Inland ENC Harmonization Group

16th Annual Meeting

October 19th – 21st 2021

Hasselt, Belgium

De Vlaamse Waterweg nv

Participants of 16th IEHG meeting:

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Minutes of the meeting

[Basic presentation: IEHG_2021.pdf]

1. **Welcome, Introductions of Participants, organizational details**

    Ms. Krista Maes from De Vlaamse Waterweg opened the meeting, welcomed the participants and presented information about inland navigation in Flanders.
    [https://www.youtube.com/watch?v=joO9rbHvFqE]

    Bernd Birklhuber thanked her on behalf of the group for the hosting of the meeting and Gert Morlion for the organization.

    The participants introduced themselves.

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

2. **Update on the legal and organizational background and the status of implementation:**

    Jose Celso presented the status of implementation in Brazil [Status_report_Brazil_2021.pdf]. IENCs are published on the CHM website (see production overview).

    Liu Li presented the status of implementation in China [Status_report_China_2021.pdf]. The national standard for IENCs has been finalized and is compatible with the PS for IENCs of IEHG. There are however differences regarding AtoNs. He announced the submission of Change Requests to include the specific signs and signals in the Product Specification for Inland ENCs for 2022.

    Action point: China to submit change requests for specific signs and markings

    Gert Morlion presented the status of implementation in Europe [Status_report_Europe_2021.pdf]

    Vladimir Sekachev presented the status of implementation in the Russian Federation on the basis of data that has been provided by the Russian Ministry of Transport [Status_report_Russia_2021.pdf]. The official ENCs are based on S-57 and some inland specific information is therefore missing.

    Denise LaDue presented the status of implementation in the U.S. [Status_report_US_2021.pdf].
    The online IENC Feature Catalogue has been updated to edition 2.5 and will be updated to 2.5.1 in the near future (see http://ienccloud.us/ienc/web/s-57/). 15 million data products have been downloaded.

    The chair reminded everybody that an overview of the status of implementation with the names and km of waterways covered by IENCs and the used edition of the standard is published at https://ienc.openecdis.org.

    Action point: Please provide an email to bernd.birklhuber@bmk.gv.at containing updates to the information on the status of implementation.

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3. Presentation of Inland ENC applications by private companies

Hendrik Göhmann presented the ENC Analyzer of 7Cs [Company_7Cs_Analyzer_2021.pdf]

Tom DePuyt presented the ARCGIS Maritime of esri [Company_ESRI_ArcGIS_Maritime_2021.pdf]

Gaël Billet presented of the applications of the Periskal Group [Company_Periskal_Group_2021.pdf]

Vladimir Sekachev presented the company STEOR-NSB LLC and its products and services [Company_STEOR_2021.pdf]

Jo Jacobs presented the products of Tresco [Company_TRESCO_2021.pdf]

Action point: The IEHG website contains a list of both National Organizations and Private Companies involved with IENCs. If not listed, please provide web address to bernd.birklhuber@bmk.gv.at for inclusion on the website.

4. Election of the Core Group of IEHG (chairs, co-chairs and technical coordinators)

- Co-Chairs: Denise LaDue and Bernd Birklhuber were confirmed as Co-Chairs.

- Vice Chairs: Fei Weijun and Jose Celso were confirmed as Vice-Chairs.

- Technical Coordinators: Cameron McLeay, Gael Billet, Vladimir Sekachev and Nuno Silva were confirmed as Technical Coordinators. Li Liu was elected as new Technical Coordinator for the Asian region.

Election of the representatives of IEHG in the Domain Control Body and the Executive Control Body of S-100

- IEHG Representatives in the S-100 Domain & S-100 Executive Control Bodies: Denise LaDue, Gael Billet and Gert Morlion were confirmed as representatives.

