MARITIME RESOURCE NAMES (MRN) IT'S VALUE AND USE

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- Technical aspects
  - URI, URL, URN
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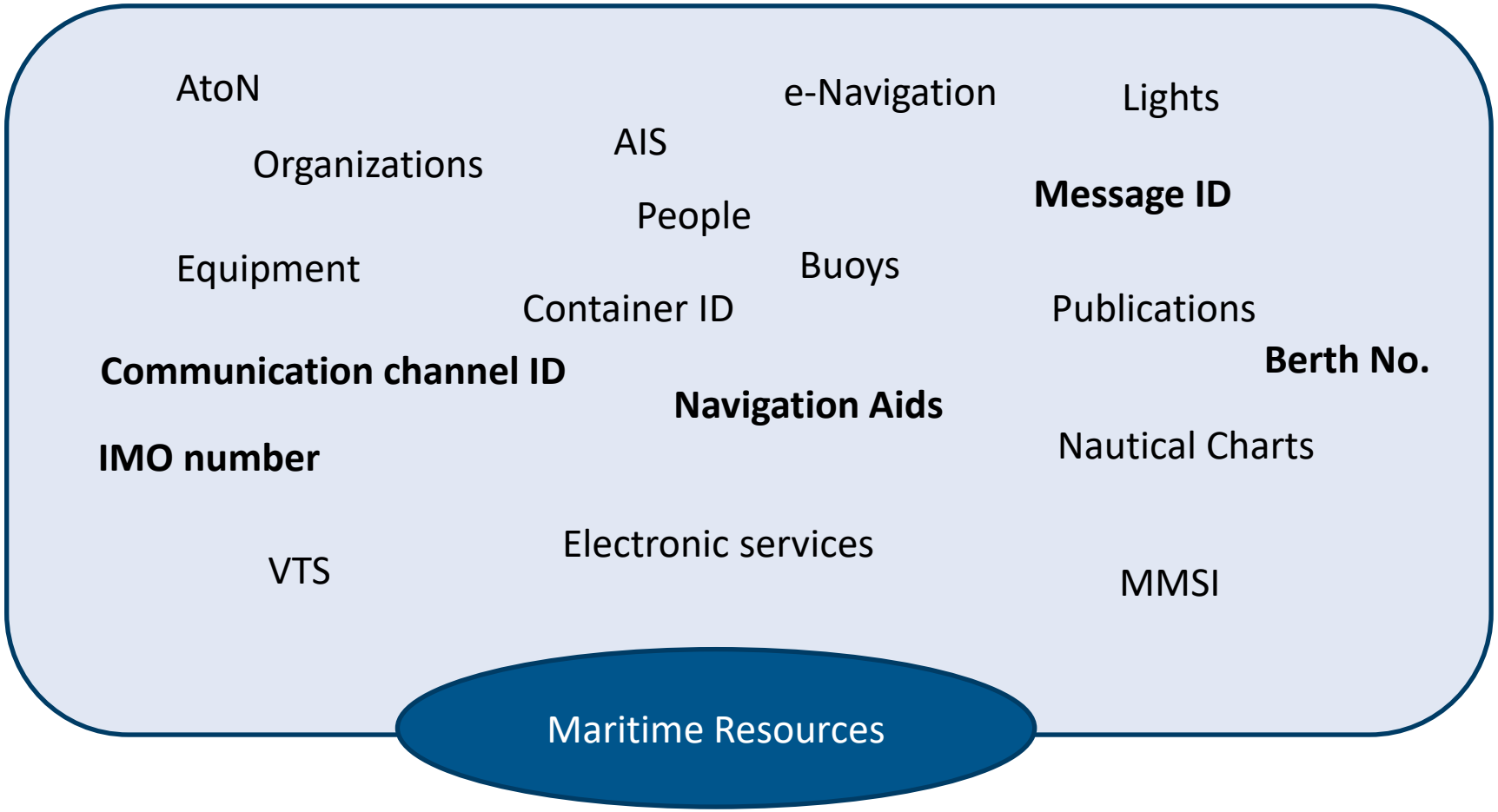
Unique identifier for all types of resources



What is Maritime Resource Names (MRN) ?

MRN is a **naming scheme** that can uniquely identify any maritime resource on a global scale. This could be **organization, 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 **electrical service**.

