11th CHRIS MEETING
IHB, Monaco, 16-18 November 1999

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Workshop on Development of Marine Information Objects (MIO) for ECDIS
Burlington, Ontario, Canada
8-9 November 1999
Record of Discussions

1. Introduction and Welcome

Dan Pillich (Chairman, MIO) welcomed those attending. Twenty persons were in attendance. Lee Alexander (IEC TC80/MT1) agreed to serve as Rapporteur.

2. Approval of Agenda

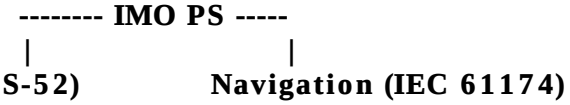
Agenda was approved. At the suggestion of George Spolestra, a brief PowerPoint presentation was given by Lee Alexander on the "What, Why and How of ECDIS vs. ECS."

Matters Arising from Previous Workshop

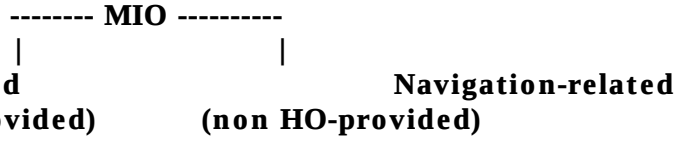
Chairman asked the Workshop participants to review the seven Recommendations from the Singapore MIO Workshop of 29-30 November 1999. Lee Alexander questioned whether Recommendation #3 (IALA draft proposal for VTS) should have been "approved". VTS symbols are navigation-related information. As such, they require further RDT&E before S-57 objects can be produced, and be harmonized with other IEC 61174 navigation symbols (e.g., ownship, ARPA and AIS).

3. MIOs – Chart or navigational objects (IHO S-52 vs. IEC 61174).

Discussion was held on how to classify MIO information in terms of chart-related and navigation related information. Lee Alexander suggested that MIO could take the same approach as what is called for in the IMO Performance Standard for ECDIS. Michel Huet felt that MIO could also be classified in terms of HO-provided and non-HO provided information).



Note: In the IMO PS for ECDIS, there is specific mention of chart-related, navigation related, and navigational information. There is no mention of so-called "Mariner's Objects."



Gert Buttgenbach suggested that for MIOs, it may be useful to decide whether an ECDIS should only be used as a navigation system, or could be used both as both a "navigation information system" (IMO PS, Sec. 2.1) and a marine Geographic Information System (GIS).

Michel Huet clarified that the IMO PS states (in Sec. 6.1) that additional information can be shown on the ECDIS as long as it does not degrade the display. John Falkinghan pointed out that for such MIO as ice information, that mariners want to show this on a single shipboard display (e.g., with ECDIS).

Andrey Vorobiev pointed out that the ECDIS PS is a minimum Performance Standard, and that other types of information and modes of operation are possible. As such, there is a need for considerable flexibility beyond what is required in terms of ensuring safety-of-navigation.

Doug O'Brien suggested that perhaps the best way is for IHO to issue an "S-62" Publication that deals with MIO. George Spolestra disagreed, and felt that there is no need for an additional IHO publication, and that IHO S-57 was appropriate for dealing with MIO objects. Gert Buttgenbach supported this by pointing out that the Open ECDIS Forum has means to register new IHO S-57 objects.

A diagram showing how MIO information can be classified was developed and discussed (see attached). In addition to indicating "chart vs. navigation" and data/display issues, the diagram also shows who is responsible for producing MIOs.

4. The Relationship of MIO to DNC and DNC/ENC Alignment

Doug O'Brien briefed on this evolving relationship. In particular, the U.S. National Imaging and Mapping Agency (NIMA) plans to produce a DNC-2 that will contain S-57 ENC content but in Digest/VPF encoding with a Digest FACC catalog. George Spolestra pointed out that this could be a positive step in that this new focus is on content rather than format (i.e., content-oriented rather than platform-dependent). This should result in convergence (not divergence) between IHO S-57 ENC and VPF/DNC. This could also lead to greater harmonization between current and future MIOs and the existing S-57 Object Catalog.

5. Status of the work in ISO TC211.

Doug O'Brien provided a PowerPoint Presentation on the standards work of ISO TC211.