Amendment of the Terms of Reference

IHO has implemented a new Concept Register in the S-100 registry that is outside of the domains. This leads to different procedures with regard to changes in the registry.
In Annex A, No. 6, a reference to the new European Committee for drawing up standards in the field of inland navigation (CESNI) has to be added.
The meeting agreed on an adaptation of the ToR [Draft ToR_for_IEHG_2021.pdf]. The document with the changes will be published via the discussion forum and will be formally adopted if there is no veto within 6 weeks.

Action point: Bernd Birklhuber to publish the draft of the amended ToR on the discussion forum.

Update of the Introduction of the Encoding Guide for Inland ENCs

The Introduction section of the Encoding Guide for Inland ENCs is containing a short history of IEHG and a short introduction to IENC standards. The links to the website and the discussion forum have to be updated and a reference to the Temporary Working Group Inland ECDIS of the European Committee for drawing up standards in the field of inland navigation (CESNI) has to be added. The meeting agreed on an adaptation of the introduction [Draft Introduction EG 2021.pdf]. The document

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with the changes will be published as a Change Request on the discussion forum and will be formally adopted if there is no veto within 6 weeks.

Action point: Bernd Birklhuber to publish the draft of the amended Introduction as a CR on the discussion forum.

5. Updates to the Encoding Guide and Product Specification

Action points from last meeting:

China to submit change requests for specific signs and markings: the national Product Specification for Inland ENCs has been finalized and the change requests will be submitted before the next meeting.

Gert Morlion to remind Rene Visser to clarify whether groin or levee is meant, because dyke/levee is a DYKCON not a SLCONS.
[done, CR 377 has been rejected; action point closed]

Denise LaDue to ensure resolution of discrepancies with S-100: many discrepancies solved.

Action point: Everybody: report discrepancies with S-100 to Denise

Denise LaDue to update the Encoding Guide Letter J to reflect the applicable changes in the section Use of the Object Catalogue of S-57 and to submit a CR regarding the use of 'sensor'.
[done, CR 408 adopted and integrated in 2.5; action point closed]

Wieland Haupt to provide the links to the available docbook versions to Bernd Birklhuber, Bernd to add them to ienc.openecdis.org website.
[the docbook versions are not up to date and have therefore not been published. Action point closed]

Working area object: RIS Comex to submit change request, if needed
[done, unlocd has been added to wtware; action point closed]
There is however a new discussion whether the encoding of CEMT classes is useful for IENCs and whether unlocd should be added to wtware. Both discussions are only affecting Europe.

Action points: TWG Inland ECDIS to decide whether the encoding of the CEMT class should be kept and RIS Comex to discuss whether the unlocd should be available for ADMARE.

Open action point: STATUS 4 for CBLSUB: René Visser to check and to submit change request if still needed.

HULKES: Denise LaDue to remove SCAMIN in edition 2.5
[done; action point closed]

Denise LaDue to submit CR to add TECSOU and SOUACC to SOUNDG in edition 2.5
[done; action point closed]

Open action point: unlocd for MORFAC: RIS Comex to submit change request, if needed.

Open action point: René to submit a change request with an Encoding Instruction that explains in which cases wtwdis is not mandatory.

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Ask S-100 Domain Control if an attribute can change type, e.g. free text to enumerated value (vcrlev & sdrlev)
If yes: the NL to submit a change request to change vcrlev and sdrlev to list attributes, to assign all verdat enumerations to these attributes and to add the necessary new enumerations
If no: Bernd Birklhuber to submit a change request with a detailed Encoding Instruction for the Encoding of vcrlev and sdrlev
[It is possible to change the type of an attribute. Existing explanation in EG:
"Name of reference level to which vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002"
The IEHG concluded that this is sufficient. Action point closed]

Wieland Haupt to check with VTT whether "real AtoN" can be replaced by "physical AtoN", because this is the more accurate term nowadays used in the maritime area. (see CR 402)
[CR 413 has been submitted and adopted; action point closed]

Denise LaDue to change VALDCO to two decimal points
[done; action point closed]