MRN will be an essential method to identify all maritime resource **machine readable** in the e-Navigation environment.

URI, URL, URN

URI (Uniform Resource Identifier)
<Scheme>:<Scheme-specific-structure>

URN (Uniform Resource Names)
Paul Petry
urn:mrn:iala:person:nnnn.n

What

URL(Uniform Resource Locator)
10 rue des Gaudines 78100
Saint Germain en Laye
http://iala-aism.org/

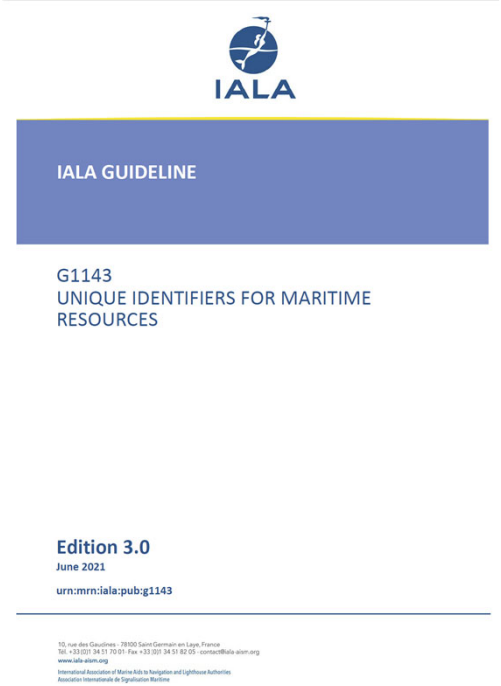
Where

Example of URN

URN	corresponds to
`urn:isbn:0451450523`	The 1968 book *The Last Unicorn*, identified by its book number.
`urn:isan:0000-0000-2CEA-0000-1-0000-0000-Y`	The 2002 film *Spider-Man*, identified by its audiovisual number.
`urn:ISSN:0167-6423`	The scientific journal *Science of Computer Programming*, identified by its serial number.
`urn:ietf:rfc:2648`	The IETF's RFC 2648.
`urn:mpeg:mpeg7:schema:2001`	The default namespace rules for MPEG-7 video metadata.
`urn:oid:2.16.840`	The OID for the United States.
`urn:uuid:6e8bc430-9c3a-11d9-9669-0800200c9a66`	A version 1 UUID.
`urn:nbn:de:bvb:19-146642`	A National Bibliography Number for a document, indicating country (`de`), regional network (`bvb` = *Bibliotheksverbund Bayern*), library number (19) and document number.
`urn:lex:eu:council:directive:2010-03-09;2010-19-UE`	A directive of the European Union, using the proposed Lex URN namespace.
`urn:lsid:zoobank.org:pub:CDC8D258-8F57-41DC-B560-247E17D3DC8C`	A Life Science Identifiers that may be resolved to http://zoobank.org/urn:lsid:zoobank.org:pub:CDC8D258-8F57-41DC-B560-247E17D3DC8C .
`urn:epc:class:lgtin:4012345.012345.998877`	Global Trade Item Number with lot/batch number. As defined by Tag Data Standard[11] (TDS). See more examples at EPC Identification Keys.
`urn:epc:id:sgtin:0614141.112345.400`	Global Trade Item Number with an individual serial number
`urn:epc:id:sscc:0614141.1234567890`	Serial Shipping Container Code
`urn:epc:id:sgln:0614141.12345.400`	Global Location Number with extension
`urn:epc:id:bic:CSQU3054383`	BIC Intermodal Container Code as per ISO 6346
`urn:epc:id:imovn:9176187`	IMO Vessel Number of marine vessels
`urn:epc:id:gdti:0614141.12345.400`	Global Document Type Identifier of a document instance
`urn:mrn:iala:aton:us:1234.5`	Identifier for Marine Aids to Navigation
`urn:mrn:iala:vts:ca:ecareg`	Identifier for Vessel Traffic Services
`urn:mrn:iala:wwy:us:atl:chba:potri`	Identifier for Waterways
`urn:mrn:iala:pub:g1143`	Identifier for IALA publications
`urn:microsoft:adfs:claimsxray`	Identifier for federated identity; this example is from Claims X-Ray[12]

Maritime Resource Names

Maritime Resource



should have a unique identifier

so that people and systems could distinguish it from any other resources

should be addressable

should have a rough location to be capable of being manipulated using a syntax

Requirements for MRN

Unique. Every id that is created must differ from any other id that is created.

