

12th CHRIS MEETING
Valparaiso, Chile, 23-25 October 2000

Date : August 2000

Source : TSMAD

**PROPOSAL ON THE FUTURE EVOLUTION OF S-57 AND THE
RELATIONSHIP TO THE ISO TC211 GEOGRAPHIC INFORMATION STANDARDS**

1. INTRODUCTION

A workshop was held in conjunction with the TSMAD/5 meeting in Wollongong Australia in April 2000 to discuss the work of ISO TC211 Geographic Information Standards and its relationship to IHO S-57. In preparation for this meeting, IDON Technologies Inc. of Canada was retained by the IHB and the Canadian Hydrographic service to prepare a report to provide background and to facilitate the workshop. The report presented to the TSMAD/5 meeting in Wollongong as well as a document providing an overview and more detailed technical recommendations that was prepared at that meeting are available separately (www.shom.iho.fr). This document is intended to present an executive summary of the issues and the recommendations of TSMAD to the CHRIS committee.

The TSMAD/5 meeting in Wollongong recognized the requirement for stability in S-57, as well as the desirability of addressing a number of areas in which the current edition of S-57 is deficient that have been identified by the various hydrographic offices and system manufacturers using the standard. The TSMAD/5 meeting identified several of these deficiencies and the new capabilities that need to be added to S-57 to address them (e.g., the ability to encode water column information such as sound velocity profiles and current information requires full three-dimensional data, i.e., multiple z values at a single x,y location, hydrographic surveys require matrix data, full support for the time dimension is needed to encode MIOs, raster support is needed for additional layers such as ice coverage, etc.). These types of requirements are being addressed in the ISO TC211 arena. If S-57 is aligned with the framework of ISO TC211 standards, then the required new components can be adopted from the existing and ongoing work within ISO. There are many benefits to this approach. Using ISO developed components will help to ensure that S-57 and future extensions are in the mainstream of the geographic information industry which will promote more rapid and lower cost implementation of S-57. In addition the environment in which S-57 exists is changing. For example, there is a much higher emphasis on database access and less on data transfer in the entire information technology industry that is affecting many hydrographic offices.

In short, new components for S-57 should not be developed in isolation from the rest of the geographic information discipline. To that end, the TSMAD proposes to align S-57 with the ISO TC211 standards and add selected new components to S-57 based on those standards. This must be done, however, in a way that maintains the stability and backward compatibility of the standard, in particular with respect to the ENC. TSMAD does not recommend transferring any control of S-57 from the IHO to ISO.

2. STABILITY

The primary requirement identified was complete stability of the current ENC product specification and full backward compatibility with respect to any additions or modifications to S-57. Currently, S-57 is frozen and the earliest that any changes may be made to S-57 3.1 is November 2002. The consensus was that this would be too soon to allow changes considering the effect they could have on current implementations of ENC production systems and ECDIS type approval.

TSMAD recommends an indefinite freezing of the current ENC product specification. This can be accomplished by the separation of the product specification into a stand-alone document that is based on S-57 Edition 3.1. In this way, the ENC can remain stable while the standard continues to evolve in order to support other products and requirements.

3. NEW CAPABILITIES

TSMAD proposes to organize a sub-group that will work on the alignment of S-57 with ISO TC211 and the addition of selected new capabilities to S-57 in accordance with the ISO TC211 base standards. The ISO work would be normatively referenced in S-57 as is currently done for other parts of S-57 (e.g., use of ISO8211 encapsulation), but the new capabilities will be an addition to S-57 and remain fully under the control of IHO. This new work would consist of:

- a- register hydrographic component of object catalogue with ISO (IHO will retain full control of the catalogue);
- b- add time dimension and 3D for vector capability;
- c- add Raster/ Matrix capability.

Future recommended enhancements include: add a database access interface, a new encapsulation (e.g. XML, UML), and make minor alignments with respect to terminology, geodetic codes, metadata for network access, and symbolization as appropriate.

4. TASKS

The following tasks are identified as an initial work plan. These are listed according to the priority identified by TSMAD. This priority ranking does not necessarily imply timing since some of the sub-tasks are dependent upon the status of the work in ISO. One must remember that many of these tasks will be addressed through the work of ISO, and that working in a coordinated way should require less effort overall for hydrographic offices.

Task 1 - Register hydrographic component of object catalogue with ISO. This task requires the preparation of a Cooperative Agreement document with ISO TC211 to ensure that IHO retains control. This parallels what was done by DGIWG/ISO with the DIGEST feature catalog. This task ensures that the IHO definitions for hydrographic objects become the definitive definitions for all external applications.

- Task 2** - Reorganize the ENC product specification based on S-57 edition 3.1 as a stand-alone document. This task is entirely editorial and involves the removing of all text that does not apply to ENC, resulting in a stand-alone document.
- Task 3** - Add raster/matrix component to S-57. This involves providing input to ISO to ensure that it will handle IHO's requirements for matrix data such as for soundings, and swath sensor information. After ISO completes its work in two years, it is a relatively simple task to incorporate the new part in S-57.
- Task 4** - Add time dimension and 3D for vector. This task would be very difficult if it were done using hydrographic office resources as a special add-on unique to S-57. However, by incorporating the ISO work the effort can be significantly reduced. The majority of the effort involves ensuring that the new capabilities developed in ISO fit with the existing S-57 vector spatial schema.

Additional tasks can be defined to implement the future recommended enhancements described in Section 3 above. The work on the various tasks could overlap, and many would require the expertise of different people. The overall set of tasks could be accomplished within three years assuming that the current practice of having two TSMAD meetings per year is followed. The actual work should be done in editorial meetings reporting to the TSMAD. This work could start at the first TSMAD meeting in 2001 after endorsement by CHRIS.

The expertise currently available in TSMAD is most likely inadequate for many of these tasks. Hydrographic Offices will have to contribute additional expertise from in-house, consultants or universities for some tasks. This is already being done by some HOs. TSMAD will act as the coordinating body.

5. PROPOSAL

In summary, TSMAD proposes that the CHRIS committee authorize the formation of a sub-group of the TSMAD working group to work on the future evolution of S-57 in accordance with the priorities set out above.
