

# Minutes of the Sixth S121 Project Team meeting

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*VOIP Teleconference, October 30<sup>th</sup>, 2018*

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## Abstract

The main goal of this meeting was to review the progress that the project team has made and plan ahead.

## Acronyms, Terms & Definitions

- ABLOS: Advisory Board on the Law of the Sea
- DOALOS: Division for Ocean Affairs and the Law of the Sea
- FIG : *Fédération Internationale des Géomètres (International Federation of Surveyors)*
- LADM: Land Administrative Domain Model (ISO 19152)
- HO: Hydrographic Office
- HSSC: Hydrographic Service and Standards Committee (of the IHO)
- IHB: International Hydrographic Bureau
- ISO19152: ISO 19152 Land Administration Domain Model
- MLB: Maritime Limits and Boundaries
- MSDI: Marine Spatial Data Infrastructure
- OGC: Open Geospatial Consortium: an international voluntary consensus standards organization
- UNCLOS: United Nations Convention on the Law of the Sea
- S100: IHO S100 The Universal Hydrographic Data Model
- S121: S121 Product Specification on Maritime Limits and Boundaries

- S121 Data Model: The foundation portion of the standard enabling States to encode their MLB in a digital format
- S121 Encodings: Technical descriptions defining how the information stored in the S121 Data Model can be reformatted programmatically to generate the S121 Exchange Formats
- S121 Exchange Formats: The file formats used to express the information contained in the S121 Data Model
- S121 Feature Objects: The S121 standard components used to describe the MLB core objects. These features objects are attributed based on whether they are location, limit or zone, and they can be described conceptually or spatially by points, curves, surfaces, or by text. They are recorded in the S100 Register.
- S121 Information Objects: The S121 standard components used to describe administrative, source and party objects.
- S121 Objects: There are two main types of objects, S121 Information Objects and S121 Feature Objects.
- S121 Product Specification: A standardized document used to provide a detailed description of a **dataset** or **dataset series** together with additional information that will enable it to be created, supplied to and used by another party.
- S121 PT: S121 Project Team
- S121 Use Cases: Practical usages that will be made of the standard. These S121 Use Cases generally lead to the definitions of specific S121 Encodings, and S121 Exchange Formats
- TOR: S121 Project Team Terms of Reference

## Participants

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## Acknowledgments

The chair and vice-chair of the Project Team wish to acknowledge the contributions made by the Project Team members both in preparation and during this meeting.

The S121PT wants to especially thank:

- Mr. Jonah Sullivan for his help and contribution while acting as the S-121 Project Team Assistant Secretary
- Canadian Hydrographic Service (Canada) and Geoscience Australia's active contribution to the S-121 Project Team

Thanks for all of your work, if you have any request or inquiries we will be happy to answer them.

Regards,

Mark Alcock (S121PT Chair)

Sébastien Durand (S121PT Vice-Chair/Secretary).

## Agenda

The agenda can be accessed here: [http://www.s-121.com/w/images/d/dd/S-121\\_PT6\\_Agenda.pptx](http://www.s-121.com/w/images/d/dd/S-121_PT6_Agenda.pptx) and was accepted by the project.

## S121 Agenda Item: Opening and Administrative Arrangements

The session was opened by the Chair, Vice-chair and by DOALOS, welcoming participants. The decision was made to keep the meeting as informal as possible to promote open communication.

## S121 Agenda Item: Approval of the Agenda

The agenda was approved by all members

## S121 Agenda Item: Review of outstanding actions from last meeting

### Report to the S-100 Working Group

Jonathan Pritchard has been regularly reporting to the Chair and wider Working Group and attending the working group meetings. Current efforts are on the ingestion of features into the S-100 registry. Regular progress reports to S-100 and HSSC should continue.

### HSSC Submission

S-121 standard version 1.0 was delivered to HSSC, there are further actions required to finalise the standard. DOALOS didn't attend HSSC, though HSSC has reduced the requirement for attendance to be face-to-face. The standard approval process has been streamlined into a 2-step process, a more incremental approach. No actions arose from the submission of the standard to HSSC.

## Implementation Examples

### **Australia**

It is important to test the standard with example data. Australia's experience is that a fuller implementation discovered issues that were not found in a simple implementation. Australia has made an ESRI Geodatabase XML available on the S-121 website. Australia has developed some python scripts to help populate the data, especially the relationship classes; these scripts are available on request.

