ENCWG – S-57 to S-101 CONVERSION SUB-GROUP

VTC MEETING 3, 8 JANUARY 2021 – 1700 - 1845 CET

Attendees

- Jonathan Pritchard (IIC Technologies – Sub-Group co-leader)
- Christian Mouden (France - Sub-Group co-leader)
- Jeff Wootton (IHO Secretariat)
- Yong Baek (IHO Secretariat)
- Julie Larrivée (Canada)
- Elizabeth Hahessy (Denmark)
- Richard Fowle (Denmark)
- Andrew Richardson (UKHO)
- Megan Bartlett (NOAA)
- Mikus Ranka (Norway)

- Robert Nyst (HSO-Canada)
- Herman Schouten van der Velden (Netherlands)
- Svein Skjaeveland (Primar)
- Thomas Richardson (ic-enc)
- Susan Marks (ic-enc)
- Inga Fjellanger (Navico)
- Tom De Puyt (Esri)
- Abinashi Dhungel (Esri)
- Hugh Astle (Teledyne)
- Friedhelm Moggert-Kaegeler (SevenCs)
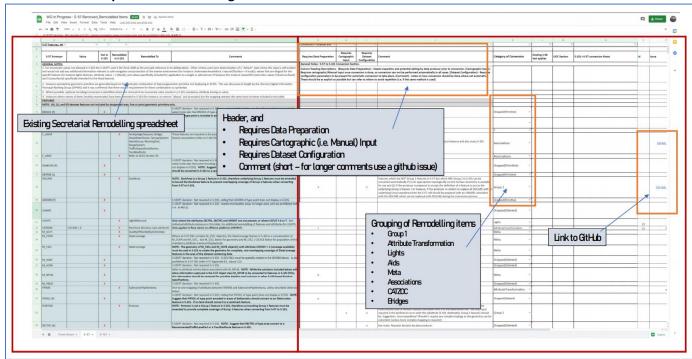- Cameron Mc Leay (Teledyne)

Agenda

Subgroup Meeting Progress and Agenda

- Happy New Year!
- **Spreadsheet shared on Google Docs**
  - Received?
  - Understood?
  - The Tour….

- **Review of Issues**
  - Added issues
    - Group 1 Features
    - Associations
    - INFORM
    - InTheWater
  - Others? Suggestions?...

- **AOB**
  - Way Forward? Regular discussion forums?
  - Updates to DCEG and Feature Catalogue
  - Can we use Feature Catalogue to identify "simple" conversions?

- **Remodelled Spreadsheet on Google Docs**

- This third meeting has concentrated on the way to use the shared spreadsheet. The Front sheet contains basic instructions. Participants are invited to write their name and initials in the Editors table so that they comments can be identified in the spreadsheet.
- In case of access/writing issues, please e-mail to Jonathan (jonathan.pritchard@iictechnologies.com or on google kusala9@googlemail.com) .
- A "Status" (e.g. Not Required, In Progress, Drafted, Finalized, etc.) column will be added to the sheet to have a better view on the progress of each item.
- Dedicated approval process should be established for the individual items. Need to remember the spreadsheet is only input to the final document to be written.
- A link to the Google Docs spreadsheet is to be added on the IHO Github (https://github.com/iho-ohi/S-57-to-S-101-conversion-sub-WG).

- **Work organization**
  - In order not to overload the spreadsheet, comments in the spreadsheet should be short. If needed, open an issue in the Github. This is where deeper discussions will take place and be stored.
  - Test data sets will be archived on the Github. The original S-57 ENC will be stored, along with "Reviewed" S-57 ENC, prepared for conversion.
  - We need to have ENCs "from everywhere" to reflect the various encoding practices (IHO Secretariat (Yong Baek) can help in collecting ENCs).
  - S-64 and future S-164 could also provide good test examples.
  - Issues that the Sub-Group cannot resolve can be passed on to the ENCWG and S-101PT via Sub-Group reports.

- **S-101 Conversion Feature Catalogue**
  - It has been suggested that a "S-101 Conversion FC" (V1.0.1 once aligned with DCEG V1.0.1) could carry the S-57 acronyms and be used for 1 to 1 conversions. Yong suggested that this could be handled by the FC builder.
  - Hugh suggested another option to rather create a simple machine readable (a 2 column table) file that would list the direct conversion cases. The spreadsheet and Github would then focus on the more complex cases. This is ongoing and can be discussed further at another meeting.

- **Output: Guidance Document**
  - Jeff presented his work on the draft document (which is based on the structure of the S-57 UOC). Extracts in annex 1.
  - Yong suggested that the Guidance draft could be available on the Github. This is to be studied in terms of editing.
  - It has to be seen if the final Guidance Document is to be submitted to the ENCWG for review and endorsement (can be discussed at next ENCWG meeting 2021-02-19).

- **Next steps**
  - Participants are now encourage to start filling the spreadsheet and/or creating issues on the Github.
  - Test data sets can be passed on to the Sub-Group co-leaders so that they store them on the Github.

- **Next meeting**
  Next meeting planned on 11th February, so that progress can be shown during ENCWG meeting on 19th February.

2.1.8.1 Seasonal Objects

Unless otherwise stated against an individual Object class within this document, all instances of encoding of attribute STATUS = *5* (periodic/intermittent) will be populated automatically against the S-101 attribute **status** on conversion.

Unless otherwise stated against an individual Object class within this document, all instances of encoding of the attributes PERSTA and PEREND will be populated automatically against the S-101 complex attribute **periodic date range** on conversion.

