



Inland ENC Harmonization Group

22 - 24 October 2019
New Orleans, USA

Welcome, introduction, organization

Many thanks to Denise LaDue for the hosting of the meeting and for the organization!

Introductions

Organizational details:

please copy your presentations to the USB-stick

All presentations will be published at <http://ienc.openecdis.org>

Agenda

1. Welcome, introduction of participants, organizational details
2. Inland ENC and IEHG: status of implementations in the regions
3. Inland waterways, navigation and cartography of new participants
4. Inland ENC applications
5. Working methods of IEHG
6. Core Group, election of chairs, S-100 representatives, amendment of ToR
7. Updates to the Encoding Guide and Product Specification
8. Update intervals and processes
9. Quality standards for Inland ENCs
10. Status of S-99, S-100, S-101
11. Alignment of the Inland ENC Product Specification with S-101 (S-401)
12. S-57 to S-100 converter development
13. S-201, S-125 and S-402
14. Navigational assistance systems and autonomous sailing
15. Do we need encryption of inland ENCs for security?
16. Annual report to HSSC
17. Information document on Inland ENCs
18. Future operation of ienc website and discussion forum
19. Any other business
20. Next meeting

Agenda

Time schedule

Tuesday, 22 October, to Thursday, 24 October

- 09:00 - 10:30 morning session
- 10:30 - 10:50 coffee break
- 10:50 - 12:00 midday session
- 12:00 - 12:45 lunch
- 13:00 - 15:00 afternoon session
- 15:00 - 15:30 coffee break
- 15:30 - 17:00 continuation of afternoon session

Inland ENCs and the Inland ENC Harmonization Group (IEHG)

Inland ENCs

Update on the legal and organizational background and the status of implementation

Brazil

China

Europe

USA

USA

- **Planned** (names of waterways & no. of km)
- **Completed** (names of waterways & no. of km)
- **Available** (e.g., from website)

Overview

Open action points



Please provide an email to Bernd containing updates to the [information on Inland ENC coverage](#).



The IEHG website contains a [list of both National Organizations and Private Companies involved with IENCs](#). [\[offline version\]](#) If not listed, please provide web address to Bernd for inclusion on the website.

Inland ENC applications

ESRI

IIC Technologies Inc.

Periskal

Quadrant ENC

Seven Cs

Teledyne

List of IENC applications:

<http://ienc.openecdis.org/?q=content/links>
[[offline version](#)]

Open action points









The IEHG website contains a list of both National Organizations and Private Companies involved with IENCs







If not listed, please provide URL to bernd.birkhuber@bmvit.gv.at for inclusion on the website.




Email addresses in the members list

-  The list of members and participants of IEHG is currently containing email addresses (active links)
-  It is published at <http://ienc.openecdis.org> [[offline version](#)]
-  Interested persons can easily get in contact with representatives of their country or with representatives of companies
-  But the list can also be misused by extracting the mailaddresses automatically and using them for spam
-  Should we keep the email addresses in the publicly accessible list?
-  Should we add URLs of the organisations instead?

Involving end users (1)

-  Involvement of end users in the development of S-401, especially regarding portrayal (e.g which symbols, priority of information, ...) would be beneficial
-  “Representatives of user groups” can become participants of IEHG and can participate in discussions on the forum
-  Individual boatmasters cannot become participants of IEHG according to the Terms of Reference
-  But we could invite them to participate in the discussion forum.

Involving end users (2)

-  Would we need a special section on the discussion forum to be able to administer special access rights?
-  If end users are invited to participate in the discussions, some questions would have to be presented in a form that allows end users to react. Do we need a special section in the discussion forum?
-  Or e.g. a special notification service (just in case of “questionnaires” for end users), but access to all S-401 documents?

Election of the Core Group



By simple majority vote, chairpersons, vice-chairs and technical coordinators are elected.

- Chair – Two persons (co-chairs) each from a different region. Only representatives of waterway authorities can become chairpersons.
- One vice-chair from each region, which is not already a chair.
- Technical Coordinators - One technical coordinator for each region.
- Core Group – The two Chairs, the vice-chairs and Technical Coordinators.

Election of chairs



Chair – Two persons (co-chairs) each from a different region. Only representatives of waterway authorities can become chairpersons.



One vice-chair from each region, which is not already a chair

Current co-chairs:

Denise LaDue (USACE, North America)

Bernd Birkhuber (MoT of Austria, Europe)

Current vice-chairs:

Flavia Mandarino (DHN, South America)

Weijun Fei (WTI, Asia)

Proposals for the coming period?

