Document Revisions

**IALA Guideline No. ####**

**On**

**IALA Procedures under the   
IHO S-100   
Geospatial Information   
Registry**

**Edition 1**

**Date issued**

***AISM***Association Internationale de Signalisation Maritime ***IALA***

International Association of Marine Aids to Navigation and Lighthouse Authorities

10, rue des Gaudines

78100 Saint Germain en Laye, France

Telephone: +33 1 34 51 70 01 Fax: +33 1 34 51 82 05

e-mail: [contact@iala-aism.org](mailto:contact@iala-aism.org) Internet: [www.iala-aism.org](http://www.iala-aism.org)

Revisions to the IALA Document are to be noted in the table prior to the issue of a revised document.

|  |  |  |
| --- | --- | --- |
| **Date** | **Page / Section Revised** | **Requirement for Revision** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Table of Contents

Document Revisions 2

Table of Contents 3

Index of Tables 3

Index of Figures 3

Procedures for the Management of the ‘IALA Domain’ under the S-100 Geospatial Information Registry 4

1 Introduction 4

2 Background 4

3 Scope 5

4 The ‘IALA Domain’ 5

5 IALA AS A DOMAIN OWNER 7

6 management of IALA Domains 8

6.1 Interaction with IHO 8

6.1.1 Domain application 8

6.1.2 Domain responsibilities 8

7 IALA AS A Submitting Organization 9

7.1 Submitting Organization Representative 9

7.2 Development of proposals 9

7.3 Submission of proposals 9

7.4 IHO Approval process 10

7.5 IHO Criteria for not accepting a proposal include: 11

7.6 Withdrawal of Proposals 11

7.7 Appeal process 13

7.8 Summary of synchronisation requirements for IALA 14 14

8 Glossary / Definitions / Acronyms 14

9 References 14

ANNEX A Extract from ISO19115 16

Index of Tables

Table 1 Envisaged IALA domains 8

Index of Figures

Figure 1 The ‘IALA Domain’ at IHO S-100 GI Registry 6

Figure 2 Domains within a Register 7

Figure 3 Processing of Proposals 11

Figure 4 Approval Process 13

Figure 5 Appeal process 15

Procedures for the Management of the ‘IALA Domain’ under the S-100 Geospatial Information Registry

# Introduction

This document describes the roles, responsibilities and procedures for IALA (and its members) as a Submitting Organization under the International Hydrographic Organisation (IHO) S-100 Geospatial Information (GI) Registry and managing and operating the associated IALA domains.

This guideline explains the concepts of registries and domains, the responsibility of IHO as manager of the GI Registry and the role of IALA as a domain owner and manager.

IALA’s roles and responsibilities as a submitting organisation are set out and the process for managing submissions is laid down.

The overall context of IALA’s involvement in the S-100 Registry is considered, in particular the move towards a Common Maritime Data Structure and the proposed IMO High-level Group on Data Modelling.

# Background

The IHO S-100 Universal Hydrographic Data Model was published as an international standard in 2010. One objective of S-100 is providing an ISO-conformant registry, managed by the IHO, containing registers such as feature concept dictionaries and product feature catalogues that are flexible and capable of managed expansion; another objective is to provide separate registers for different user communities. The operational procedures for the organization and management of the S-100 Geospatial Information Registry are set out in IHO Publication S-99.

There is a co-operation agreement between the IHO and IALA, which was signed in 2001 and covers work on IHO S-100, which is governed by S-99. Within the IHO S-100 GI Registry, Supplementary Registers may be used by external Submitting Organisations. The S-99 and S-100 standards are maintained and developed by TSMAD (Transfer Standard Maintenance and Applications Development working group) on which IALA has a seat.