### **Canada**

Canada is actively implementing examples of the standard: three different location sites. A video was presented at the UN-GGIM meeting; it will be shown to this group and should be publicly available soon. Work on the implementation of the standard is ongoing, without changes to the standard. Canada is assisting the US with their implementation example

### **USA**

Currently loading sample data into the schema, example data should be available soon.

### **DOALOS**

Engagement with some smaller states in the South Pacific to develop implementation examples would be beneficial.

## Coordinate formats used by member states

Information on the DOALOS website is comprehensive and represents what has been delivered by member states. Examples were sent as well.

## Upcoming events and strategic engagement

Review of engagement with other working groups and forums

UN-SPLOS ended early; the side-event did not occur.

UN-GGIM plenary and Marine Geomatic Information Group strongly endorsed S-121. This engagement will become important when promoting implementation of the standard.

Upcoming meeting of ISO TC211 in Wuhan China in 2 weeks will include a “Stage Zero” study of ISO-19152. A first proposed draft has been created as an input for the meeting; it needs to be reviewed by this project team. Tony Pharaoh will be making a presentation to the plenary updating the progress of this standard and others.

**ACTION:** Editorial Board to review Stage Zero study of ISO-19152 before December meeting.

Upcoming UN-WGIC meeting in Daqing China in 3 weeks, high-level participants is a potential forum for engagement. There will be attendees from Canada, Australia, Chair of MSDI-WG, and IHO SG: they will be briefed on the issues. S-121 events will be mentioned in information pamphlets distributed to attendees.

## Geodesic Densification

Australia has reviewed the ESRI tool to densify geometries, it has been greatly improved, it will be the focus of Australia’s efforts. A draft document will be available at the December meeting. Canada has been working with Geocap to add this feature to their software suite. Geocap and ESRI software are expensive; an open-source implementation is desirable. The capacity to create both geodesic and loxodrome lines are important.

The S-121 standard does not include geodetic arcs or geometries, these geometries might be included for states that want to implement geodetic arcs.

The open-source GeographicLib has been used by Australia in the past, the ESRI tools now create the same output as the open-source version. The creation of geodetic arcs or buffers with ESRI software hasn’t been tested; these functions are found in the Geocap software and are much faster; this makes it unlikely a tool will be developed.

Australia is developing an open-source implementation of GeographicLib to densify along geodesic or loxodrome geometries. This is an important activity for deposits to DOALOS to ensure integrity of the deposited data. GeographicLib has been implemented in several FOSS products, including PostGIS. The OGC Pilot Project should have an open-source implementation, hopefully leveraging this work.

**ACTION:** Australia to present densification tools and documentation at the December meeting.

This technical detail could be added to a future version of the IHO TALOS Manual and the wider IHO community. Preliminary discussions with the IHO SG regarding the TALOS Manual are already underway.

## S-121 Implementation

Implementation and Encoding Specification Documentation is being created; it is a complex task to make it look simple even though there is a lot behind it.

**ACTION:** Editorial Board to review and finalise Encoding Specification Document before December meeting.

**ACTION:** Doug O'Brien to ensure the Encoding Specification Document meets the minimum mandatory requirements defined at PT5 December 2017.

### Use Case 1:

Extractions and overlays are in GML/AML (like S-57)

### Use Case 2:

Deposit with DOALOS or National Legislation, structural elements are in an ASN1 script in development. There will be a minimum format for deposit with DOALOS developed.

The output document is organised into blocks with:

- metadata (cover)
- Governance or preamble with a single BAU (one for each document or legal motion)
- Data types (tabular format or linear format)
  - Attributes
  - geometries

When making a deposit, it is a subset of the capabilities of the standard. The information in the database will be maintained, but the deposit will be a small subset of the database elements.

### Use Case 3:

Due publicity GML/KML, allowing overlay or an image plus metadata.

### Multiple Languages

Canada is working to support the bilingual aspects of the standard using "locale". Will deposits have two languages in the same document?

**DECISION:** Mixing languages increases complexity; individual documents should be in a single language.

GML can already handle multiple locales, as can S-100. Legal documents are usually simplified and only try to do a single thing, including being in a single language.

Mandatory Fields have been highlighted and should be enforced.

## S121 Agenda Item: Registration of features to S-100

After HSSC this has been one of the most important activities of the working group.

Canada and IIC have been working together on S-100 Registry Ingest. All of the features and attributes in the S-121 model are being added to the S-100 ISO feature registry: all of the feature content.



Product specifications, feature attributes, associations, are submitted to the IHO Registry Manager, who creates a feature catalogue (XML bindings between feature, attributes, and their associations). This is a machine-readable description from all the standards documents.

