



7th Meeting of the Nautical Cartography Working Group

Proposal by US (NOAA) and Republic of Korea (KHOA)

Recommendations for Baseline Symbology Project Team

Agenda Item 6.7B



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INTRODUCTION & BACKGROUND

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- NCWG established a Baseline Symbology PT
 - to develop set of symbols for automated paper chart production from S-101 ENC data
- Over 70% of MS responding to 2019 Future of the Paper Chart Survey indicated they have either started automated production or are exploring ways to create paper charts from **S-57 ENCs**
- Growing need to have an agreed upon set of international symbols and rules for use in automated production
- *Some HOs could make use of the work now, if it were available*



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OPPORTUNITY

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- Opportunity for HOs to take advantage of new technology to automate much of the creation of paper charts
- *Automation will enable an increased capacity for HOs to concentrate on building S-57, S-101, and other datasets that the shipping world will require in the future*
- As the Baseline Symbolology PT works on Work Plan Item E11 to “Develop baseline symbolology to support automated chart production,” it should:
 - Be Expedient
 - Be Flexible
 - Be Pragmatic



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BE EXPEDIENT

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- Many HOs already started paper production using S-57 ENC's
- Standard digital symbology and automated chart production was discussed at HSSC11 in May 2019 and NCWG5 in Nov 2019
- Tangible progress has been slow to appear, despite formation of the PT and VTC meeting in Mar 2021
- NCWG and the PT need to drive forward with renewed purpose
- Build upon automation progress that has already been made by some industry partners and other HO's
- *Prototype of some nature should be available autumn of 2022*



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BE FLEXIBLE

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- PT should be flexible and open to new ways in which data might be presented on automated ENC-based paper charts
- Automated paper charts and the baseline symbology created to support it should be familiar to paper chart users, but ...
 - there will features for which the “traditional” S-4 portrayal may be difficult to automate, and ...
 - there could be a different – and equally comprehensible – representation that is acceptable
- *Trade-offs must be considered between nostalgia for the “beauty” of traditional paper charts verses the efficiency of using an automated process to create an equally functional product*

