘contextParameter’. | - | - |  |
| Attribute | registerItem |  | 1 | S100\_PR\_RegisterItem |  |
| Attribute | xmlID |  | 1 | CharacterString |  |
| Attribute | parameterType |  | 1 | ParamterType |  |
| Attribute | defaultValue |  | 1 | CharacterString |  |

6 Part 2b – Portrayal Register

A-18

Terms and Definitions