S-130PT4

2022-10-24

Opening and Welcome

S130PT4-1

Meeting Protocol

Meeting participants are kindly requested to note the following meeting protocols:

- Please keep your camera and microphone turned **off** if you are not talking or presenting.
- If you want to make an intervention, **please turn your camera and microphone on and raise (and**
- **wave) your hand** to indicate that you wish to speak. (Please turn your camera and microphone off when finished)
- Don't forget to turn your microphone **on** before speaking, and **off** when finished.
- Please use the **Chat** function to communicate any text information to the meeting.
- It is intended to record the meeting for internal purpose only – please inform the secretary if you have an objection to this.
- If you have problems connecting using Firefox or other browser – please try using Chrome.

Approval of Agenda

S130PT4-2

https://iho.int/uploads/user/Services%20and%20Standards/HSSC/Project%20Team%20S-130/S130PT04/S130PT04_2_2022_EN_draft%20Agenda_v1.pdf

Agenda 4-2

Agenda item	Title	Lead	Remarks
1. Opening and Administrative Arrangements			
S130PT4-1	Opening and Welcome	Chair	
2. Approval of Agenda			
S130PT4-2	Agenda	Chair	
S130PT4-2.1	Status of List of Actions and Decisions from S-130PT3	IHO Sec.	
3. Work Items			
S130PT4-3.1	Present Steps in the Development of a Product Specification from S-97 IHO Guidelines	SSG Leader	
S130PT4-3.2	Report of the Schema Sub-Group	SSG Leader	
	a. Present the MRN identifier concept	SSG Leader	
	b. Propose general rational purpose of S-130PT	SSG Leader / JP (IIC)	
	c. Discussion on and approval of feature type name: - Spatial Extent of Oceans and Seas - Global Sea Areas - Outer Limits of Sea area	All	
	d. Discussion on and approval of draft Application Schema	All	
	e. Presentation of draft Feature Catalogue and GML schema (and potentially sample dataset)	JP (IIC)	
S130PT4-3.3	Discussion on sample and final dataset, including: - Recommendations about producer of final dataset - Number of versions to be produced	All	
S130PT4-3.4	a. Discussion on navigational purpose of S-130 Product Specification	Chair	
	b. Opportunity to review the draft description	China	
S130PT4-3.5	Discussion on need for Portrayal Catalogue for S-130 Product Specification	All	
S130PT4-3.6	Discussion on relevant metadata elements	All	
S130PT4-3.7	Discussion on data quality elements into the Application Schema	Vice-chair	
S130PT4-3.8	Discussion on shift towards SharePoint as an editing tool	All	
S130PT4-3.9	Discussion on assignment of tasks to Project Team, Sub-Groups or others	All	
4. Any Other Business (AOB)			
S130PT4-4.1	AOB	IHO Sec.	
S130PT4-4.2	Group Photo	Chair	
5. Date and Venue of Next Meeting			
6. Review Action Items			
S130PT4-6	Review Action items	IHO Sec.	
Close			

Status of List of Actions and Decisions from S-130PT3

S130PT4-2.1

List of Actions and Decisions from S-130PT3

Action	Status
[Action 3/01] S-130PT are invited to update the list of members of the S-130PT and contact details.	Ongoing

List of Actions and Decisions from S-130PT3

- **[Decision 3/01]** S-130PT3 approved the agenda as presented at the meeting.
- **[Decision 3/02]** S-130PT3 agreed to update the action item 2/05 as complete and forward the action to the Sub-Groups for their actions.
- **[Decision 3/03]** S-130PT3 approved the draft as a *baseline* and continue to improve it further to develop it to a first edition of the S-130 Product Specification Description.
- **[Decision 3/04]** S-130PT3 to hold the next S-130PT meeting (S-130PT4) as a virtual meeting on 24 Oct 2022 (13:00-15:00, UTC+2, CEST).

Present Steps in the Development of a Product Specification from S-97 IHO Guidelines

S130PT4-3.1

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4th Meeting of S-130PT

Steps in the development of S-1XX PS

SSG Leader
(Schema Sub Group)

24 October 2022 / VTC Event

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S-100 READINESS LEVELS

- S-97 A-5 S-100 Readiness Levels
  - Main document
  - A Default Encoding
  - Feature Catalogue
  - DCEG
  - Portrayal Catalogue
  - Data Quality Checks
  - Test data Sets
  - Data Validation
  - Exchange Catalogue

Level 1

Level 2

Required Product Specification component	Level 1 v1.0.0	Level 2 v1-2.0.0	Level 3 >v2.0.0	Level 4 >v2.0.0	Level 5 >v2.0.0
Main Document (Defines the relevant parts of S-100 that are required for the Product Specification)	X	X	X	X	X
A Default Encoding	X	X	X	X	X
S-100 Compliant Feature Catalogue	X (draft)	X (updated)	X (final, from IHO GI Registry)	X	X
Data Classification and Encoding Guide	X (draft)	X	X (final)	X	X
S-100 Compliant Portrayal Catalogue NOTE: Not every Specification will need a Portrayal Catalogue – this should be determined as part of the development process and stakeholder feedback.		X	X	X	X
Data Quality Checks		X	X	X	X
Test Data Sets		X	X	X	X
Data Validation (and test datasets)		X	X	X	X
Exchange Catalogue		X	X	X	X
Encryption / Digital Signatures			X	X	X
Interoperability			X* (draft)	X* (tested)	X*
Alerts and Indications				X*	X*
Operational data					X

(X* = ECDIS only)

- Submission of S-130 1.0.0 to HSSC15 (May 2023)
- Initial implementation of S-130 Edition 1.0.0 (Sep. 2024)
- From gaining experience for S-130 2.0.0 (End of 2024)
- Final approval of S-130 2.0.0 and S-130 Final dataset (Q1 of 2025)

