



Inland ENC Harmonization Group

**Meeting focused on the
development of S-401**

October 20th – 21st 2022

Online

Participants :

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Minutes of the meeting

[Basic presentation: IEHG_2022.pdf]

1. Welcome, Introductions of Participants, organizational details

Bernd Birkhuber thanked the participants from other regions for their participation despite of the inconvenient time.

The participants introduced themselves.

The draft agenda was adopted without amendments [IEHG_2022_S401_Agenda.pdf]

2. Status of development of S-99, S-100 and S-101

S-100 has entered into force on 1st January 2010

S-100 edition 4.0.0 has been adopted in December 2018

S-100 Registry 3.1

Concept Dictionary Register

- Concept Power Characteristics defined in the Registry (registered and accepted)
- Concepts Real AIS AtoN and Virtual AIS AtoN deleted in the IENC domain because similar concepts exist in the Hydro domain

Data Dictionary Register

- Complex Attribute powerCharacteristics added
- Enumerations realAISAtaN and virtualAISAtaN deleted
- Enumerations physicalAISAtaN and virtualAISAtaN added for the attribute typeOfAtoN

S-100 Toolkit

- Tool developed by IHO to centralize and maintain S-100 applications
- Feature Catalogue Builder: version 2.3.2.0 released on 2021-07-12
Connected to the Data Dictionary Register
- DCEG Composer: version 0.0.7863.32931 from 2021-07-12
- Portrayal Catalogue Builder

No new versions of the tools available

S-99 edition 1.1.0 has been published in November 2012

S-101 edition 1.0.0 has been published in December 2018 but is not complete. Edition 1.1.0 of the Product Specification is now available as a draft.

- A new Edition 1.0.2 has been published in April 2022 for the S-101 FC and DCEG
- The IHO DCEG Sub-Group is working on the Edition 1.1.0 of the S-101 DCEG. The latest draft will be presented as part of the S-101 DCEG Agenda for the S-101 PT meeting in November. It is intended to publish 1.1.0 soon and it will contain a lot of changes compared to 1.0.2
- The documents are available on the discussion forum of IEHG

Status of the S-101 Feature Catalogue

- Main changes in Edition 1.0.2
- Attributes information and pictorial presentations re-inserted as allowable attributes for geo features
- Term and definition for meta features Vertical Datum of Data amended so as to be distinct from the attribute vertical datum
- Simple attribute category of distance mark removed and replaced with new Boolean type attribute distance mark visible
- New enumerate values 26 (bridge) and 27 (dam) added for attribute category of landmark
- ...

Action point: keep track of S-101 developments and the consequences for IENCs (Cameron, Chris, Tom, René, Friedhelm, Gert, Gaël and Patrick).

3. Interoperability and S-98

The interoperability standard S-98 will ensure that different products can be displayed together in an ECDIS. Currently S-98 is only allowing S-101 cells as base cells and only those other products that are mentioned in the Performance Standard for ECDIS of IMO. There is however no obligation that an ECDIS must be able to read all the products that are mentioned in S-98, only S-101 is required.

The fact that S-401 is not mentioned in S-98 would cause problems in areas where S-101 and S-401 cells have to be displayed at the same time. IHO has acknowledged the problem in the past and announced to allow S-401 as base cell in a future edition.

Action point from last meeting:

all to contribute to a gap analyses as soon as S-98 is available.

Status: done, action point closed

According to the latest information from IHO it is still unclear whether it will be possible to include other products (like S-401 or weather) that are not mentioned in the IMO Performance Standard in future editions of S-98, but it could be possible because IHO is responsible for S-98. If yes, a complete S-401 PS and test cells would be a precondition, because the S-401 IENCs would then be part of the certification process of maritime ECDIS.

If it is not possible to include S-401 in future versions of S-98, we would need to develop our own interoperability standard (e.g. S-498). It could include all products covered by S-98 plus S-401 (and later maybe S-402).

The meeting came to the conclusion that the inclusion of S-401 (and other inland specific product specifications) in future editions of S-98 would be the preferred solution for interoperability.

Action point: Gert Morlion to finalize a draft paper for the S-100 working group and HSSC with the explanation why interoperability is important, examples of areas where maritime vessels are navigating on waterways with IENCs, and the request to include S-401 in future versions of S-98. The draft should be sent to IHO after agreement in the Core Group of IEHG.

4. Alignment of the Inland ENC Product Specification with S-101 (S-401)

IEHG has to develop

- S-401 Product Specification
- S-401 Feature Catalogue
- S-401 Portrayal Catalogue
- S-401 Data Classification and Encoding Guide (DCEG) (or Encoding Guide)
- S-401 test cells
- S-402 Product Specification for bathymetric IENCs (vector): development will start after finalization of draft S-401
- Maybe Product Specifications, FCs and PCs for overlay IENCs and basic IENCs for use with overlays

a. Product specification

Edition 1.0.0 of S-101 has been published (see <http://registry.iho.int/productspec/list.do>), but without portrayal, validation, encryption, alerts and indications.

