

# International Hydrographic Organization



## Summary of the Activities of the IHO Geospatial Information (GI) Registry

S-100WG3

Singapore – 10-13 April 2018

IHO Secretariat

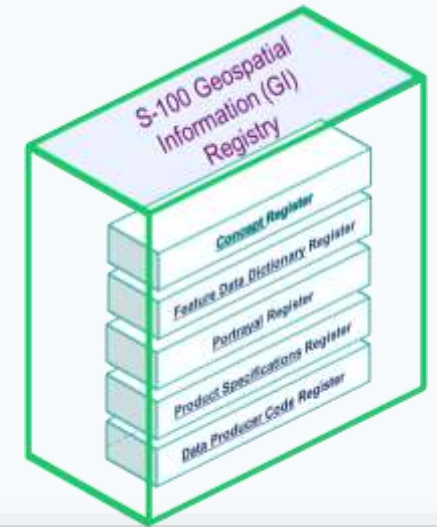


# Introduction

- **IHO Geospatial Information(GI) Registry** is the entire information system in which the collection of hydrographic-related Registers are located.
  - Current Registers: Feature Concept Dictionary; Portrayal; [Metadata]; **Product Specification**; and **Data Producer Code**.
  - Other Components: Feature Catalogue Builder (FCB); Portrayal Catalogue Builder (BCB).
- **KHOA has continued to support the development of the new Registry**



Korea Hydrographic and  
Oceanographic Agency



<http://registry.iho.int/>



# Summary of Activities of the IHO GI Registry



## Welcome to the S-100 Geospatial Information Registry (Version 2.1)

This registry is owned by the International Hydrographic Organization (IHO) and managed by the Secretariat of the IHO. The site contains many registers of hydrographic information together with registers of supplementary information owned by specialist domain experts. Each register type is further subdivided into domains e.g. hydrographic, nautical publications, i.e. Inland ENC etc. The administration of this registry conforms to IHO Publication S-99 (Operational Procedures for the Organization and Management of the S-100 Geospatial Information Registry) a copy of which can be downloaded [here](#).

The information contained in the Registry can be freely accessed, however items can only be added or changed by the managers of approved Submitting Organizations. Application to become a Submitting Organization can be made by fulfilling the requirements of the prerequisite form available [here](#). Please note: It is not necessary to be a submitting organization in order to request new (S-62) Data Producer codes. Requests for new Data Producer codes, or changes to existing codes should be sent to the following email address: [sdco@iho.int](mailto:sdco@iho.int).

Once accepted as a submitting organization you are free to submit proposals to any register. The Registry interface undergoes periodic improvements and any difficulties using this site should be reported to the [Registry Manager](#).

• Go to [Feature Catalogue Builder](#)

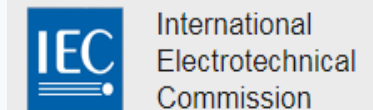
### Feature Concept Dictionary Register according to S-100

No.	Type	Valid	Superseded	Retired
1	Feature Type	221	270	289
2	Information Type	12	1	0
3	Simple Attribute Type	222	238	35
4	Enumerated Type	2600	221	208
5	Complex Attribute Type	104	89	1
6	Code List Type	18	1	0
7	Code List Value Type	122	2	0

### Portrayal Register

No.	Type	Valid	Superseded	Retired
1	Symbol	222	0	0
2	Line Style	32	0	0
3	Area Fill	26	0	0
4	Font	9	0	0

Registry Owner	Registry Manager	Register Managers
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# Summary of Activities of the IHO GI Registry

- Some statistics:

- Total number of items = 6371**

- Features (Geo/Meta) = 860**

- Information = 18**

- Simple Attributes = 908**

- Enumerates = 4237**

- Complex Attributes = 154**

- Codelists = 20**

- Codelist Values = 174**

- Portrayal Items = 658**

Feature Concept Dictionary Register according to S-100

No.	Type	Valid	Superseded	Retired
1	Feature Type	321	270	269
2	Information Type	17	1	0
3	Simple Attribute Type	577	236	95
4	Enumerated Type	3400	631	206
5	Complex Attribute Type	104	49	1
6	Code List Type	19	1	0
7	Code List Value Type	172	2	0

Portrayal Register

No.	Type	Valid	Superseded	Retired
1	Symbol	573	0	0
2	Line Style	55	0	0
3	Area Fill	26	0	0
4	Font	4	0	0

FCD Register

- FCD Register:

- Valid items = **4610**

- Superseded items = **1190**

- Retired items = **571**

- No. of proposals since S-100WG2 = **624**



# Summary of Activities of the IHO GI Registry

- Domains (FCD Register):

- IHO Hydrographic – (IHO Working Groups (S-100WG, NIPWG, S101PT, TWCWG, WWNWS Sub-WG, ....))

- Inland ENC's – (IEHG)

- Sea Ice – (WMO)

- Weather – (WMO)

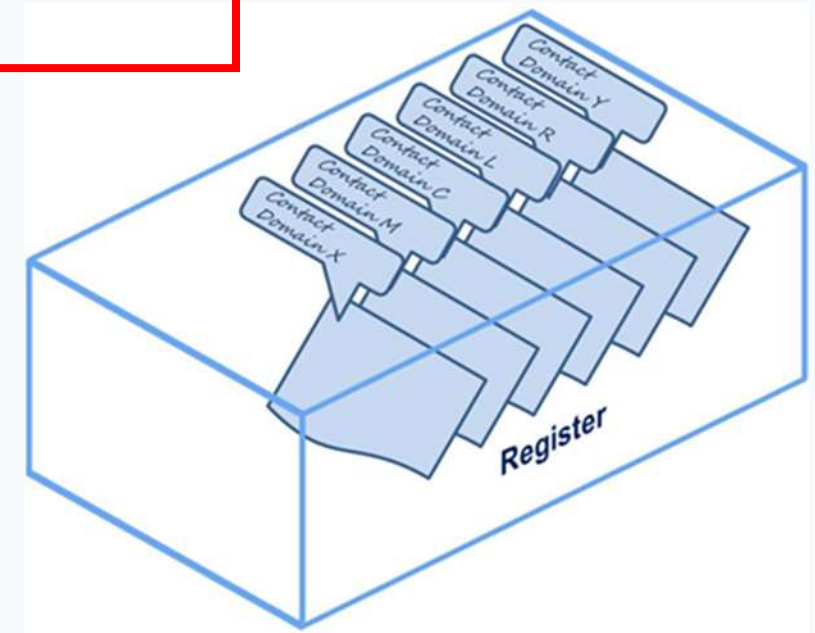
- IALA AtoNs – (IALA)

- IALA VTS – (IALA)

- IALA AIS – (IALA)

- IEC – (IEC)

- Under Keel Clearance Management – (UKCM Project Team)



# Summary of Activities of the IHO GI Registry

- Submitting Organizations (FCD Register):

- IHO, IEC, IALA, WMO, IEHG
- S-100WG (KHOA, NOAA, SMA, Spanish HO)
- NIPWG (BSH, UNH)
- UKCMPT (AMSA)

The screenshot shows a web form titled 'Member' with a navigation bar at the top containing 'HOME', 'INTRODUCTION', 'GI REGISTERS', and 'PROPOSAL'. Below the navigation bar, there is a red note: 'Note: Fields marked with an asterisk(\*) are mandatory and must be filled in.' The form fields are: '\*Back:' with a dropdown menu 'Submitting Organization'; '\*Domain(FCD):' with radio buttons for 'IHO Hydro UN34', 'WMO ICE', 'Inland ENC', 'Port ENC', 'IALA AIS', 'IALA Rules', 'IALA VTS', 'WMO Weather', 'AMS', 'IEC', and 'UN34'; '\*Domain(Portrayal):' with radio buttons for 'IHO Hydro' and 'Inland ENC'; '\*ID:' with a text input field and a 'Generate ID' button, with a note 'Please enter at least 8 characters with a combination of numeric and lower case'; '\*Password:' with a text input field and a note 'Enter a combination of 8-16 numbers and lower case'; '\*Re-enter Password:' with a text input field; '\*Given Name:' with a text input field; '\*Surname:' with a text input field; and '\*Organization:' with a dropdown menu.