At its 57th session IMO NAV agreed to the use of the IHO S-100 GI Registry as a baseline for the collection, exchange, and distribution of data. There are two aspects to IALA’s participation. The first is to participate as a Submitting Organization. The second is to become a domain owner under the Registry. At the same meeting it was proposed to set up an IMO / IHO Harmonization Group on Data Modelling (HGDM), which is tasked with establishing the Common Maritime Data Structure (CMDS). By becoming a Domain Owner in the S-100 GI Registry, IALA will contribute to the HGDM and to the CDMS.

At its 52nd session, the IALA Council approved registration of IALA at IHO as a Domain Owner for Aids to Navigation (AtoN), VTS and for other data areas under IALA’s remit, and as a Submitting Organization, in accordance with the IHO / IALA co-operation agreement.

Because of IALA’s breadth of expertise in AtoN, an ‘IALA Domain’ within the GI Registry is a logical extension of the registry beyond hydrographical applications. The IHO continues to handle operation of the GI Registry; the responsibility for the management of the ‘IALA Domain’ remains with IALA. Other Submitting Organisations will be able to propose amendments to existing Registry entries.

As a benefit, IALA gains synergies regarding definition procedures, operational resources, and international standing. This approach is in line with that approved by IMO.

IALA will serve as a Submitting Organisation to support its requirements for its product specifications.

A “product” is understood as a technical or operational service provided by an IALA member to its user(s), in particular to the mariners and to the maritime community at large.

A “Maritime Service Portfolio” is a set of “products” provided by an IALA member (and other stakeholders) in a given sea area, waterway, or port, as appropriate.

The IALA operational procedures addressed in this Guideline conform to the Registry procedures outlined in the IHO standard S-99, although some terms have been renamed for clarity and to better indicate IALA’s internal processes. IALA has developed these internal procedures to interact with the GI Registry within the context of the Association.

# Scope

The scope of this Guideline is to advise IALA about the interaction between IALA and the IHO S-100 GI Registry. The governing documentation for this interaction is the IHO S-100 standard and the associated procedures in IHO standard S-99. The IALA operational procedures addressed in this Guideline conform to the Registry procedures outlined in IHO standard S-99. IALA has developed these procedures solely to manage the IALA domain and its role as a Submitting Organization within the context of the Association. Should there be any conflict between this Guideline and IHO standard S-100 or S-99, IALA should defer to the IHO documentation.

It is important to note the difference between the register, as a whole, the ‘IALA domain’, the domains to which IALA contributes and the individual entries.



1. The ‘IALA Domain’ at IHO S-100 GI Registry

# The ‘IALA Domain’

The ‘IALA Domain’ is not a single entity because the IHO GI Registry is composed of one Product Specification Register, which is *organisational* in its orientation, and several Registers, which are *functional* in orientation. Each functional Register provides a specific activity of a domain. In addition, currently, each Register is subdivided by IHO into a Main Space[[1]](#footnote-1) and Supplementary Space. The ‘IALA Domain’ resides in the Supplementary Space. For reasons explained below, it is advisable that the ‘IALA Domain’ is subdivided into several domains.

*Domain*

*nn*

*Domain*

*2*

*Domain*

*1*

**Supplementary Space**

*Domain*

*xx*

*Domain*

*B*

*Domain*

*A*

**Main Space**

1. Domains within a Register

The list of Registers is:

Product Specification Register:

The Product Specification Register contains a list of product specifications developed and maintained by a recognised organisation. This register is based on the principle of *organisational* responsibility, i.e. a domain is assigned to a specific recognised organisation. In the case of IALA, the scope of IALA is so large that it is advisable to subdivide one organisational domain into several organisational domains that reflect the IALA’s different areas of competence. For example, amongst others, there will be an IALA AtoN domain and an IALA VTS domain.

An important part of any product specification is a *feature catalogue*, which is normally produced as a result of modelling the product. It uses item types from a feature concept dictionary residing in the Feature Concept Dictionary Register, such as feature classes and attributes; it documents the binding between them. In addition, constraints, units of measurement and format description of attributes can be specified.