Example of Automated Output from NOAA Custom Chart Tool

CATZOC Source Diagram

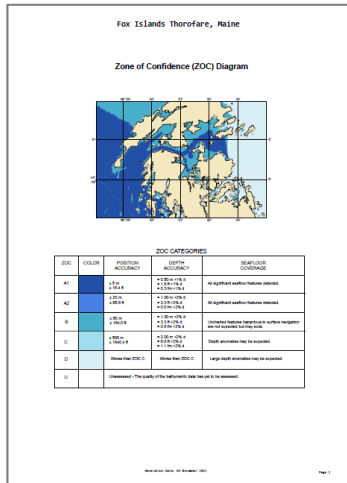


Chart Notes

NOTES

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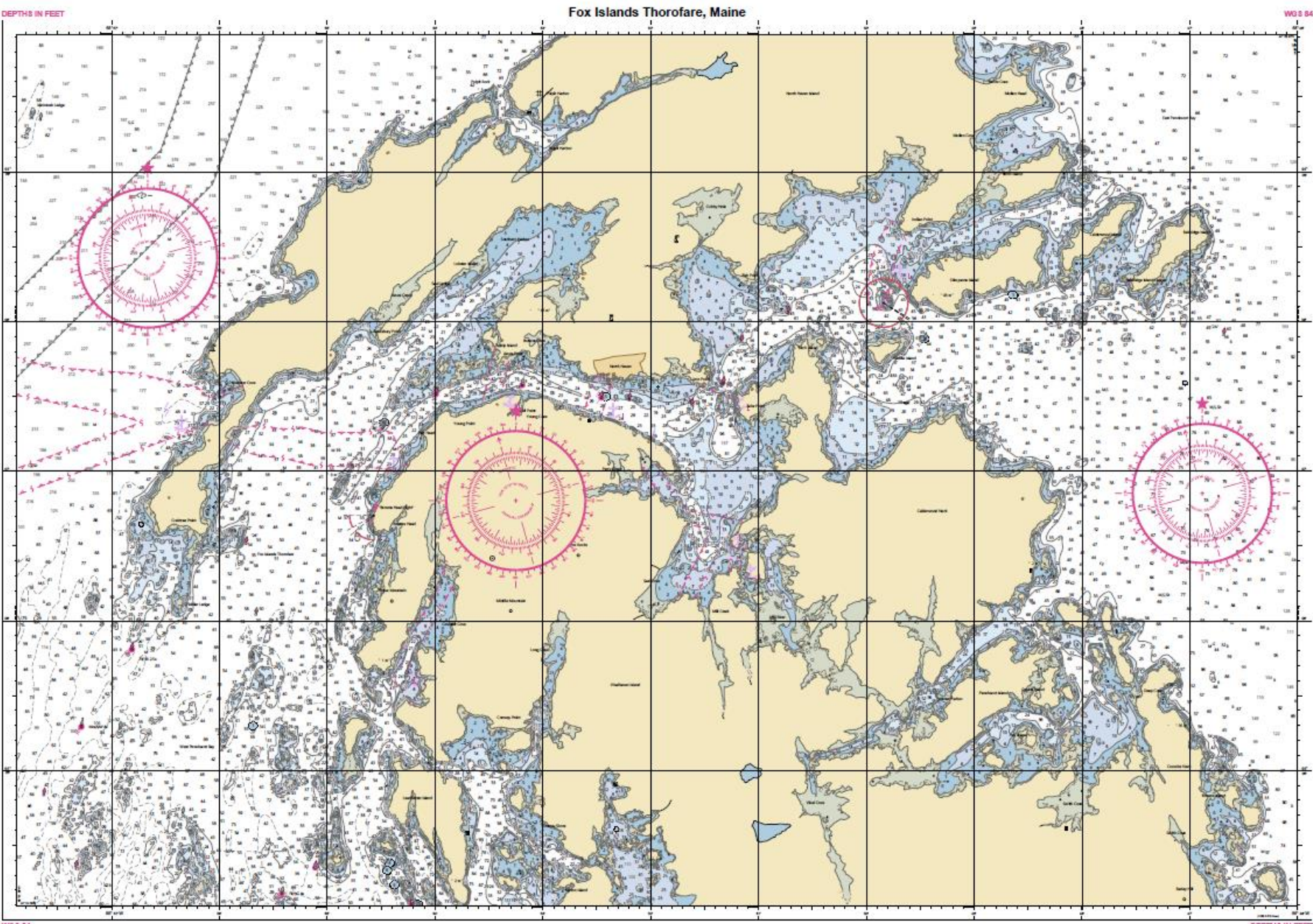
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BE PRAGMATIC

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- The PT should take advantage of existing S-57 ENC data and S-57 related automation efforts
- NCWG5 discussed various aspects of how paper chart automation might be carried out
 - Use of S-57 to S-101 ENC converters
 - NCWG focusing on the automation of S-101 ENCs might “speed the transition to S-101”
- *Automation of S-101 ENCs should certainly be considered, but ...*
 - *Challenges remain for HO’s conversion of existing S-57 data*
 - *and for HO’s creation of native S-101 data directly*



