Network Working Group
Internet-Draft
Intended status: Informational
Expires: December 15, 2017

K. Nielsen
Danish Maritime Authority

June 13, 2017

Maritime Resource Names (MRN)
draft-knielsen-mrn-urn-01

Abstract

This document describes a Uniform Resource Name (URN) namespace intended for persistently and uniquely naming maritime resources. published by the International Association of Lighthouse Authorities (IALA AISM).

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at http://datatracker.ietf.org/drafts/current/.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on December 15, 2017.

Copyright Notice

Copyright (c) 2017 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to BCP 78 and the IETF Trust's Legal Provisions Relating to IETF Documents (http://trustee.ietf.org/license-info) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.

Table of Contents

1. Introduction 2
2. Specification Template 2
3. Examples 5
4. Namespace Considerations 8
5. Community Considerations 8
6. Security Considerations 9
7. IANA Considerations 9
8. Normative References 9
Author's Address 9

1. Introduction

IALA is a non-profit, international technical association founded in 1957. It gathers together marine aids to navigation authorities, manufacturers, consultants, and, scientific and training institutes from all parts of the world and offers them the opportunity to exchange and compare their experiences and achievements.

Although a lot of standardized identifier schemes for vessels, buoys, mariners and other maritime resources already exist in the maritime world. There is no single system that allows people to specify such an identifier in a uniform and unambiguous way. We believe that it makes sense to introduce a naming scheme that can uniquely identify any maritime resource on a global scale. By maritime resource we more or less
mean anything that has an identity of some kind. This could be organizations, employees, a person, a physical or a virtual object, for instance an electronic document, a buoy, a ship, a mariner, a nautical chart or an electronic service (e.g., "today's weather report for the Oresund Strait"). Not all resources are "retrievable" in an electronic sense; For example, human beings, corporations, and buoys. However, they can still be considered a resource.

It is our opinion that having such a naming scheme will facilitate innovation, integration, trade, safety, and security in the maritime sector, by paving the way for new kind of maritime digital information services.

This document defines such a standard naming system, based on Uniform Resource Names (URNs).

2. Specification Template

Namespace ID

"mrn"

Registration Information

Registration version number: 1

Registration date: 2017-xx-xx

Declared Registrant of the Namespace

Registering organization:

International Association of Lighthouse Authorities (IALA)

10 rue des Gaudines

78100

St Germain en Laye

France

Email: contact@iala-aism.org

Designated Contact:

International Association of Lighthouse Authorities (IALA)

Email: info@mrnregistry.org

<http://www.mrnregistry.org/>

Declaration of structure:

The Namespace Specific String (NSS) of all URNs that use the "mrn" NID shall have the following structure:

```
<URN>   ::= "urn:mrn:" <OID> ":" <OSS>

<OID>   ::= 1*(ALPHA / DIGIT) ; Organizational ID

<OSS>   ::= <OSNID> ":" <OSNS> ; Organizational specific string

<OSNID> ::= 1*(ALPHA / DIGIT / "-")
            ; Organizational specific namespace ID

<OSNS>  ::= 1*<URN chars> ; Organizational specific namespace string

DIGIT   ::= %x30-39 ; 0-9

ALPHA   ::= %x61-7A ; a-z
```

Basics of the ABNF notation used :

" " literals (terminal character strings); terms not in quotes are non-terminals

/ alternatives

() indicates a sequence group, used as a single alternative or as a single repeating group

<a>*<b> indicates that the following term or group can repeat at least <a> and at most <b> times; default values are 0 and infinity, respectively

; comment

<URN chars> As defined in [@!RFC2141]

Relevant ancillary documentation:

The process for assigning unique organizational IDs is managed by IALA. Details and application process can be found at <http://www.mrnregistry.org>.

Identifier uniqueness considerations:

Guaranteeing uniqueness is a two-way process. First, IALA will guarantee that each organization will be assigned a unique organizational id that will never be reused. Second, each

organization must guarantee that they do not assign identical organizational specific strings (OSS).

Identifier persistence considerations:

Each individual organization must guarantee that assigned URNs will not be reused and will remain valid beyond the lifecycle of the referenced resources. However, it should be noted that although the URNs remain valid, the status of the referenced resource may change.

Process of identifier assignment:

While the assignment of OIDs for each organization is managed by IALA. The assignment of organization specific namespace ids and strings are fully managed by each individual organization.

Process of identifier resolution:

There are no plans to provide a general available resolution mechanism. However, organizations are free to setup resolution servers for all or part of the URNs assigned under their organizational id.

Rules for Lexical Equivalence:

The entire URN is case insensitive.

Conformity with URN syntax:

There are no additional characters reserved except as noted in the ABNF above.

Validation mechanism:

In the case of each sub-namespace, there will be namespace-specific rules for determining validity. There are no plans to provide a central repository for these rules.

Scope:

Global.

3. Examples

All the examples provided in the following section are hypothetical examples. Real world naming schemes will most likely look different.

Using the MRN identifier scheme a vessel with an IMO number of 9743368 could be identified as follows:

urn:mrn:imo:imo-number:9743368

The governing organization of how to assign IMO numbers is the International Maritime Organization (IMO). IMO may have delegated the actual assignment of numbers to another organization. But IMO is still the organization who has determined that an IMO number is an unique seven-digit number. Within the context of maritime resource names the organizational id (OID) refers to the organization who governs the syntax and rules of a particular resource type. In the above case the organizational ID is "imo".