Feature Concept Dictionary Register:

The Feature Concept Dictionary Register hosts all feature concept dictionaries, as defined in the appropriate domains of the Feature Concept Dictionary Register. (see Figure 2) Unlike the domains within the Product Specification Register the domains in the Feature Concept Dictionary Register are functional in orientation.

A *feature concept dictionary* specifies independent sets of definitions of features, attributes, enumerated values and information types that may be used to describe relevant maritime information. A feature concept dictionary may be used to develop a feature catalogue. Unlike a feature catalogue, a feature concept dictionary does not make associations or bind attributes to features.

Portrayal Register:

The portrayal relates to the human – machine interfaces of products.

The portrayal of data is independent of the data but closely related to the data. In other words, attributes within the dataset drive the portrayal process; there may be many different portrayals for the same data.

The Portrayal Register will contain both symbols and rules that invoke the symbols under certain conditions.

The construction of the Portrayal Register follows the same principles as the other Registers and is shown in Figure 2.

Metadata Register:

Metadata is structured information that describes, explains, locates or otherwise makes it easier to retrieve, use or manage an information resource. Metadata is often called data about data or information about information.

The Metadata Register contains the metadata elements from the ISO19115 standard (for an extract of the main metadata table see Annex A). It will also contain additional metadata elements required for an IALA product specification.

Producer Code Register:

This topic is currently beyond the scope of IALA’s activities but this decision may be reconsidered in the future.

# IALA AS A DOMAIN OWNER

Recognising that the ‘IALA Domain’ comprises several functional domains (e.g. VTS, AtoN, AIS, and AIS ASM) in the Feature Catalogue Dictionary, Portrayal and Metadata Registers, as well as several organisational domains in the Product Specification Register, it is envisaged that IALA will become a domain owner, as indicated below.

1. Envisaged IALA domains

|  |  |
| --- | --- |
| Product Specification Register | IALA VTS domain |
|  | IALA AtoN domain |
|  | IALA AIS domain |
|  | IALA AIS ASM domain |
|  | IALA IWRAP domain |
| Feature Concept Dictionary Register | VTS domain |
|  | AtoN domain |
|  | AIS domain |
|  | AIS ASM domain |
|  | Formal Risk Assessment domain |
| Portrayal Register | VTS domain |
|  | AtoN domain |
|  | AIS domain |
|  | AIS ASM domain |
|  | Formal Risk Assessment domain |
| Metadata Register | VTS domain |
|  | AtoN domain |
|  | AIS domain |
|  | AIS ASM domain |
|  | Formal Risk Assessment domain |

# management of IALA Domains

## Interaction with IHO

IALA interacts with IHO via the ‘IALA Domain’ Co-ordinator who needs to be aware of the IHO’s structure for the S-100 GI Registry and its processes so that the appropriate body can be addressed.

### Domain application

A domain is established by application to IHO (Registry Manager), providing the information shown at Annex B.

Assuming that IHO approves and sets up the requested domain, the domain is then ready to be populated. The process of populating a domain is explained in section 7.

### Domain responsibilities

In order to avoid too many different roles, such as a role manager for each individual domain (see Table 1), the following roles are designed to minimise their number, while taking into account the structure imposed by the S-100 GI Registry and the large number of IALA’s fields of interest. A single person cannot fulfil the roles detailed below due to the wide range of technical, operational and organisational competence required.

Thus the overall responsibility of IALA for its domains in the S-100 GI Registry is distributed over three types of management role:

1. IALA Field Managers.
2. IALA Product Specification Managers.
3. The ‘IALA Domain’ Co-ordination Manager.

Being a Domain Owner, IALA is represented in IHO’s Domain Control Body. This will entail interaction with the IHO’s Domain Control Body within the timescales for the IHO’s internal process given below (section ??). This activity affects the work of the ‘IALA Domain’ Co-ordinator and could lead to the involvement of IALA Field Managers and IALA Product Specification Managers. Membership of the IHO’s Domain Control Body allows Submitting Organisations to advocate their own proposals.

