

**5th IHO-HSSC Meeting
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Paper for Consideration by HSSC 5

S-100 Maritime Boundary Exchange Product Specification

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| <i>Submitted by:</i> | Australia |
| <i>Executive Summary:</i> | To establish a Maritime Boundary Exchange Product Specification based upon the S-100 Universal Hydrographic Data Model, assign a specification number within the S-10x series, and for the draft standard to undergo assessment via the IHO standards development path, including technical review of the standard by TSMAD once initial drafting is completed. |
| <i>Related Documents:</i> | TSMAD26/DIPWG5 11.10A and 11.10B |
| <i>Related Projects:</i> | None |

Introduction / Background

This proposal is to develop a product specification for encoding and exchanging digital maritime boundary information; including maritime limits, zones and boundaries as described under the United Nations Convention on the Law of the Sea (UNCLOS). The specification is in response to a growing necessity for IMO Member States to exchange maritime boundary information in a common digital format. The specification has been developed under the technical supervision of TSMAD, based upon broad user requirements defined by a request from the UN General Assembly in 2004. The specification has been drafted by Geoscience Australia with guidance from TSMAD and is in an advanced stage of development, with drafting forecast for completion by March 2014.

The S-10X maritime boundary exchange product specification is designed to provide a suitable format for the exchange of digital vector data pertaining to maritime boundaries. The specification is customised to ensure the unique features and attributes of maritime boundary information can be exchanged between States. The specification is also intended to be suitable for lodging digital maritime boundary information with the United Nations for purposes related to UNCLOS. The specification addresses a need for a non-proprietary format that is both open standard and sufficiently flexible to meet the needs of States.

The specification was designed with two primary criteria: it should not, by its content or attribution, attempt to form a prescriptive interpretation of UNCLOS; and the specification would contain sufficient precision and attribution to be utilised for many platforms and applications. State Practice and the current trends in geographic information management and dissemination provided the roadmap for development.

The specification was developed in part from a previous request from the UN Division for Oceans and Law of the Sea (DOALOS) that digital datasets submitted for continental shelf submissions should consist of strings of vertices rather than curve types (e.g. geodesics) between turning points. DOALOS further requested all geometries should be directly visible, not encapsulated in a proprietary data format. The specification addresses this request by recommending curves and surfaces be densified with vertices, published in an open source digital standard.

Salient features of the specification include:

- Rigorously defined positioning,
- Strong connection of data back to source documentation,
- Features and attribution are derived from UNCLOS, however the specification is sympathetic to State sensitivities by its non-prescriptive nature,
- Fulfils the same role as charts in UNCLOS by virtue of its inclusion in the IHO's S-100 Universal Hydrographic Data Model,
- Users of the specification will be able to exchange complex and large maritime boundaries datasets across a number of platforms and applications.

Analysis/Discussion

Is the subject addressed by the paper within the scope of IHO objectives?

This specification is intended to provide a suitable format for the exchange of digital vector data pertaining to maritime boundaries, limits and zones of States. As features on charts and maritime boundaries are strongly interlinked, charts form the basis of decisions regarding many maritime boundaries and are an integral part of their representation and exchange. However, a chart cannot adequately represent the level of detail required. The specification therefore seeks to create a digital format with the necessary geometry, precision, and attribution features to act as the format for the exchange of information between States and for depositing electronic maritime boundary information with the United Nations for UNCLOS purposes.

Is the subject of the paper within the scope of an item of the current IHO work programme?

This paper seeks to have further development and adoption of this draft specification included within the IHO work programme. Given that S-100 is new, and the potential benefits it can offer are only just starting to be realised by other organisations, it is reasonable to expect new product specifications will progressively emerge. The IHO should be responsive to emerging requirements within the scope of overall IHO objectives.

Do adequate industry standards exist?

At present there are no industry standards capable of fulfilling the role of the specification. In addition, the UN Division for Oceans And Law Of the Sea (DOALOS) requested that data submitted to the UN for UNCLOS purposes should not be in a proprietary format, and that the geometries are clearly visible (i.e. not encapsulated in proprietary coding).

Do the benefits justify the proposed action?

Addition of a new product specification within the S-100 series will strengthen the wider adoption of S-100 and improve data exchange within the maritime domain and related fields.

Are there any potential cost impacts on the maritime industry, Member States or other involved parties?

