

## IALA COUNCIL 65<sup>th</sup> session



12-15 December 2017  
IALA Headquarters

### 11 – IALA TECHNICAL ACTIVITIES

#### 11.4 – ENAV

#### 11.4.4 – ENAV21 documents for noting by Council

##### 11.4.4.1 – Proposal for Management of Maritime Resource Names (MRN)

Note by the ENAV Committee

### 1 SUMMARY

This document contains a proposal for how to manage *Maritime Resource Names (MRN)*, more specifically the assignment of Organisation IDs by IALA, as well as a system for sharing of MRN definitions (organisation-specific namespace strings) that have cross-organisation interest.

### 2 INTRODUCTION TO MRN

At ENAV17 the concept of Maritime Resource Names (MRN) was presented as a system for uniquely identifying maritime resources on a global scale using Uniform Resource Identifiers.

The use of unique identifiers is a necessary development of e-Navigation to maintain harmonisation across domains and services. Navigationally unique objects such as aids to navigation, VTS products and services and other maritime services requires identification numbers to avoid duplication and misalignment of AtoN and Marine Safety Information (MSI).

Worldwide harmonised identification of Unique Identifiers for maritime resources can:

- assist in the development and maintenance of enhanced data exchange applications for ship to ship, ship to shore, shore to ship, and shore to shore in the context of e-Navigation;
- assist administrations in the efficient delivery of Marine Safety Information (MSI);
- reduce the administrative burden associated with the maintenance associated with international list of lights numbers and other navigation products.

This is not unique to the maritime domain. The syntax for Maritime Resource Names will enable IALA members to issue Unique Identifiers for objects such as AtoN, VTS products and services, waterways, etc., in a format, which is designed to be compatible with existing lists of lights, yet interoperable with usage in different domains such as Electronic Nautical Charts.

In summary, MRNs are defined using the following hierarchical structure (full syntax available in Annex A):

*"urn:mrn:"<NSS>*

where NSS is the Namespace Specific String composed as follows:

*<NSS>::=<Organisation ID>":"<Organisation-specific namespace ID>":"<Organisation-specific namespace string>*



The MRN scheme is highly adaptable. Each organisation can choose their own layout for a specific type of identifiers. It is easy to fit existing identifiers into the naming scheme. And it provides good context information about the type of the identifier in comparison to something simple like a random UUID.

Some hypothetical MRN examples described in the previous paper were:

A vessel with an IMO number of 9743368 could be identified as follows:

`urn:mrn:imo:imo-number:9743368`

An AtoN located in the USA could be identified as follows:

`urn:mrn:iala:aton:us:1234X5`

A container aboard a ship using the ISO 6346 identifier scheme for container ids.

`urn:mrn:bic:container-id:CSQU3054383`

### 3 ORGANISATION IDS

The leftmost part of a MRN string is the *Organisation ID* or *OID*. In order to assure that no organisation uses the same OID a centralised assignment process is needed. This is similar to how the Domain Name System, IANA deals with assignments at the higher levels, while subdomains are administered by the organisation to which the space has been delegated.

A simple registration by filling out a template on first come - first served basis [1] is proposed. The request process is described in chapter 5.

The contents of a template should just contain the minimum information needed. Here is an example of a hypothetical registration of “mcp” for the Maritime Connectivity Platform Development Forum:

`mcl.txt`

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Organisation ID:

`mcp`

Date:

`2017-06-22`

Declared registrant:

Registering organisation:

`Maritime Connectivity Platform Development Forum  
http://www.maritimecloud.net`

Contact:

`Thomas Steen Christensen  
THC@dma.dk`

Purpose:

`The Maritime Connectivity Platform Development Forum governs and directs the development of the Maritime Connectivity Platform . Which is a communication framework enabling efficient, secure, reliable and seamless electronic information exchange between all authorized maritime stakeholders across available communication systems.`

`Initially MRNs will be deployed to identify core actors such as organisations, users and vessels.`

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<sup>1</sup> Obviously, registrations of well-known maritime stakeholders such as IMO or ITU can only be performed by the respective organisations.



IALA will provide a web site with all registered OID. IALA will maintain a database of all entries and provides this database as CSV file on the web site as well.

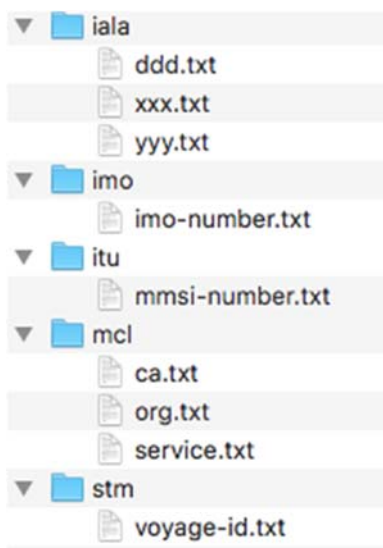
## 4 ORGANISATION-SPECIFIC NAMESPACE IDS

The Organisation-specific namespace ID is the part following immediately after the Organisation ID. It is assigned in a decentralised way by an organisation that has obtained an Organisation ID, just like in the Domain Name System (DNS) whenever an organisation has registered a new domain. The organisation is free to create new subdomains as they want without involving a central authority, for example, enav.foo.org or xxx.enav.foo.org.