PARTS OF S-130 MAIN DOCUMENT

- The overview section and its sub-elements **(On-going)**
  - Introduction
  - References
  - Terms, definitions and abbreviations
    - Use of Language
    - Terms and Definitions
    - Abbreviations
  - General data product description
  - Data Product Specification metadata
  - Product Specification maintenance
- Version numbers
- Specification scopes / Dataset identification **(TBD)**
- Data content and structure (Application schema) **(On-going)**

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MAIN PARTS OF AN S-100 PRODUCT SPECIFICATION

- Data product format **(Decided)**
- Feature Catalogue **(Drafted)**
- Dataset
- Dataset loading and unloading
- Geometry
- Reference systems **(Decided)**
- Data quality
- Data capture and encoding instructions
- Maintenance
- Data product delivery
- Dataset naming rules

- Metadata
- Portrayal

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STEPS IN THE DEVELOPMENT OF S-1XX PS

* Source : IHO Guidelines for Creating S-100 Product Specifications, S-97

1) Initiation	Identify the need for a new data product; define its scope; and decide the boundaries between the new product and existing data Product Specifications. Obtain sample source material. Describe typical application use cases
2) Data Model / Application Schema	Define the classes and attributes that describe the domain and which are relevant to the data product. Define the relationships between the classes and specify applicable constraints. Prepare one or more UML diagrams describing the Domain Model
3) Registration of feature elements	Propose amendments to existing classes and attributes and propose new classes and attributes for addition to the Concept and Data Dictionary Registers in the IHO GI Registry using the Registry interface.
4) Develop the Feature Catalogue	Prepare the XML Feature Catalogue from the feature and information classes, attributes and relationships as approved in the IHO GI Registry, utilizing the Feature Catalogue Builder.
5) Transfer modes and packaging	Determine whether data products are to be delivered as data files contained in transfer (exchange) sets, by web services (and if so, identify or outline a service protocol), e-mail, etc.

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STEPS IN THE DEVELOPMENT OF S-1XX PS

* Source : IHO Guidelines for Creating S-100 Product Specifications, S-97

6) Define metadata	Survey the metadata elements listed in S-100 for their appropriateness to the data product and its allowed packaging and delivery methods. Define appropriate values and restrictions for the metadata elements listed in S-100
7) Define the data format	Select an appropriate data format. S-100 provides for 3 standard delivery formats (ISO 8211, GML, and HDF5). Prepare format-specific artefacts if necessary
8) Data Classification and Encoding Guide (DCEG)	A DCEG should contain enough overview and general material about basic concepts such as data types, features, information types, associations, etc, to give its intended audience a basic grounding in the concepts they will need to apply
9) Portrayal symbols and rules	Determine the symbols to be used for portrayal and the rules for generating displays from the data product.
10) Registration of portrayal elements	Propose any new portrayal components (for example symbols, colour tokens, line styles, area fills, etc) to the Portrayal Register in the IHO GI Registry using the Registry interface

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STEPS IN THE DEVELOPMENT OF S-1XX PS

* Source : IHO Guidelines for Creating S-100 Product Specifications, S-97

11) Portrayal Catalogues	Prepare a Portrayal Catalogue (or Catalogues) for the features and information types which are intended to be displayed in the intended application domain(s) and usage scenario(s)
12) Define the Spatial reference system	Identify the recommended coordinate reference system and vertical datum(s)
13) Data product packaging and maintenance	Define the content and structure of delivery packages, updating of data, and any auxiliary content delivered either with or as an adjunct to data
14) Validation checks and quality measures	Define tests for the spatial, structural, and conceptual integrity of datasets. Define format-specific implementations of validation checks
15) Determine interoperability	Determine which if any product groups in Interoperability Catalogues are supplemented or enhanced by the data product; and how the IHO Interoperability Catalogue will be affected by the new product

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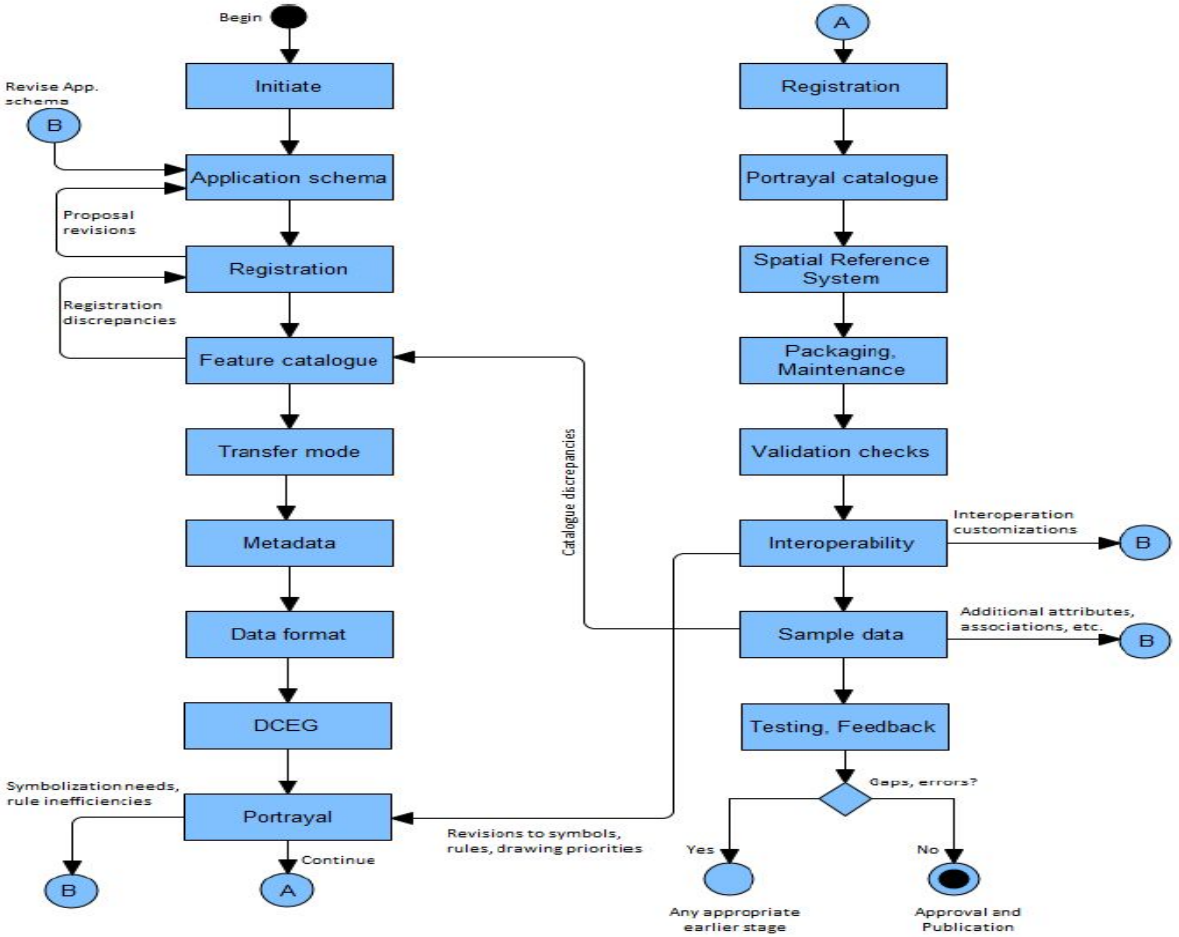
STEPS IN THE DEVELOPMENT OF S-1XX PS