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CURRENT *S-57 ENC* COVERAGE



IHO Web Catalogue
INT Charts & ENC Schemes



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Manual

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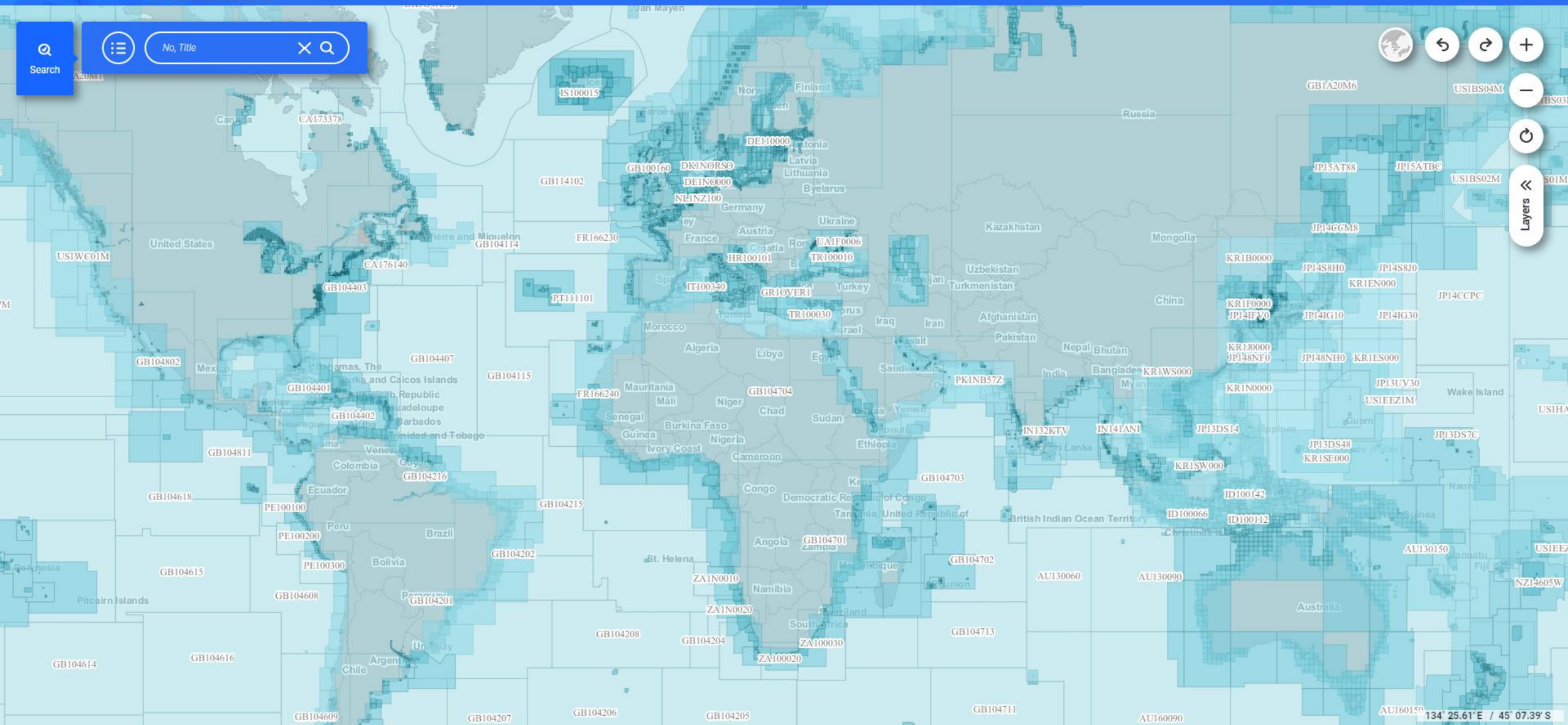
Search



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CURRENT *S-101 ENC* COVERAGE?



