IALA

IALA GUIDELINE

G1164
MANAGEMENT OF MARITIME RESOURCE NAME ORGANIZATION IDENTIFIERS

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DOCUMENT REVISION

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

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1. INTRODUCTION

The use of unique identifiers is a necessary development of e-Navigation. To answer this need, IALA has obtained the Maritime Resource Name (MRN) as a method of utilising unique identifiers within the maritime domain. Use of MRN within IALA's remit is outlined in IALA Guideline *G1143*.

To promote harmonization among identifiers for maritime resources, IALA has provisioned the MRN, a subpart of Uniform Resource Name (URN), for use across the maritime domain. Where usage and objects fall within the Aids to Navigation and other appropriate categories, IALA has outlined guidance procedures in IALA Guideline *G1143*. However, IALA is also cognizant that MRN can and should be applied to maritime resources beyond IALA's guidance.

This Guideline discusses procedures for IALA to process requests for Organizational Identifiers (OID) and related namespaces within the MRN construct.

1.1. RELATED DOCUMENTS

- G1143 Ed2.0 Unique Identifiers for Maritime Resources December 2020
- IALA Basic Documents Ed5.0 December 2020
- RFC 2141 – URN Syntax (https://www.ietf.org/rfc/rfc2141.txt)
- RFC 5234 – Augmented BNF for Syntax Specifications: ABNF (https://tools.ietf.org/html/rfc5234)
- RFC 8141 – Uniform Resource Names (URNs) (https://tools.ietf.org/html/rfc8141)
- ISO 3166-1 alpha-3

2. BACKGROUND

The MRN concept was born out of an identified need for persistent unique identifiers for Marine Aids to Navigation. In assessing this need, IALA Committees introduced the concept of a unique identifier which could be used beyond the area of Marine Aids to Navigation.

IALA has taken the lead to obtain the MRN namespace, defined as "urn:mrn:". IALA has also decided to make portions of the namespace available to interested parties, by defining the OID as a necessary component to all MRNs, written as "urn:mrn:oid:".

G1143 is the Guideline that addresses IALA's use of MRN within its namespace; any other organizations seeking to apply MRN in their own namespace should adopt a similar guideline for their namespace to explain its use. It is recommended that OID guidelines follow a similar structure to IALA Guideline *G1143* to facilitate the greatest possible harmonization between MRN namespaces.

3. REQUIREMENTS FOR OID NAMESPACES

This section defines requirements for the operationalization of MRNs. Specifically, these requirements are related to the definition of OID namespace schemes. OID namespace schemas refer to the structure of the organization-specific namespace string (OSNSS). The requirements are based on the basic idea and concept of MRN and should facilitate interoperability of harmonization of independently managed OID namespaces:

- URN Compliance:

As MRN is a subset of URN, all active URN documentation must be followed in the creation of MRNs, regardless of OID ownership. OID Owners should specify and document additional parameters (such as those documented in *G1143*). Such documentation should be available to any users implementing MRN within the OID.

- Uniqueness:

An ID within the MRN namespace is never assigned to more than one resource and never re-assigned to a different resource. Ensuring uniqueness within an OID namespace is the responsibility of the respective OID Owner. Uniqueness should prevail over other "nice to have" aspects of the MRN.

- Decentralization:

OID Owners may define further sub-namespaces inside of the Organization-specific namespace string (OSNSS) for representing further internal hierarchies and decentrally organize the assignment of MRN in these sub-spaces.

Within the IALA OSNSS, G1143 documents the use of MRN. Another example can be found in Maritime Connectivity Platform Identity Providers, see MCP MRN Specification: https://maritimeconnectivity.net/docs/mcp-idsec-2-ID.docx

- Forward compatibility:

OID namespaces shall be designed for evolution enabling the addition of new naming schemes for new resources in the future.

- Flexibility:

OID namespaces should be used with maximum capacity and flexibility; the schemes should allow for identification of many types of resources relevant to the OID. It is not necessary to request multiple OIDs in order to identify multiple resources.

There are also a few properties that are "nice to have" for an OID namespace scheme:

- Human readability:

A naming scheme should be readable by humans in such a way that identifiers can be entered in forms and documents. The human-readability aspect should not be read as a requirement to conform to specific language requirements. The human-readability aspect should not interfere with the uniqueness aspect of the identifier (see above). In cases where multiple languages may be used, it is not recommended to create an MRN in every language.

- Contextual:

A naming scheme should provide information on the type of resource that a particular identifier refers to, such as a vessel, mariner, AtoN, port or VTS centre.

