Input paper: [[1]](#footnote-1) ARM11-9.6

Input paper for the following Committee(s): check as appropriate Purpose of paper:

**X** ARM **□** ENG **□** PAP **□** Input

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Agenda item [[2]](#footnote-2) (from agenda) 9

Workplan Task Number / Technical Domain 2 …………………………………

Working Group WG 2 …………………………

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On the IALA governance of MRN

# Summary

On its 65th session, the IALA council adopted the proposal to obtain and manage the ‘MRN’ domain of URN (C65‐11.4.4.1). Furthermore, the IALA ARM committee (in collaboration with the ENAV committee) developed a guideline relating to MRN; G1143, which was adopted by council meeting #69. The ARM committee is currently revising G1143, and edition 2 is currently underway.

Recapturing that the MRN syntax is:

<MRN> ::= "urn":"mrn":<OID>:<OSS>

Where OID is Organisation ID

And OSS is Organisation specific string

With regard to these documents, the authors would like to propose the following:

1. The guideline G1143 should only be a guideline for how IALA manages the IALA domain within MRN.
2. Regarding the principles for accepting organisations to obtain domains under MRN (OID) from IALA, we would like to propose that IALA keeps an open policy for this, which we believe is in the “spirit” of the original document (C65‐11.4.4.1) adopted by council. This would for instance include the use of country code (following ISO 3166-1 alpha-2) as a possible organisation ID (OID).
3. We would like to propose that the ‘INT’ domain referenced in the draft guideline G1143, should only be used for temporary uses, and that IALA should not try to govern the structure of the ‘INT’ domain. We believe that the current phrase in the draft edition 2, “when it is impractical to assign ‘iala’”, is very wide, and could potentially open up for a problematic use of the ‘int’ domain. One possible use could be as an example structure for different domains.
4. We believe that harmonisation of the structure of different MRN domains could be very beneficial in order to ease interoperability between different systems utilizing MRN. For this purpose, we propose that IALA will host a forum for MRN domain owners, where the individual MRN structures could be discussed, and harmonised if deemed beneficial. The ENAV working group ’Digital Information System’, could be an obvious “host” for such a forum.

In addition to this, we have included the guideline for MRN used within the MCP domain as inspiration, background information. This guideline is something that is still being matured by the MCP (Maritime Connectivity Platform) consortium (www.maritimeconnectivity.net).

# Action requested of the Committee

The committee is requested to note the information.

1. The MCP namespace

We first describe the MCP namespace. As explained above it is a subspace of the Maritime Resource Name (MRN) space [3], which is an official URN namespace. The syntax definitions below use the Augmented Backus-Naur Form as specified in [RFC5234].

The syntax for a MRN is as follows [3]:

<MRN> ::= "urn" ":" "mrn" ":" <OID> ":" <OSS>

[ rq-components ]

[ "#" f-component ]

<OID> ::= (alphanum) 0\*20(alphanum / "-") (alphanum)

<OSS> ::= <OSNID> ":" <OSNS>

<OSNID> ::= (alphanum) 0\*32(alphanum / "-") (alphanum)

<OSNS> ::= pchar \*(pchar / "/")

The rules for alphanum and pchar are defined in [RFC3986].

The optional rq-components and f-component are specified in [RFC8141].

"mrn" specifies that the URN is within the MRN namespace. The Organization ID (OID) refers to an organization that is assigned a subspace of MRNs such as IMO, IALA, or the MCP. Syntactically, it is a string that must be unique across the "mrn" scheme. The Organization Specific String (OSS) is specified and managed by the governing organization in a consistent way conform to the definitions of the MRN namespace. In particular, each organization must structure the OSS into two parts: the Organization Specific Namespace ID (OSNID), and the Organization Specific Namespace String (OSNS). The OSNID identifies a particular type of resource (uniquely within the governing organization), while the OSNS identifies the particular resource (uniquely for its type within the governing organization). Altogether, this ensures that the resulting URN is globally unique.

For a MRN governed by the MCC the OID reads "mcp", and the OSNID specifies one of the five types currently used within the MCP: device, organization, user, vessel, and service. Moreover, the definition of the OSNS takes into account the distributed structure of the MCP: identities can be provided and managed by several identity providers. In detail, the syntax of a MRN governed by the MCC (short: MCP MRN or MCP name) is as follows:

<MCP-MRN> ::= "urn" ":" "mrn" ":" "mcp" ":" <MCP-TYPE> ":" <IPID> ":" <IPSS>

<MCP-TYPE> ::= "device" | "org" | "user" | "vessel" | "service"

<IPID> ::= <CountryCode> | (alphanum) 0\*20(alphanum / "-") (alphanum)

<IPSS> ::= pchar \*(pchar / "/")

"mcp" specifies that the governing organization is the MCC. The next element is MCP-TYPE. As explained above this pins down one of the five types currently used within the MCP. The Identity Provider ID (IPID) refers to a national authority or other kind of organization that acts as an identity provider within the MCP. If the identity provider is a national authority then the IPID must be a country code as defined by ISO 3166-1 alpha-2. Otherwise it will be a string of the same syntax as that for OIDs. The IPID must be unique across the urn:mrn:mcp namespace. The Identity Provider Specific String (IPSS) can be defined and managed by the respective identity provider in a way that is consistent and conforms to the definitions of the MRN namespace and requirements laid down by the MCC. In particular, the identity provider must ensure that the IPSS identifies a particular resource uniquely for its type within the domain of the identity provider. Altogether, this will ensure that the resulting URN is globally unique.