Open discussions on the forum

Symbolization of restricted areas
S-52 is containing symbols for certain restrictions, e.g. for areas where anchoring is prohibited:

The existing (European) Presentation Library is not containing symbols for inland specific restrictions. The type of restriction can only be seen in the pick report (if the application provider has not created own symbols). The IEHG meeting discussed whether we should create additional symbols.
Pro: no pick report required
Contra: clutter, symbols of big areas would always be shown in the middle of the fairway directly in front of the vessel.
The IEHG meeting decided to introduce symbols for safety related restrictions, but not for e.g. berthing prohibited. The symbols on the European notice marks could be used as a starting point for the development of symbols consisting of magenta colored narrow lines.

Action point: develop proposal for S-401 for the symbolization of safety related restricted areas.

Discrepancies with S-100

Action point: catach_10 (anchorage for pushing-navigation vessels) in IENC 2.5 will have to be converted to categoryOfAnchorage 16 (anchorage for pushing-navigation vessels) in S-401

Change requests since the last meeting that have not already been taken into account for edition 2.5.1

The IEHG meeting confirmed the adoption of CRs 408, 412, 413, 414, 415.
The IEHG meeting supported CR 418, the deadline for comments is 2021-11-17
It was however noted that there might be a discrepancy between the encoding of roofs as described in CR 408 and the encoding according to S-101.

Action point: domain managers: check if there is a contradiction of CR 408 and the S-101 encoding of roofs.

Dave Lewald informed the IEHG meeting about the idea of IALA to distinguish between aid to navigation and navigation aid to allow information about AtoNs that should be there, but are physically missing. An option would also be to encode "missing" in INFORM and/or to develop a special symbol (that could e.g. also include text, but the text would in this case also be displayed when text is deactivated by the user).

Denise LaDue announced a new CR regarding an amendment of the encoding of radio activated sensors.

6. **Update intervals and processes, decision on next version or edition**   all

Action points from last meeting:

everybody to submit change requests that should be included in edition 2.5 before 14 December 2019 [done, action point closed]

Denise LaDue to implement the adopted change requests in the Encoding Guide and the Feature Catalogue
[done, action point closed]

Bernd Birklhuber to implement the adopted change requests in the Product Specification (main document)
[done, action point closed]

Domain managers to register the new elements from the adopted change requests
[done, action point closed]

Wieland Haupt to implement the adopted change requests in the Recommended Validation Checks
[see agenda point quality standards]

The IEHG meeting discussed whether the adoption and publication of an edition 2.6 is necessary and came to the conclusion that it is not necessary at the moment. As it is unclear when it will be possible to adopt S-401 the question whether an edition 2.6 is necessary will be discussed again at the next meeting.

The CR form is already providing the possibility to propose a new symbol for the registration in the S-100 registry. But to include a new element in the portrayal catalogue we would also need the information that is at the moment in the Lookup Tables and will be in the LUA scripts in S-401. This would also apply to new features that are displayed by areas or lines without a dedicated symbol. The IEHG meeting agreed that it is too early to request the provision of LUA scripts. The amendment of the Lookup Tables should be included in the CR. A conversion of the Lookup Tables to LUA scripts will be possible.

Action point: Bernd Birklhuber to develop a proposal for an amendment of the CR form

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The IEHG meeting noted that the guideline for the drafting of change requests should be amended to reflect the new concept register in the S-100 registry.

Action point: Bernd Birklhuber to propose an amendment of the guideline for the drafting of change requests with regard to the concept register in the S-100 registry.

Claudia Heckert and Rade Gicic confirmed, that they could provide new symbols in svg format, if the person submitting a CR is not able to provide a svg-symbol. A svg-symbol editor will be included in the S-100 tool kit.

The IEHG meeting came to the conclusion that a CR should ideally already include the symbol in svg format, but that it would also be acceptable to submit the CR with a symbol in a different data format and to do the conversion to svg later.