Decentralized. It must be possible to create IDs without relying on a single global source that must be used every time an ID is created.

Forward compatible. It must be possible to add new naming schemes for new maritime domains in the future. Technologies will only come and go with an ever-increasing rate in the coming years.

Flexible. The naming scheme must be very flexible and allow for identifying any type of resource such as documents, cargo, routes, equipment, ships and mariners, giving no preference to any specific type of IDs.

MRN syntax

- Syntax (128 byte limit)

  urn : mrn : <NameSpaceString>

  <NSS> = <Governing Organization> : <Type> : <Country Code> : <Identifier>

  - Country code: ISO 3166-1 alpha-2

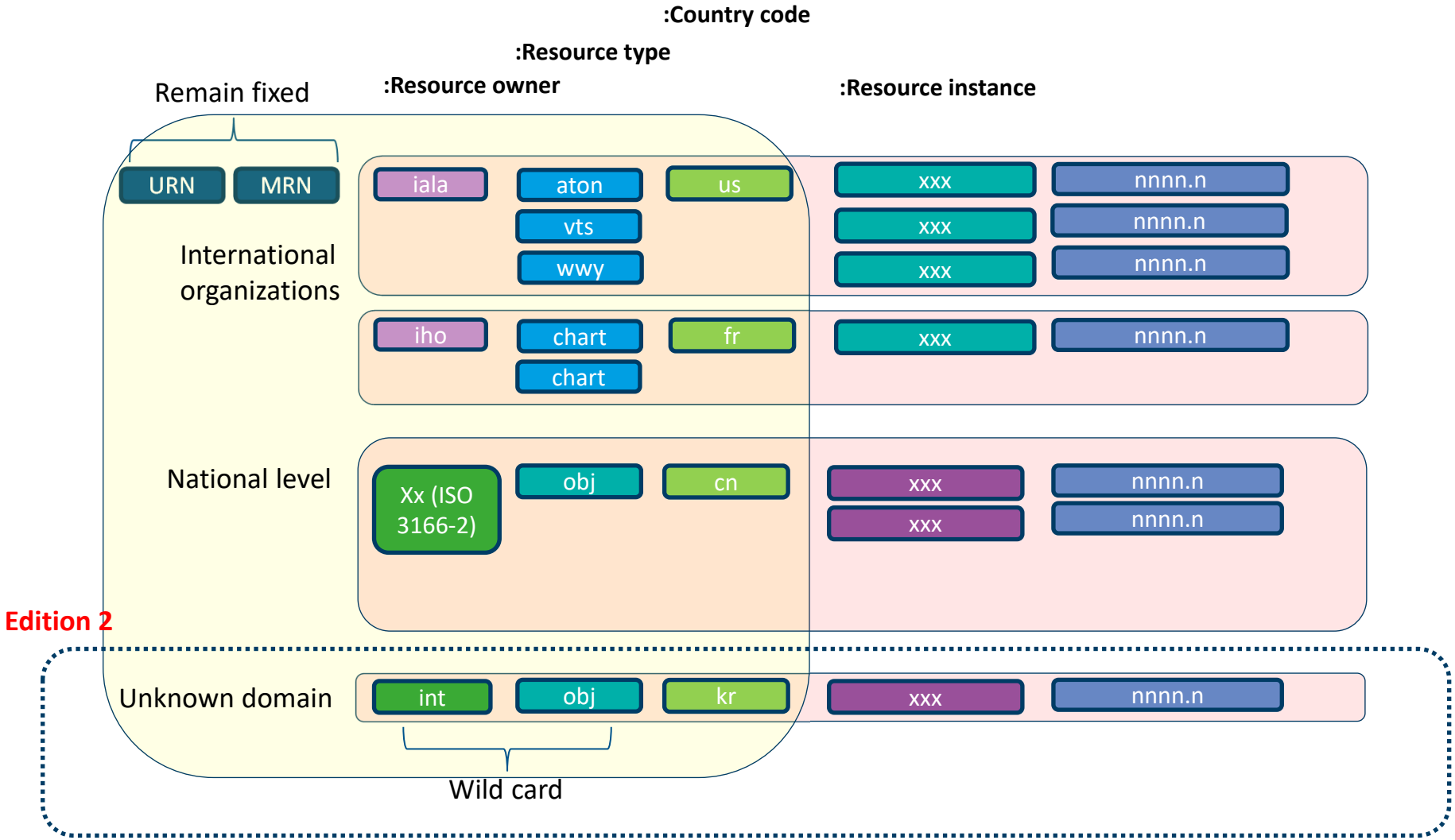
ID types		Syntax constraint
Marine Aids to Navigation	Aton	ANNEX A, Section A1
VTS services	Vts	ANNEX A, Section A2
Waterways	Wwy	ANNEX A, Section A3
Publications	**Pub**	**ANNEX A, section A4**
Object	**obj**	**ANNEX A, section A5**