An edition 1.1.0 of the S-101 PS is now available as a draft.

Edition 1.0.0 of S-401 has been published with the same approach as edition 1.0.0 of S-101 in the registry.

Action points from last meeting:

- All regions to test edition 1.0.0 of S-401 and to submit feedback
Status: not done
- RIS Comex to try to include overlay cells in the next edition of S-401 and to report to IEHG
[would have to be handled by S-98 if separate PS for overlay cells
To be discussed whether it is possible and necessary to include them in S-401]
Status: not done

Action points:

- All regions to test edition 1.0.0 of S-401 and to submit feedback
- The S-401 expert group to try to include overlay cells in the next edition of S-401 and to report to IEHG
[would have to be handled by S-98 if separate PS for overlay cells
To be discussed whether it is possible and necessary to include them in S-401]

b. Feature Catalogue

Inputs:

- S-101 Feature Catalogue Ed1.0.1
- IENC Feature Catalogue & Encoding Guide Ed2.5.1
- Remarks from IEHG Meeting XVI

Methodology:

- Starting from S-101 FC
- Removing all the S-101 features that will not be used in S-401
- Adapting the S-101 features when needed:
 - Adding the Inland attributes according to the IENC FC Ed2.5.1
 - Adding the Inland enumerations to the existing attributes
- Adding the Inland Features/Information types

Current version exported to XLS using the tool developed by NOAA

- Feature bindings:
 - For S-401 specific elements the bindings can be created with the current version of the FCB
 - But it is not possible to remove the bindings for S-101 elements that are not used in the S-401 FC with the current version of the FCB
- Update the FC based on the changes of Ed1.0.2

Questions sent to IHO/KHOA:

- Methodology to remove the feature bindings and update S-401 FC with the current version of the FCB
- Next update of the FCB to optimize the management of the feature bindings

If the next version of the FCB is also not able to delete bindings, it could be considered to create the S-401 from scratch instead of using the S-101 FC as a basis.

The meeting discussed whether the Excel version of the FC or the annex of the DCEG would be an acceptable replacement for the current pdf-version of the FC. It came to the conclusion that the DCEG would most probably be sufficient.

Action point: Gaël to investigate if the DCEG Builder is able to combine information from the FC and the Registry automatically.

As the online FC is based on the xml FC it might be relatively easy to have an online S-401 FC as soon as the first edition is finalized.

Action points from last meeting:

RIS Comex to

- check for inland specific features individually if CONDTN_3 or STATUS_18 should be replaced by the new attribute inDispute
Status: Proposal from Gert has been posted on the forum

Action point: Gert to submit a change request on the forum and to integrate it in the S-401 FC if it is adopted.

- include both restricted areas (Navigational and Regulatory) in the S-401 FC
Status: change request written and posted on the forum, will be adopted if there is no veto before 23 November 2022 and will then be integrated in the S-401 FC

Action point: Gaël to integrate the change request 425 in the S-401 FC if it is adopted.

- add uNLocationCode to bridge, SpanOpening and SpanFixed as optional attribute
Status: done, action point closed
- assign waterwayDistance only to bridge
Status: done, action point closed
- develop a proposal how to encode bridges with different types of opening spans and which attributes have to be assigned to which features
Status: open

Action point: The S-401 expert group to develop a proposal how to encode bridges with different types of opening spans and which attributes have to be assigned to which features (taking into account the solution of S-101).

- delete enumerations 7 and 14 of techniqueOfVerticalMeasurement if the definitions are not too different from 15 and 17
Status:
7: Found by Laser: measuring depth
14: Computer generated: The sounding was determined from a bottom model constructed using a computer
Removed from the FC. The elements are still in the Registry.
done, action point closed
- create the complex attribute powerCharacteristics in the S-401 FC
Status: done, action point closed
- define LockBasin, Dockarea and LandArea as skin of the earth in S-401 and to assign an attribute for the maximum permitted draught to LockBasin and DockArea
Status: Proposal written for IHO to reverse the decision to define LockBasin and DockArea as group I features

Action point: Gert to submit the paper to IHO.

The meeting came to the conclusion that an edition 1 of the S-401 is needed as the basis for the development of the DCEG, the Portrayal Catalogue, and other parts. This edition will not be used for the production of operational S-401 IENCs.