While a total decentralised approach would be the easiest from an administrative point of view, it is believed that it would make sense to have a central repository where organisations *should*, but do not have to, register MRN definitions they expect will be used across multiple organisations.

This would make it much easier to discover existing definitions and avoid creating overlapping definitions. Furthermore, it would be easy to find existing definitions that could serve as an inspiration when defining new MRN strings. Finally, there would be no need to send information about MRN definitions back and forth using email or similar methods.

It is proposed that the same public repository used for Organisation IDs could be used for these definitions. The definitions could be stored in a simple hierarchical view such as this:



Each text file would contain a filled-out template similar to the one used for the Organisation ID registration process. The exact contents of this template have yet to be defined. However, it is believed that the following considerations could be used as a starting point:

### 4.1 Syntax

Since MRNs are expected to be involved in a lot of machine to machine communication or inclusion in documents such as Extensible Markup Language (XML) documents. It is vital that the exact syntax is formalised to avoid any kind of unambiguous representation. To avoid this, a description of the structure of MRNs within the namespace, in conformance with the fundamental MRN syntax, is needed. The structure might be described in terms of a formal definition (e.g., using ABNF [RFC5234]), an algorithm for generating conformant URNs, or a regular expression for parsing the string into constituent parts.

### 4.2 Assignment

The main use case of MRNs is to function as unique identifiers. Therefore, it is important to describe which method is used to ensure that MRNs within the namespace are unique. This can be done, for example, by assigning URNs sequentially or using a well-defined process by a single authority. Assignment could also be



partitioned among delegated authorities that are individually responsible for respecting uniqueness rules. This is, for example, used in the STM project for generating unique vessel IDs.

The mechanisms or authorities for assigning URNs to resources should also be described. For example, it should be clear whether assignment is completely open (e.g., following a particular procedure such as first-come, first-served), completely closed (e.g., for a private organisation), or limited in various ways (e.g., delegated to authorities recognised by a particular organisation). If limited, how to become an assigner of names or how to request assignment of names from existing assignment authorities should be described.

### **4.3 Security and Privacy**

This section should describe any potential issues related to security and privacy with regard to assignment or use within the MRN namespace. For example, leakage of private information when names part of the MRN and MRNs are communicated over a public communication channel.

### **4.4 Interoperability**

Interoperability with existing identifier schemes must be evaluated. For example, if an existing non-URN identifier system uses non-ASCII characters these characters must be percent-encoded.

### **4.5 Additional Information**

An optional “Addition Information” section could include information that is useful to those trying to understand this registration or its relationship to other registrations, for example, comparisons to existing MRN namespaces that might seem to overlap.

## **5 GOVERNANCE AND ORGANISATION**

The overall management responsibility of IALA with regards to MRN is a part of the IALA Domains management organisation.

### **5.1 Procedure on obtaining an organisation - specific namespace**

Representatives of recognised organisations may submit a request to obtain an organisation ID under the MRN of IALA. They can do this by email to [mrn@iala-aism.org](mailto:mrn@iala-aism.org). The minimum information needed to process the request is to fill out a template which can be retrieved from the MRN part of the IALA website.

The IALA Domain Administrator will:

- validate the request of the recognized organisation;
- update the organisation ID;
- inform the organisation of the decision.

### **5.2 Appeals**

A recognised organisation may appeal if it disagrees with the decision of the Domain Administrator to approve or reject a request for an organisation ID. 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 organisation shall submit its appeal to the Domain Administrator.

The Domain Administrator shall:

- forward the appeal to IALA Deputy Secretary-General for final decision;
- inform the appellant of the decision.



## **6 ACTION REQUESTED OF THE COUNCIL**

The Council is requested to note that IALA will take the responsibility of ownership of the MRN registry and will manage it according to the principles described in this document.



## ANNEX A MRN ABNF GRAMMAR

The basic syntax for a MRN is defined using the Augmented Backus-Naur Form (ABNF) as specified in [RFC5234]:

```
<MRN> ::= "urn" ":" "mrn" ":" <OID> ":" <OSS>  
        [ rq-components ]  
        [ "#" f-component ]  
  
<OID>  ::= (alphanum) 0*32(alphanum / "-") (alphanum) ;  
          Organisation ID  
  
<OSS>  ::= <OSNID> ":" <OSNS> ; Organisation-specific  
          string  
  
<OSNID> ::= (alphanum) 0*32(alphanum / "-") (alphanum)  
            ; Organisation-specific namespace ID  
  
<OSNS> ::= pchar *(pchar / "/" ) ; Organisation-specific  
          namespace string
```

Rules not defined here:

- alphanum and pchar as defined in [RFC3986].
- rq-components and f-component as defined in [RFC8141].

The namespace, “mrn”, is case-insensitive in processing but is conventionally written in lower case.

Q-component, F-component and R-component are not generally defined by this specification. Organisation specific namespace strings might choose to make use of them where applicable.