The IHO Geospatial Information Registry

Structures and applications for hydrographic information beyond ECDIS

S-57 Hydrographic Data Transfer Standard

History of the basic standardisation for ENCs

IHO S-57  - May 1992
Edition 3.0  - November 1996
Edition 3.1  - November 2000 (currently “frozen”)
    (added IMO-requested features for PSSA and ASL)
  – Edition 3.1 Supplement No. 2 - June 2010
    (amended ZOC criteria, corrected navaid master-slave relationship)
S-57 Hydrographic Data Transfer Standard

contains

– Introduction
– Data Model
– Data Structure and Format
– Rules for ISO 8211 encapsulation
– Appendix A – Object Catalogue
– Appendix B1 - ENC Product Specification

Users and uses

Hydrographic Offices
– Electronic Navigational Charts (ENCs)
  • Reached global coverage comparable with paper charts
  • Basis for ECDIS carriage requirements starting in 2012

Other communities have S-57 based products
– Additional Military Layers (AML)
– Marine Information Overlay (MIO)
– Inland ENC
– [Port ENC]
Why do we need S-100?

- Broad geospatial framework standard
  - Not specific to ECDIS or charting but in the mainstream of GIS
  - easier use of hydro data for products and services beyond HOs like coastal zone mapping, security, spatial planning ...

- Based on ISO 19100 series of Geographic Standards
  - new components not developed in isolation
  - standards are never “frozen”
  - Plug-and-Play updating of data, symbology and software enhancements

S-100 Universal Hydrographic Data Model

S-100 based standards will support:

- Imaginary and grided data
- High-density bathymetry
- Seafloor classification
- 3-D and time-varying data (x,y,z and time)
- Dynamic ECDIS
- MIOs
- Marine GIS
- Web-based services
- other applications ...

S-100 will replace S-57 over time
What exactly is this mysterious S-100 all singing and dancing machine?

A framework standard – an *implementation guide*

describes components for

– a **registry** for managing
  • feature concept dictionaries
  • feature portrayal elements
  • metadata elements
  • producer codes
  • product specifications

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**registry**
- a database that contains the essentials required to establish and define the content elements of product specifications

**feature**
- the codification that describes a real-world entity
  • a buoy, a sounding, a building, a cargo,
  • a legal regulation, a pilot service, a marine service,
  • a ship report, (voyage plan, position, etc), …

**product specification**
- the application schema for a standardised data input/output
  • content, arrangement, portrayal, encoding, etc …
    the “plan”, the “recipe”, the “data product template”
  • examples: S-101 ENC, S-102 BathyGrid, S-103 NPUB
S-100 - a framework Standard

Organizational guidelines and principles

... to create a “store”

S-100

Registry

Product Specifications

S-100 core element: the GI - Registry
- register entries organised under “domains” so far:
  • hydrography,
  • nautical publications,
  • sea ice,
  • inland ENCs, ….
- registry open to extension and use by other Submitting Organizations and for new domains
  • Submitting Organizations propose then oversee their domain data - via the unified executive control body
  • all features tagged with domain “owner”

S-100 - two Registers of different domains

13.12.2010 Hydro2010 Rostock-Warnemünde
GI - registered items - no end date

register entries stay in register, even after supersession or retirement

- "valid" - latest version (use for new prod specs)
- "superseded" - previous version/s (referenced by existing prod specs)
- "retired" - no longer recommended for use

No need to change a product specification whenever an entry is changed in a register!

Product Specification owners remain in control!
S-100 based products composed with over Registries

Feature (FCD) elements
Portrayal elements
Metadata elements
S-100 Registry

New Product Specification (standard)
Product Specification adopted, “owned” and amended by relevant authority

Feature (FCD) elements
Portrayal elements
Metadata elements
other ISO 19100 Registries

S-99 - operation rules for S-100 GI Registry

Is what you want already in the registry?
– Then use it!

Not in the registry?
– Then, find or become a submitting organization and:
  • propose a revision
  • propose something new
  • propose to establish a new domain

Registry operating rules in S-99 (active 1 Jan 2011)
### S-100 - Timetable

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>S-100 development started</td>
</tr>
<tr>
<td>2006</td>
<td>Registry development started</td>
</tr>
<tr>
<td>1 Jan 2010</td>
<td>S-100 in force</td>
</tr>
<tr>
<td></td>
<td>Registry in trial use</td>
</tr>
<tr>
<td>1 Jan 2011</td>
<td>S-99 - <em>Registry Operating Rules</em> in force</td>
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<tr>
<td></td>
<td>S-100 Registry public access</td>
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<tr>
<td></td>
<td>IMO e-nav strategy completed</td>
</tr>
<tr>
<td>2014+++</td>
<td>First S-101 ENCs available</td>
</tr>
<tr>
<td>????</td>
<td>e-nav implementation by Industry</td>
</tr>
</tbody>
</table>

### S-100 - GI Registry Summary

- S-100 GI Registry is available now
  - can support more than hydrography and charting
- Relevant bodies act as submitting organizations
  - “competent international technical groups”
- Submitting Organizations stay in control!
- S-100 GI Registry will be underpinning world’s ENCs and nautical publications in accordance with SOLAS obligations for next 30+ years
S-100 - enhanced possibilities

S-100 GI Registry supports a variety of data sources, products and services

Thank you for your attention!