IHO Web Catalogue
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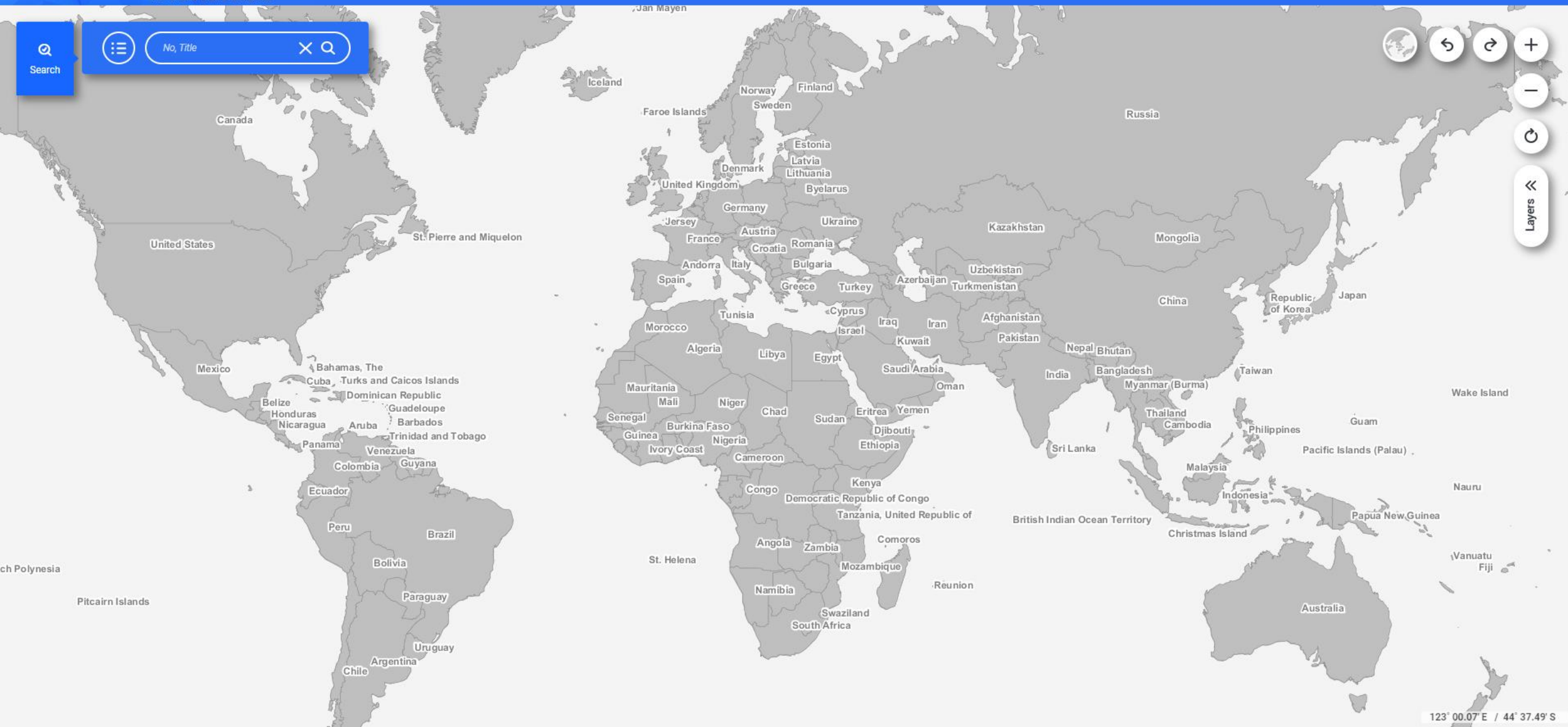
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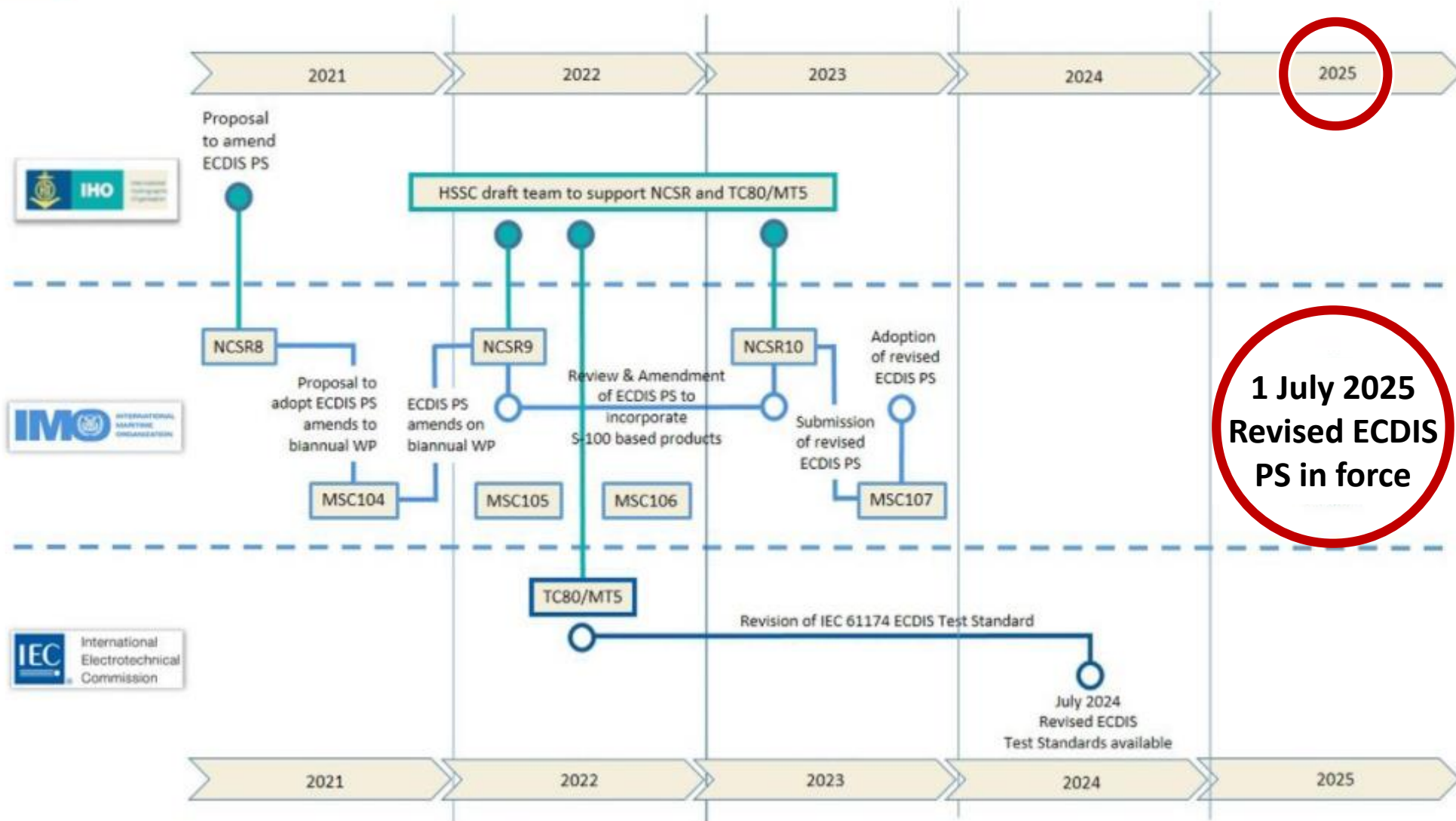
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The road to S-100 ECDIS – IHO committed to deliver