* Source : IHO Guidelines for Creating S-100 Product Specifications, S-97

16) Prepare sample data	for test-beds. Create sample datasets and exchange sets conforming to the data format, packaging, and Feature Catalogue defined in the Product Specification
17) Testing and feedback	Carry out tests of data production and use of the sample data in selected applications to validate the correctness, completeness, consistency, and utility of the Product Specification, including related artefacts such as the Feature Catalogue and XML schemas
Final Step	Production of S-130 dataset

STEPS IN THE DEVELOPMENT OF S-1XX PS

- Product Specification development process



Report of the Schema Sub-Group

S130PT4-3.2

IHO International Hydrographic Organization

4th Meeting of S-130PT

Report of the Schema Sub-Group

SSG Leader
(Schema Sub Group)

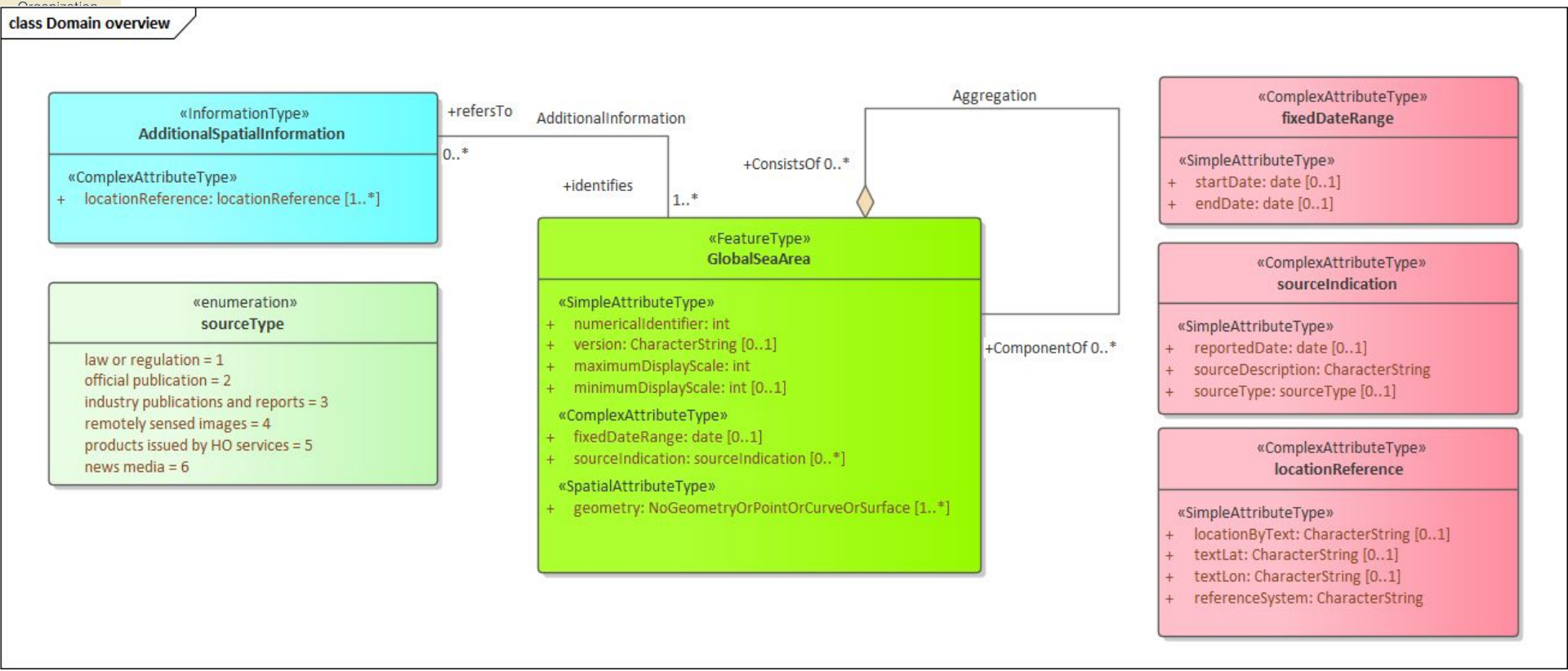
24 October 2022 / VTC Event

S-130 APPLICATION SCHEMA

- Results of SSG1 meeting
  - Requirements for the application schema
    - Feature type name: Spatial Extent of Oceans and Seas, Global Sea Area and Outer limit of Sea Area
    - Maximum Display Scale / Minimum Display Scale
    - Spatial: Point/Curve/Polygon/NoGeometry
    - Numerical ID: MRN or URI
    - Source (optional)
    - Version and Date
    - Additional Spatial Information (optional)

