16th Meeting of the Hydrographic Services and Standards Committee
Tokyo, Japan, 28-30 May 2024, Agenda Item 7.13A

Inland ENC Harmonization Group

S-401 and Interoperability with S-101

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presented by Friedhelm Moggert-Kägeler

Inland ENC Harmonization Group

Content

1. Inland ENC Harmonization Group
2. Background
3. Analysis
4. Discussion
5. Conclusions

The Inland ENC Harmonization Group

- Founded in 2003 by North America and Europe, to facilitate the development of international standards for Inland ENC data
- Additional countries have joined over the years (Russia, Brazil, China, South Korea, Venezuela, Peru)
- The goal of the IEHG is to develop specifications for Inland ENCs worldwide
- The Inland ENC standard is flexible enough to accommodate additional inland waterway requirements in other regions of the world
- Several editions of the Product Specification for IENCs have been released
- The latest - Edition 2.5 - was released in 2020
- IEHG is responsible for the development of Inland-ECDIS-related S-100 product specifications – e.g. S-401

1. Background

- All product specifications for Inland ENCs have been based on S-57
- An IENC can be legally displayed on a certified maritime ECDIS, but currently most maritime ECDIS do not support IENC!
- In some sections of inland waterways, carriage requirement regulations exist. Owners of sea-going vessels must invest in a second application if their respective maritime ECDIS does not support IENC

1. Background

- IEHG has followed the development of S-100 from the beginning and contributed to various IHO working groups
- S-401 drafts have been constantly aligned with all S-101 editions
- The idea has been that an S-100 application would be able to display any
- S-100-based product correctly!
- This has been seen as a solution for combined use of maritime and inland charts!
- The European Commission has invested a lot of money in the development of S-401!

1. Background

- IEHG noticed that the first edition of the interoperability standard S-98 only covers those products that are explicitly required by IMO

- Informal contacts: different opinions about the integration of S-401 into a future S-98

2. Analysis

Do maritime vessels need to display Inland ENCs?

- Maritime vessels are not only accessing ports on inland waterways;
- they often also use the lower sections of big inland waterways
  - Rhine river up to Duisburg (220 km)
  - Danube river up to Belgrade (1100 km)

- Inland ENCs are mandatory on some inland waterways
- Official Inland ENCs are published by the competent authorities
- Inland ENCs contain a lot of detailed information and include inland-specific features

2. Analysis

Currently S-98 does not include S-401 (Inland ENC PS):

- Hence, on some inland waterways, it would not be permitted to navigate by using an S-100 ECDIS that cannot display Inland ENCs
- Charts with detailed inland-specific information would be missing

Conclusion of the IEHG:

- There is a need to ensure that the equipment of maritime vessels can display Inland ENCs!

2. Analysis

IEHG's formal request:

- The integration of S-401 into a future version of S-98, as a complementary option for a base-cell

Precondition:

- Availability of an operational version of S-401, as well as S-401 test charts

2. Analysis

Pros:

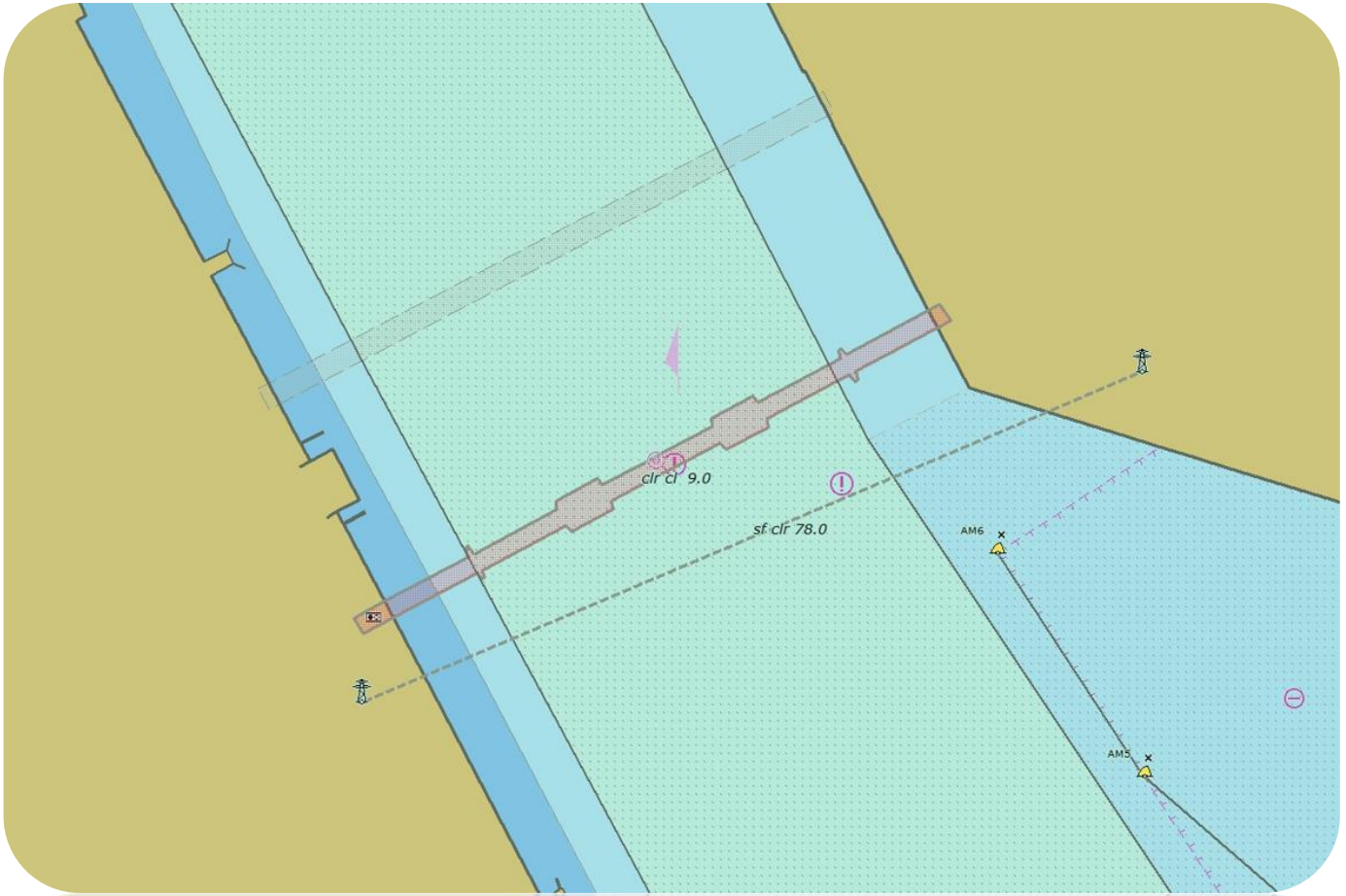
- Ensures that every S-100-based maritime ECDIS can display and utilize all features and attributes that form part of S-401 Inland ENCs
- No need for two applications
- No legally questionable situations when moving from maritime to inland areas
- S-401 Inland ENCs include larger-scale, more detailed information and can act as a complementary layer to S-101

Cons:

- Increased workload for IHO working groups dealing with S-98 (note that IEHG is willing submit comprehensive proposals for the integration)