If the symbol should also be implemented in an edition 2.6, it would be necessary to submit the proposed symbol also in the raster or vector format in accordance with S-57 and S-52.

7. Quality standards for Inland ENCs

Updates of the recommended validation checks for Inland ENCs

Action point from last meeting:

Wieland Haupt to provide the final version of the RVC 2.4 to Bernd Birklhuber for publication at ienc.openecdis.org
[done, action point closed]

During the last meeting of the IEHG it was decided that it was not necessary to implement a new version of the recommended validation checks to be fully in line with all the changes of edition 6.1.0 of S-58. While the inland recommended validation checks (inland RVC) defined two types of failures (errors and warnings), edition 6.1.0 of the S-58 has defined three types (critical errors, errors and warnings). Some of the errors in the inland RVC are critical errors in S-58. This can cause serious problems when a maritime ECDIS tries to load an IENC.

The proposal to align edition 2.5 of the RVC with edition 6.1.0 of S-58 has been submitted on the discussion forum and has been adopted in March.

The topic is foreseen for the work program of the European Inland ECDIS working group for 2022. Every IEHG member is invited to contribute

The first draft of the RVC 2.5 [Recommended Inland ENC validation checks_2_5 draft 0 including check 2000.pdf] is based on edition 2.4 rev1 of the RVC for Inland ENCs. The amendments deriving from the alignment with edition 6.1.0 of S-58 are marked as corrections. The text in the tables of edition 6.1.0 of S-58 is completely different from earlier editions of S-58 and the RVC for Inland ENCs. Edition 6.1.0 of S-58 has therefore been used as the basis for the tables and the deviations of the RVC for Inland ENCs from S-58 are shown as corrections in the tables. This should also allow application developers to adapt validation software that is based on S-58 to the RVC for Inland ENCs.

In the maritime area the Feature Catalogue is containing some attributes and attribute values that may not be used. The main purpose of check 2000 of S-58 is to check for prohibited elements. For Inland ENCs we have deleted attributes and attribute values that may not be used from the Feature Catalogue. The table in check 2000 of the RVC for Inland ENCs is therefore just a copy of the IENC FC in a different structure (the FC is listing all allowed attributes and attribute values for a feature, check 2000 is

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listing all features that are using an attribute and attribute values). The maintenance of the table of check 2000 requires a lot of efforts and creates the risk of deviations between the FC and the RVC.

The IEHG meeting agreed to replace check 2000 by the checks against the FC for elements that are not part of the FC and for missing mandatory elements. 7Cs will however check with the developers of the Analyzer if this is feasible.

Action point: Hendrik Göhmann to check with the developers of the Analyzer if it is feasible to replace check 2000 with references to the FC for IENCs.

The IEHG meeting discussed the checks from S-58 that have been deleted in edition 2.4 of the RVC for Inland ENCs, but seemed to be useful for edition 2.5. The results are integrated in the document. Regarding the further procedure 7Cs wants to support the development by a test implementation.

Action points:
the European temporary working group on Inland ECDIS to develop the proposal for edition 2.5 of the RVC for IENCs in 2022.
Hendrik Göhmann to check the time frame for a possible test implementation.
Esri and caris to check if they could do test implementations, too.
Bernd Birklhuber to upload the amended proposal on the discussion forum.

minimum content of Inland ENCs

Action point from last meeting:

Brazil & China to investigate whether a different definition of minimum content is necessary for their respective waterways.
[Brazil does not require an amendment]

Action point: China to investigate whether a different definition of minimum content is necessary for its waterways.

accuracy information in Inland ENCs, development for S-101?

Action point from last meeting:

Friedhelm Moggert-Kägerler and Gael Billet volunteered to attend the IHO DQWG meeting, if approved by their companies, and to report via the discussion forum respectively at the next IEHG meeting
[The IEHG meeting was informed that IHO decided to use category of temporal variation if the temporal variation is known. But if it is not known (e.g. if a seabed has been surveyed for the first time) zone of confidence can be used.]