Election of technical coordinators



Technical Coordinators - One technical coordinator for each region

Current technical coordinators:

Cameron Mcleay (CARIS USA, North America)

Gael Billet (Periskal Group, Europe)

Vladimir Sekachev (Russia)





Nuno Silva (IIC Technologies, South America)

Yong Baek (KHOA, Asia)

Proposals for the coming period?



Election of representatives for S-100

IEHG has to nominate representatives for the registry management of S-100:

-  representatives as submitting organization
(currently Denise LaDue and Gael Billet)
-  representatives for the Domain Control Body
(currently Denise LaDue and Gert Morlion)
-  representatives for the Executive Control Body
(currently Denise LaDue and Gael Billet)
-  Proposals for the coming period?

ToR, Annex B

Amendment of the ToR

-  The Terms of Reference have to be amended to take into account the new representatives
-  Procedure for the adoption of Change Requests:
The domain control bodies of all domains in the Registry need to approve newly registered items to avoid inconsistencies. This means that the adoption of a CR which includes new elements for the IHO GI Registry could take more time than the 6 weeks foreseen in the ToR. The meeting could discuss an adaptation of the ToR.

ToR

Update of the Introduction of the EG



The Introduction of the Encoding Guide for Inland ENC's is containing a short history of IEHG and should be updated

Introduction draft

Adopted documents

Product Specification for Inland ENC's, edition 2.4





Inland ENC Encoding Guide, edition 2.4.1

Inland ENC Feature Catalogue, edition 2.4corr2




[XML](#)

Online Inland ENC Feature Catalogue

Action points from last meeting (1)

-  Denise LaDue to change all instances of “UNKNOWN” to “unknown” in the Encoding Guide
-  Flavia Mandarino to create new CR for the encoding of an aquaduct. [CR adopted 12.12.2017]
-  Rene Visser to clarify whether groin or levee is meant, because dyke/levee is a DYKCON not a SLCONS.
-  Denise LaDue to ensure resolution of existing discrepancies with S-100 and verify no additional discrepancies have developed

Action points from last meeting (2)

-  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'.
-  Wieland Haupt to present the next version of the EG in docbook format at the next IEHG meeting.
docbook IENC EG (Wieland)
-  Chris Hudson to contact Yong Baek whether docbook could be used for the DCEG builder.

Questions on the discussion forum

[Encoding of FAIRWY](#)

[IENCs and ECDIS](#)

[Working area object](#)

[SIGSEQ](#)

[CBLSUB](#)

[cranes](#)

[HULKES](#)

[TECSOU](#)

[data order](#)

[morfac](#)

[refgag](#)

[wtwdis](#)

[wtwgag](#)

Questions on the discussion forum (2)

Training guidelines for operators of Inland ECDIS Systems

johannes.nemeth, Dec '18

Dear members of Inland ECDIS expert group,
in terms of the limited time yesterday at the European Inland ECDIS expert group meeting in Vienna we couldn't get deeper into agenda topic 12.a) 'Training guidelines for operators of Inland ECDIS Systems'.

Please find enclosed the document 'Draft standards of competence for the RIS operator'.

The objective is to collect maritime versions of training guidelines and to collect the methods and materials from the training institutes.






Please have a look on it and share your opinion and feedback.

BR,

Johannes Nemeth





[Draft standards of competence for the RIS operator 1-1.pdf](#)

Change Requests





-  The [Change Request form](#) has been updated
-  The [guideline for the drafting of change requests](#) has been published
-  The [overview of change requests](#) is available and has to be consulted to find the number for the next change request
-  All documents available on the discussion forum and on <http://ienc.openecdis.org>
-  [Change requests since the last meeting](#)

Update intervals and processes

Action points from last meeting

-  All - Update change requests regarding the EG before 1 December 2017. Change requests with no opposition will be adopted on 12 January 2018. [Done]
-  Denise LaDue to update the Encoding Guide by 31 January 2018, which will enter into force 6 weeks later, if no opposition. [Done, 2.4.1 adopted on 2019 03 20]
-  Bernd Birkhuber to submit the proposal for the Guideline for CRs on the IEHG Discussion Forum. [see <https://iehg.centralus.cloudapp.azure.com/t/change-request-form-and-guidelines/328>]
-  All – provide feedback to the Draft Guidelines. [done]

Update intervals and processes

-  An update of the EG can (currently) be adopted by IEHG within 6 weeks
-  Adopted updates may be used in a region (depending on regional regulations), but a new edition of the EG, FC and Product Specification is only published after a decision of the IEHG meeting (procedure adopted by IEHG in 2009)
-  Ed. 2.4 has been published by IEHG in spring 2015
-  When should the next edition be published?
(Do we wait for S-401 or do we need an intermediate update 2.5?)
./.