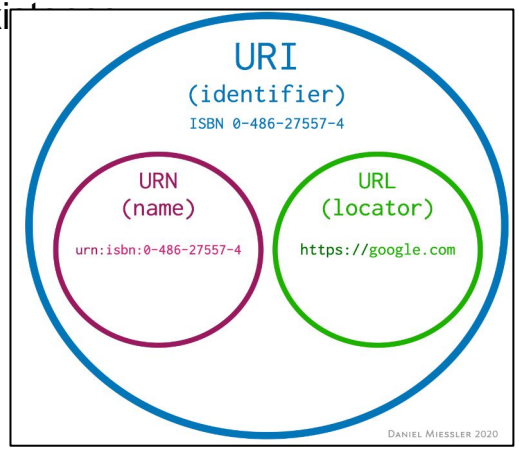
S-130 APPLICATION SCHEMA

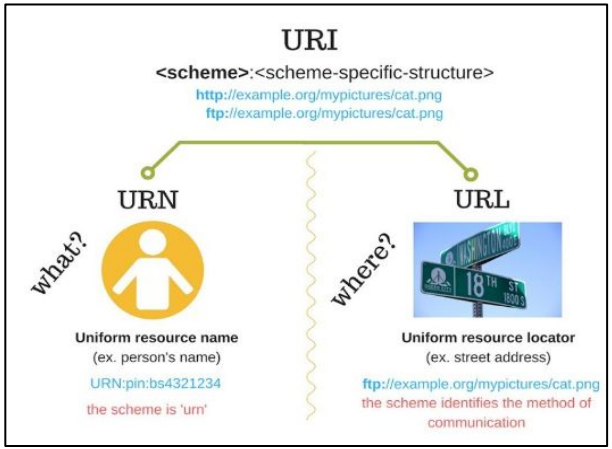
- Draft application schema



a. Present the MRN identifier concept

- URI (Uniform Resource Identifier)
  - String identifier that refers to the identity of a resource on the internet using either a location, name, or both
- URL (Uniform Resource Locator)
  - location of a resource on the internet. It contains the reference and also the way to access the resource
- URN (Uniform Resource Name)
  - subset of URI. It refers to a resource on the internet without actually specifying its location or exi





CONCEPT OF THE MRN IDENTIFIER

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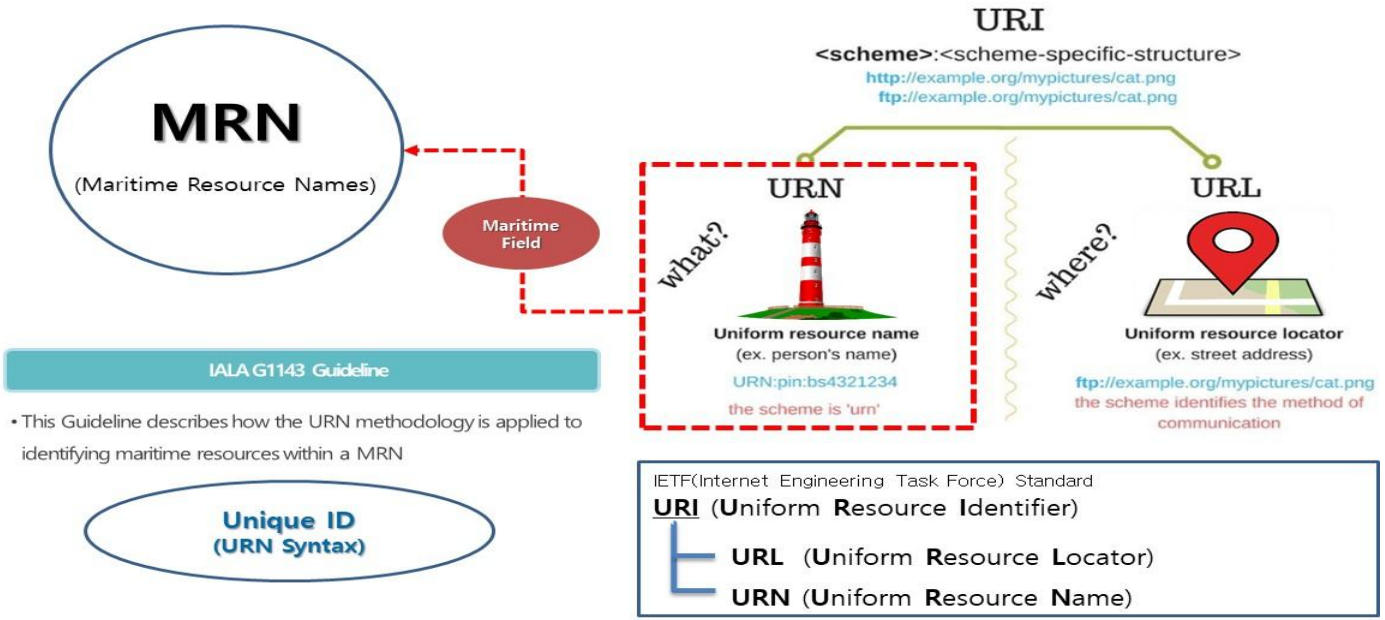
- Background of MRN development
  - IALA developed the MRN for e-Navigation and MCP.
  - ENAV Committee discussed the MRN Guideline.
  - IALA approved the MRN Guideline as G1143 (19.6)



CONCEPT OF THE MRN IDENTIFIER

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- Example of URN (https://en.wikipedia.org/wiki/Uniform_Resource_Name)

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:gl143	Identifier for IALA publications
urn:microsoft:adfs:claimsxray	Identifier for federated identity; this example is from Claims X-Ray[12]

iana
Internet Assigned Numbers Authority

Date:

2017-08-24

Registrant:

Name: Kasper Nielsen
E-mail: kasperni@gmail.com

On behalf of

International Association of Marine Aids to Navigation &
Lighthouse Authorities (IALA)

IALA

liberty		[RFC3622]
mace		[RFC3613]
mef		[RFC7818]
mpeg		[RFC3614]
mrn	[mrn-template]	[International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA)]
nato		[RFC7467]
nbn	[nbn-template]	[RFC8458]