- Domain Control Body (FCD Register):

- IHO, IEC, IALA, WMO, IEHG
- S-100WG, NIPWG

~~Executive Body?~~

- Submitting Organizations (Portrayal Register):

- IHO, IALA, IEHG
- S-100WG (KHOA, NOAA, SMA, Spanish HO)
- NIPWG (BSH)

- Domain Control Body (Portrayal):

- IHO, IEHG
- S-100WG, NIPWG



# Summary of Activities of the IHO GI Registry

- The “IHO GI Registry Project Team”:
  - S-100WG2 Action 22 – ToRs for Approval
  - Registry structure and management
  - Registry Content
  - Conventions and Guidelines

## IHO GEOSPATIAL INFORMATION (GI) REGISTRY PROJECT TEAM (GIRegPT)

### Terms of Reference and Rules of Procedure

Reference: 2<sup>nd</sup> S-100WG Meeting (Genoa, Italy, March 2017)  
3<sup>rd</sup> S-100WG Meeting (Singapore, April 2018)

#### 1. Objectives

- To provide expertise and assistance to the IHO Geospatial Information (GI) Registry Manager for the development and maintenance of the IHO GI Registry infrastructure.
- To provide expertise to assist the IHO Secretariat in the development and maintenance of IHO publication S-99 - *Operational Procedures for the Organization and Management of the S-100 Geospatial Information Registry*.

#### 2. Authority

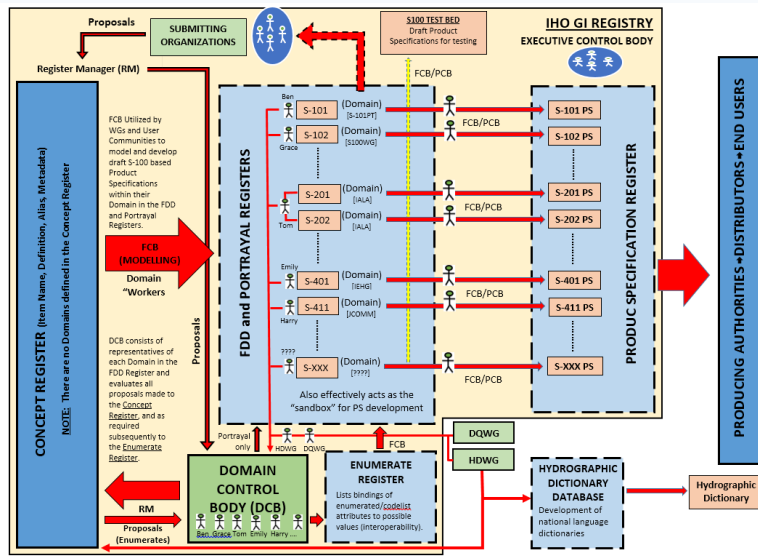
This Project Team (GIRegPT) is a subsidiary of the S-100 Working Group (S-100WG). Its work will be guided by the rolling Work Plan established by the S-100WG and subject to its approval.

#### 3. Composition and Chairmanship

- The Project Team (GIRegPT) shall comprise representatives of the IHO Secretariat, IHO Member States (MS), Expert Contributors (EC) and observers from accredited NGOs. A membership list shall be maintained and posted on the IHO website.
- EC membership is open to entities and organizations that can provide relevant and constructive contribution to the work of the GIRegPT. ECs shall seek approval of their membership from the Chair of the GIRegPT.
- EC membership may be withdrawn, in the event that a majority of GIRegPT members agree that an EC's continued participation is either irrelevant or not constructive to the work of the GIRegPT.
- The Chair of the GIRegPT shall be the IHO GI Registry Manager.
- If a secretary is required, the position should normally be filled by a member of the GIRegPT, approved by the Chair.

#### 4. Procedures

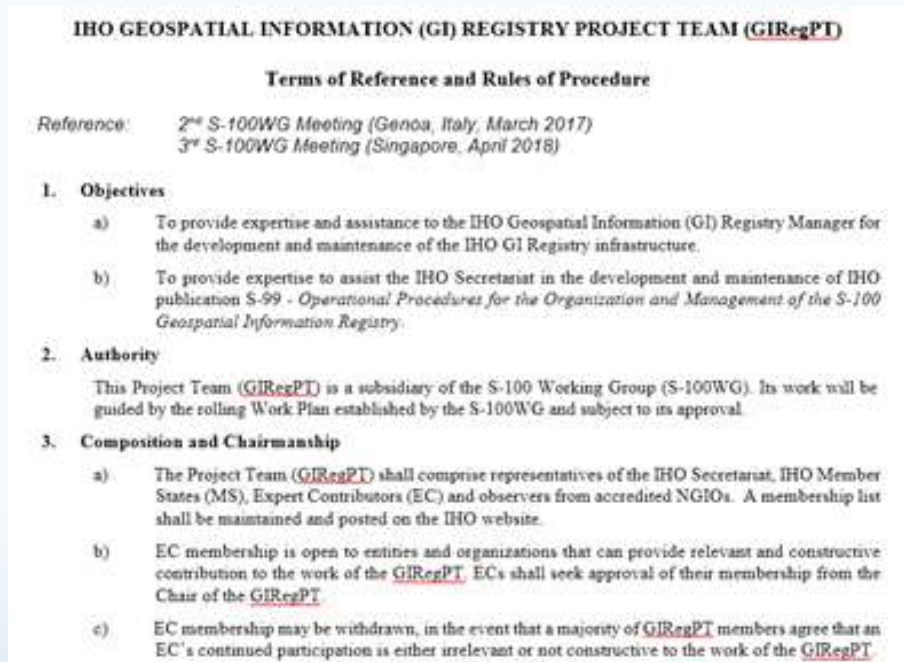
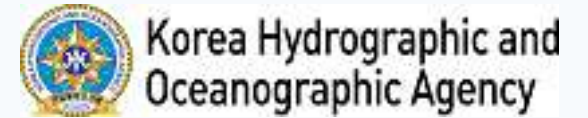
- The GIRegPT should work primarily by written correspondence and teleconferences. If a face to face meeting is required, it should be held in conjunction with a S-100WG meeting.
- Decisions should be made by consensus. Dissenting opinions, if any, should be reflected in the GIRegPT report.
- The GIRegPT should liaise with other IHO bodies, international organizations, end users and industry to ensure the relevance and currency of its work.
- The GIRegPT should identify a Work Programme for each year, including expected time frame for progressing tasks.
- The GIRegPT should report to the S-100WG in accordance with its Work Plan.




# Summary of Activities of the IHO GI Registry

- Actions for S-100WG3:

- Note the activities of the IHO GI Registry since S-100WG2
- Endorse the IHO GI Registry Project Team ToRs
- Approve the convening of a Workshop focussing on the IHO GI Registry
- Discuss .....