The encoding guidance for taking into account leap years ("last day in February") for PEREND/PERSTA remains unchanged in S-101.

2.2.3.1 Quality of bathymetric data

S-57 Meta object: Quality of data (**M_QUAL**)   (A)

S101 Meta feature: **Quality of Bathymetric Data**   (S)   (S-101 DCEG Clause 3.7)

The differences in the data modelling between the S-57 M_QUAL Meta object and the **Quality of Bathymetric Data** Meta feature constitute one of the most significant changes from S-57 to S-101. In the S-101 data model, the defining S-57 CATZOC attribute has been effectively "deconstructed" into its component parts of position and depth accuracy; and seafloor coverage (including feature detection). This has been done in order to provide the mariner with more detailed information as to the quality of the bathymetric data included in the ENC dataset.

Category of Zone of Confidence in Data: During the automated conversion process, the value populated in CATZOC will be used to populate the S-101 mandatory attributes **data assessment**, **features detected** (complex attribute), **full seafloor coverage achieved**, **horizontal position uncertainty** (complex attribute) and **vertical uncertainty** (complex attribute). The values populated for these attributes will correspond to the values shown in the ZOC table included in S-57 Appendix A, Chapter 2 – *Attributes*, as amended by S-57 Supplement No. 3. Data Producers may choose to re-evaluate these values in order to provide more accurate indications of these individual components of bathymetric data quality to the mariner, given that the automated values populated will correspond to the "worst case" for each component (see also additional comments for the **data assessment** attribute below). For this reason, and also so as to ensure consistent portrayal of the indication of overall bathymetric data quality in the "dual-fuel" ECDIS environment, the S-101 attribute **category of zone of confidence in data** is included as identical to the S-57 CATZOC attribute, from which ECDIS portrayal will be derived.

Where the S-57 attributes POSACC or SOUACC have been populated for M_QUAL to indicate a higher accuracy then the CAZOC indicates, these values will override the CATZOC categorisation of position and depth accuracy in populating the **horizontal position uncertainty** and **vertical uncertainty** complex attributes during the automated conversion process.

Data Assessment: The S-101 mandatory attribute **data assessment** introduces an option to reduce screen clutter in some ECDIS display modes through population of value *2* (assessed (oceanic)). This value is intended for use where an indication of the overall data quality is not considered to be required – generally in depths deeper the 200 metres. However, determination as to when this value may be populated cannot be made during the automated conversion process, therefore for all M_QUAL except those where CATZOC = *6* (zone of confidence U (data not assessed)), the corresponding **Quality of Bathymetric Data** will have **data assessment** populated with value *1* (assessed).

Temporal Variation: The S-101 mandatory attribute **category of temporal variation** introduces the ability for the Data Producer to incorporate the temporal impact on bathymetric data quality in areas where the seabed is likely to change over time, or in the wake of an extreme event such as a hurricane or tsunami. During the automated conversion process, for all M_QUAL except those where CATZOC = *6* (zone of confidence U (data not assessed)), the corresponding **Quality of Bathymetric Data** will have **category of temporal variation** populated with value *5* (unlikely to change). For full S-101 functionality, Data Producers will be required to reassess the value of this attribute as required. For CATZOC = *6* (zone of confidence U (data not assessed)), **category of temporal variation** will be populated with value *6* (unassessed).

Feature Detection: The S-101 complex attribute **feature detection** introduces the option to include an indication of the minimum size of significant features detected by higher quality hydrographic surveys, using the sub-attribute **size of features detected**. There is no corresponding encoding for this information in S-57 – for full capability S-101 data, Producing Authorities will be required to populate this attribute manually, if considered necessary.

Survey Data Range: In S-57, the attribute SUREND is not mandatory for M_QUAL. In S-101, the complex attribute **survey date range**, sub-attribute **date end**, is mandatory for **Quality of Bathymetric Data**. In order to optimise the S-57 to S-101 conversion process, Data Producers should ensure that the attribute SUREND is populated on all M_QUAL objects for their S-57 datasets as required (for example, where the seabed is likely to change over time). If this is not done, **survey date range**, sub-attribute **date end** will be populated as empty (null) during the automated conversion process.

Technique of Sounding Measurement: While the S-57 attribute TECSOU is an allowable attribute for S-57 data, the corresponding S-101 attribute **technique of vertical measurement** is prohibited for **Quality of Bathymetric Data**. If it is considered important to retain this information when converting to S-101, Data Producers should remove TECSOU from M_QUAL and populate it on the individual features (wrecks, obstructions etc) as required. Alternatively, an S-101 Meta feature **Quality of Survey** may be manually encoded.

Overlapping **Quality of Bathymetric Data** features: S-101 allows for overlapping **Quality of Bathymetric Data** features in order to define the quality of bathymetric data at varying depths in the water column. There is no corresponding encoding for this information in S-57 – for full capability S-101 data, Producing Authorities will be required to evaluate their data holdings and encode this information manually, if considered necessary.

Bathymetric Data Quality and Dataset Compilation Scale: In S-101, **Quality of Bathymetric Data** is not mandatory for data at smaller than 1:700000 maximum display scale. M_QUAL will be converted to **Quality of Bathymetric Data** at all scales during the automated conversion process, however Data Producers may consider removing these features from data at smaller than 1:700000 maximum display scale, or utilising attribute **data assessment** value *2* (assessed (oceanic)) as appropriate.