Update intervals and processes

Edition 2.5

Adoption IEHG: 2019

Publication: 2019

Adaptation of regional
regulations (e.g. Europe): 2022

Practical use: 2023

S-401

S-101 ed. 3.0.0 of IHO: 2022

S-401 ed. 3.0.0: 2022 / 2023

Publication: 2023 / 2024

Adaptation of regional regulations
(e.g. Europe): 2026 / 2027

Practical use: 2027 / 2028

Update intervals and processes



Do you agree to adopt an edition 2.5?



Time schedule for the next version/edition?

Deadline for submission of CRs:

Deadline for adoption of CRs:

Finalization of EG, FC, PS:

Publication of the drafts on the forum:

Deadline for veto:

Publication of edition 2.5:

Quality standards for Inland ENCs



Recommended validation checks for IENCs

2.4

Action point from last meeting: Wieland Haupt to update and provide Edition 2.4.1 of the Recommended Validation Checks

Does IEHG adopt version 2.4.1 of the RVC?

Ed 6.1.0 of S-58 is containing new checks, which could become part of ed 2.5 of the Inland RVC





minimum content of Inland ENCs






xls

Action point from last meeting: Brazil and China are invited to investigate whether a different definition of minimum content is necessary for their respective waterways.

Quality standards for Inland ENC's (2)

-  IHO has invited the IEHG to participate the DQWG in February 2020
-  The meeting could decide if IEHG is going to participate and who is going to represent IEHG in this WG

S-99, S-100, S-101 and future alignment

-  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 [Beta version](#)
-  [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

| Components | Edition 1.0.0 (2018) | Edition 2.0.0 (2020) | Edition 3.0.0 (2022) |
|--|---|--|----------------------|
| Main Documentation | ✓ | ✓ | ✓ |
| Feature Catalogue | ✓ | ✓ | ✓ |
| Portrayal Catalogue | Partial | ✓ | ✓ |
| Validation | Partial | ✓ | ✓ |
| Data Classification and Encoding Guide | ✓ | ✓ | ✓ |
| Encoding Format | ✓ | ✓ | ✓ |
| Encryption | | ✓ | ✓ |
| Alerts and Indications | | ✓ | ✓ |
| Full Test Data Sets for Type approval | | Partial | ✓ |
| Notes | Portrayal will be limited to S-52 rules translated to LUA | Edition 2.0.0 refines all the additional rules | Operational Edition |

Future updates of S-101

- 🌐 S-401 will be based on S-101 and future updates of S-101 should also be taken into account for S-401
- 🌐 Example: how can we ensure in the future that S-101 features are displayed in the same way in the S-401 PC as in the S-101 PC? How will we detect updates of the S-101 PC?
- 🌐 A possible solution within S-100: keep central list of changes. That would allow all organizations to check which changes should be taken into account for their product (Gert contacted Yong:
At the moment this is not possible but KHOA wants to implement this feature into the registry. Therefore we need to write a formal request to the S-100 Working Group of IHO.

Action point from last meeting










Denise LaDue to make the request at HSSC-9 for S-402 to be assigned to the IEHG for Bathymetric Inland ENC's





[Done, S-402 has been reserved by IHO for the
“Bathymetric Contour Overlay for Inland ENC Product Specification”]

Development of 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
-  An Interoperability standard (based on [S-98](#))





Action points from last meeting

-  COMEX should submit proposals on the Discussion Forum [next slide]
-  All members of the IEHG are invited to provide feedback
-  All members – provide regional specific symbols in SVG or any other format, along with size requirements and portrayal rules, to Wieland for conversation to SVG and inclusion in the portrayal catalogue. (S-401-EUR-Symbols_RUS_AtoNs-mod.xls, SVG-symb-lib_S-401_V0.3.pdf)
-  Bernd Birkhuber to submit the amended CR form on the Discussion Forum [Done, see <https://iehg.centralus.cloudapp.azure.com/t/change-request-form-and-guidelines/328>]