# Summary of Activities of the IHO GI Registry

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For more information: <https://www.iho.int>  
IHO Secretariat Contact: [jeff.wootton@iho.int](mailto:jeff.wootton@iho.int)



# International Hydrographic Organization



## Proposed Structure of the IHO Geospatial Information (GI) Registry

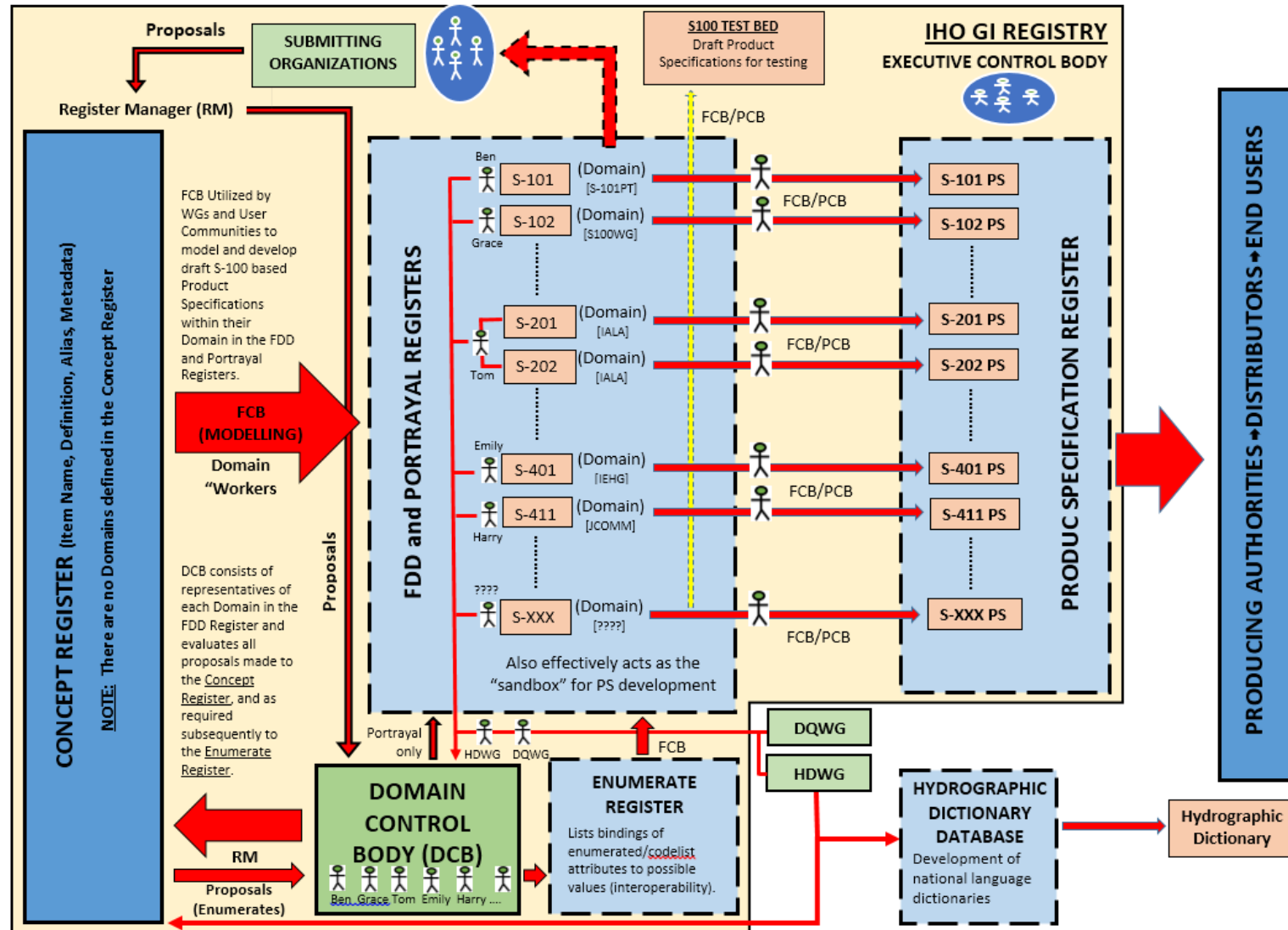
S-100WG3

Singapore – 10-13 April 2018

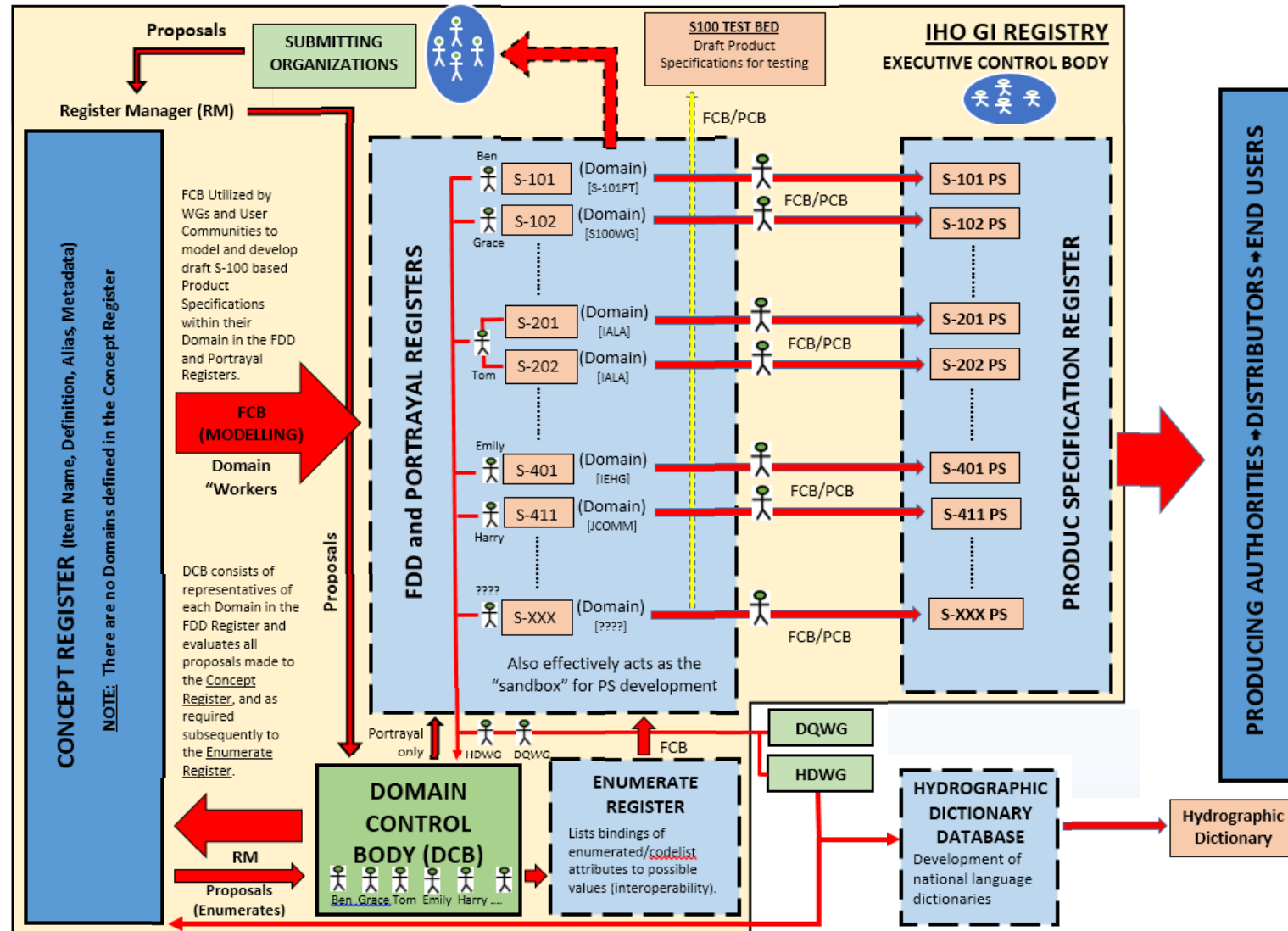
IHO Secretariat



# Proposed Structure of the IHO GI Registry

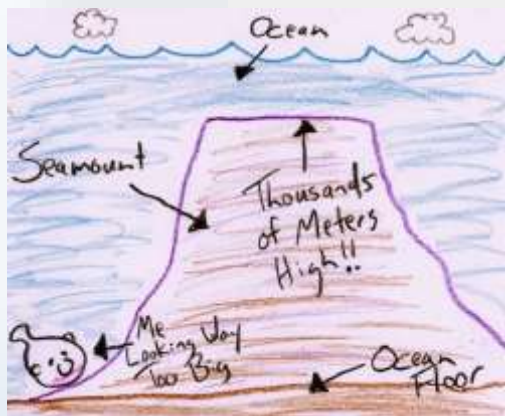


# Proposed Structure of the IHO GI Registry



# Proposed Structure of the IHO GI Registry

## Real World Feature



# Proposed Structure of the IHO GI Registry

## IHO GEOSPATIAL INFORMATION (GI) REGISTRY STRUCTURE

### Explanatory and Supporting Notes

#### Concept Register:

- The Concept Register is effectively the “source” register from which all hydrographically-relevant concepts are drawn for modelling in S-100 based Product Specifications.
- A single instance only of each concept exists in the Register. Each concept must be unique (that is, no two concepts can be interpreted to describe the same “real world” entity), and is described by Item Name; Definition (with supporting metadata); Unique ID; Alias(s) (if any); Status (Valid, Invalid (or Not Valid), Superseded, Retired); Lineage and Maintenance Metadata; and a flag to identify whether the concept is included in the IHO Hydrographic Dictionary.
- [The Concept Register is not partitioned into separate Domains. In other words it is “domainless”. However, assessment of proposals to the Concept Register is done by the Concept Register Domain Control Body (DCB), which consists of representatives of each of the Domains contained in the Data Dictionary Register (and HDWG, DQWG) – see notes on DCB below.]
- IHO GI Registry Process:
  - Submitting Organization submits a proposal to the Register via the IHO GI Registry interface;
  - Proposal is assessed by the Register Manager for completeness and possible duplication with items already registered. If suitable, the proposal is forwarded to the Concept Register Domain Control Body. [If considered to be not suitable, the proposal is “rejected” and returned to the Submitting Organization for further rework/resubmission or withdrawal based on Register Manager comments.];
  - Proposal is assessed by the Concept Register Domain Control Body for suitability and possible impact on Product Specification(s) under the individual members’ area of expertise. If approved, the proposal is forwarded to the Register Manager for incorporation in the Register. [If rejected, the proposal is forwarded by the Register Manager back to the Submitting Organization for rework; or appeal by the Submitting Organization to the Executive Control Body.];
  - Register Manager commits the approved change to the Concept Register, and the Submitting