6. Examination of the Objects and Attributes for the proposed MIOs.

Marc Philippart from the National Institute for Coastal and Marine Management in The Netherlands (RIKZ) gave a PowerPoint presentation on tides/current flow information that is being produced for coastal areas and major ports in The Netherlands. Discussion followed on how this type information could be used in conjunction with ECDIS. Most importantly, it would be for route planning or route monitoring. Also discussed was who has responsibility to produce this type of information for use with ECDIS (HOs or private companies?), and how should it be distributed?.

Following a lengthy discussion, Gert Buttgenbach summarized. Object classes that are providing the foundation for the display of current in ECDIS already exist in IHO S-57 ed. 3. There are also concepts that can be identified on how to populate this data with time-series information (e.g., strength and direction of current flow). These concepts are either stand-alone, simplified tidal models that can be imbedded (or interfaced) into ECDIS, or forecasted time-series information that are first calculated ashore. The primary question

that remains to be resolved is how to connect the ECDIS to the provider of MIO information.

It was proposed and agreed that the MIO Workshop focus its work on four steps:

1. object definition
2. product content specification
3. display requirements
4. service description

For instance, with respect to tidal stream/current flow information, the objects are currently defined in IHO S-57. However, there is no detailed product specification on the level of content or attribution. While there are minimum display information described in S-52 and IEC 61174, there is no description on how or who will provide the service.

Andrey Vorobiev proposed that a separate group look into this matter. For instance, this would be an appropriate topic for the "*Open ECDIS Forum*." Michel Huet also suggested that this group should provide recommendations back to the MIO Workshop and to IEC TC80/MT1.

6.1 Meteorological information

Dan Pillich tabled a report that had been prepared on this (Weather in ECDIS). This only defines the objects. To date, no work has been performed on content specification, display attributes or service description. However, there was agreement to follow World Meteorological Organization (WMO) guidelines. Further development requires cooperation with an "appropriate" user group. An "appropriate" user group would also be one that is willing to fund the development.

6.2 AIS and VTS

It is not certain what is the status of the draft IALA proposal for VTS symbols. Capt. Keith Millen (Port of London) has retired. Others from IALA who were previously interested were not able to attend this MIO meeting. Michel Huet suggested that it would be useful to review the IALA proposal to determine what type of S-57 objects need to be created. Lee Alexander offered to re-establish contact with IALA in conjunction with MIO and the ongoing work of IEC TC80/MT1 on navigation-related symbols.

6.3 Under-keel clearance

Dan Pillich introduced a paper on how underkeel objects could be performed. Lee Alexander questioned the need to develop a specific "object" for underkeel clearance. He felt that this ECDIS capability was more a function of the ENC database, and the ability to display selected contour layers defined by ship's safety contour (IMO PS, Sec. 10.4.4). Until the ENC data supports the ability to display single meter contours (or decimeter contours), that the ECDIS would not be able to compute ship's safety contour (indication of next deepest depth contour after computing ship's draft plus minimum underkeel clearance) for a given geographical area at a given time. Gert Buttgenbach also questioned the need to specify rather than encourage this capability. Linas Pilypaitis suggested that this was particularly applicable for certain areas (e.g., Great Barrier Reef in Australia). It was also suggested that a "consulting group" may be useful to advise ECDIS developers on this type of matter. In this regard, the primary role of MIO should be to review requirements and provide advice and assistance to developers.

7. Examination of Display Options for meteorological, AIS, VTS and underkeel clearance data

Lee Alexander gave a Powerpoint briefing on the use of AIS with ECDIS, including planned trials for new AIS symbols proposed by the German Institute of Navigation (DGON). Both simulator and at-sea trials are planned to evaluate the suitability and effectiveness of AIS symbols when used in conjunction with both chart- and navigation-related information. A brief simulation of AIS targets in the Port of Singapore was provided using SevenCs software. Andrey Vorobiev (Transas Marine) provided a more detailed simulation showing the various proposed symbols under different chart colour and display scenarios.

8. Review of Other forms MIO Information

8.b Ice Objects and Display

Dan Pillich reviewed that there had been several Ice Information Workshops in years past. In 1995, SevenCs prepared a report that contained an Ice Information Object Catalog. He also brought up the issue on whether ice information is more cartographic or navigation-related..