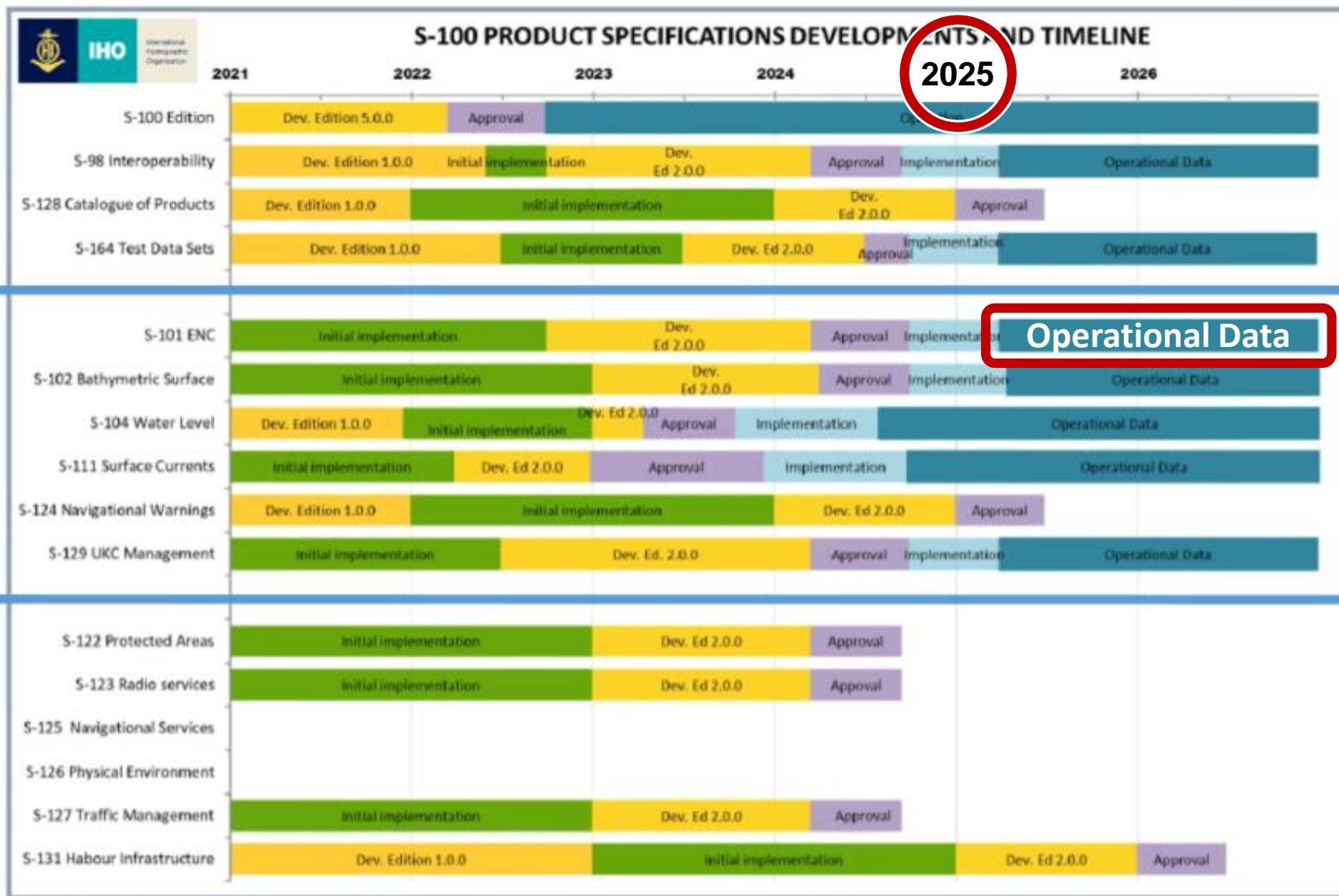
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The S-100 eco-system is taking shape