**Comment [TS1]: RM:** I am arriving at the realization that the concept register idea should be more flexible than this document and the diagram suggest. Either the CR should allow for “senses” or “scopes” like a **lexical database or thesaurus**, or the architecture and guidance documents should explicitly allow for product specifications and the data dictionaries to make different types of derivations from the concept register (especially refinements, and specializations or partitions). Use the concept register to link the derivations, and require derivations to describe the relationship to the entry in the concept register, e.g., which ...

**Comment [TS2]: RM:** The tendency will be to reject anything that might have an impact, which would block development of new products or introduction of new maritime information domains. Adding **senses or scopes** would mitigate, though not avoid, this potential problem.  
**JW:** Need to know more about “senses or scopes” – how is this implemented? ...

**Comment [TS3]: RM:** This is likely to be very troublesome for implementers. It will also be troublesome for product specifications that share parts of their



# Proposed Structure of the IHO GI Registry

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- Principle discussion items:
  - Structure and content of the Concept Register
    - Level of flexibility – lexical databases (ontologies – RDF, OWL, Wordnet)?
  - Structure of the FDD Register
    - One Domain for each PS (introduction of “scopes” and “namespaces”; “datatypes”)?  
Structure of the Concept Register DCB (does not conform to S-99).
  - Enumerate/Codelist Register(s)
    - One Register or 2? Contents? Relationship with the Concept Register?
  - Relationship to the Hydrographic Dictionary
  - Impact on S-100 and S-99



# Proposed Structure of the IHO GI Registry

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- Actions for S-100WG3:
  - **Provide** ongoing comment and feedback to the IHO Secretariat as refinement of the Registry continues.
  - **Consider** the possible further discussion required for refinement of the IHO GI Registry structure, as summarized in paragraph 8 (and summarized in the presentation), and endorse the continuation of this discussion, through the hosting of an IHO GI Registry Workshop.





# Proposed Structure of the IHO GI Registry

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**THANK YOU**



# International Hydrographic Organization



## Guidelines for Proposals to the IHO Geospatial Information Registry - Progress

S-100WG3

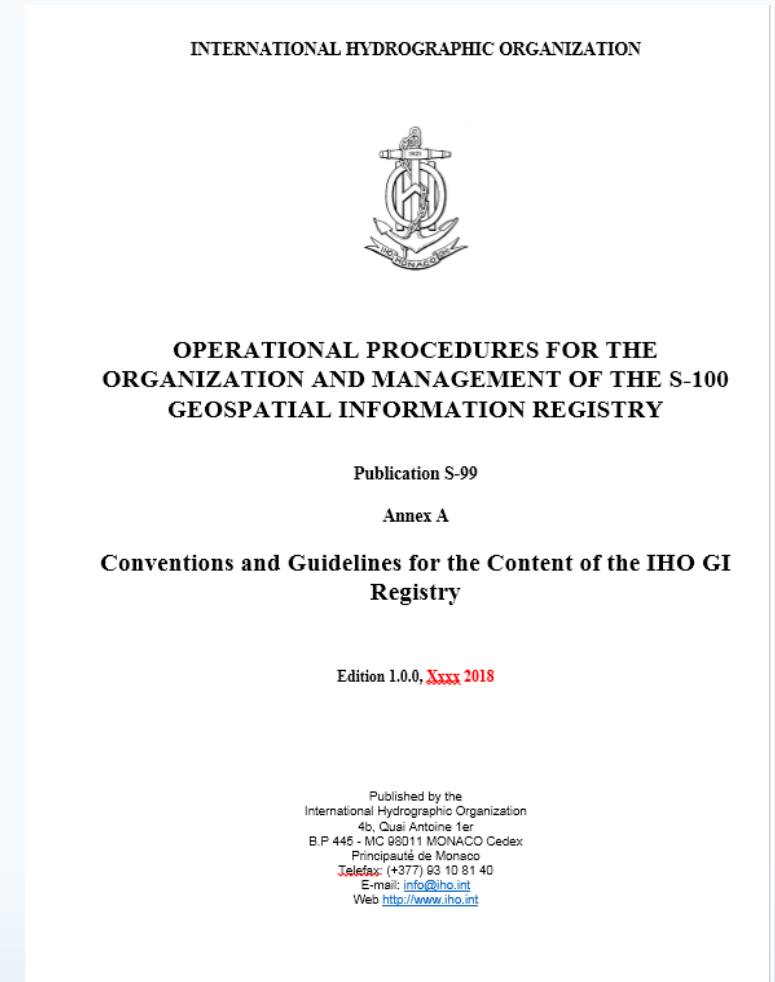
Singapore – 10-13 April 2018

IHO Secretariat



# Guidelines for Proposals to the IHO GI Registry

- *S-99 - Operational Procedures for the Organization and Management of the S-100 Geospatial Information Registry*
  - Provides high level operational guidance for the IHO GI Registry.
- **S-100WG2 Action 21:**
  - Develop draft guidelines for submission of proposals to the IHO GI Registry for Submitting Organizations, Domain Control Bodies and the Register Manager, for consideration of the S-100WG.
- Provisionally assigned S-99 Annex A