The IEHG meeting discussed whether automation in inland navigation could lead to new requirements regarding accuracy of IENCs and whether it would be possible to introduce new accuracy requirements for all IENCs or to recommend them only for areas, where autonomous navigation is used. It came to the conclusion that the existing accuracy of IENCs should be sufficient for navigation and that sensors will most probably be necessary for e.g. docking, locking and berthing. But information about the accuracy and the uncertainty of the data should be made available. This is also the approach of the data quality working group of IHO.

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8. 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

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 2.0.0 is now envisaged for 2022.

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. This 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 and announced to allow S-401 as base cell in a future edition. The S-100 WG will however first finalize of first version of S-98 for S-101 without taking S-401 into account (to be able to start testing). Once finished this first version, it's up to us to make a gap-analysis.

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

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

9. 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-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

1. 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. Edition 1.0.0 of S-401 [has been published with the same approach in the registry and on https://editions.openecdis.org/s-401.

Action point from last meeting:

Open action point: All regions to test edition 1.0.0 of S-401 and to submit feedback

Gert Morlion to ask S-100 WG to allow JPEG
[done, IHO has confirmed that JPEG are allowed; action point closed]

Open action point: RIS Comex to try to include overlay cells in the next edition of S-401 and to report to IEHG

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2. Feature Catalogue

Gaël Billet presented the status of the development of the S-401 FC [S401 – Status.pdf]. A draft of the FC produced with the FC builder is available [S-401_FC-DCEG-Draft_version.zip]. The zip file is also including a DCEG produced with the FC builder. This version does not include any encoding instructions, but is showing the content of the FC in a form that can easily be read.

Action points from last meeting:

RIS Comex to
- check whether there are new elements in the S-101 FC
- compare with Corisma documents
- check whether the noticed discrepancies have an impact on the S-401 FC
- start working on the S-401 FC using the S-101 FC as a basis (as soon as edition 2.5 and a final FCB are available)
[done; action point closed]

Questions discussed by the IEHG meeting:

The FC 2.5 includes:
CONDTN_3 under reclamation (an area of the sea that is being reclaimed as land, usually by the dumping of earth and other material)
STATUS_18 existence doubtful (an object that has been reported but has not been definitely determined to exist)
S-101 includes a new attribute: inDispute (A statement that expresses if an area is in a jurisdictional dispute).
For condition=3, it is sometimes announced in S-101 to replace it by inDispute or by status=18. In some cases, condition=3 is still present in the S-101 FC (for example for ShorelineConstruction).
The meeting discussed whether we to keep condition=3, keep condition=3 and add status=18 or keep condition=3 and add inDispute. It came to the conclusion to use all three attributes and to decide for inland specific features individually which attribute should be used.

Action point: RIS Comex to check for inland specific features individually if CONDTN_3 or STATUS_18 should be replaced by the new attribute inDispute.

The FC 2.5 is only containing a restricted area feature. A distinction is now made in S-100 and S-101 between Restricted Area Navigational (area where the restrictions have a direct impact on the navigation of a vessel in the area) and Regulatory (area where the restrictions have no direct impact on the navigation of a vessel in the area, but impact on the activities that can take place within the area). The enumerations for the attribute restriction are now divided between these two features.

The meeting discussed whether we should use both features in S-401 or only one of them. It decided to use both because the distinction is used to trigger alarms.

The meeting decided to use the same enumerations of CATREA for the two features as S-101 because we do not have inland specific enumerations of CATREA.

Action point: RIS Comex to include both restricted areas in the S-401 FC.