There is expected to be an overall cost benefit to the maritime industry and Member States. By using a digital format it is envisaged that the cost of implementing the specification compared with existing methods (paper charts and maps) would lead to a decrease in the overhead of exchanging and depositing maritime boundary information.

Use of the specification by a Member State must not be mandatory.

Conclusions

The S-100 Universal Hydrographic Data Model is the natural home of the maritime boundary exchange specification because of its status in respect to nautical charting. Within UNCLOS charts are assigned certain roles, as a full component of an IHO digital charting standard the specification will be consistent with the intent of the Convention.

The specification fulfils a role that is consistent with the aims of S-100.

Recommendations

That:

1. the Maritime Boundary Exchange Product Specification be accepted as an IHO Product Specification based on S-100 and assign an appropriate S-100 identifier;
2. a work item be added to the TSMAD work plan to provide technical assistance for the Specification under the direction of subject matter experts from IMO Member States, and;
3. Geoscience Australia be made responsible for maintenance of the Specification as required at the request of IMO Member States.

Justification and Impacts

Development of the specification is already underway between a number of Member States. Australia requests HSSC assign TSMAD the action of providing technical support to finalise the work as and when required. The majority of the activity is to be done out of session by liaison between interested Member States.

TSMAD is the sole working group within HSSC suitable to provide technical assistance because of its expertise in creating and maintaining digital transfer standards. Advice pertaining to any other aspect of the Specification will be the preserve of individual Member States.

Interested Member States have provided staff time to draft the Specification at no cost to the IHO; for this reason there is no requirement for external consultants. No plans exist for requesting funding from the IHO now or in the future. Assistance from TSMAD will take the form of technical advice, editing and commentary on the Specification, and should not impact

on the other activities of the working group. Maintenance of the Specification once published is expected to be minimal.

A draft Product Specification was circulated to interested Member States at TSMAD26. Based upon initial discussion within TSMAD it is proposed to continue development independent of meetings of the working group, and to report back at TSMAD28 in April 2014. The Specification is expected to be finalised in time to be submitted to HSSC6 for adoption.

As the Specification will use the Geographic Markup Language (GML), it is dependent on the completion of the S-100 GML specification. The present timeline for the GML specification is acceptable and should not pose any problems with the maritime boundary specification.

Action Required of HSSC

The HSSC is invited to:

- a. endorse the Maritime Boundary Exchange Product Specification as an IHO Product Specification based on S-100
- b. assign an appropriate S-100 Product Specification identifier
- c. add a work item to the TSMAD work plan for TSMAD to provide technical assistance for the Specification under the direction of subject matter experts from IMO Member States
- d. agree to Geoscience Australia being responsible for maintenance of the Specification as required at the request of IMO Member States.

Annexes:

- A. Maritime Boundary Exchange Product Specification Proposed Work Plan - 2012 to 2014
- B. IHO Standards Development - Progress Report Diagram

Annex A

Maritime Boundary Exchange Product Specification Proposed Work Plan - 2012 to 2014

1. The Product Specification is approaching the final drafting stage. Once this is completed it is proposed to submit the Product Specification to TSMAD for a technical appraisal to ensure consistency with the S-100 data model.
2. Following this the specification will again be circulated to stakeholders for comment.
3. Planned submission to HSSC for implementation.

Tasks

- A. Complete draft product specification – Geoscience Australia in consultation with stakeholders
- B. TSMAD complete technical appraisal of Product Specification - TSMAD
- C. Consultative process – Geoscience Australia
- D. Submission to HSSC6 for adoption

| Task | Work Item | Priority H-high M-medium L-low | Milestones | Start Date | End Date | Status P-planned O-ongoing C-Completed | Contact Person | Affected Pubs/ Standard | Remarks |
|-------------|----------------------|--|------------------------|-------------------|-----------------|--|-----------------------|--------------------------------|----------------|
| A | Complete draft | L | Draft document | Jun 12 | Mar 14 | O | Geoscience Australia | N/A | |
| B | TSMAD tech appraisal | L | Technical approval | Mar 14 | Sept 14 | P | TBD | N/A | |
| C | Consultation | L | Stakeholder feedback | Mar 14 | Sept 14 | P | Geoscience Australia | N/A | |
| D | Implementation | L | Implementation and use | Nov14 | | P | TBD | N/A | |

Annex B

IHO Standards Development - Progress Report Diagram