# Guidelines for Proposals to the IHO GI Registry

- Progress:
  - “Work in progress”
  - Lots of questions .....
    - TSSO opinion
    - TSSO questions
  - First pass review of the GIRegPT



“theme” should be the first part of the Item Name. For instance, “buoys” and “beacons” have been used as “themes” in the Concept Register, resulting in all registered items that are part of these “themes” beginning with the word “Buoy” (for example Buoy Cardinal”) or “Beacon” (for example “Beacon Isolated Danger”).

- Similar to the above, descriptive terms (for instance “direction of”, “size of”) should not be used at the start of an item name.
- Where an item(s) to be registered corresponds to an established classification or identification code (for example Metarea numbers; Beaufort Force values; IUCN Code), the name of the code must be included in the item name in the Register. E.g. Metarea 1; Beaufort Force 7; IUCN 1A. The meaning (or what may be interpreted as the definition) of the value must not be included in the Item Name. **[NOTE: If this is to be the case, will need to specify how the “meaning” of the code is to be made visible to the end user, as it should not be assumed that they will have an understanding of the codes. Discussion with Tony 15/09/17.]** Perhaps this could be managed in the Enumerate Register? Further subsequent thinking is that perhaps the Enumerate Register could be partitioned into 2 “Domains” – one that is a compendium of enumerates and values drawn from the Concept Register, and the other having the enumerated attribute name drawn from the Concept Register but the values (international classification/ID Codes and their meanings) included only in the Enumerate Register (justification: the values themselves are not actually “concepts”, but classifications of concepts). When building the Feature Catalogue, the FCB could then take the attribute, values and “meaning” of the values and include them in the Feature Catalogue such that they are all visible to the end user.]
- Only alphanumeric characters (A-Z, a-z, 0-9) and the special characters “\_” and “.” are allowable for Register item names. All other characters are prohibited. **[What about accented letters? Lexical level??]**
- All names must have each word included in the name commencing with an upper case character A-Z. **[What about prepositions – “of” etc? Is there an ISO convention for this?]**

W3C).

**Comment [TS3]:** RM: This should be guidance rather than a rule, otherwise given the ambiguities of natural language, we will end up with some strange names [JW: Agree – amended to “should”]. ServiceVesselTraffic, ServiceRadio, ServicePilot? What is the theme – the fact that they are marine services, or the nature of the service?

**Comment [TS4]:** RM: The “label” in the feature catalogue should be defined with the intent that it is what the end user will see.

**Comment [TS5]:** RM: The rule in programming and modelling is that individual members (enumerates) are meaningful only in the context of their “container”, which is a specific (named) enumeration. The context corresponds to an attribute concept. This can be elaborated with hierarchies and partitioning (subsets). A compendium of enumerates would need to include “scopes” (= “namespaces” in XML terms) in order to be workable. A global list of individual enumerates will quickly become unmanageable.

**Comment [TS6]:** RM: Don’t know if there is an ISO convention, but they should begin with lower case in the long name and upper case in the camel-case code. [JW: Other way around?]

- Consultation required
  - “Registry Workshop” ....



# Guidelines for Proposals to the IHO GI Registry

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- Actions for S-100WG3:
  - **Approve** the designation of the Conventions and Guidelines for the Contents of the IHO GI Registry document as Annex A to S-99.
  - **Approve** the convening of an “IHO GI Registry Workshop” to facilitate the progression of the development of the conventions and guidelines document and the rationalization of the content of the FCD Register.



# Guidelines for Proposals to the IHO GI Registry

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**THANK YOU**



# International Hydrographic Organization



## Review and Consolidation of IHO Geospatial Information (GI) Registry Content - Progress

S-100WG3

Singapore – 10-13 April 2018

IHO Secretariat







# Review of IHO GI Registry Content - Progress

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# Review of IHO GI Registry Content - Progress

- Observations and Analysis

- Number of Valid items = **4610**

- 321 Features
    - 17 Information
    - 577 Simple Attributes
    - 104 Complex Attributes
    - 3400 Enumerates
    - 19 Codelists
    - 172 Codelist Values

A	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
Item	Address	Item Name	CamelCase	Use Type	Definition	Definition Source	Reference	Similarity to Source	Alpha Code	Alias	MTI	S-4	Distinctions	Remarks	Associated Attribute
two upright crosses (one over the other) two-way		Action Required	DK	NA	OK	S-57Ed3.1	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Topmark/Daymark Shape
Two-way route		Action Required	DK	NA	OK	S-57Ed3.1	Missing	Unspecified	Missing	Unspecified	M28.2	B-432.4, B-434.1-4	Unspecified	None	Traffic Flow
Two-way route part		Action Required	DK	OK	Refer to issue	S-57Ed3.1	Missing	Unspecified	OK	Unspecified	M28.2	B-435.6	Deep Water Route; Fairway System; Traffic Separation Scheme	None	
two-way traffic		Action Required	DK	OK	Refer to issue	S-57Ed3.1	Missing	Unspecified	OK	Unspecified	M28.2	B-435.6	Deep Water Route Part; Recommended Traffic Lane Part; Traffic Separation Scheme Lane Part	Includes IHO Dictionary definition.	
pronounced Tylon		Action Required	Spelling	NA	OK	IHO Dictionary	Missing	Unspecified	Missing	Unspecified	R13	B-452.4	Unspecified	None	Category of Fog Signal
Type of buoy		Action Required	DK	Text	Does not look authoritative	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	All buoy features; Buoy Shape	Delete - is examples	
Type of environmental observation equipment		Action Required	DK	Text	Does not look authoritative	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	
Type of light		Action Required	DK	Text	Almost repeat of the name.	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Light Characteristic	Delete - is examples	
Type of Ship		DK	DK	Enumeration	Repeat of the name	Missing	Missing	Unspecified	Lower	Unspecified	N/A	N/A	Unspecified	None	
Typhoon		DK	DK	NA	OK	Missing	OK	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Category of Weather W
T-shape		Action Required	DK	NA	OK	S-57Ed3.1	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Missing
ultra quick-flash plus long-flash		Action Required	DK	NA	Missing	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Light Characteristic
UN location code		Action Required	DK	Text	Should be a Remark?	Missing	Missing	Unspecified	Lower case	Unspecified	N/A	N/A	Unspecified	Refer to Issue	
Unassessed		DK	DK	NA	Refer to issue	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Category of Temporal
Unassessed		DK	DK	NA	Does not look	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Data Assessment