2. Analysis

ENC PoAB kanaaldok
Lower scale



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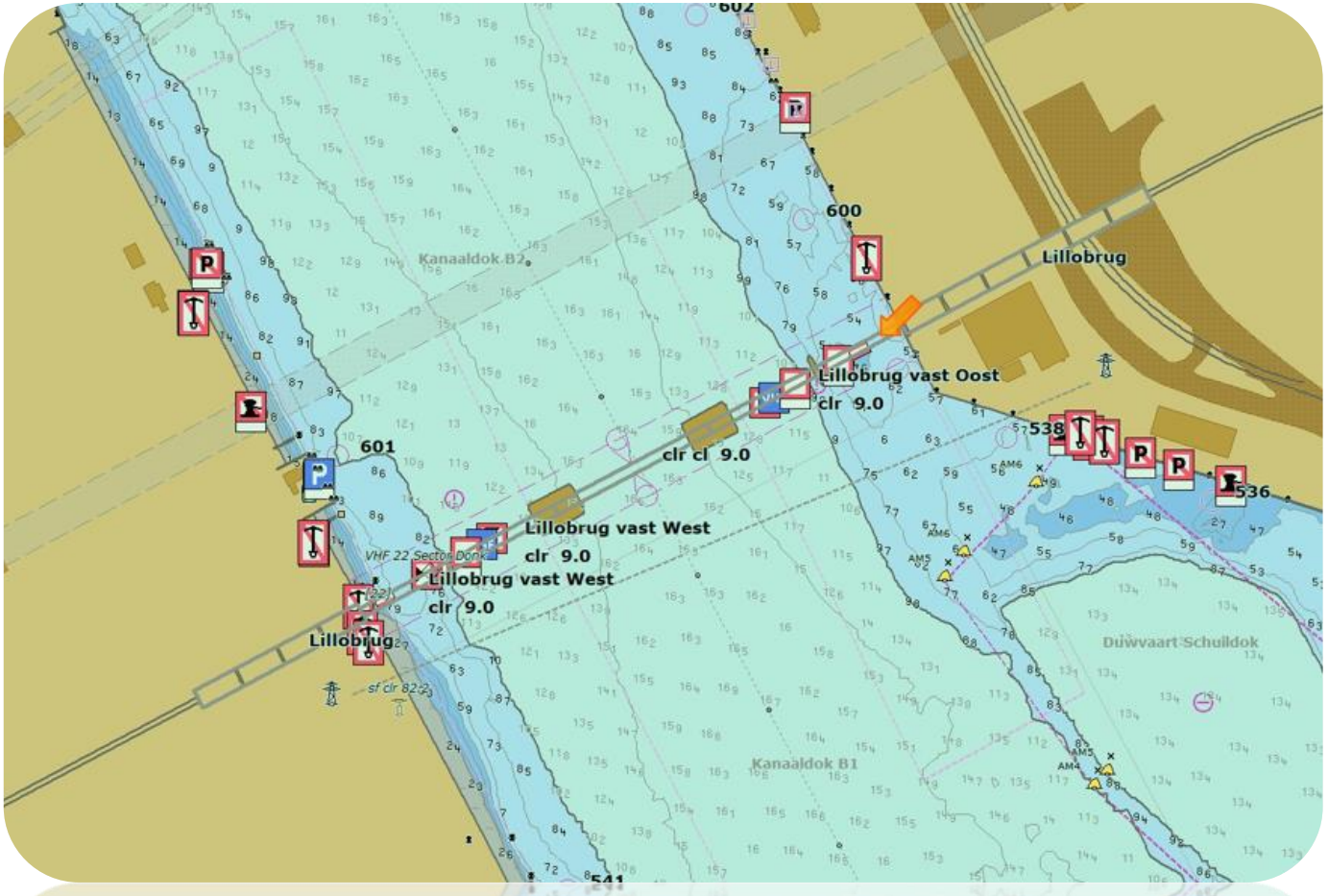
2. Analysis

