3ʳᵈ S-100WG MEETING
Singapore – 10-14 April 2018

Paper for Consideration by the S-100 Working Group (S-100WG)

Summary of Activities of the IHO GI Registry

Submitted by:	IHO Secretariat (IHO GI Registry Manager).
Executive Summary:	A summary of the day-to-day activities of the IHO GI Registry during the period March 2017 – March 2018; and progress on actions from S-100WG2.
Related Documents:	1. IHO Geospatial Information Registry (http://registry.iho.int/).
	2. IHO Publication S-99 - *Operational Procedures for the Organization and Management of the S-100 Geospatial Information Registry*.
	3. Minutes and Actions of S-100WG2.
Related Projects:	Development of the IHO Geospatial Information Registry; S-100 based Product Specification development.

Introduction / Background

1.   The IHO Geospatial Information (GI) Registry became operational in October 2016. From this time the Registry/Register Manager (Technical Standards Support Officer (TSSO) at the IHO Secretariat) has been processing proposals for the inclusion of new items in the Feature Concept Dictionary (FCD) Register. The TSSO also began assuming the responsibilities for the day-to-day operation of the Registry as the Registry Manager (on behalf of the IHO Secretariat).

2.   This paper provides a summary of the activities of the IHO GI Registry since S-100WG2, and summarises the progress made and observations/issues identified by the TSSO since March 2017. Other components of the IHO S-100 infrastructure include the S-100 Feature Catalogue Builder (FCB) and S-100 Portrayal Catalogue Builder (FPB) – these are the subjects of separate reports to S-100WG3.

Analysis / Discussion

3.   The IHO Geospatial Information (GI) Registry became operational in October 2016, having been redeveloped from the previous version of the Registry which was substantially developed and managed by the former TSMADWG Chair. This Registry structure (database) and interface has been developed (and continues to be supported/maintained) by the Republic of Korea (ROK) – Korea Hydrographic and Oceanographic Agency (KHOA), with significant input from the S-100WG Chair. The Registry structure and interface has been built to conform with the processes described in S-99 - *Operational Procedures for the Organization and Management of the S-100 Geospatial Information Registry*, and is hosted on an IHO server. The work of the ROK (KHOA) in the development and maintenance of the IHO GI Registry is gratefully acknowledged and their continued support is greatly appreciated by the IHO.

4.   The IHO GI Registry can be accessed at http://registry.iho.int/. Links are provided on the IHO web site at the downloads section of the Standards and Publications page; and from the Introduction/Information link in the S-100 section of the S-100WG page (IHO Council, Committees & WG).

Welcome Page of the IHO GI Registry

5.   Coincident with the commissioning of the current version of the Registry, the IHO Technical Standards Support Officer (TSSO) took up the role of the IHO GI Registry Manager and Feature Concept Dictionary (FCD) Manager on behalf of the IHO Secretariat.

6.   The main focus of the TSSO since March 2017 has been the advancement of actions from S-100WG2 related to the Registry; refinement of the proposal for a restructure of the Registry submitted to S-100WG2; continued processing of proposals to the FCD Register; and reporting to/liaising with ROK (principally Mr Yong Baek) on improvements to the current version of the Registry interface and any corrective action required.

7.   Registry:

The IHO GI Registry currently consists of the following Registers:
   - Feature Concept Dictionary (FCD) Register;
   - Portrayal Register;
   - Product Specification Register; and
   - Data Producer Code Register.

The Product Specification and Data Producer Code Registers are still in development, and a link to relevant documentation is included under these Register tabs within the "GI REGISTERS" tab in the Registry interface. While there is provision for the addition of a Metadata Register, a justification and use case for such a Register is yet to be developed. The Portrayal Register has been implemented (February

2017), however there has yet to be any significant action with regard to proposals to this Register. At the time of compiling this paper, there were 7028 items registered, across the FCD and Portrayal Registers. The principle "day-to-day" activity within the Registry has been for the FCD Register, which will be the main focus for the remainder of this report.