- Number of items with “no issues” = **57**



# Review of IHO GI Registry Content - Progress

- Observations and Analysis (2)
  - Repeated concepts

A	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
Item	Address	ItemName	CamelCase	Use Type	Definition	Definition Source	Reference	Similarity Source	Alpha Code	Alias	NTI	S-4	Distinctions	Remarks	Associated Attribute
redoubt		Action Required	OK	NA	OK	Compendium Dictionary	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Category of Fortified Str
reduce bridge lighting		Action Required	OK	NA	Whose repair of the name	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Function of Sensor
Reduced Visibility		Refer to issue	OK	NA	OK	Missing	OK	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Category of Weather /
reed		Action Required	OK	NA	OK	Admiral's List and Flag	Missing	Unspecified	Missing	Unspecified	FCI	B-4524	Unspecified	None	Category of Fog Signal
reed		Action Required	OK	NA	OK	Compendium Dictionary	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Category of Vegetation
reed		Action Required	OK	NA	OK	B-4542	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Category of Vegetation
Reference Gauge		OK	OK	Text	OK	Missing	Missing	Unspecified	Lower case	Unspecified	N/A	N/A	Unspecified	None	
Reference gravitational level		Action Required	OK	Enumeration	Whose repair of the name	Missing	Missing	Unspecified	Lower case	Unspecified	N/A	N/A	Unspecified	None	
Reference Location		OK	OK	Text	Refer to issue	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	
Reference low water level according to Danube		Action Required	OK	NA	OK	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Vertical Datum
Reference Station Datum		OK	OK	NA	OK	Missing	Indeterminate	OK	Missing	Unspecified	N/A	N/A	Unspecified	None	Transmitted Message T1
Reference station ID		Action Required	OK	Text	Whose repair of the name	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	
Reference tide		Action Required	OK	Enumeration	Refer to issue	Missing	Missing	Unspecified	Missing	Unspecified	B00,30,31	B-405, B-407	Unspecified	None	
Reference tide type		Action Required	OK	Enumeration	Refer to issue	Missing	Missing	Unspecified	Missing	Unspecified	B00,30,31	B-405, B-407	Unspecified	None	
Reference Year for Magnetic Variation		Action Required	OK	Should be Integer for Truncated Date?	Refer to issue	Missing	Missing	Unspecified	OK	Unspecified	B60,70,71	B-272	Unspecified	None	
refinery area		Action Required	OK	NA	Refer to issue	S-5748/3.1	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Category of Production
reflector		Action Required	Missing	NA	Missing	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Missing
refrigerated cargo vessel		Action Required	OK	NA	OK	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Category of Vessel

Implement Concept Register and modelling within FDD Register Domains. Use of namespaces / scopes(?)



# Review of IHO GI Registry Content - Progress

- Observations and Analysis (3)
  - Repeated concepts (2)

Item	Address	ItemName	CaseCase	Use Type	Definition	Definition Source	Reference	Similarity to Source	Alpha Code	Alias	INTJ	S-I	Distinctions	Remarks	Associated Attribute
Undetermined/Unknown		OK	OK	NA	Repeat of the name	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Ice Stage of Development
Undetermined/Unknown		OK	OK	NA	Repeat of the name	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Lake Ice Stage of Development
Undetermined/Unknown		OK	OK	NA	Repeat of the name	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Floe Sizes
Undetermined/Unknown		OK	Similar	NA	Repeat of the name	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Melt Stage
Undetermined/Unknown		OK	OK	NA	Repeat of the name	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Concentration of Strips/Patches
Undetermined/Unknown		OK	Similar	NA	Repeat of the name	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Level Ice
Undetermined/Unknown		OK	OK	NA	Repeat of the name	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Compacting Strength
Undetermined/Unknown		OK	Similar	NA	Repeat of the name	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Ice Lead Status
Undetermined/Unknown		OK	Refer to Issue	NA	Repeat of the name	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Orientation of Leads or Fractures
Undetermined/Unknown		OK	OK	NA	Repeat of the name	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Iceberg Size
Undetermined/Unknown		OK	Refer to Issue	NA	Repeat of the name	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Ice Drift Direction
Undetermined/Unknown		OK	OK	NA	Repeat of the name	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Ice Thickness Type
Undetermined/Unknown		OK	Refer to Issue	NA	Repeat of the name	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Snow Cover Concentration
Undetermined/Unknown		OK	Refer to Issue	NA	Repeat of the name	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Direction of Sastrugi
Undetermined/Unknown		OK	Refer to Issue	NA	Repeat of the name	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Missing
Undetermined/Unknown		OK	Refer to Issue	NA	Repeat of the name	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Ice Ridge Classification
Undetermined/Unknown		OK	Refer to Issue	NA	Repeat of the name	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Ice Keel Concentration
Undetermined/Unknown		OK	Refer to Issue	NA	Repeat of the name	Missing	Missing	Unspecified	Missing	Unspecified	N/A	N/A	Unspecified	None	Ice Rafting Concentration

Implement Concept Register and modelling within FDD Register Domains. Use of namespaces / scopes(?)



# Review of IHO GI Registry Content - Progress

- Observations and Analysis (4)
  - Repeated concepts (no assigned Domain)

A	B	C	D	E	F	G	H	I	J	K
Item	Domain (FCO)	Type	Issue	Comments	Decision	Address	Item Name	Case Case	Use Type	Definition
living danger area	IHO Hydro	Enumerate					Action Required	OK	NA	OK
living danger mark	IHO Hydro	Enumerate					Action Required	OK	NA	OK
First aid	None	Enumerate	Note that this concept has not been assigned to a domain.				Action Required	Missing	NA	Missing
first aid equipment	IHO Hydro	Enumerate					Action Required	OK	NA	OK
first class landing	Inland ENC	Enumerate	Is this internationally recognized in terms of the definition? If not, suggest that the country that has defined this be mentioned in the definition.				Action Required	OK	NA	Water to issue
First stage thin first year ice 30-50 cm	None	Enumerate	Note that this concept has not been assigned to a domain. Assume this is WMO Ice.				Action Required	Missing	NA	Missing
First stage thin first year ice 30-50 cm	None	Enumerate	Note that this concept has not been assigned to a domain. Assume this is WMO Ice.				Action Required	Missing	NA	Missing
First stage thin first year ice 30-50 cm	None	Enumerate	Note that this concept has not been assigned to a domain. Assume this is WMO Ice.				Action Required	Missing	NA	Missing
First stage thin first year ice 30-50 cm	None	Enumerate	Note that this concept has not been assigned to a domain. Assume this is WMO Ice.				Action Required	Missing	NA	Missing
First stage thin first year ice 30-50 cm	None	Enumerate	Note that this concept has not been assigned to a domain. Assume this is WMO Ice.				Action Required	Missing	NA	Missing
First Year Ice (30 to 200 cm)	WMO Ice	Enumerate					OK	Incomplete and unclear	NA	Repeat of the name
First Year Ice (30 to 200 cm) - Ice Stage of	WMO Ice	Enumerate					Action Required	Incomplete	NA	Repeat of the name
First Year Ice (30 to 200 cm) - Ice Stage of	WMO Ice	Enumerate					Action Required	Incomplete	NA	Repeat of the name
First Year Ice (30 to 200 cm) - Ice Stage of	WMO Ice	Enumerate					Action Required	Incomplete	NA	Repeat of the name
First Year Ice (30 to 200 cm) - Ice Stage of	WMO Ice	Enumerate					Action Required	Incomplete	NA	Repeat of the name
First Year Ice (30 to 200 cm) - Ice Stage of	WMO Ice	Enumerate					Action Required	Incomplete	NA	Repeat of the name
First Year Ice (30 to 200 cm) - Ice Stage of	WMO Ice	Enumerate					Action Required	Incomplete	NA	Repeat of the name