CONCEPT OF THE MRN IDENTIFIER

- Essential properties
  - **Uniqueness** : never assigned to more than one resource
  - **Decentralization** : create IDs without relying on a single global source
  - **Forward compatibility** : enabling the addition of new naming schemes for new maritime domains
  - **Flexibility** : allow for identifying any type of resource such as documents, routes, equipment, ships and mariners
  - **Human readability** : naming scheme should be readable by humans
  - **Contextual** : provide information on the type of resource
  - **Backward compatibility** : allows for integration with these existing schemes

urn:mrn:iho:hydro:OOOO:12345678

Organization ID	Domain	Agency code	Unique number

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PROGRESS OF MRN GUIDELINE IN IHO

- Top level name space is urn:mrn
- IALA developed based on uniform resource identifier (URI) is defined in RFC 3986 (http://tools.ietf.org/html/rfc3986)
- Governed by IALA through mrnregistry.org
- MRN added to S-100 4.0.0 (3-10 & 11-7.4) as the recommended Globally Unique Identifier (GUID).
- IHO has been granted **urn:mrn:iho**, and should define management rules.
- Two levels of guidance
  - IHO level
  - Member State level

CONCEPT OF THE MRN IDENTIFIER

- 6th Test Strategy Meeting (TSM), September 2018
  - MRN guideline research was started funded by NOAA
  - IHO Level Guidance on how to manage the urn:mrn:iho namespace
- 4th S-100WG, March 2019
  - MRN Guidelines for IHO was presented
  - More details were introduced
- 7th Test Strategy Meeting (TSM), September 2019
  - Draft guidance for the use of Maritime Resource Name (MRN) in IHO documents, products and S-100 based product specifications
  - Proposed the MRN guidance for inclusion into S-97 as guidance for anyone wishing to use MRN identifiers

CONCEPT OF THE MRN IDENTIFIER

International Hydrographic Organization

- MRN Guidance and Example (Drafted in 2019)

6. Product Specification developer guidance

Product Specification developers should include guidance describing how to use MRN Persistent Unique Identifiers when creating compliant data products. It is further recommended that the producer code is specified as the first namespace after the '<type>' namespace.

urn:mrn:iho: '<type>':'<type-specific-part>'

<type> ::= 'pub', 'prod', 'hydro', or 'npub'

<type-specific-part> ::= '<S62>':'<producer namespace>'

For harmonization purposes a common structure should be considered for MRN identifiers for object instances. This enables a predictable upper level MRN Persistent Unique Identifier namespace (which predictability can be leveraged for reducing total data volume) that can be defined for each IHO Product Specification. Moreover, the producers of data are given flexibility over how they wish to manage their producer namespaces and how to assign MRN identifiers to the data objects under their remit. The structure provides a clear delineation between the fixed upper level (urn:mrn:iho) and flexible (Product Specification developer defined) lower level of the MRN identifier. Further, each namespace component in the MRN (between successive ":" characters) unambiguously indicates the naming convention that applies to the following portion (normally only the immediately following component, but this is not a hard requirement). A drawback with the flexibility given to the producer namespace is that applications cannot depend on a uniform structure of the MRN below the S-62 namespace. Product Specification developers should consider this during the development process.

It is important to note that some data formats that use URI namespaces (GML, XML, RDF, OWL) may give specific meaning to parts of the MRN ID, such as GML where the colon has special significance. MRNs therefore cannot be used verbatim for GML identifiers ("gml:id") or tags. Instead, for GML formats, either MRNs should be used as values for an attribute designed to carry identifiers, or translated into a format compatible with GML, or rules for mapping GML identifiers to MRNs should be defined (the Product Specification should pick one method and define the mapping to MRNs for all compliant datasets). Product specifications that use another encoding with limitations similar to GML must define sufficient guidance to link MRN IDs to objects.

Example of one method of translating a URN identifier into a GML accepted identifier;

URN ID example	GML acceptable ID version
urn:mrn:iho:hydro:DK:DMA:NW:C:034.17	DK.DMA.NW.C.034.17

The ':' (colon) character has been translated into a '.' (punctuation), and the urn:mrn:iho:hydro part has been omitted as this part would always be fixed in the product. Additional parts of the URN ID could be omitted, but the retained parts yield an ID that is still human readable as well as machine-processable in the same way as the original MRN.

6.1. Object instances in data products

A structure like urn:mrn:iho:<type>:<S62>:<producer namespace> gives predictability to the fixed part of the MRN **Persistent Unique Identifier**, permitting byte saving schemes, such as having the fixed part stated in metadata or as a namespace within the Product Specification. If a byte saving scheme is implemented in a Product Specification, a function for re-creating MRN **Persistent Unique Identifiers** is needed in user and production software to permit systems to identify objects (for example feature instances) across products.

A Product Specification should also include rules for how to preserve MRN **Persistent Unique Identifiers** of objects that originate elsewhere, for example checks can validate if an MRN **Persistent Unique Identifier that has an origin** elsewhere[1] from the producer, is from a permitted source by checking the MRN structure against permitted sources. In all other cases the MRN **Persistent Unique Identifier** should begin with the code of the dataset producer. These rules can be configured with a list of permitted MRN name spaces to ensure that only permitted inputs are used and help identify erroneous MRNs. It is also recommended to create rules for the preservation of MRN **Persistent Unique Identifiers** of objects that originate elsewhere.