Discussions on the forum

- 🌐 When IHO decided to use LUA for portrayal the result of the discussion on the forum was to follow S-101 and to use LUA for IENC portrayal, too
Conclusion IEHG meeting?
- 🌐 The discussion has shown a support for the idea to follow the timeline of IHO for S-101 and the content of editions 1.0.0, 2.0.0 and 3.0.0
This will allow industry to develop the new generation of ECDIS and ECS with both Product Specifications aligned. The main reason for Editions 1.0.0 and 2.0.0 not being operational is to allow industry to work on stable draft versions before having an operational Edition 3.0.0.
Conclusion IEHG meeting?
- 🌐 Should S-401 contain an Encoding Guide or do we follow the principles of the DCEG of S-101? (see special slides later)






S-401 Product Specification

-  Edition 1.0.0 of S-101 has been published (see <http://registry.iho.int/beta/productspec/list.do>), but portrayal, validation, encryption, alerts and indications will only be finalized in an edition 2.0.0 that is scheduled for 2020
-  The proposal for edition 1.0.0 of S-401 is based on the same approach
-  Annex B (portrayal) and annex C (Validation checks) will have to be amended in an edition 2.0.0
-  Edition 1.0.0 of S-401 could be the basis for pilot implementations and testing of chart production

S-401 status ppt






S-401 PS

S-401 DCEG or EG?




-  The S-100 Data Classification and Encoding Guide ([DCEG](#)), [edition 1.0.0](#) has been published in December 2018
-  The registry will provide a DCEG Builder that helps to create a DCEG from the FC and the PC
-  The DCEG is containing a lot of general instructions that should also become part of the S-401 DCEG or EG
-  Our current EG is based on real world objects and describes which features have to be used to encode the real objects
-  The DCEG is based on features and describes how to encode them

S-401 DCEG or EG?

Two examples:

-  Our EG is containing a separate page for each type of bridge (basculer 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 is containing one page for the feature bridge and describes there how to encode the different types of bridges
-  Our EG page for dam/barrier describes that the features DAMCON, RESARE and C_AGGR have to be used
-  The DCEG has separate pages for the three features
-  Which way do we go for S-401?

S-401 DCEG or EG?

-  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
-  At the moment the IENC FC is containing some amended definitions of copied S-57 elements. It will not be possible to register deviating definitions. We have therefore decided to use our amended definitions only in the EG
-  If we use the DCEG: do we amend the DCEG produced by the DCEG builder manually for each update or do we maintain manually a separate version of the FC for easier production of the DCEG? (gain experience and decide later)

S-401 FC

S-401 DCEG or EG?



Pro DCEG:

In line with S-101 approach

DCEG builder of S-100 registry can be used

Easier to use for chart producers who work also with S-101



Pro EG:

Based on real world objects

Easier to use for chart producers who are accustomed to EG








Decision?

S-401 FC





S-57 to S-101 converter development

Converter development

-  IHO is providing a converter for S-57 datasets
-  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 to convert IENCs 2.4 to S-401
-  Do we need an independent converter?
-  If yes: who is going to pay, who is going to develop, who is going to maintain? Central web service or local installations?

AtoN Information Product Spec. S-201






Dave Lewald, S-201

-  S-101 of IHO is containing AtoN information, S-201 of IALA is also providing AtoN information in the maritime area
-  On inland waterways in PRC, Europe, the Russian Federation and South America AtoNs are defined in regional regulations and are different from IALA
-  Some landlocked countries with inland waterways are not members of IALA
-  Consequences for S-401?

Navigation services Product Spec. S-125

Dave Lewald, S-125

Bathymetric contour overlay for IENC Product Spec. S-402

-  IHO has reserved S-402 for the bathymetric contour overlay for IENCs Product Specification
-  The Product Specification will be based on the current Product Specification for bathymetric IENCs and S-401
-  Development is dependent on S-401 and has not started
-  If applications on inland waters will only be allowed to use S-401 IENCs and S-402 bIENCs, it would be possible to describe the interoperability in the S-402 PC
-  If applications should also be allowed to use e.g. S-102 bathymetry we need an interoperability standard ([S-98](#))

Navigational assistance systems and autonomous sailing



[Smart shipping general discussion](#)

Wieland Haupt



Developments in the maritime area?



Is ECDIS used as the basis of autonomous sailing?



Consequences for S-401?