#### IALA Field Manager

In the context of IHO GI Registry, IALA currently recognises the following Fields: VTS, AtoN Information, AIS, AIS ASM and IWRAP. Fields comprise all relevant domains associated with that Field, e.g. the VTS Field would comprise the IALA VTS domain from the Product Specification Register, the VTS domain from the Feature Concept Dictionary Register, the VTS domain from the Portrayal Register and the VTS domain from the Metadata Register.

Each Field contains at least one IALA product and one IALA Product Specification. The IALA Field Manager harmonises the different products / Product Specifications within that Field. The IALA Field Manager also considers the usage of entries by others in his Field.

**’IALA Domain’**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **IALA Field** | **AIS** | **AIS ASM** | **VTS** | **AtoN** | **Risk Assessment** |
| Product |  |  |  |  |  |
| Feature |  |  |  |  |  |
| Portrayal |  |  |  |  |  |
| Metadata |  |  |  |  |  |

A list of the individual IALA Field Managers is maintained by the IALA Secretariat.

#### IALA Product Specification Manager

A manager is appointed to manage each IALA Product Specification.

An IALA Product Specification Manager co-ordinates the development of an IALA Product Specification, co-ordinates the usage of existing entries in the S-100 GI Registry that are used by that IALA Product Specification and co-ordinates the creation of new entries required by that IALA Product Specification.

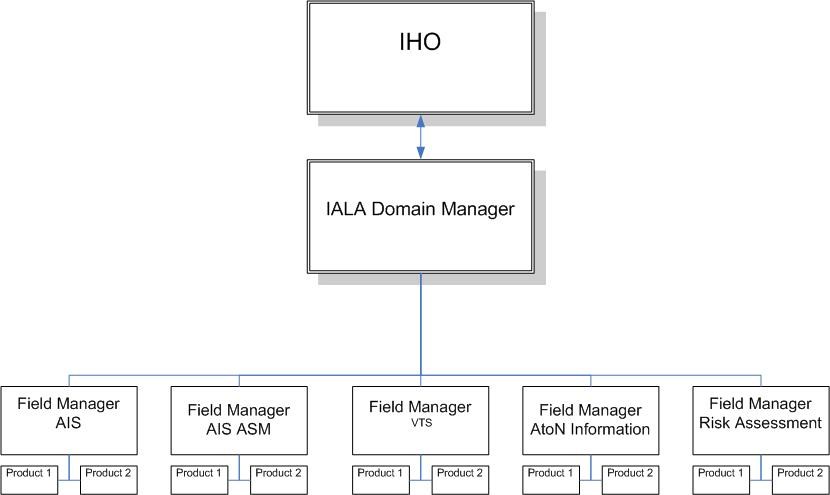
An IALA Product Specification Manager is able to draw on any Register in the GI Registry.

A list of the individual Product Specification Managers is maintained by the IALA Secretariat.

#### ‘IALA Domain’ Co-ordinator

The ‘IALA Domain’ Co-ordinator who resides in the IALA Secretariat, co-ordinates the activities of each of the IALA Field Managers and is the single point of contact with the IHO.

**6.1.2.4 IALA Organizational Chart**

****

# IALA AS A Submitting Organization

IALA acts as a Submitting Organization to the S-100 GI Registry. In accordance with S-99 paragraph 3.5, Submitting Organizations propose changes and additions to the contents and proposals for the contents of any domain in any Register. IALA members are encouraged to make submissions to the GI Registry via IALA.

## Submitting Organization Representative

For IALA this IHO stipulated role falls to the ‘IALA Domain’ Co-ordinator, who acts as the point of contact between IALA and the IHO.

## Development of proposals

Submitting Organizationsmanage the development of proposals for entries or amendments to the Feature Concept, Portrayal and Metadata Registers from within their respective Working Groups, communities or organizations.