S-99 is the management of the registry, how to ingest into the registry. Jonathan Pritchard is the representative of the S-121 Working Group for submission to the registry. Re-use of features or attributes already in the registry is encouraged.

Supersession of existing features: Data Classification and Encoding Guide (DCEG) Section 16 sent out for review, due in mid-December

Compilation of input to registry (S-121 DCEG Document) has been created and needs to be reviewed by Editorial Board

**ACTION:** S-121 Editorial Board to review the DCEG before December meeting.

**ACTION:** Draft 1 of Feature Catalogue XML completed mid-November (available for OGC Pilot Project)

**ACTION:** comparison of XML and Text Documents is required by Editorial Board and any interested subject matter experts.

The XML feature catalogue should be used to revise the Enterprise Architect UML model to update the tagged items in the UML model. Other teams are using Enterprise Architect and the company that publishes the software is working to support this working group and others.

## S121 Agenda Item: Implementation Examples

### Australia

Australia's implementation has previously been demonstrated. A more complete implementation of all MLBs has found several issues that a smaller example had not identified.

Demonstration of Australia's national continental shelf legislation and comparing it to the text-based output they developed.

WGS84 is a reference frame rather than an epoch such as ITRF2000, geodesists prefer the latter. When a limit is defined by a treaty, the coordinate's original reference frame is included, along with a second table that has every point transformed to a common reference frame as required by DOALOS.

**ACTION:** Carry forward the reference frame issue to the December meeting

The text encoding document, while still under development, is available upon request.

A more developed document will be presented at the meeting in December.

The governance object could be a text blob to meet the expectations of a national legal process.

The ability to import the text document into a database is being developed, but the text document is a lossy format, it doesn't contain all the information that would be in the database, only what is required for the legal functions.

### Canada

Presentation of Canadian Implementation Example video.

## UK, France, USA

Publicly available datasets are being ingested into the S-121 format by the S-121 Editorial Board with the cooperation of each state.

There is not necessarily enough information to fully attribute the data. Public data is complete information for deposit with DOALOS, but not able to fully take advantage of the standard.

These examples provide good tests of the ability to import data into the S-121 model and raises previously unknown issues.

Example datasets will be presented at the December meeting if desired.

UK, France, and USA indicated willingness to collaborate.

## Call for others

Request to contact S-121 WG Chair with desire to contribute example datasets.

## S-121 Agenda Item: Exchange Formats

This is the main agenda topic for the December meeting.

Summary of use cases explained in S-121 Encoding document by Doug O'Brien

AML GML overlay layer (use case 1)

Deposit [legal text format] (use case 2)

Should be ingestible by S-121 systems when downloaded from DOALOS (human and machine readable).

Public Dissemination Subset (GML/KML) (use case 3)

## S121 Agenda Item: OGC Pilot Project

### Status

The timeline has slipped due to administrative constraints.

The ingestion of features into the S-100 registry provides good positioning for the pilot project.

Seven-month pilot project has been broken into two phases. Phase 1 (database and software-specific implementation and XSD schema for implementation in any software) ends 31 March 2019; Phase 2 (interoperability and text output) ends May-June 2019.

The delay has allowed the standard to mature and increased the ability for participants to contribute meaningfully. There is still room to add to this pilot project.

The pilot project does not stop work by the S-121 Project Team or individual states, development continues.

Australia desires to release a new public dataset in S-121 format in 2019.

**ACTION:** OGC would like example data as soon as possible to scope the work.

## Call for sponsors

CFS will end before December meeting, but still open to additional sponsors. Also includes contributions-in-kind.

Call for participants

CFP will be open at December meeting.

## S121 Agenda Item: Upcoming events and strategic engagement

S-121 Face-to-face meeting, New York, USA, December 2018

DOALOS has made the necessary preparations for the meeting. Robert Sandev has offered to create invitations for visa purposes.

Skype for business can be used for teleconference: connection details should be sent to all participants before the meeting. Doug O'Brien offered to host a zoom meeting in addition to skype for business.

**ACTION:** Doug O'Brien to coordinate with Robert Sandev to test of Zoom and Skype for Business

**ACTION:** S-121 PT7 Participants list shall be forwarded to Robert Sandev for security passes Thursday before the meeting.

OGC Pilot Project finish, April or May 2019

Pilot Meetings

Call for sponsors

Call for participants

Participants teleconference

Other events and forward planning

**ACTION:** Editorial Board to ensure S-121 representation at next OGC meeting (North Carolina USA 10-13 December 2018)

**ACTION:** Robert Sandev to engage with UN-GGIM MSDIWG