  - Examples:

    urn:mrn:iala:aton:us:1234-5

    urn:mrn:iala:aton:gb:sco:6789-1

IALA and INT namespaces



MRN for Aids to Navigation

G1143 edition 3.0 on MRN

- Examples:

urn:mrn:iala:aton:kr:A01010001
In example [3] Region(1) + Coast(2) + AtoN Type(2) + unique number(5): A01010001

Region Code

Region1	Region2	Region3	Region4	Region5	Region6	Region7
A	B	C	D	E	F	G

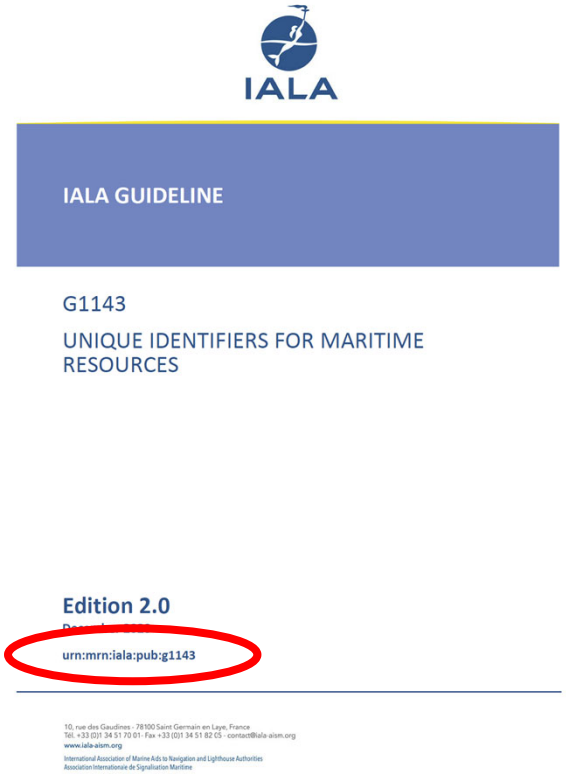
Coast Number

Coast1	Coast2	Coast3	Coast4
01	02	03	04