## Submission of proposals

The process for submitting proposals for the registration of items in the Feature Concept, Portrayal and Metadata Registers is illustrated in Figure 3.

Submitting organizations shall:

1. Receive proposals for the registration of items from proposers within their respective Working Groups, communities or organizations;
2. Ensure that all proposals are logical and complete and are consistent with other features, attributes and enumerated values; and
3. Submit proposals to the appropriate Register and domain.

|  |  |  |  |
| --- | --- | --- | --- |
| **Submission Process –**  **Feature Concept, Portrayal and Metadata Registers** | | | |
|  | IALA as Submitting Organization | | IHO |
| Product Specification Manager in conjunction the the Field Manager  Develop  Proposal  Amend Proposal  No  Forward to Submitting Organization | ’IALA Domain’ Co-ordinator  No  Inform Submitting Organization of Additional requirements  Yes  Submit  Proposal  Proposal  Appropriate & Complete  Review Proposal | Yes  Review Proposal  Proposal  Complete  **A** |

1. Processing of Proposals

## IHO Approval process

The process for determining the acceptability of proposals by IHO is illustrated in Figure 4. IHO has declared that their approval process shall normally be completed within a time period of 60 days. In the case of appeal this period shall be extended to 90 days.

The IHO can decide to:

1. Accept the proposal without change,
2. Accept the proposal subject to changes negotiated with IALA, as the Submitting Organization, in conjunction with the ‘IALA Domain’ Co-ordinator, who feeds this information back into the IALA development process.
3. Not accept the proposal.

The IHO will provide reasons for their disapproval of the proposal, which IALA can appeal, at two levels to the IHO, see below (section ??). Other options will be the IMO HGDM and as a last resort IMO.

## IHO 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 Registry.
3. The proposed item does not belong to an item class included in the proposed Register.
4. The proposed item does not fall within the scope of an appropriate Register.

In this instance the Registry Manager is expected to provide a proposal for an appropriate Register.

1. The justification for the proposal is inadequate.

In this instance the issue is expected to be resolved by dialogue with the IHO.

Each Domain Control Body member shall inform the Register Manager of their working group / organization’s decision, and the rationale for that decision, within 30 days of receipt of the proposal. Nil returns will be taken as acceptance of the proposal.

This affects the role of the ‘IALA Domain’ Co-ordinator, as a member of the IHO’s Domain Control Body.

If the decision of the IHO control body is negative the Co-ordinator should:

1. Inform the Submitting Organization of the 30 working day deadline for appealing the decision of the IHO Domain Control Body, and
2. Make the results of the approval process available to all interested parties.

## Withdrawal of Proposals

##### IALA may decide to withdraw a proposal at any time during the approval process.

|  |  |  |  |
| --- | --- | --- | --- |
| **Approval Process –**  **Feature Concept, Portrayal and Metadata Registers** | | | |
|  | Submitting Organization | Register Manager | Domain Control Body |
| Resubmit  Yes  Yes  **B**  Appeal Decision?  No  Withdraw Proposal  No  Yes  Resubmit  Proposal  See Figure 3  Inform  Process Complete | Retirement  No  Insert new item into register  Clarification  Inform  Update Status  & Content  **A**  Yes  No  Negotiate Change | Yes  No  No  Yes  Accept  Proposal  Change Proposed?  Evaluate Proposal |

1. Approval Process

## Appeal process

IALA, through its ‘IALA Domain’ Co-ordinator, may appeal, in the first instance, to the IHO Executive Control Body if it disagrees with the IHO’s decision to reject a proposal. If the appeal is rejected a further appeal can be made to the IHO’s HSSC.

An appeal is to 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 5.

1. Appeal process

Figure needs reviewing for relevance and amending

## Summary of synchronisation requirements for IALA

There is a time limit of 30 days in which responses to queries are required, which takes the matter outside the normal IALA Committee structure.

Add additional timescales imposed by IHO, sorted by IALA roles.