Annex A - Example

Examples of how MRN Persistent Unique Identifiers from another domain may look when included among the MRN IDs generated by the product producer;

Feature: Recommended Track
- *Attribute*: category of recommended track: Based on a system of fixed marks
- *Attribute*: orientation: 270 degrees
- *Attribute*: MRN: urn:mrn:iho:hydro:jsho:12345678

Feature: Navigational Line
- *Attribute*: category of navigation line: leading line bearing a recommended track
- *Attribute*: orientation: 270 degrees
- *Attribute*: MRN: urn:mrn:iho:hydro:jsho:87654321

Feature: Landmark
- *Attribute*: category of landmark: tower
- *Attribute*: function: light support
- *Attribute*: MRN: urn:mrn:iala:aton:jscg:54321678

Feature: Light
- *Attribute*: category of light: leading light
- *Attribute*: colour: white
- *Attribute*: MRN: urn:mrn:iala:aton:jscg:45678123

Feature: Range System
- *Attribute*: name: Micklefirth approach range
- *Attribute*: MRN: urn:mrn:iho:hydro:jsho:23456781
- *Aggregation*: Range System Aggregation
  - Consists of: MRN: urn:mrn:iho:hydro:jsho:12345678
  - Consists of: MRN: urn:mrn:iho:hydro:jsho:87654321
  - Consists of: MRN: urn:mrn:iala:aton:jscg:54321678
  - Consists of: MRN: urn:mrn:iala:aton:jscg:45678123

b. Propose general rationale and purpose of S-130PT

- General rationale and purpose proposed by JP (IIC)
  - A fully conformant S-100 product specification for describing a polygonal demarcation of global sea areas (PDGSA).
  - The purpose of the product specification is to encode the extent of global sea areas using a system of unique numerical identifiers only.
  - This is in order to enable the production of datasets, compatible with the S-100 Universal Hydrographic Data Model, representing the limits of oceans and seas for use in compatible geographic information systems.

Discussion on and approval of feature type name

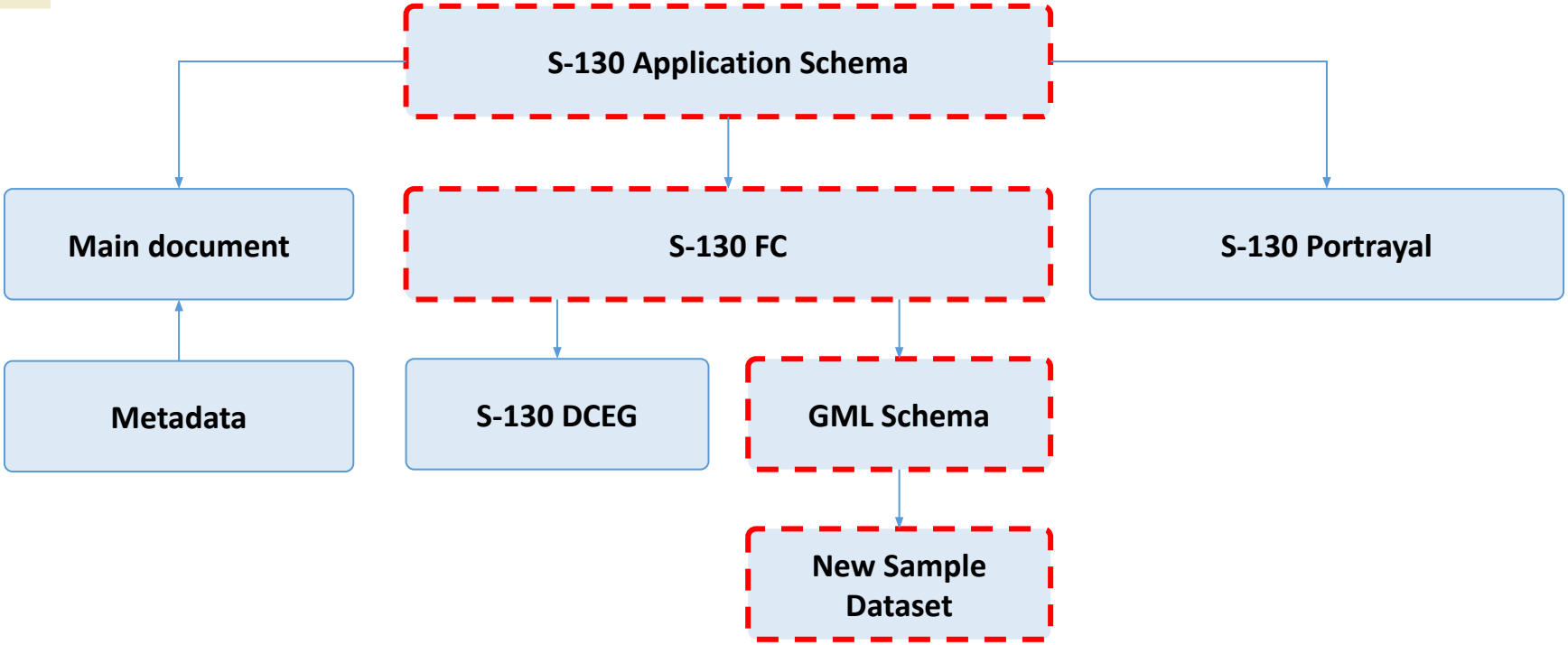
Spatial Extent of Oceans and Seas / Global Sea Areas / Outer Limits of Sea Area

S130PT4-3.2c

Discussion on and approval of draft Application Schema

S130PT4-3.2d

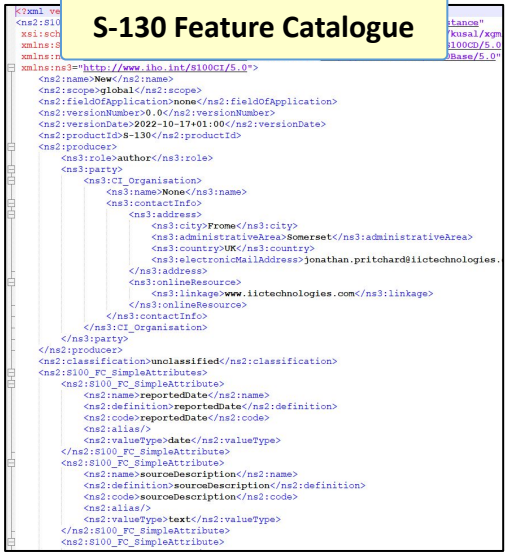
e. Presentation of draft Feature Catalogue and GML schema (and potentially sample dataset) proposed by JP(IIC)