[Accuracy information](#) in IENCs (Gert Morlion)
(reactions next slide)

Accuracy information for autonomous sailing



Dear Gert, Interesting points. It would be interesting to have the IEHG contribution to the discussions at the IHO Data Quality Working Group. Next meeting will be here in Monaco, from 4 to 7 February 2020. This year we had interesting discussions on autonomous vessels, data quality and data integrity.

Regards, Alberto



Dear Gert, I agree that this Information could be important for autonomous navigation. I do not believe that human boatmasters would use it because it would create an information overload during navigation.

Adding these attributes as optional elements would provide the technical possibility to include this type of accuracy information in test areas for autonomous navigation. Looking at the time frame for the formal adoption and publication of a new standard it could even be useful to include the attributes in an edition 2.5, because S-401 might be too late for some testing areas. ./.

Accuracy information for autonomous sailing (2)



But adding the information to the IENCs will require a lot of work. I don't think that chart producers would agree to make these attributes mandatory as long as there are no autonomous vessels and we do not even know, whether they will really use all of these attributes.

I would therefore support the idea to introduce them as soon as possible as optional attributes, but mandatory amendments should be considered on the basis of results from the testing of autonomous vessels in testing areas.

It would be great if we could get additional input from companies that are developing autonomous navigation applications if they would need additional Information. I would like to invite users of the discussion forum who have contacts to such companies to forward the proposal to them and to invite them to inform us about their needs regarding the content of IENCs.

Best regards

Bernd

Accuracy information for autonomous sailing (3)

Dear Gert,

Under the direction of Pieta Kluytenaar we had a working group regarding "minimum requirements and recommendations for electronic Inland navigational Charts". The result of this group recommends different accuracy and different update rates for different Inland ECDIS objects. Of course,, for lock chambers, bridge pillars, berth objects... the highest accuracy was demanded.

For me these results are still valid and very helpful. We use it.

But the accuracy of the objects in the chart is only one aspect.

Another important one is the accuracy of the position of the vessel. This is depending on a lot of parameters. At the moment it is not very high. The most transponders are equipped with outdated GPS-sensors and don't use correction data. And the position of the antenna at the vessel is often also not surveyed in high precision.

The tests of navigational assistance systems are ongoing or just starting in a lot of different places.

We should accompany the development and wait for the resulting demands regarding our standard.






Maybe the demands are quite different from the proposed solution.

One of the results of our LAESSI project was, that the accuracy of the IENC objects was high enough. In the case of passing bridges they used very precise additional on board sensors to reach the necessary accuracy to detect a lack of vertical clearance in advance.

Best regards




Wieland

Encryption of IENCs for security







-  Maritime ENCs are encrypted according to S-63 to allow the commercially viable distribution
-  IENCs are provided free of charge e.g. in Europe and the US and have therefore not been encrypted
-  The IENCs could easily be changed (obstacles could be deleted, depth values or vertical clearances could be changed) by unauthorized persons
-  This could potentially endanger the safety of navigation
-  Do we need encryption of IENCs for security?

S-63, IHO data protection scheme

Three purposes:



-  Piracy Protection: To prevent unauthorised use of data by encrypting the ENC information.
-  Selective Access: To restrict access to ENC information to only those cells that a customer has been licensed for by providing cell permits.
-  Authentication: To provide assurance that the ENC data has come from approved sources by digital signature.

S-63: consequences for IENC distribution

-  Each data server needs a certificate from IHO
-  Requests of data servers that are neither a Hydrographic Office nor a RENC have to be supported by an HO or RENC
-  Manufacturers have to issue hardware IDs according to S-63 for each user (a dongle can be used)
-  Permits have to be issued for IENCs for each hardware ID
-  The application of S-63 would cause additional administrative costs on all levels
-  Would it still be possible to provide IENCs free of charge?

S-63: comments on forum

S-63 is used for two main topics:

-  Copy protection; This is achieved by encryption and probably not necessary for IENC. Anyway, both technology and key length is far from up to date.
-  Data authentication; This is what you are looking for. It uses digital signatures to ensure the data integrity at least for the data files (Not for text and picture files, catalogue, etc)

Using S-63 would mean you have to follow the entire standard in order that existing S-63 software can be used to import the data. It is also worth to mention that S-63 is a security scheme for ENCs and is bound very tight to the S-57 ENC product spec (e.g. file naming of signature files).

In S-100 data protection and data authentication can be used independently of each other. The mechanism is described in part 15 of S-100 (Ed 4.0). The product specification specifies what is used and in the meta data the information is stored. Although some details are still (in my opinion) not clear, the general approach points in the right direction.