IENC PoAB kanaaldok
Higher scale



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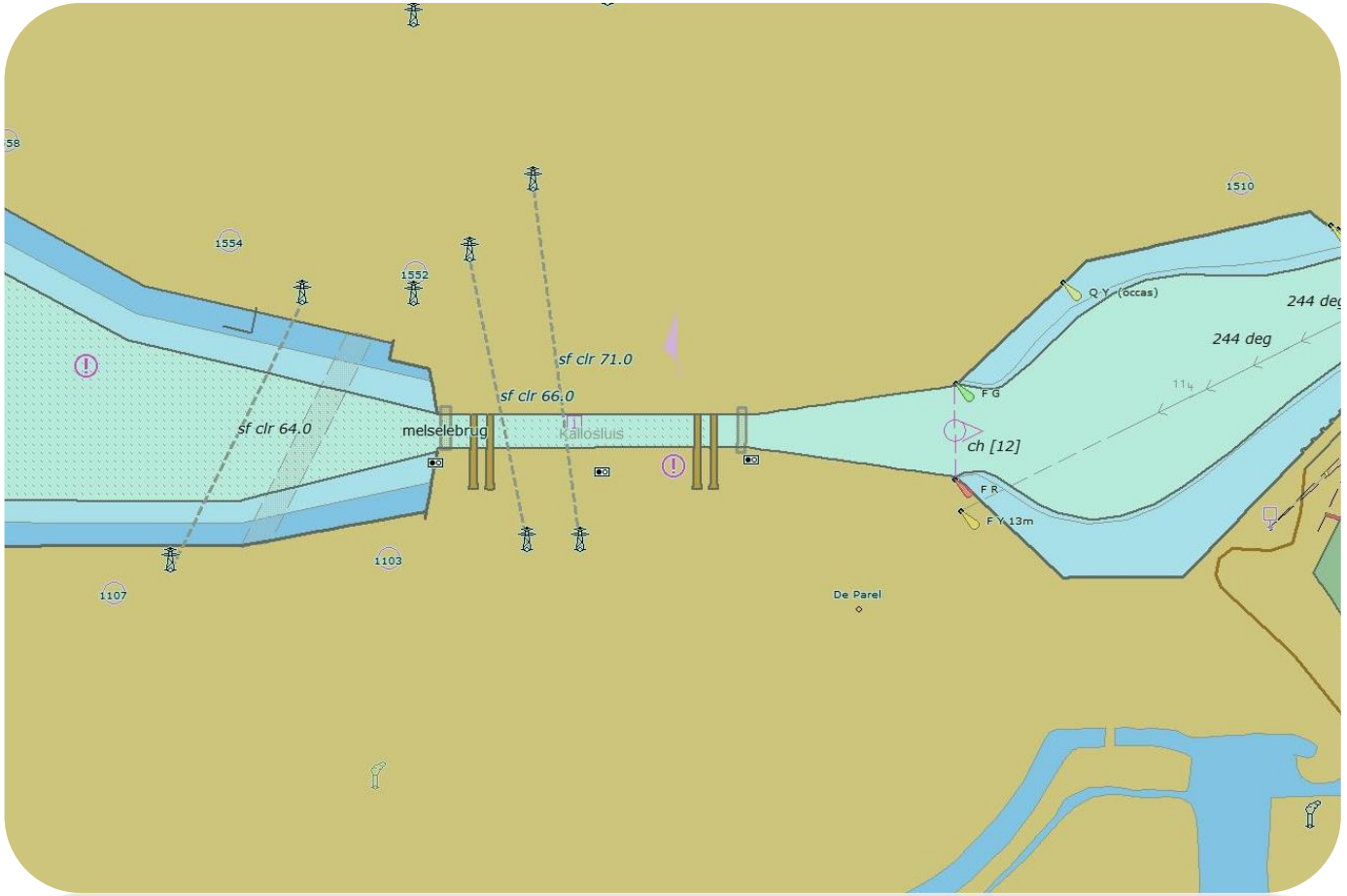
2. Analysis