Action point: the S-401 expert group to produce an edition 1.0.0 of the S-401 FC when

- the feature bindings have been added,
 - the two CRs have been taken into account,
 - the encoding of the different types of span open has been solved and
 - Hana (and others) have finalized the checks whether the draft is in line with edition 2.5corr2.
- This edition should then be published on ienc.openecdis.org and registered in the S-100 Registry. As edition 1.1.0 of the S-101 FC might already be available when the points mentioned above are solved, the first edition of the S-401 FC could also be based on edition 1.1.0 of the S-101 FC.

c. DCEG / EG

Specifications of the current version

- Possibility to import a FC
- Not connected to the Data Dictionary Register
- Export to Word format
- Possibility to group the features and to organize the structure of the DCEG
- Insertion of text, tables, pictures for Features and Information

Future functionality

- Reuse the previous edition of a DCEG with a new version of the associated feature catalogue to update it (initially planned for 1st quarter of 2022)

Questions sent to IHO/KHOA:

- Management of the definitions depending on the Domain
- Possibility to have multiple pages for one feature

Action points from last meeting:

- Domain managers to ask IHO if it would be possible to have several “pages” for one feature in the DCEG
answer: no, at least not at the moment
- domain managers to clarify with IHO whether slightly different definitions of the same feature would be possible in different domains (as long as they are based on the same concept)
answer: no
- RIS Comex and all members of IEHG to continue the development of a DCEG for S-401 taking into account the decisions of IEHG mentioned above
Status: open

The DCEG will also be needed as an input for the conversion guidance. A basic version of the DCEG (without the detailed Encoding Instructions) might be sufficient.

Action point: the S-401 expert group and all members of IEHG to continue the development of a DCEG for S-401 taking into account the decisions of IEHG mentioned above

d. Portrayal Catalogue (including development of LUA scripts and testing tools for the scripts)

Action points from last meeting:

- RIS Comex to continue as proposed in the presentation when a stable PCB is available, contribution of all members via the discussion forum [ongoing]
Status:
LUA script development only possible when the functionality can be checked
Talking to software manufacturers for testing possibilities
- All members that submit proposals with new symbols to provide the symbols in SVG format themselves or to provide them in a different format to Claudia Heckert or Rade Gicic for conversion to SVG [ongoing]
Status: Rade Gicic no longer available

Apart from a testing tool we would also need a possibility to create test datasets (see agenda points 4e and 5).

Action points:

- The S-401 expert group to continue as proposed in the presentation when a stable PCB is available, contribution of all members via the discussion forum [ongoing]
- All members that submit proposals with new symbols to provide the symbols in SVG format themselves or to provide them in a different format to Claudia Heckert for conversion to SVG [ongoing]

e. Development of S-401 test cells

The availability of S-401 test cells is also a precondition for testing of LUA scripts and other functionalities. A stepwise approach would however be possible. Test cells with those features that require inland specific LUA scripts for their portrayal would be sufficient as a first step.

5. S-57 to S-100 converter development

IHO is providing a converter for S-57 datasets: <https://registry.iho.int/repository/list.do>

The providers of Inland ENC production software are planning to include converters in their tools. Many chart producers are producing IENCs from a GIS and do not need an independent converter to convert IENCs 2.4 or 2.5 to S-401. But we need a S-57 to S-401 conversion guidance.

Teledyne Caris presented a converter that is not yet available for commercial purposes, but could be provided to some IEHG members for testing purposes. (.....pdf)
7Cs will have a converter in 2023.

Action point from last meeting:

- develop mapping tables for the new combined attribute powerCharacteristics, maybe the restricted areas (which restriction enumerations for which feature) and the inland specific elements.
Status:
New IHO document with conversion rules
Adapted for S-401 as far as possible
S-401 WG needs to check and amend (features, attributes are checked)
Talking to software companies to support conversion

6. Annual Report to HSSC about IEHG

Action point from last meeting:

- Denise LaDue and Bernd Birkhuber to update the report to HSSC

Annual report to the Hydrographic Services and Standards Committee (HSSC) of the International Hydrographic Organization (IHO), 8-12 May 2023, Helsinki, Finland, about IEHG

It is unclear if a representative of IEHG will be able to participate in the meeting, but IEHG will submit a written report in any case.

Action point: Denise LaDue and Bernd Birkhuber to update the report to HSSC

7. Any other business

The meeting came to the conclusion that regular meetings of IEHG representatives who are involved in the development of S-401 with representatives of the respective IHO (and IALA) working group representatives would be beneficial to coordinate activities and to prevent diverging developments.

Action point: the S-401 expert group to ask for coordination meetings with IHO working group representatives and to inform the Core Group.

8. Next meeting – Date and Location

The meeting came to the conclusion that the next regular IEHG meeting should be scheduled in autumn 2023.

Denise LaDue offered to host the meeting in Chicago. The IEHG members thanked the USACE for the offer. The Chinese participants asked for a possibility to participate online because they would have to go in quarantine after returning if the current COVID regulations would still be in force.

The meeting came to the conclusion to postpone the decision about the form (online, hybrid or physical) to end of February, beginning of March 2023. If the meeting is physical it will be in Chicago.

Action point: the Core Group to decide in February/March 2023 about the form of the next meeting.

The chair thanked all participants for their contributions and closed the meeting.