S-63: comments on forum (2)

A small intermediate solution could be to create a digital signature only for the exchange set catalogue. The integrity of the other files is then secured by the CRC values in the catalogue.

Nobody can change a data file since this would change the CRC value. The catalogue cannot be modified because the digital signature would no longer match. Older software would still work, it just ignores the signature file. New software could use the signature if it is present.

This is just an idea to start the discussion, a lot of details have to be considered (format of signature, public key infrastructure, etc.)

I am happy to answer any questions

Best regards.

Holger Bothien

S-63: comments on forum (3)

Dear Holger, dear Bernd,

The S-100 scheme has many advancements over the S-63 and is very close to start. PRIMAR will soon start distributing S-102 using this scheme for the authentication (it may happen at any time from now). The IHO Secretariat will manage the certificates and I assume this will serve all S-xxx products. A group of experts will meet next month to deal with those details that are not very clear yet (as mentioned by Holger).

Regards,

Alberto

[S-100 Part 15, data protection](#)

S-63: comments on forum (4)

I just exchanged some messages with PRIMAR (www.primar.org) and they may be interested in distributing Inland ENC's in the S-401 format using the S-100 Part 15 scheme. They have already received a proposal from one of their member nations. This may be one way ahead for iENC distribution in a secure environment, using an existing system.

Regards,
Alberto

Decision?

Annual report to HSSC

- 📄 Action point from last meeting: Denise LaDue and Bernd Birkhuber to prepare the ppt presentation to HSSC immediately after the meeting.
[Done: HSSC-9-07-6A - IEHG_Report – Pres.pdf]
- 📄 Annual report to the Hydrographic Services and Standards Committee (HSSC) of the International Hydrographic Organization (IHO) in spring 2020 about IEHG

Report 2017

Information document on Inland ENC

- IEHG has developed a document that provides information on Inland ENCs and the relation and the differences to maritime ENCs
 - The document can be used by every member of IEHG for presentations, discussions, explanations
 - Comments?
 - Amendments?
- Action point:** All members of IEHG are invited to submit proposals for amendments of the information document on Inland ENCs (Inland ENC.ppt on ienc.openecdis.org).
- Article for HYDRO International

Information (EN)

Information (SP)

Operation of Web Services

Future operation of



ienc.openecdis.org website
now hosted by Periskal on behalf of EC
Could we switch to a cheaper system?

<http://ienc.openecdis.org>

<https://ienc.gitbook.io/ienc>



Discussion forum

<http://operations.usace.army.mil/nav/IEHG/start.cfm?Option=Login>

would it be possible to add a status column?
(pending/adopted/rejected and datum)










IENC domain in the registry of IHO

<http://registry.iho.int>










Any other business, Next Meeting

Action points from last meeting:






-  Keep track of S-101 developments and the consequences for IENCs (Cameron, Chris, Tom, René)
-  Update CRs and submission on the discussion forum (Bernd) [Done, see <https://iehg.centralus.cloudapp.azure.com/t/change-request-form-and-guidelines/328>]
-  Registration of symbols in S-100 (Gert)
-  Preparation of 2.5, including draft FC 2.5 (Denise)
-  Update of list of members (Bernd)
-  Meeting minutes (Denise and Bernd) [Done, [IEHG XIV Minutes.pdf](#)]
-  Start information exchange with IALA regarding S-201 and RTCM regarding SC 129 (Dave)

Any other business, Next Meeting

Distribution of work (based on last meeting)

-  Report to HSSC (Denise and Bernd)
-  Inland ENC ppt (Bernd, input from everybody, Gustavo for Spanish)
-  Keep track of S-101 developments and the consequences for IENCs (Cameron, Chris, Tom, René)
-  PS, FC and EG 2.5 (Denise and Bernd)
-  RVC 2.4.1 (Wieland)
-  Registration of new elements in S-100 and solving discrepancies (Denise and Gael)
-  Registration of symbols in S-100 (Gert)
-  Update of list of members (Bernd)
-  Meeting minutes (Denise and Bernd)

Any other business, Next Meeting

-  How to encourage other countries to join IEHG?
South America / Asia
-  Any other business?
-  Next meeting of IEHG: where and when ?
Hasselt, Belgium? Autumn 2020 or spring 2021?
-  Changes to the agenda of next meeting?
-  Departures

Thank you, Denise, for the hosting of the
meeting and the hospitality!
Thank you all for participation!