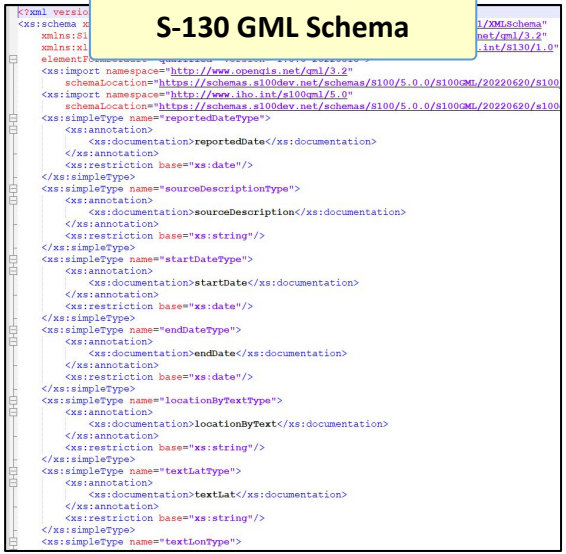
FC, GML SCHEMA AND SAMPLE DATASET

- S-130 FC, GML schema and sample dataset as follows
  - FC : S-130-10_ed5.xml
  - GML schema : S130-Draft-Schema-18102022.xsd
  - Sample dataset : S-130-sample1-v2.gml

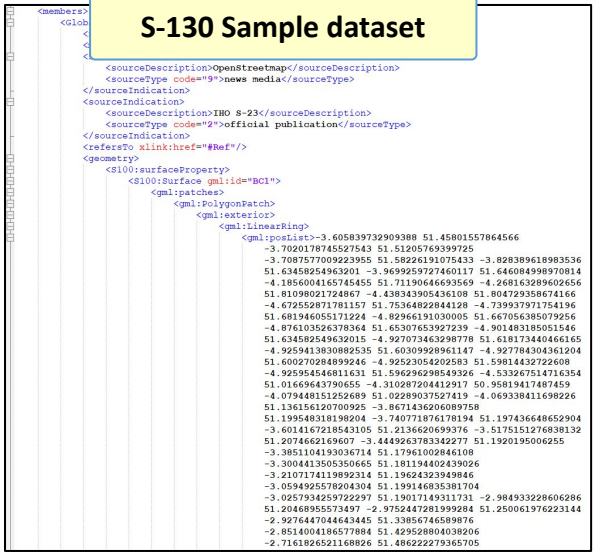
S-130 Feature Catalogue



S-130 GML Schema



S-130 Sample dataset



FC, GML SCHEMA AND SAMPLE DATASET

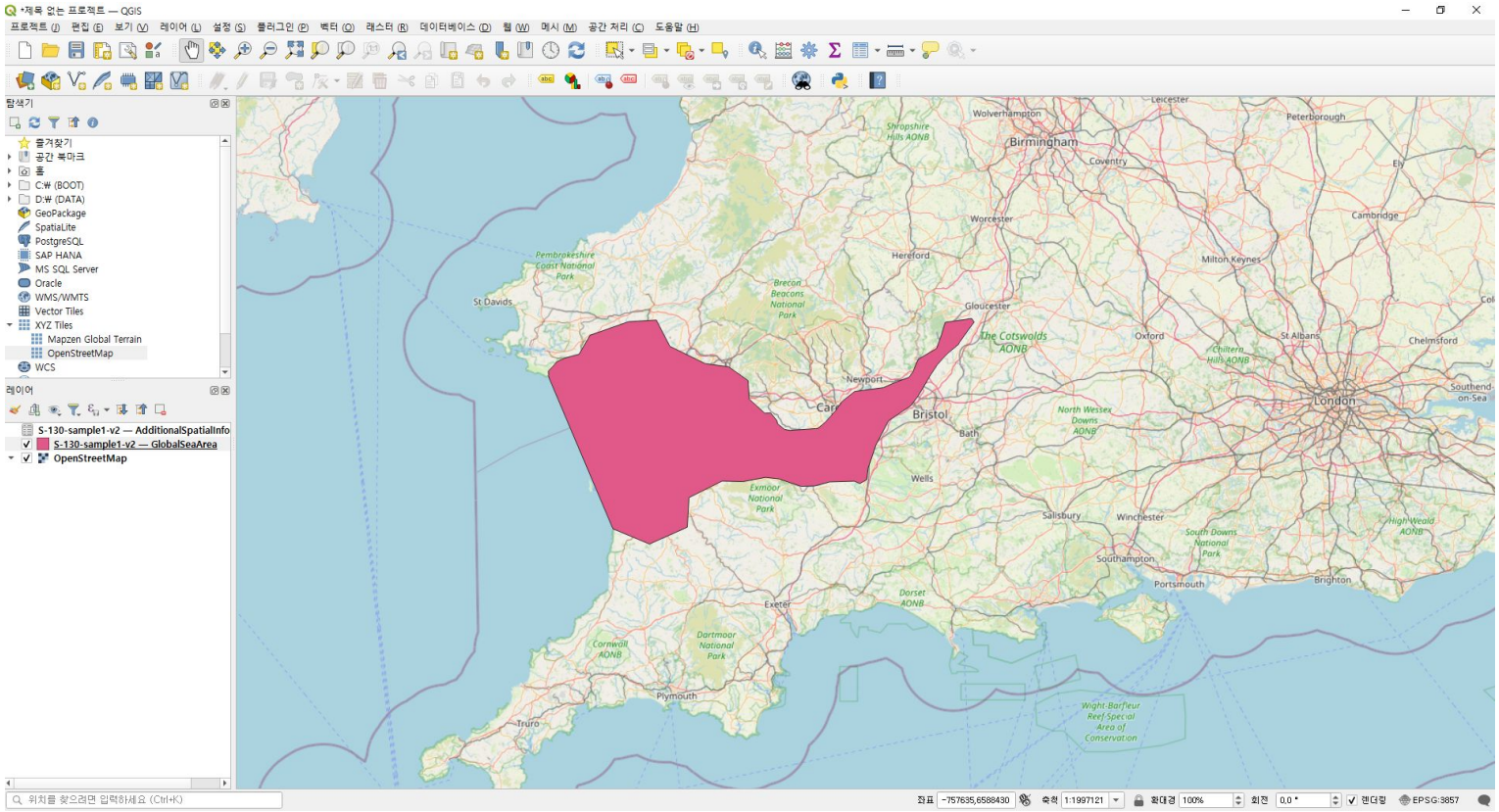
- Explanatory note
  - Draft S-130 feature catalogue - autogenerated from the data model
  - GML Schema - autogenerated from the Feature Catalogue
  - Sample dataset - data of the UK Bristol Channel. This is approximate but the data refers to the S-23 definition of the Bristol channel and the S-23 coordinates are in an informationType for reference. This was made using the S-100 edition 5.0.0 tool, featureBuilder.