AtoN Type

Lighthouse	Light Buoy	Buoy	Light Beacon	Beacon	Bridge	Racon
01	02	03	04	05	06	07

MRN for publications

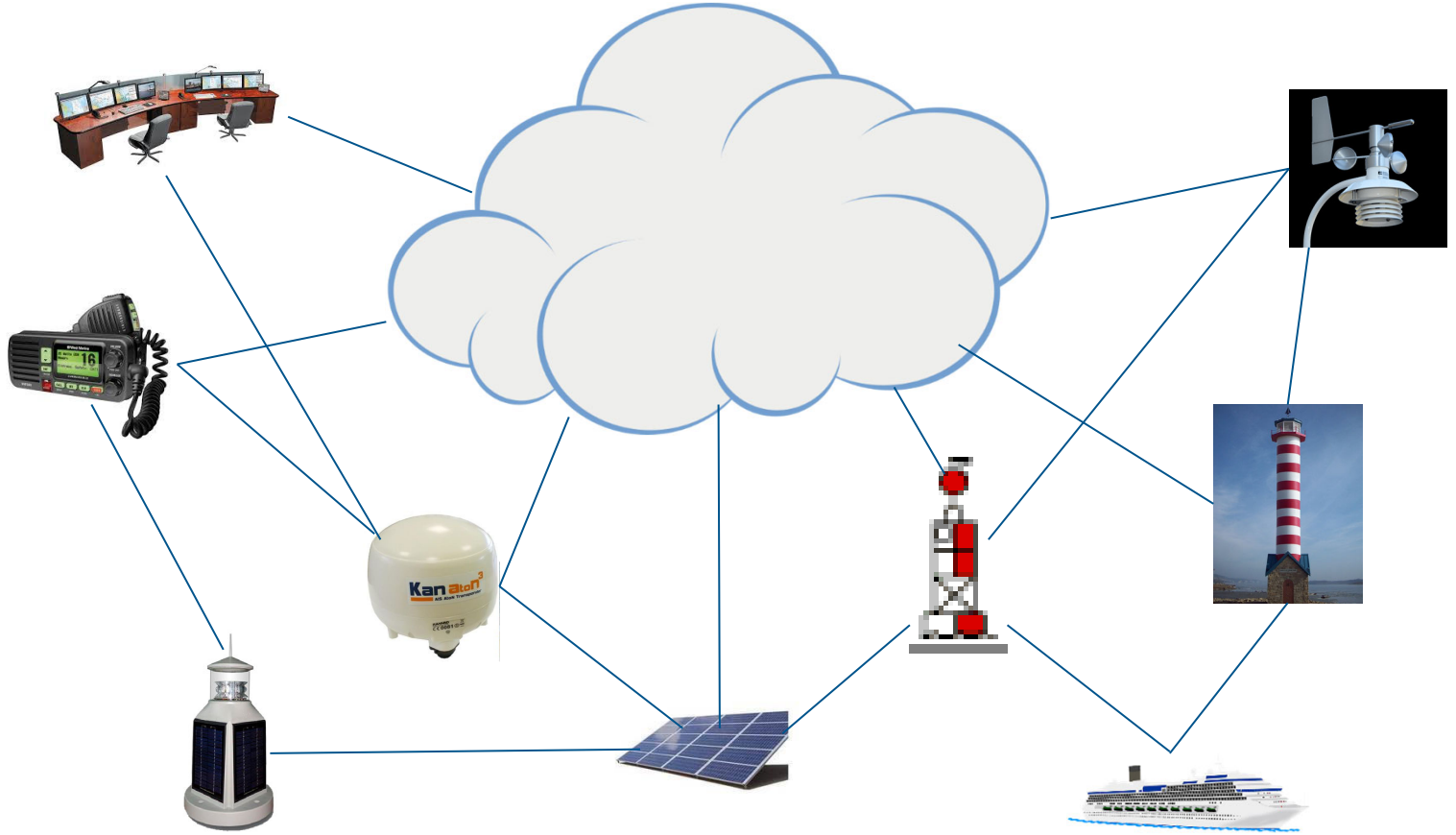


ID types	Examples
Marine Aids to Navigation	urn:mrn:iala:aton:us:1234.5
VTS services	urn:mrn:iala:vts:ca:ecareg
Waterways	urn:mrn:iala:wwy:us:atl:chba:potri
Publications	**urn:mrn:iala:pub:g1143:ed1.0** **urn:mrn:iala:pub:g1143_es:ed1.0** **urn:mrn:iala:pub:g1143_fr:ed1.0**
Object	urn:mrn:iala:obj:us:nm:42.42