- Backward compatibility:

Creation and implementation of new MRN schemes do not necessarily constitute a re-configuring of existing naming or numbering schemes. The MRN concept allows for the inclusion of a variety of schemes that already exist, and an OSNSS can allow integration with existing schemes so they can continue to be used. For instance, existing IALA guidance document numbers have been incorporated into MRN as follows:

IALA Guideline G1143   urn:mrn:iala:pub:g1143:ed2.0

3.1. REQUIREMENTS FOR OIDS

- OIDs must comply with IETF documentation for all URNs, specifically RFC 2141, RFC 5234, and RFC 8141.

- All OIDs must contain a minimum of three lower case alphanumeric characters. These characters are defined in RFC 2141.

- OIDs must not contain any characters identified as "reserved" by RFC 2141.

- OIDs must not use ISO 3166-1 alpha-3 country codes as written. This does not prevent any particular sequence of letters that may be an ISO 3166-1 alpha-3 code to be used as part of an OID. For instance, "nam" cannot be an OID as it is an existing ISO 3166-1 alpha-3 code, but "namea" could be requested and used as an OID.

4. DISCUSSION

The MRN is intended to be an extendable mechanism across the maritime domain. IALA does not have the capacity to govern MRN implementation in all instances. IALA makes the MRN namespace available to all interested users in the maritime domain with limited interference to the purposes of harmonization and cooperation.

- Authoritative – IALA makes MRN OIDs available to authoritative entities, but not to individuals or individual governments.

- Decentrally managed – IALA's role in MRN Management is to make MRN available for applicants. IALA does not impose specific guidance on the application of MRN namespace outside of IALA's namespace but recommends anyone using the MRN namespace does so in harmony with *G1143.* For example, following a similar structure of sub-namespaces such as <type> and <country codes>.

- URN-compliant – as MRN is a subset of URN, all active URN documentation must be followed in the creation of MRNs, regardless of the overseeing authority. Authorities should specify and document additional parameters (such as those documented in *G1143*). Such documentation should be available to any users implementing MRN within the OID.

- Publicly-available – IALA will publish all assigned MRN OIDs, as well as OID Owner information. Points of Contact will be published.

5. APPLICATION PROCEDURES

All applications for MRN OID namespaces are subject to review and acceptance by the IALA Secretariat and uploaded to the IALA website (https://www.iala-aism.org/technical/data-modelling/mrn/).

Applications must specify the entity who will be the OID Owner (typically, an organization or project, but not an individual government or state) with a point of contact. Contact information must include name, title, and email address. Multiple individuals may be identified as points of contact if needed. Applications must also specify if the OID Owner will be different from the OID Applicant. The secretariat will investigate the information on the application is correct, and the secretariat can require OID applicants to obtain IALA National member sponsorship as it deems necessary. Sponsorship from an IALA National member may be included. If such sponsorship is included, a statement of support from the National member must be submitted. If not included at the time of submission, IALA Secretariat may request sponsorship as it deems necessary.

All applications must include a statement of the intended use within the maritime domain. Applicants must demonstrate a need for an OID.

Applicants should specify the OID being requested. All OIDs must contain a minimum of three lower case alphanumeric characters, as defined in RFC 2141. OIDs must not contain any characters identified as "reserved" by RFC 2141. OIDs, like all MRN, are case-insensitive, meaning that "urn:mrn:exp:" is the same as "urn:mrn:EXP:". IALA encourages OID Applicants to choose OIDs that are human-readable and contextual; however, this may not always be possible. IALA reserves the right to reject any submissions not meeting requirements or otherwise found objectionable.

Note: OIDs must not use ISO 3166-1 alpha-3 country codes. This does not preclude ISO 3166 country codes from being utilized elsewhere within the namespace.

Applicants must consent to the publication of the OID, OID Owner information, and statement of intended use, via the IALA MRN website or another place of IALA's choosing.

IALA will make every effort to respond to applications within 90 days of receipt. OID applications are accepted, reviewed, and adjudicated by IALA Secretariat on a rolling basis throughout the calendar year.

Applications are subject to human review; the process is not automated.

In the event of rejection, IALA will provide the OID Applicant with the cause for the rejection. An OID Applicant may resubmit an application if desired.

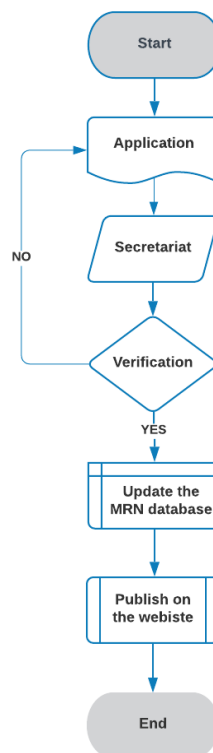Figure 1 illustrates the MRN OID submission and approval process.