Retire items not assigned to a Domain



# Review of IHO GI Registry Content - Progress

- Observations and Analysis (5)
  - Syntax; use of punctuation

A	B	C	D	E	F	G	H	I	J	K
Item	Domain (FCID)	Type	Issue	Comments	Decision	Addressed	Item Name	Case	Use Type	Definition
Fairway	IHO Hydro	Feature	Part of definition (refer S-101 DCEG and International Maritime Dictionary) is in the Remarks field. Needs to be reconciled.				Action Required	OK	OK	Refer to issue
Fairway crossing	Land ENC	Enumerate	Needs to be discussed as part of the general discussion related to the values for Category of Notice Mark.				Action Required	OK	NA	Almost repeat of the name.
Fairway System	IHO Hydro	Feature	The definition is attributed to the S101 DCEG. Most of this definition (except for the last sentence) has come from the International Maritime Dictionary definition for Fairway.				OK	OK	OK	Refer to issue
Fan	IHO Hydro	Enumerate					Action	OK	NA	OK
Fast ice	WMO Ice	Enumerate					OK	OK	NA	Missing
Fast ice	IHO Hydro	Enumerate	Some of the definition (IHO Dictionary) has been included in the Remarks.				Action	OK	NA	Refer to issue
Fast ice	WMO Ice	Enumerate					Action	OK	NA	Repeat of the name.
Fast ice boundary	None	Enumerate	Note that this concept has not been assigned to a domain. Assume this is WMO Ice.				Action	Missing	NA	Missing
Fast ice edge	None	Enumerate	Note that this concept has not been assigned to a domain. Assume this is WMO Ice.				Action	Missing	NA	Missing
Fast ice, growlers	None	Enumerate	Note that this concept has not been assigned to a domain. Assume this is WMO Ice.	TSSO: Recommend retire -			Action	Missing	NA	Missing
Fish Aggregating Device (FAD)	IHO Hydro	Enumerate	Note that there is a difference between the Item Name in the Register and the name as included in the S-101 DCEG (inclusion of "mark" in Register definition). Note also bracketed acronym included in item name.	TSSO: Suggest amend Register definition to agree with S-101 DCEG.	30/11/17: Amended name, however bracketed acronym retained. Added definition reference (Wikipedia) and S 4 reference.		Refer to issue	OK	NA	Missing
(E.5.15) berthing area reserved for all vessels that are required to carry three blue lights or three blue cones	Land ENC	Enumerate	There appears to be a "code" value included at the start of the Item Name for all registered values of "Category of Notice Mark", in addition to the "meaning" (?) of the code being included. Needs to be discussed.	TSSO: Suggest Item Name be amended to "Information Mark E.5.15"			Refer to issue	Exceeds string length?	NA	Almost repeat of the name.
2 cones, point to point	IHO Hydro	Enumerate					Action Required	OK	NA	OK
2 cones (points downward)	IHO Hydro	Enumerate					Action Required	OK	NA	Missing
Stake, Pole, Perch, Post	IHO Hydro	Enumerate	There are a number of terms used in the Item Name. Suggest one is chosen as the principle term and the others as aliases.				Refer to issue	OK	NA	OK

"Conventions and Guidelines" document



# Review of IHO GI Registry Content - Progress

- Observations and Analysis (6)
  - Enumerates not assigned to attribute

Item	Case	Use Type	Definition	Definition Source	Reference	Similar to Source	Alpha Code	Alias	MIJ	S-I	Distinctions	Remarks	Associated Attribute	Enumerated Code Value
stadium	OK	NA	Refer to issue	S-57 Ed 3.1	Missing	Unspecified	Missing	Unspecified	NA	NA	Unspecified	None	Function	41
Stage of Melt	Amended to Stage of Melt	OK	OK	Missing	Missing	Unspecified	OK	Unspecified	NA	NA	Unspecified	Distinction		
stake	OK	NA	Refer to issue	IHO Dictionary	Missing	Adapted	Missing	Unspecified	NA	NA	Unspecified	None	Category of Pile	1
Stake, Pole, Perch, Post	OK	NA	OK	IHO Dictionary	Missing	Adapted	Missing	Unspecified	Q30	B-456.1	Unspecified	None	Beacon Shape	1
Standard	Missing	NA	Missing	Missing	Missing	Unspecified	Missing	Unspecified	NA	NA	Unspecified	None	Missing	1
standard	OK	NA	OK	Missing	Missing	Unspecified	Missing	Unspecified	NA	NA	Unspecified	None	Character Spacing	2
Standard Time offset from UTC	OK	Text	OK	Missing	Missing	Unspecified	Missing	Unspecified	NA	NA	Unspecified	None		
Starboard lateral	OK	NA	Refer to issue	Missing	Missing	Unspecified	Missing	Unspecified	E30.3	B-483.2	Unspecified	None	Virtual AIS Aid to Navigation Type	6
starboard-hand lateral mark	OK	NA	OK	S-57 Ed 3.1	Missing	Unspecified	Missing	Unspecified	Q31.130.1	B-456.1B-461.3	Unspecified	None	Category of Lateral Mark	2
state	Missing	NA	Missing	Missing	Missing	Unspecified	Missing	Unspecified	NA	NA	Unspecified	None	Missing	3
Station Name	OK	Text	Refer to issue	Missing	Missing	Unspecified	Missing	Unspecified	R31	B-407.2	Station Number	None		
Station name	OK	Text	Refer to issue	Missing	Missing	Unspecified	Missing	Unspecified	NA	NA	Unspecified	None		
Station Number	OK	Integer	Refer to issue	Missing	Missing	Unspecified	Missing	Unspecified	R31	B-407.2	Station Name	None		
status	Missing	NA	Missing	Missing	Missing	Unspecified	Missing	Unspecified	E34	B-374.4	Unspecified	None	Missing	5
status	OK	NA	Refer to issue	S-57 Ed 3.1	Missing	Unspecified	Missing	Unspecified	NA	NA	Unspecified	None	Category of Lateral Mark	10
Status	OK	Enumeration	Refer to issue	Missing	Missing	Unspecified	OK	Unspecified	C211.90.44 N00.0.5 P50.54.95.65 Q70.17	B-353.3 B-431.1 B-431.3 B-444.1 B-445.2 B-489.5 B-	Condition	None		
statute miles	OK	NA	It is not authoritative	Missing	Missing	Unspecified	Missing	Unspecified	NA	NA	Unspecified	None	Height/Length Units	5