# Glossary / Definitions / Acronyms

Definitions and acronyms shall be in accordance with IHO S-100 and S-99 where appropriate. IALA-specific definitions and acronyms follow.

* Registry: The IHO maintains the S-100 Geospatial Information (GI) Registry on a dedicated server.
* Registers: The Registry consists of five types of Register:
* Feature Concept Register
* Portrayal Register
* Metadata Register
* Product Specifications Register
* Data Producer Code Register
* The **Feature Concept, Portrayal and Metadata Registers** are managed lists of items. Selections from these three Registers are used to define Feature and Portrayal Catalogues used in individual Product Specifications.
* The **Product Specification Register** is a list of Product Specifications created by recognized organizations, which is currently confined to S-100 GI Registry based Product Specifications. It contains metadata about the content, purpose, version, location and availability of those Product Specifications.
* The **Data Producer Code Register** is the authoritative list of the codes that can, if required, be stipulated in Product Specifications to identify the producers of a particular data product. This register is currently restricted to IHO products and so is not considered applicable for IALA’s purposes.
* **Main and Supplementary Spaces.** Each of the Registers above are currently subdivided into:
* The Main Space of each Register is maintained by IHO for the purpose of directly supporting the official hydrographic products and services required to meet the chart and publications carriage requirements of the Convention on the Safety of Life at Sea (SOLAS);
* The Supplementary Space of each Register allows organizations recognized by the IHO to register items not already included in the Main Space or items that extend existing items in the Main Space.

# References

1. IHO S-99 Operational procedures for the organisation and management of the S-100 Geospatial Information Registry, January 2011.
2. IHO S-100 Universal Hydrographic Data Model, January 2010.
3. ISO19115 standard
4. Extract from ISO19115

The ISO 19115 International Standard defines an extensive set of metadata elements; typically only a subset of the full number of elements is used for any particular product specification. However, it is essential that a basic minimum number of metadata elements be maintained for a dataset.

Listed are the core metadata elements required to identify a dataset, typically for catalogue purposes. This list contains metadata elements answering the following questions: “Does a dataset on a specific topic exist (‘what’)?”, “For a specific place (‘where’)?”, “For a specific date or period (‘when’)?” and “A point of contact to learn more about or order the dataset (‘who’)?”. Using the recommended optional elements in ISO/DIS 19115 addition to the mandatory elements will increase interoperability, allowing users to understand without ambiguity the geographic data and the related metadata provided by either the producer or the distributor. Dataset metadata profiles of this International Standard shall include this core.

Metadata entity set information consists of the entity (UML class) MD\_Metadata, which is mandatory. The MD\_Metadata entity contains both mandatory and optional metadata elements (UML attributes). The MD\_Metadata entity is an aggregate of the following entities (which are further explained in the following subclauses):

• MD\_Identification

• MD\_Constraints

• DQ\_DataQuality

• MD\_MaintenanceInformation

• MD\_SpatialRepresentation

• MD\_ReferenceSystem

• MD\_ContentInformation

• MD\_PortrayalCatalogueReference

• MD\_Distribution

• MD\_MetadataExtensionInformation

• MD\_ApplicationSchemaInformation

ISO 19115:2003 defines the conceptual model required for describing geographic information and services. It provides information about the identification, the extent, the quality, the spatial and temporal schema, spatial reference, and distribution of digital geographic data.

The 19115 international metadata standard defines the mandatory and conditional metadata sections, metadata entities, and metadata elements; the minimum set of metadata required to serve the full range of metadata applications (data discovery, determining data fitness for use, data access, data transfer, and use of digital data); optional metadata elements - to allow for a more extensive standard description of geographic data, if required; a method for extending metadata to fit specialized needs.

1. In the context of Main and Supplementary Registers, as used in IHO’s S-99 Standard, the term ‘Space’ is used here to avoid possible confusion with the repeated use of the term ‘Register’. [↑](#footnote-ref-1)