IEHG has decided earlier to replace the feature bridge with SpanFixed and SpanOpening and to assign its attributes (waterwayDistance, uNLocationCode,…) to the new features. The S-101 DCEG is showing an example of how a bridge with different spans has to be encoded:
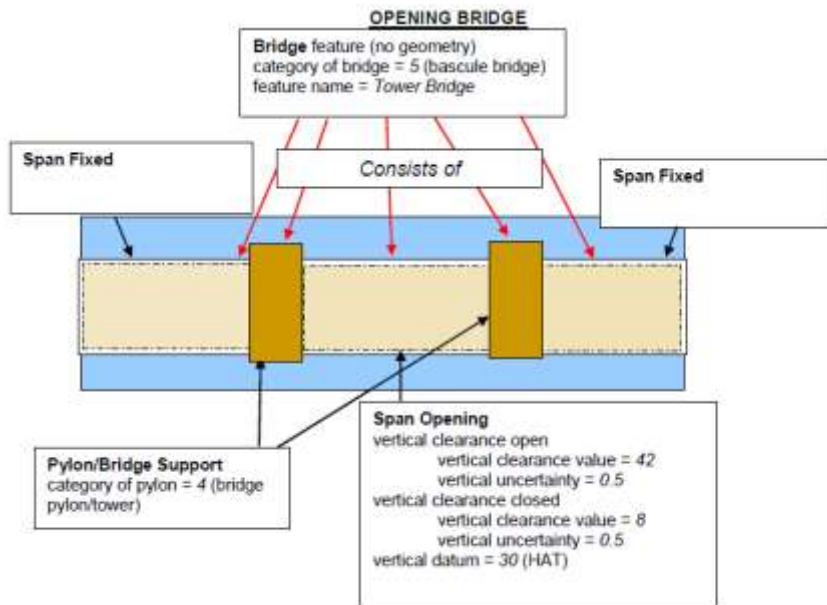
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Figure 6.2 - Opening bridge - Example

In S-101, SpanOpening and SpanFixed only contain the clearance characteristics.

The IEHG meeting discussed if attributes such as categoryOfBridge, uNLocationCode, waterwayDistance should also be added to the new span features or only to the feature bridge itself.

Regarding the attribute category of bridge the meeting discussed how to encode bridges with different types of opening spans. The attribute could be assigned to the span features, two separate bridge features could be encoded, the attribute could be used as a list attribute for bridge (but it would be unclear which part is which type in this case) or a new attribute category of span could be assigned to the span features.

Action point: RIS Comex to
- add uNLocationCode to all three features as optional attribute,
- assign waterwayDistance only to bridge and
- develop a proposal how to encode bridges with different types of opening spans and which attributes have to be assigned to which features.

techniqueOfVerticalMeasurement: the enumerated value 7 (Found by Laser) is now identified as part of the Inland Domain. It is not present anymore in the S-101 FC but it is mentioned in the IENC FC and EG for Ed 2.5 for TECSOU. It has been added to all the features with techniqueOfVerticalMeasurement that are already existing in Ed 2.5.
The meeting noted that the enumerated value 15 seems to be the same. The existing enumeration 14 could also be replaced by 17.

Action point: RIS Comex to delete enumerations 7 and 14 of techniqueOfVerticalMeasurement if the definitions are not too different from 15 and 17.

Complex attributes can now be defined, but for Inland no complex attribute has been created so far. The IEHG meeting decided to create a complex attribute powerCharacteristics with the existing attributes
categoryOfVoltage,
categoryOfFrequency,

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categoryOfPlug,
amountOfAmperage,
allowedConsumption,
numberOfShoreConnectors.
This will allow a clear encoding of power supply stations that provide more than one type of power supply (e.g. different voltages or amperages with different types of plugs).

Action point: RIS Comex to create the complex attribute powerCharacteristics in the S-401 FC.

Skin of the earth: LockBasin and DockArea are considered as Skin of the Earth in S-101. There is no scaleMinimum attribute for these features and it would no longer be possible to encode depth areas in lock basins or dock areas. The IEHG meeting decided to follow S-101 and to add an attribute for the maximum permitted draught to LockBasin and DockArea.