8.   FCD Register:

The FCD Register contains (at time of compiling this paper) **6371 items**. These items are registered as specific types; and item status, as defined in S-99. A detailed report of the Register contents can be seen on the welcome page of the Registry interface (see figure above). In summary, the FCD Register contains ([bracketed] figures are figures at March 2017 for comparison):

- 860   [819]   Geo/Meta Features
- 18   [10]   Information Features
- 908   [825]   Simple Attributes
- 4237   [3868]   Enumerates
- 154   [89]   Complex Attributes
- 20   [16]   Codelists
- 174   [119]   Codelist Values

Collectively, the status of these registered items is:

- 4610   [4242]   Valid items
- 1190   [940]   Superseded items
- 571   [565]   Retired items

The Register incorporates the following Domains, across which items are registered:

- IHO Hydro
- WMO Ice
- WMO Weather
- Inland ENC
- IALA AIS
- IALA AtoNs
- IALA VTS
- Port ENC
- AML
- IEC
- UKCM*
  - * New Domains approved since March 2017

Since March 2017 there have been **624 Proposals** to the FCD Register. These comprise proposals for:

- 41   [37]   Geo/Meta Features
- 8   [9]   Information Features
- 83   [285]   Simple Attributes
- 369   [495]   Enumerates
- 65   [69]   Complex Attributes
- 4   [18]   Codelists
- 55   [125]   Codelist Values

Proposals have covered all Proposal Types (Addition, Clarification, Supersession and Retirement). Proposals have been substantially for the IHO Hydro, WMO Weather, IALA AtoNs and Inland ENC Domains.

There are no proposals with status "Not Yet Determined" or "Under Negotiation" with Submitting Organization or DCB for evaluation.

The Register Manager has no items in his Work Queue.

There are 15 Submitting Organizations registered for the FCD Register, representing IHO, IEC, IALA, WMO, IEHG, KHOA (S-100WG), NOAA (S-100WG), SMA (S-100WG), Hidrografico de la Marina (S-100WG), UNH (NIPWG), BSH (NIPWG), and AMSA (UKCMPT). There are currently 9 DCB members registered, representing S-100WG, IEC, IALA, WMO, IEHG and NIPWG.

NOTE: The Register currently has no Executive Control Body members (see S-100WG2-10.2A).

9.   Status of Actions from S-100WG2:

Action 03 (Agenda item 6.4): *IHO Secretariat to discuss current Codelist attribute type modelling with WMO JCOMM pending the outcomes of related discussions at the meeting (agenda item 9.6).*

Discussed with WMO JCOMM based on the conclusions from Agenda 9.6 that Enumerated type should be used instead of Codelist type where it is possible to do so. WMO JCOMM have subsequently amended their (weather) data model accordingly. Complete.

Action 07 (Agenda item 8.5): *Develop a draft data structure for the S-100 Producer Code Register. [RENCs to further investigate the use of Producer Codes and file naming conventions for S-101, including file name duplication issues.]*

KHOA are considering the data structure for the Producer Code Register as part of the next iteration of the Registry (see S-100WG3-06.4 and S-100WG3-06.7.1). In Progress.

Action 19 (Agenda item 9.3): *Investigate how to implement the changes to the Registry as outlined in paper 9.3A.*

KHOA are developing a "new" Registry structure and associated interface, including the implementation of a Concept Register. The new test structure and interface is currently being evaluated (See S-100WG3-06.2.2 and S-100WG3-06.7.1). In Progress.

Action 21 (Agenda item 9.4): *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.*

See S-100WG3-06.2C. In Progress.

Action 22 (Agenda item 9.4): *Develop ToRs for an IHO GI Registry Project Team for consideration of the S-100WG.*

See draft ToRs at Annex to this paper. For consideration of S-100WG.

Action 23 (Agenda item 9.5): *Sub-WG to be formed to review the content of the IHO GI Registry. Members: JW (lead), YB, CM, JLP.*

It is considered that the review of the contents of the FCD Register should be conducted by the IHO GI Registry Project Team (Action 22), noting that the same S-100WG members volunteered for both tasks. Briana Sullivan (UNH/NIPWG) and Raphael Malyankar (NIPWG) also added to the Sub-WG (see S-100WG3-06.2.4). Closed, pending approval of S-100WG.

Action 24 (Agenda item 9.6): *Develop guidelines for the use of Codelist type attributes for inclusion in the IHO GI Registry proposal guidelines; and consider additional guidance for the S-100 document.*

Draft guidance has been included in the draft Registry Guidelines document, however a comment from a member of the FCD Register Content Review Sub-WG suggests that such guidance should not be included in this document, but in the Guidelines for Product Specifications Developers. Requires further discussion (see S-100WG3-06.2.3). No progress at with the main S-100 document at this stage. In Progress.

Action 25 (Agenda item 9.7): *Conduct a review of S-99 and produce a new edition based on the accrued practical experience with the Registry and related decisions made at S-100WG2.*

Focus has been on the Guidelines for Registry Content document. Not Yet Started.