FC, GML SCHEMA AND SAMPLE DATASET

- Discussion topics proposed by JP (IIC)
  - The polygon is very approximate along the coastline. It would need ENC and River/Bay closing lines to be accurate
  - We can see how inaccurate S-23 is (the North point is miles out from where it should be - the reference in the information type contains the textual location of the North of the closing line)
  - A random integer value - in practice S-130 id numbers should probably be issued (probably by IHO) in order to be unique.
  - It might be good to allow a single locationReference in GlobalSeaArea as an inline attribute to avoid lots of references like S-121.
  - Need to use GI registry definitions and define any that don't currently exist. They will need to be submitted by the PT.
  - Everything is S-100 edition 5.0.0

FC, GML SCHEMA AND SAMPLE DATASET

- S-130 Sample dataset in QGIS



Discussion on sample and final dataset, including:

- Recommendations about producer of final dataset
- Number of versions to be produced *(e.g. at different scales)*

S130PT4-3.3

Discussion on navigational purpose of S-130 Product Specification

S130PT4-3.4a

S-98 Applicability

Yes.

...

Description: Applicable to S-98 (Yes or No)

Comments: S-98 Interoperability Specification in S-100 Navigation Systems

*Comments (Sewoong) : If the S-130 does not consider the navigational purpose, the S-98 applicability will be No.

Opportunity to review draft Product Specification Description

S130PT4-3.4b

Discussion on need for Portrayal Catalogue for S-130 Product Specification

S130PT4-3.5

Portrayal Catalogue

- **S-97:** “Portrayal is an optional part of a Product Specification. However, if consistent portrayal across all user platforms is important to an S-100-based data product, then specifying how portrayal is done becomes mandatory. Within S-100 Product Specifications, this is done by including a Portrayal Catalogue. The Portrayal Catalogue is a collection of defined portrayal instructions for a Feature Catalogue; and includes portrayal functions, symbols and portrayal context.”

Discussion on relevant metadata elements

S130PT4-3.6

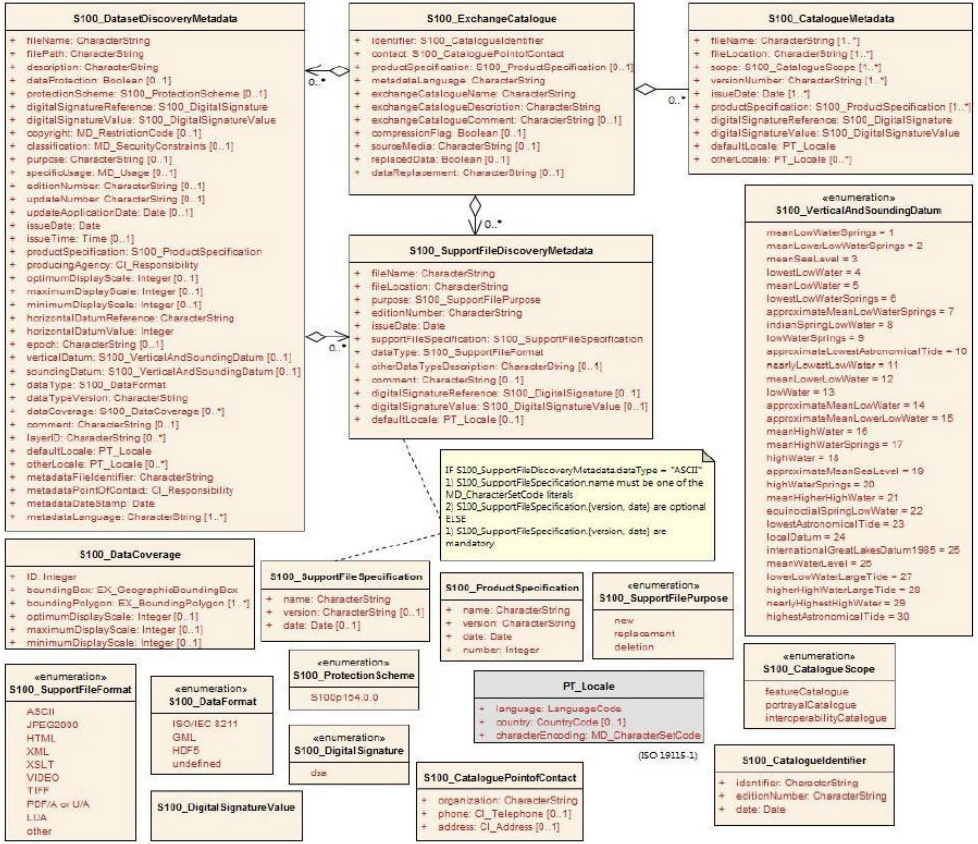


Figure 4a-D-4 S-100 Exchange Set - class details

4.0.0!

Discussion on data quality elements into the Application Schema

S130PT4-3.7

Discussion on shift towards SharePoint as an editing tool

S130PT4-3.8

Discussion on assignment of tasks to Project Team, Sub-Groups or others

S130PT4-3.9

AOB

S130PT4-4.1

Group Photo

S130PT4-4.2

Date and Venue of Next Meeting

S130PT4-5

Review Action Items

S130PT4-6