LandArea: only the Surface primitive is considered as Skin of the Earth. Curve and Point are not considered as Skin of the Earth. The attribute scaleMinimum in LandArea only applies to Curve and Point. The IEHG meeting decided to follow S-101.

Action point: RIS Comex to 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.

Attribute type of AtoN: The IENC FC is containing the attribute type of AtoN with the enumerations aid to navigation, physical AIS aid to navigation and virtual AIS aid to navigation. This attribute is available for the different types of buoys and allows to display the type of buoy (left hand, right hand, special purpose, …) and whether it is a real buoy, a real buoy equipped with AIS or a virtual buoy.

S-101 is containing the features PhysicalAISAidToNavigation and VirtualAISAidToNavigation. For a Physical AIS AtoN it is not possible to encode the type of buoy, for a Virtual AIS AtoN it is only possible to encode 12 types.

The IEHG meeting discussed whether it is sufficient to include the inland specific approach in S-401 or it is necessary to include the maritime AIS features, too. It came to the conclusion that both options should be available. IALA will approach IHO to include synthetic AIS AtoNs.

3.   Portrayal Catalogue

Action point from last meeting:

all members that submit proposals with new symbols to provide the symbols to Wieland Haupt for conversion to SVG [done]
The action point remains valid for all future proposals with new symbols
Who will create the SVG symbols in the future?

Open action points:
RIS Comex to continue as proposed in the presentation when a stable PCB is available, contribution of all members via the discussion forum.
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.

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4. DCEG / EG

Action point from last meeting:

RIS Comex (Gert Morlion) to investigate the possibilities for the implementation of updates with the DCEG builder and to inform IEHG.
[announced, but not implemented up to now]

The IEHG meeting discussed the pros and cons of the DCEG.

The EG for IENCs is containing a separate page for each type of bridge (bascule bridge, bridge with bridge arches, fixed bridge, lift bridge, suspension bridge, swing bridge) and describes for each type in detail how to encode it. The DCEG would contain one page for the feature bridge and describe there how to encode the different types of bridges. An advantage of this approach would be the easier implementation of updates of attributes of bridge features.
The meeting came to the conclusion that the DCEG would be preferable in this case and could include detailed encoding instructions for each type of bridge based on the existing pages of the EG. In case of complex situations it could also be considered to refer to an annex of the DCEG.

Action point: domain managers to ask IHO if it would be possible to have several pages for one feature in the DCEG.

The EG for IENCs page for dam/barrier describes that the features DAMCON, RESARE and C_AGGR have to be used. The DCEG would have separate pages for the three features.
The IEHG meeting decided to include references to the other features in the encoding instructions of the main feature in the DCEG.

The idea was to include almost all S-101 features with all attributes and enumerations in the S-401 FC and to list in the EG which elements should be used for IENCs. The DCEG produced with the DCEG builder will always show all possible attributes.
The IEHG meeting came to the conclusion that a list of recommended attributes could be included in the encoding instructions in the DCEG.

At the moment the EG for IENCs is containing some amended definitions of copied S-57 elements. It will not be possible to register deviating definitions in the S-100 registry. We have therefore decided to use our amended definitions only in the EG. The IEHG meeting discussed whether the definitions in the DCEG produced by the DCEG builder should be amended manually. They might be overwritten by updates. The meeting decided therefore to explain the deviations in the encoding instructions of the DCEG if necessary.
Action point: 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).

The IEHG meeting decided to start developing a DCEG for S-401.

The S-101 DCEG is containing a lot of general encoding instructions that are currently not mentioned in the EG for IENCs. IEHG had already decided earlier that these instructions should be taken over as far as possible. The meeting discusses the open questions in a first draft of this part
[S-401 DCEG_General_Part.pdf]. The decisions of the meeting have been entered in the document.

Action point: 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.

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10. S-57 to S-100 converter development

IHO is providing a converter for S-57 datasets https://registry.iho.int/repository/list.do. The converter is under further development.