Each organization further divides the organizational specific string (OSS), which is the part following "imo", into two parts. An organizational specific namespace ID (OSNID) which is a unique identifier within the governing organization for a particular type of resource. In this example, we have used "imo-number" but it could just as well have been "imonumber" or just "number".

The second part is the organizational specific namespace string (OSNS). Which is the only part that differs for resources of the same type, in this case it is "9743368". The organizational specific namespace string is (as the name implies) specific for a combination of a OID and OSNID. In this case the organizational specific namespace string is always a 7 digit IMO number.

Another way to identify the same vessel might be to use its MMSI number. Here the identifier could look like this:

urn:mrn:itu:mmsi:538070999

In this case ITU is the governing body because MMSI numbers are based on recommendation M.585 from ITU. It might be that national bodies does the actual assignment of MMSI numbers, but ITU is the governing body for the standardization of MMSI numbers.

As can be seen from these two examples. The same vessel can be identified by multiple different identifiers. This is no different to a person who might be identified either by his driver license number or his social security id. Multiple identities can identify the same entity. Some parameters frequently used for identification, such as 'names of people', do most of the time qualify as identifiers, as they are not guaranteed to be unique. A single identifier must refer to one and only one identity.

The concept of URNs can be taken from a very coarse grained level to a very fine grained level. For example, a container ship might be identified by one of the two previous URL's. The containers aboard the ship might be identified with an URN adapting the ISO 6346 identifier scheme for container ids.

urn:mrn:bic:container-id:csqu3054383

Finally, individual items in a single container might be identified by another URN scheme. It might even be possible to integrate with URNs defined outside of the urn:mrn namespace. For example, all items in a container might be identified by an electronic product code ([RFC5134]). In other words, the usage of URNs as identifiers are not limited to those defined within this document. In the future other non-maritime sectors might even adopt similar naming schemes based on URNs to facilitate easier integration across sector boundaries.

An identifier does not need to be a physical object, but can be a virtual item such as an electronic document. For example, IMO might decide that all of their documents would use a "publications" prefix. So

urn:mrn:imo:publications:if110s

would refer to the publication "IMO SOLAS Consolidated Spanish Edition, 2014 IF110S"

On the other hand an organization such as IALA might decide that all of their publications would follow another format where the category of the publication is included in the identifier. For example, a recommendation could be

urn:mrn:iala:publications:recommendation:e-nav-140

while the identifier of a guideline might be written as

urn:mrn:iala:publications:guideline:synchronisation-of-lights-1069

As can be seen from the previous example the Organizational specific namespace string can be split into multiple hierarchies. It is all up to the governing organization how they want to structure their identifiers.

Another example of identifiers with multiple hierarchies could be an identifier scheme for lights and buoys. Here IALA could choose to let the OSNS consist of <CountryCode>:<National Identifier>. For example

urn:mrn:iala:aton:us:1234x5

There are no requirements that organizations are permanent entities. For example, the European STM Validation project could choose to use "stm" as their organizational id. So, for example, a voyage id in this project might look like

urn:mrn:stm:voyage:id:xcus231230

Internally in the project they can use xcus231230 to refer to a voyage plan. But when working with external systems or other projects the full URN can be used in case other projects uses another type of identifier for a particular voyage.

As can be seen from all these examples. The scheme is highly adaptable. Each organization 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.

4. Namespace Considerations

IALA traditionally addresses the maritime community, but its resources are made available to all interested parties. While URN namespaces may exist for which any generic naming system can be encoded. Is is the goal of IALA to foster a community around maritime resource names within the global maritime community. Therefore, the possibility of binding to various other namespace repositories have been deemed impractical.

5. Community Considerations

Members of the IALA community will benefit from persistent and globally unique identifiers for use in software and in conformance with protocols developed and used by IALA and third-party collaborators.

While in general organizations will be free to structure their organization specific namespace in any way they see fit (as long as they guarantee uniqueness and persistence). It is our intention to provide general guidelines and best practices in the future. For example, encouraging that every organization use "publications" as the organization specific namespace id for referring to official publications from them. Or that every identifier that refers to a country uses standards available in ISO 3166 for the representation of names of countries and their subdivisions.

6. Security Considerations

There are no additional security considerations other than those normally associated with the use and resolution of URNs in general, which are described in [RFC1737], [RFC2141], and [RFC3406].

7. IANA Considerations

This document defines a URN NID registration that is to be entered into the IANA registry of URN NIDs. It specifically requests the MRN NID.

8. Normative References

[RFC1737] Sollins, K. and L. Masinter, "Functional Requirements for Uniform Resource Names", RFC 1737, DOI 10.17487/RFC1737, December 1994, <http://www.rfc-editor.org/info/rfc1737>.

[RFC2141] Moats, R., "URN Syntax", RFC 2141, DOI 10.17487/RFC2141, May 1997, <http://www.rfc-editor.org/info/rfc2141>.

[RFC3406] Daigle, L., van Gulik, D., Iannella, R., and P. Faltstrom, "Uniform Resource Names (URN) Namespace Definition Mechanisms", RFC 3406, DOI 10.17487/RFC3406, October 2002, <http://www.rfc-editor.org/info/rfc3406>.

[RFC5134] Mealling, M., "A Uniform Resource Name Namespace for the EPCglobal Electronic Product Code (EPC) and Related Standards", RFC 5134, DOI 10.17487/RFC5134, January 2008, <http://www.rfc-editor.org/info/rfc5134>.

Author's Address

Kasper Nielsen
Danish Maritime Authority
Carl Jacobsens Vej 31
2500 Valby
Denmark

Email: kasperni@gmail.com