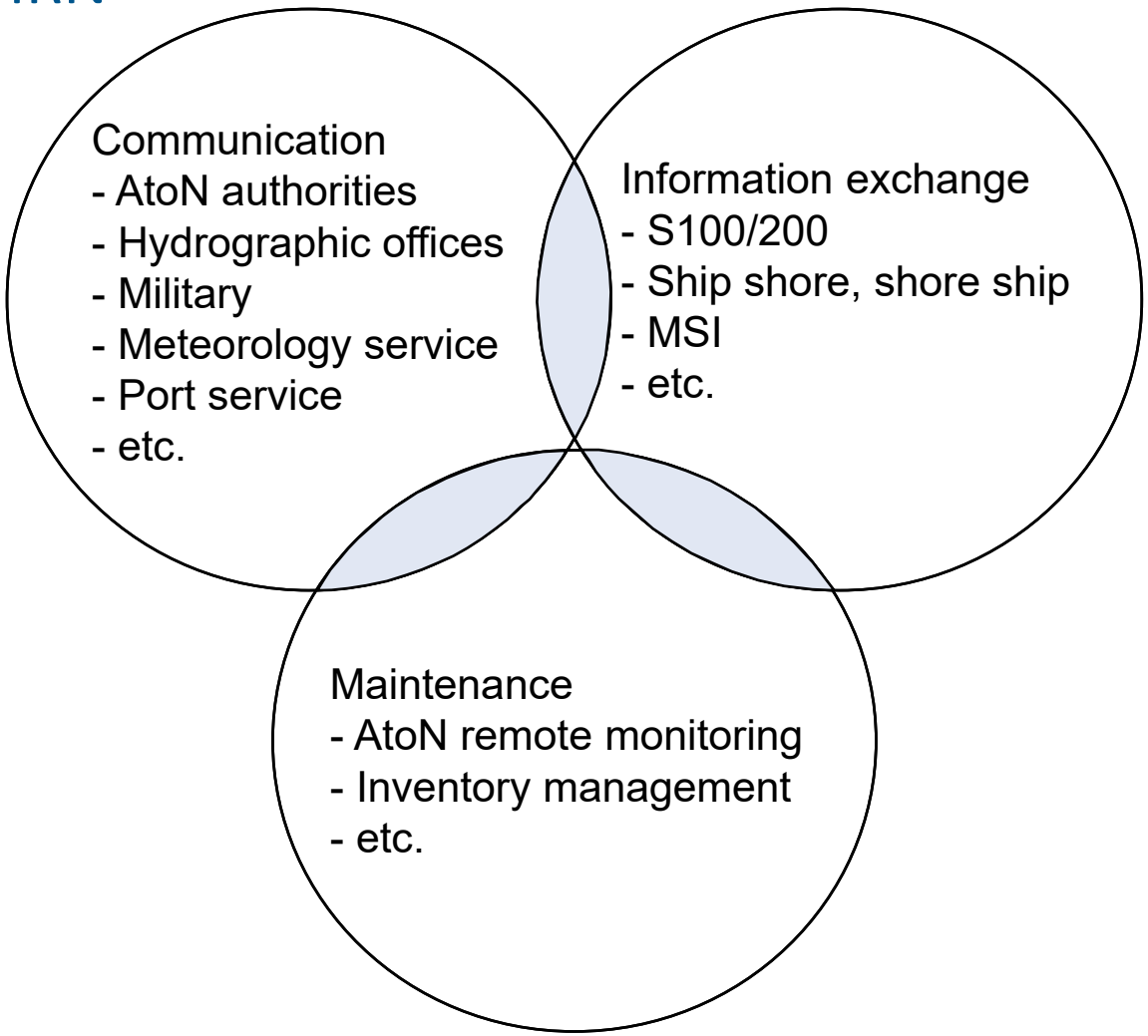
List of MRN organization IDs

Organization IDs	Date	registering organization	contact
urn:mrn:iala:	2017-07-30	International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) http://www.iala-aism.org	Minsu Jeon tm@iala-aism.org
urn:mrn:iho:	2018-04-04	International Hydrographic Organization (IHO) http://www.iho.int	Yong Baek addt@iho.int
urn:mrn:mcl: urn:mrn:mcp:	2017-06-22	Maritime Connectivity Platform Consortium (MCC) https://maritimeconnectivity.net/	Thomas Steen Christensen thomas@dmc.international
urn:mrn:gs1:	2018-10-30	GS1 Global Office www.gs1.org	Jaco Voorspuij jaco.voorspuij@gs1.org
urn:mrn:stm:	2019-03-28	Sea Traffic Management (STM) https://www.stmvalidation.eu/	Fredrik Karlsson Fredrik.Karlsson@Sjofartsverket.se
urn:mrn:mission:	2019-02-01	Manage Information Seamlessly in Ports and Hinterlands (MISSION) https://www.lhg.com/index.php?id=239	Anisa Rizvanolli Anisa.Rizvanolli@cml.fraunhofer.de
rn:mrn:ipcdmc:	2019-06-26	International Port Collaborative Decision Making Council (IPCDMC) http://www.ipcdmc.org	Michael Bergmann michael.bergmann@bergmann-marine.com
urn:mrn:nlp:	2020-03-20	Navelink Industry Consortium https://navelink.org	Tobias Axelsson info@navelink.org
urn:mrn:kor:	2020-03-27	The Ministry of Oceans and Fisheries, Republic of Korea (MOF) http://mof.go.kr	Sunbae Hong hong0610@korea.kr