Figure 1   OID submission and approval process diagram

6. IMPLEMENTATION

To provide maximum flexibility for OID Owners, IALA intends to impose only necessary restrictions on MRN implementation. Because of this, care and good faith should be taken to ensure utilization of MRN in appropriate contexts, where persistent unique identifiers are needed.

6.1. NECESSARY RESTRICTIONS

Necessary restrictions are:

- All OID namespaces must follow rules that apply to all MRN namespaces.

- OIDs (but not their documentation or implementation results) must be published and widely-available through IALA websites or other means.

- OIDs must not use 3-letter country codes defined in ISO 3166-1 alpha-3.

- All OID assignments are to be considered permanent.

- Should an organization change name or in another such situation, an OID may be transferred between entities with an understanding of continuity of operations and MRN application.

- Once an OID is assigned, it will never be removed from use and subsequently re-assigned to another entity.

OIDs must contain a minimum of three lower case alphanumeric characters, and must not utilize any "reserved" characters, as defined in RFC 2141. OIDs must comply with IETF documentation for all URNs, specifically RFC 2141, RFC 5234, and RFC 8141.

6.2. CYBER-SECURITY AND RISK MANAGEMENT

While MRN and OID assignments are publicly available information, and thereby not confidential, there are several suggestions with regards to risk and (cyber) security

- An OID may represent a critical AtoN or a confidential document. Always be aware that information disclosed in the publication of the MRN and its OID could eventually impact the integrity or reliability of that object when used with bad intentions. This is also valid for related OID's; e.g. the publication of a set of OID's compromising one AtoN may provide useful information for activists or terrorists on the best way to damage that AtoN.

- The authority of organization managing OID assignments should take appropriate measures to ensure the integrity and availability of the administrative system for the registration of OID's. Keywords are regular backups, proper authorizations for altering the registration and preventive technical (IT security-) measures.

- Periodic checks or audits should be performed to verify the integrity of the MRN registration and if the (public) registration does not contain any unnecessary sensitive information.

6.3. OTHER IMPLEMENTATION NOTES

Procedures set forward in this document will not be retroactively applied to established MRN OIDs in use at the time of adoption. However, in the interest of compatibility, it may, in the future, become necessary to recommend action by established users. IALA will request comments on administrative burdens and implications of any such recommendations prior to releasing them.

7. DEFINITIONS

The definitions of terms used in this Guideline can be found in the *International Dictionary of Marine Aids to Navigation* (IALA Dictionary) at http://www.iala-aism.org/wiki/dictionary and were checked as correct at the time of going to print. Where conflict arises, the IALA Dictionary should be considered as the authoritative source of definitions used in IALA documents.

In addition, for this document:

MRN Owner	IALA is the MRN Owner. The IALA Secretariat is tasked with administering MRN.
OID Applicant	The OID Applicant is the organization who submits an OID Application for review by the IALA Secretariat.
OID Owner	An OID Owners is the organization who will administer the assignment of MRNs within an assigned OID.
Resource	A resource is any entity that can be named, numbered, or otherwise identified. Within different contexts, a resource may refer to singular or plural entities (e.g. a group of buoys in a channel may be one resource).

8. ABBREVIATIONS

ABNF	Augmented Backus-Naur Form
AtoN	Marine Aid(s) to Navigation
ID	Identification/Identity/Identifier
IETF	Internet Engineering Task Force
ISO	International Organization for Standardization
MRN	Maritime Resource Name
OID	Organizational identifier
OSNSS	Organization-specific namespace string
RFC	Request for Comments (IETF)
URN	Uniform Resource Name(s)

9. APPLICATION TEMPLATE

Application for Maritime Resource Name (MRN) Organization Identifier (OID)

OID Applicant: _____

Description of Applicant or Project:
_____
_____
_____

Website where information on Applicant or Project can be found:
_____

*OID Owner (If different from OID Applicant): _____

*Point of Contact   Name: _____
                     Title/Position: _____
                     **Email: _____

*Statement of intended use within the maritime domain:
_____
_____
_____

*Requested OID: _____

Region of Operation/Implementation: _____

***Sponsoring IALA National member:
_____

(Statement must be included.)

*Items will be published on IALA's MRN Registry Website and are publicly available.

IALA complies with the General Data Protection Regulations of the EU. Any applicant who wishes to remove their contact details should advise the IALA Secretariat.

** Personal email addresses should be avoided, and a generic address is recommended.

***optional.

10. FURTHER READING

A good explanation of Uniform Resource Names can be found at:

https://en.wikipedia.org/wiki/Uniform_Resource_Name