Retire enumerates not assigned to an attribute



# Review of IHO GI Registry Content - Progress

- Observations and Analysis (7)
  - Disparity between Item Name and Definition

A	B	C	D	E	F	G	H	I	J	K
Item	Domain (FCD)	Type	Issue	Comments	Decision	Addressed	Item Name	CamelCase	Use Type	Definition
stone	IHO Hydro	Enumerate	Minor difference in definition between Register and S-101 DCEG. Both definitions are attributed to IHO Dictionary. Needs to be reconciled.				Action Required	OK	NA	Refer to issue
stone	IHO Hydro	Enumerate					Action Required	OK	NA	OK
stony shore	IHO Hydro	Enumerate	This S-57 enumerate has been remodelled in S-101 using the attribute "Nature of Surface" (value "Stone"). Need to determine whether this is required in S-100.				Action Required	OK	NA	OK
stop mark	IHO Hydro	Enumerate					Action Required	OK	NA	OK
stopping	IHO Hydro	Enumerate					Action Required	OK	NA	OK
storm	IHO Hydro	Enumerate	Generic Item Name for a specific definition (to signal stations). Needs to be reconciled.	TSSO: Suggest amend Item Name to "Storm Signal Station".			Action Required	OK	NA	OK
storm	IHO Hydro	Enumerate	Enumerate Register only for specific code list?				OK	OK	NA	OK
Storm	WMO Weather	Codelist Value	Discussion at S-100/WG2 meeting. Recommendation is that where a concept can be modelled as an Enumerate type attribute, it should be done rather than modelling as a Codelist type.	TSSO: Suggest remodelling as Enumerated value (Enumerate Register only?).			OK	OK	NA	OK
Storm force wind	WMO	Enumerate					Action	OK	NA	OK
Storm Force Wind Warning	WMO Weather	Enumerate					OK	OK	NA	OK
Storm Surge	WMO Weather	Feature	Item name appears to reflect the cause but the definition indicates the resultant effect on the water level.	TSSO: Suggest renaming to Storm Surge Level or Storm			Refer to issue	Refer to issue	OK	OK
Storm Surge	WMO	Complex					OK	OK	NA	OK
storm warning	IHO Hydro	Enumerate					Action	OK	NA	OK
straddle carrier	IHO Hydro	Enumerate	Some of the definition (IHO Dictionary) has been included in the Remarks.				Action	OK	NA	Refer to issue
Straight territorial sea baseline	IHO Hydro	Feature	Part of definition (refer S-101 DCEG and IHO Dictionary) is in the Remarks field. Needs to be reconciled.				Action Required	OK	OK	Refer to issue
stream depth	IHO Hydro	Simple att	Definition is specific to tidal streams while Item Name is relatively generic.	TSSO: Suggest amend name to "Tidal Stream Depth".			Action Required	OK	Real	Refer to issue
Streamed Data	IHO Hydro	Enumerate					OK	OK	NA	OK
Streamed data	IHO Hydro	Codelist Value	Discussion at S-100/WG2 meeting. Recommendation is that where a concept can be modelled as an Enumerate type attribute, it should be done rather than modelling as a Codelist type.	TSSO: Suggest remodelling as Enumerated value (Enumerate Register only?).	30/11/17: Remodelled as Enumerate, however Codelist retained as it may be used as such in other PSs?		Action Required	OK	NA	OK
strip light	IHO Hydro	Enumerate					Action	OK	NA	OK
stripes (direction unknown)	IHO Hydro	Enumerate	Not sure that this should be a "concept"? Also, note that the definition has been amended for S-101 DCEG (as an adaptation of the S-57 definition) to replace "painted".	TSSO: Enumerate Register?			Action Required	OK	NA	Refer to issue
Strips and Patches	WMO Ice	Feature	There is no correlation between the Item Name and the camelCase	TSSO: Recommend amending Item Name to Ice Strip.			Refer to issue	Amend the template	OK	OK

"Conventions and Guidelines" document





# Review of IHO GI Registry Content - Progress

- Observations and Analysis (8)
  - “Coded” attribute lists

A	B	C	D	E	F	G	H	I	J	K
Item	Domain (ECD)	Type	Issue	Comments	Decision	Addressed	Item Name	Case	Use Type	Definition
0.5 - 2.0m Between Berms	WMO Ice	Enumerate	Inconsistency between syntax for this Item Name and other values for attribute "Iceberg Concentration"				Refer to issue	Incomplete	NA	Repeat of the name
070 to 170	WMO Ice	Enumerate					Action	OK	NA	Repeat of the name
070 to 170	WMO Ice	Enumerate					Action	OK	NA	Repeat of the name
070 to 170	WMO Ice	Enumerate					Action	OK	NA	Repeat of the name
070 to 170	WMO Ice	Enumerate					Action	OK	NA	Repeat of the name
Iceberg	WMO Weather	Codelist Value	Discussion at S-100/WG2 meeting. Recommendation is that where a concept can be modelled as an Enumerate type attribute, it should be done rather than modelling as a Codelist type.	TSSD: Suggest remodelling as Enumerated value (Enumerate Register only?)			OK	OK	NA	OK
1peniche	Inland ENC	Enumerate	There appears to be a "code" value included at the start of the Item Name for all registered values of "Category of CEMT Class", in addition to the "meaning" of the code being included. Needs to be discussed.				Refer to issue	Refer to issue	NA	Syntax?
10 to 20 of Area	WMO Ice	Enumerate					Action	OK	NA	Repeat of the name
170	WMO Ice	Enumerate	Needs to be a single generic concept (or enumerate in Enumerate Register) of "170".				Refer to issue	Refer to issue	NA	Repeat of the name
170	WMO Ice	Enumerate	Needs to be a single generic concept (or enumerate in Enumerate Register) of "170".				Refer to issue	Refer to issue	NA	Repeat of the name
170	WMO Ice	Enumerate					Action	OK	NA	Repeat of the name
170	WMO Ice	Enumerate					Action	Syntax	NA	Repeat of the name
170	WMO Ice	Enumerate					Action	OK	NA	Repeat of the name
170	WMO Ice	Enumerate					Action	Syntax	NA	Repeat of the name
170 ice	WMO Ice	Enumerate					Action	Syntax	NA	Repeat of the name
170 ice	WMO Ice	Enumerate					Action	Syntax	NA	Repeat of the name
170 to 270	WMO Ice	Enumerate					Action	OK	NA	Repeat of the name
170 to 270	WMO Ice	Enumerate					Action	Syntax	NA	Repeat of the name
170 to 270	WMO Ice	Enumerate					Action	OK	NA	Repeat of the name
170 to 270	WMO Ice	Enumerate					Action	OK	NA	Repeat of the name
170 to 270 ice	WMO Ice	Enumerate					Action	Incomplete	NA	Repeat of the name
170 to 270 ice	WMO Ice	Enumerate					Action	Incomplete	NA	Repeat of the name
170 to 370 ice	WMO Ice	Enumerate					Action	Incomplete	NA	Repeat of the name
170 to 370 ice	WMO Ice	Enumerate					Action	Incomplete	NA	Repeat of the name
1-2m Between Berms	WMO Ice	Enumerate					Action	Incomplete	NA	Repeat of the name

Implementation of Enumerate / Codelist Register(s) – namespaces / scopes(?)



# Review of IHO GI Registry Content - Progress

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- Observations and Analysis (9)
  - camelCase (length, syntax)
  - Non-authoritative definitions (repeat of name, ....)
  - Inference to modelling/encoding )Item Name, Definition, Remarks
  - INT1 and S-4 references
  - “Distinctions”
  - Available Metadata fields by Type



# Review of IHO GI Registry Content - Progress

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- Actions for S-100WG3:
  - **Note** progress of the FCD Register content review since S-100WG2.
  - **Approve** the continuation of the review of the FCD content by the IHO GI Registry Project Team.



# Review of IHO GI Registry Content - Progress

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**THANK YOU**



# Summary of Activities of the IHO GI Registry

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For more information: <https://www.iho.int>  
IHO Secretariat Contact: [jeff.wootton@iho.int](mailto:jeff.wootton@iho.int)