ENC PoAB Kallo lock
Lower scale



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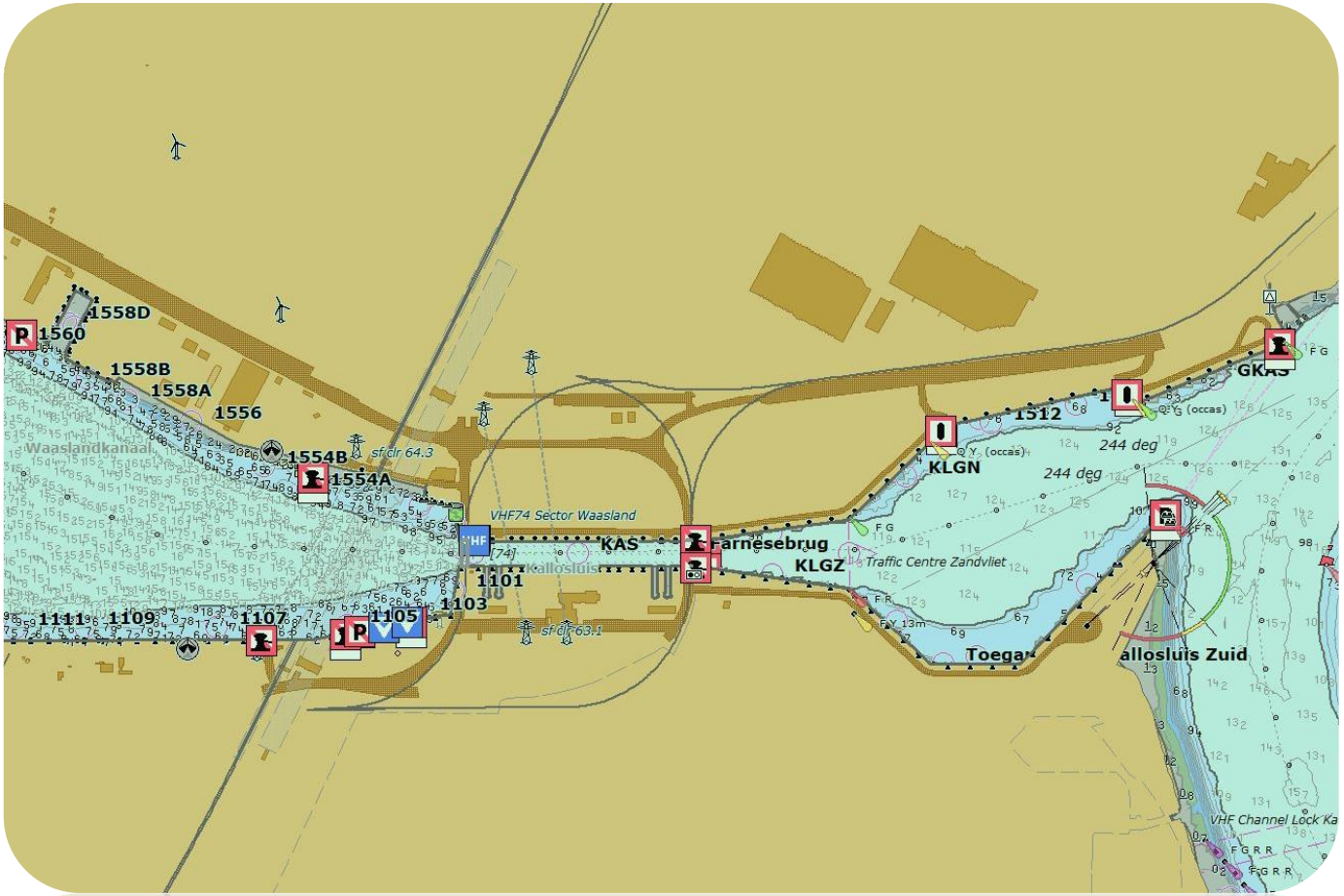

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3. Discussion

ECDIS Performance Standard:

- 1.3 – ECDIS should be capable of displaying all nautical information necessary for safe and efficient navigation, originated, and distributed by or on the authority of a government, authorized hydrographic office or other relevant government institution, as required by SOLAS regulations V/19 and V27.
- 1.6 The ECDIS display may also be used for the display of radar, radar tracked target information, AIS and other appropriate data layers to assist in route monitoring.
- 2.2 These performance standards apply to ECDIS mode of operation, ECDIS in RDCS mode of operation as specified in appendix 7 and ECDIS backup arrangements as specified in appendix 6.

3. Discussion

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Official Inland ENCs are published by competent waterway authorities.

3. Discussion

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S-401 is an appropriate data layer

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- 1.6 The ECDIS display may also be used for the display of radar, radar tracked target information, AIS and other navigation related information, such as meteorological and monitoring.
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Inland ENCs provide all nautical information to ensure safe and efficient navigation, because all pertinent chart-related data is available

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Use S-401 for ECDIS mode of operation

4. Conclusions

Logical solution according to IEHG:

- Integration of S-401 into a future version of S-98
- S-401 should act as a complementary base layer to S-101
- Helps ensure safe and efficient navigation on all waterways, regardless of type.
- If it is guaranteed that maritime ECDIS can be used on inland waterways, this would justify the additional efforts of the IHO working groups and the IEHG

5. Actions

The HSSC is invited to:

- note this paper
- task the relevant working group with analyzing the possibility of integrating S-401 as a complementary base layer in a future edition of S-98, as a basis for a final decision at the next HSSC.
- accept the IEHG's offer to prepare documentation for including S-401 within S-98, if integration is approved
- reserve the number range from S-401 to S-410 for future inland-specific products