Priority 1
Products

Operational Data

Regional rollout of S-100 based data services can be the door opener



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BE PRAGMATIC

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- Waiting to resolve S-101 issues: refining conversion s/w, conversion training, etc. will surely delay any useful PT outcome
- PT can provide a means for HOs to start automating the production of paper charts from plentiful (*a planet's worth!*) S-57 data that they already have on hand
- Some HOs already have S-57 based paper symbolization rules
- *NCWG should move forward to support automatic paper chart production of S-57 ENC data first*
- *This will provide valuable lessons for the eventual automation of S-101 ENC data when it becomes available*



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CONCLUSIONS

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- There is a growing, global need to expedite the work of the Baseline Symbology Project Team
- The World is in the process of transforming its approach to paper chart production and would be well served by the NCWG's expediting the Project Team's work
- An initial focus on automating the use of S-57 ENC seems reasonable, given that plentiful S-101 data may not be available in the near future



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RECOMMENDATIONS

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- **Be Expedient**
 - **Strive to produce a prototype in the next 12 months**
 - Automation will free resources that can be used to expand ENC coverage and prepare for the transition to S-101 ENC
- **Be Flexible**
 - Be open to **automated paper charts looking different from classic S-4 specified “traditional” paper charts**
- **Be Pragmatic**
 - **Create an S-57 ENC data based solution first**
 - Take advantage of the existing S-57 data and S-57 based rules so HOs may start automating paper chart output now



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JUSTIFICATION AND IMPACTS

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- Many paper chart producing nations are ready to start automating ENC-based paper chart production now
- Expediting the development of digital symbology and rules to support automation will enhance the capacity of HOs to produce inherently synchronized ENC and paper chart products in a more timely fashion
- Automation will free resources that can better be served creating and improving other data that will enhance the safety and efficiency of commercial shipping and other maritime operations



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ACTION REQUIRED OF NCWG

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The NCWG is invited to:

- a. Adopt the recommendations identified above,**
- b. Update HSSC on the Baseline Symbology PT's focus, based on the recommendations above, prior to HSSC14**