The providers of Inland ENC production software are planning to include converters in their tools. 7Cs is working on a converter.

Many chart producers are producing IENCs from a GIS and do not need to convert IENCs 2.4 to S-401 and do therefore not need a converter.

Action point: develop mapping tables for the new combined attribute powerCharacteristics, maybe the restricted areas (which restriction enumerations for which feature) and the inland sepcific elements.

11. The Aids to Navigation (AtoN) Information Product Specification (S-201) and The Navigation Services Product Specification (S-125)

Dave Lewald informed the meeting that the first edition of S-201 has been published and is waiting for an update. It is primarily for the data exchange between authorities.

It is planned to include temporary changes of AtoNs in S-125 which is the standard for publication of AtoN information. In the US the Coast Guard is providing a weekly file with all AtoNs.

Claudia Heckert informed the meeting that Germany is preparing to use a buoy overlay based on the existing Product Specification for IENCs. In the future there would theoretically be three options:
- include a buoy overlay in S-401,
- create an S-403 for inland specific buoy overlays or
- use S-125.

The meeting came to the conclusion that IEHG should try to collaborate with IALA to include the inland specific AtoN related elements in S-201 and S-125. This would allow to publish an AtoN overlay and would ensure that the information can be used by all vessels and that it is taken into account in S-98.

The Bathymetric Contour Overlay for Inland ENC Product Spec. (S-402)

This task has been postponed and will be started when S-401 has been finalized.

12. Annual Report to HSSC about IEHG

Open action point: Denise LaDue and Bernd Birklhuber to update the report to HSSC in time for the HSSC meeting in May.

The HSSC meeting is planned in Asia and it is unclear whether it will be a physical or virtual meeting. It is also unclear who could represent IEHG and present the report (especially in case of a physical meeting)

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13. Updates of the Information documents on Inland ENCs
(Inland ENC.doc and Inland ENC.ppt on the website)

Action points from last meeting:
DHN or Gustavo Puente to amend the Spanish version
[done; action point closed]

Open action point: All members of IEHG are invited to submit proposals for amendments of the information document on Inland ENCs (Inland ENC.ppt on the IEHG website).

14. Future operation of:

the ienc.openecdis.org website

Action point from last meeting:
Bernd Birklhuber to clarify the details of the future operation of the website on the basis of gitbook
[done; action point closed]

The website is now hosted by the European Committee for drawing up standards in the field of inland navigation (CESNI).

discussion forum for Inland ENCs

Due to internal regulations of USACE the discussion forum had to be moved to a new platform. Please register yourself (information available at the ienc.openecdis.org website) to be able to participate in discussions. Notifications are operational.

Open action point: Denise LaDue to investigate whether it would be possible to display the status of the CRs in the overview (pending, adopted, rejected).

Denise LaDue announced that she is going to check if we could use apan.org in the future. The IEHG meeting supported the proposal but indicated that an e-mail notification would be a very important feature for any discussion forum. Alternatively the use of Basecamp could be checked.

IENC Register (as part of S-100 Registry)

No new developments.

15. Any other business

How to encourage more countries/regions to join IEHG
- South America
- East Asia

Action point: Bernd Birklhuber to create a document with the action points and columns indication responsibilities and the status and post it on the forum to keep track of the action points defined by the IEHG meeting.

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16. Next meeting – Date and Location

The IEHG meeting came to the conclusion that a meeting in 2022 is necessary because the development of S-401 is in an important phase. If a physical meeting is not possible due to the pandemic it could be an online meeting.

Vladimir Sekachev informed the meeting that Russia would not be able to host a meeting 2022, but it could be considered in 2023.

A meeting in Asia in 2022 could maybe be combined with the planned Smart Rivers meeting, but it was unclear whether that would be possible.

The US could maybe host a meeting.

The participants thanked Gert and De Vlaamse Waterweg for the perfect organization and hosting of the meeting and the hospitality.

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