Important note: We expect that the definition of MCP-TYPE, i.e. the set of types, will be modified and possibly extended in the near future. In particular, "vessel" is likely to be replaced by "ship".

Examples:

* urn:mrn:mcp:user:dma:alice - valid MCP MRN for a user, where dma specifies the ID Provider, and the subsequent IPSS string is defined to give the username.
* urn:mrn:iala:aton:gb:sco:6789-1 - valid MRN for a marine aid to navigation (AtoN), where gb stands for United Kingdom, sco for Scotland, and the number is the scottish asset identifier. The example is from [4]. This is not a MCP MRN.
* urn:mrn:mcp:device:mirX:aton:gb:sco:6789-1 - valid MCP MRN for the same AtoN, where mirX specifies the ID Provider, and the subsequent IPSS string is defined to first specify the type of the device, and then to follow the country-specific convention of the IALA scheme.

The following requirements pin down that and how the MCP namespace can be managed decentrally.

**ID2 The MCC can delegate the assignment of part of the MCP namespace to other organizations that act as identity providers. More concretely, this means that the organization, say X, must hold an IPID, say string "nameofx", and is then responsible for the namespace with the prefix "urn:mrn:mcp:<MCP-TYPE>:nameofx".**

**ID2.1 The MCC must ensure that each IPID refers to at most one identity provider.**

**ID2.2 Each Identity Provider must ensure to respect all syntax prescribed in the MRN specification. Moreover, each Identity Provider must ensure that each IPSS of their name space refers to at most one entity of their domain.**

**ID2.3 The MCC can give recommendations on how to structure the IPSS, e.g. to harmonize the syntax for particular types of entities. These recommendations will not be binding. However, the MCC reserves the right that a particular syntax can be binding with respect to conformance to certain profiles.**

Note that ID2.1 and the second part of ID2.2 together ensure uniqueness: one MCP MRN is assigned to at most one entity. This is a general requirement for any URN. ID2.3 allows us to harmonize the IP specific strings while not principally restricting the governance of an IP provider over its namespace.

Example:

Say there are two ID providers, MIR X and MIR Y. Assume the MCC assigns the IPID "mirx" to MIR X, and "miry" to MIR Y respectively. The MCC must ensure that the strings "mirx" and "miry" are not assigned to any other MIR. MIR X is responsible for the namespace "urn:mrn:mcp:<MCP-TYPE>:mirx:\*", and MIR Y is responsible for the namespace "urn:mrn:mcp:<MCP-TYPE>:miry:\*" respectively. They might decide to employ the same syntax for the IP specific string, and make this part of a profile they both adhere to. Other ID providers are not bound to use the same syntax. However, if they do not comply to it they cannot be compliant to that profile.

Finally, the following is to ensure a good practice of transparency and interoperability:

**ID3 Every Identity Provider is encouraged to publish he syntax that describes their name space as well as provide a reference implementation that recognizes the strings of their namespace.**

**Important note**: According to current discussions in the MCC WGs this recommendation is likely to become mandatory in the future. Also, it is foreseen that an automated service will be hosted from the MCP web page that makes such information and tools available.

* 1. Further Requirements for a Strong Notion of Maritime Identity

The vision of the MCP is to enable a strong concept of digitial maritime identity. Hence, we put down requirements that go beyond what is commonly required of URNs. The following ensures that one physical entity cannot have several MCP MRNs. For example, this supports law enforcement: When a maritime entity gets discovered and blacklisted for "bad behaviour" (e.g. fake emergency signalling) then it cannot simply revert to another MCP identity and participate as usual.

**ID1 Every entity registered as a MCP participant shall hold at most one MCP MRN (i.e. MRN governed by the MCP). This does not exclude that a MCP entity can hold other MRNs, but these must be within namespaces governed by other organizations (e.g. IMO). Also, we will formulate exceptions concerning legacy MRNs within the MCP namespace.**

Important note: According to current discussions in the MCC WGs this requirement is likely to be strengthened to "Every entity of the MCP shall hold exactly one MCP MRN (i.e. MRN governed by the MCP)" in the future. Similarly to the current formulation this does not exclude that an MCP entity can hold another MRN of another organization. But it will give a clear concept of MCP entity: those entities that are registered under an MCP MRN name.

Hence, the AtoN in the example above can be identified by its IALA MRN, or its MCP MRN respectively. However, Requirement ID1 rules out that the AtoN can be referred to by a second MCP MRN. The following requirements implement ID1 in a decentral manner.

**ID1.1 Each Identity Provider shall ensure that each entity they register holds at most one MCP MRN within their namespace.**

**ID1.2 Each holder of a maritime entity shall ensure that this entity is registered with at most one MCP identity provider.**

Note that practically it won't be possible to avoid that a "bad player" will seek to register their entity at several different Identity Providers and thereby obtain several MCP identities for it. However, ID1.1 ensures that they can obtain at most as many identities as there exist Identity Providers. And ID1.2 ensures that when it is discovered that an entity holds several MCP MRNs of different providers then it is clear that they have violated a rule (and action can be tied to this).

1. Input document number, to be assigned by the Committee Secretary [↑](#footnote-ref-1)
2. Input papers should be assigned to a work task as listed in the Committee work plan which is available in input papers. Leave open if uncertain but consider how the paper is to be processed if not relevant to a work task [↑](#footnote-ref-2)