Action 48 (Agenda item 11.8): *Investigate the proposal to make Mooring Buoy a new feature (proposal D) thus allowing the attributes Buoy Shape, Colour and Colour Pattern to be removed from the Mooring Facility feature.*

Focus has been on the Guidelines for Registry Content document and the FCD Register content review. Not Yet Started.

10.   Other Issues:

There have been no substantial emerging issues with the Registry reported since S-100WG2. Discussion has focussed on the issues that were identified at S-100WG2, and a summary of these discussions and progress made is the subject of separate papers to S-100WG3.

11.   IHO GI Registry Workshop:

Pending the results of discussions related to this and other papers related to the IHO GI Registry submitted to S-100WG3, the IHO Secretariat considers that a workshop is required for Registry developers (KHOA, ….), FCD Register Domain managers, proposers, Product Specification (PS) developers, data modellers and other interested parties. Such a workshop would be beneficial in facilitating discussions between all PS developers and others performing functions or activities within the Registry in order to reach a common understanding of the structure, processes and roles within the Registry; and the impacts of the evolution of the Registry infrastructure and content as it relates to the discussions/decisions at S-100WG3.

Conclusions

12.   The IHO saw a significant milestone reached with the commissioning of the IHO GI Registry in October 2016. This has seen significant steps taken in S-100 based Product Specification and related Feature Catalogue development as evidenced by the activities of registered Submitting Organizations since that time. The efforts in reaching this milestone and continuing support of ROK (KHOA) are acknowledged and are greatly appreciated by the IHO.

13.   However, continued practical experience of the operation of the Registry (particularly the FCD Register) has identified that there is still a significant amount of work before the Registry can be considered to be stabilized. It is considered important that the most significant issues so far identified (some of which may be considered to be fundamental to the structure, content and management of the Registry) be resolved as soon as possible so as to have as minimal impact as possible on Product Specifications in development.

Recommendations

14.   This paper is intended as an introduction to the more specific issues to be addressed by the S-100WG related to the IHO GI Registry, as contained in related papers to S-100WG3. However in accordance with S-100WG2 action 22, draft ToRs for an "IHO GI Registry Project Team" are included as Annex A to this paper, and it is recommended that the S-100WG discuss and approve these ToRs.

15.   It is also recommended that the S-100WG approve the hosting by the IHO Secretariat of a Workshop related to the administration and activities of the Registry.

Justification and Impacts

16.   The IHO GI Registry is owned by the IHO, which comprises the IHO Member States. While the day-to-day operation of the Registry is substantively overseen by the IHO Secretariat, decisions on the structure, content and operational processes for the Registry rest with the Member States. With wider interest in S-100 and the Registry by other organizations related to hydrography, a stable and well operated Registry is of interest to all parties and ultimately impacts on the reputation of the IHO and its Member States.

Action required of S-100WG

17.   The S-100WG is invited to:

 a.   **Note** this report.

 b.   **Note** the activities of the IHO GI Registry since S-100WG2.

 c.   **Endorse** the IHO GI Registry Project Team ToRs included at Annex A.

 d.   **Approve** the convening of a Workshop focussing on the IHO GI Registry.

 e.   **Discuss** any additional items of note from the report.

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

Terms of Reference and Rules of Procedure

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

1.   Objectives

   a)   To provide expertise and assistance to the IHO Geospatial Information (GI) Registry Manager for the development and maintenance of the IHO GI Registry infrastructure.

   b)   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

   a)   The Project Team (GIRegPT) shall comprise representatives of the IHO Secretariat, IHO Member States (MS), Expert Contributors (EC) and observers from accredited NGIOs. A membership list shall be maintained and posted on the IHO website.

   b)   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.

   c)   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.

   d)   The Chair of the GIRegPT shall be the IHO GI Registry Manager.

   e)   If a secretary is required, the position should normally be filled by a member of the GIRegPT, approved by the Chair.

4.   Procedures

   a)   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.

   b)   Decisions should be made by consensus. Dissenting opinions, if any, should be reflected in the GIRegPT report.

   d)   The GIRegPT should liaise with other IHO bodies, international organizations, end users and industry to ensure the relevance and currency of its work.

   e)   The GIRegPT should identify a Work Programme for each year, including expected time frame for progressing tasks.

   f)   The GIRegPT should report to the S-100WG in accordance with its Work Plan.