John Falkingham (Canadian Ice Service) provided a PowerPoint presentation on the current status, needs, and future opportunities for ice information in Canada. Ice Information objects already exist but are not being used due to lack of content spec, display requirements, and service description.

Four different options were discussed on how to deal with these issues:

1) Lee Alexander suggested that the establishment of a Test Bed Project (e.g., St. Lawrence River, Gt. Lakes, Baltic Sea, etc.) was the best way forward to refine a produce content specification, display requirements onboard vessels using ECDIS, and service description.
2) Doug O'Brien and Gert Buttgenbach recommended that MIO should organize a joint WMO-IHO Ice Information Meeting be held where experts work out these details.
3) Michel Huet felt that the establishment of a joint IHO-IEC Harmonization Group on MIO was another way to deal with these issues.
4) Another option was increased use of the Open ECDIS Forum.

John Falkingham then asked for assistance on the development of a Project Implementation Plan for Ice Information on ECDIS. In turn, he offered to organize a Workshop. It was agreed that the incorporation of Ice Information into ECDIS is a suitable candidate for MIO. Following further discussion, it was confirmed that the MIO Workshop is committed to develop a mechanism for standardization and implementation.

8.b NATO WECDIS

Linas Pilypaytis gave a Powerpoint briefing on NATO WECDIS. A key aspects of WECDIS is the ability to use different types of data both for navigation and warfighting purposes. A particular benefit of the WECDIS approach to MIO is the development of a Common Product Specification that specifies content separate from data format. A copy of the WECDIS Common Product Specification (Annex B) is included in the minutes of this Workshop.

9. Formulation of Recommendations to the CHRIS

a) Three options were discussed related to <u>the future of MIO</u>:

1) continue as a Ad Hoc Group
2) become a new IHO WG
3) establish a MIO harmonization group between IEC and IHO

Dan Pillich stated that he wished to relinquish the leadership of MIO, and that he supported the third option. Dan also suggested that Lee Alexander may be an appropriate person to lead this **IHO/IEC Harmonization Group on MIO (HGMIO)**. The MIO Workshop agreed that Option #3 would be the best approach. Michel Huet also suggested that Terms of Reference be drafted in time for consideration at the 10th CHRIS.

b) It was agreed that four MIO Working Groups be established:
   1) **Ice Information** – John Falkingham
      - use existing Ice Information Object Catalog
      - conduct a WMO/IHO Workshop with clear requirements
      - develop a product spec based on the Common Product Specification Framework contained in NATO WECDIS STANAG (Annex B)
      - recommend display and service requirements
      - provide recommendations for testing
   2) **AIS and VTS** – Lee Alexander
      - based on ongoing simulator and at-sea trials
   3) **meteorological** – Linas Pilypaitis
   4) **tides and currents** – Marc Philippart, Rene Kint and Dan Pillich

c) Other MIO activities that would benefit from coordination included:
   - Continue a liaison with ISO TC211 – Doug O'Brien
   - Develop a IHO publication that deals with MIO matters – Michel Huet
   - Use of the Open ECDIS Forum for MIO discussion, projects, and development – Gert Buttgenbach

George Spolestra brought up the issue that funding for these activities is always a concern. In this regard, it was suggested by Gert Buttgenbach that IHO consider industry participation in IHO standards development as a means to acquire additional funding to support these activities. It was also discussed how IEC membership/ participation occurs.

10. Discussion of new IMO proposals

Chairman stated that he was not aware of any new proposals by IMO that necessitated attention by the MIO Workshop.

11. Product presentations

Charles O'Riley (CHS0 gave a detailed presentation on new hydrographic survey, data processing, and display techniques that have application to MIOI.

12. Determination of targets for the future program of meetings and workshops

At this time, no future MIO meetings are planned. Most work will take place by e-mail, website, and/or FTP site. However, if the IHO/IEC Harmonization Group on MIO (HGMIO) is established, it may be useful to hold an opening meeting sometime in YR 2000.

13. Closing Remarks

Chairman thanked all those attending for a productive Workshop.