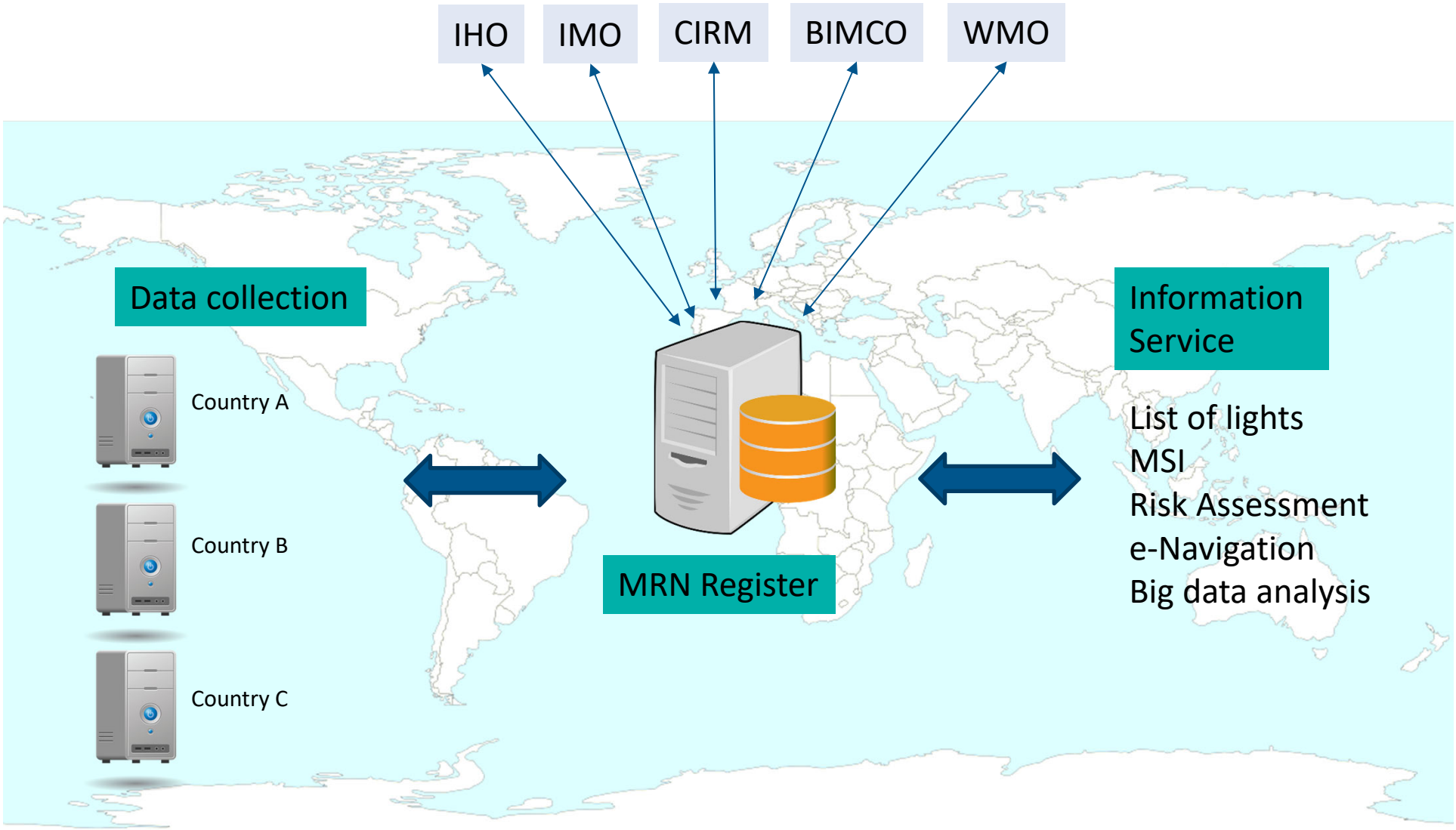
MRN



Use of MRN


Communication
- AtoN authorities
- Hydrographic offices
- Military
- Meteorology service
- Port service
- etc.
Information exchange
- S100/200
- Ship shore, shore ship
- MSI
- etc.
Maintenance
- AtoN remote monitoring
- Inventory management
- etc.

MRR Maritime Resource Registry



QUESTIONS?

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