Paper for consideration by NIPWG 5

Outcome of the S-100WG TSM Meeting

Submitted by:	NIPWG Chair, Portolan Sciences
Executive Summary:	Brief overview on the main results of the recent TSM meeting
Related Documents:	
Related Projects:	S-100

Introduction / Background

The TSM is a sub-team of the S-100WG. Contrary to usual S-100WG meetings, the number of participants is limited and they are mostly technical experts. The main subjects of the TSM are technical questions and solutions to these, and which results will be presented to the whole S-100WG at a later stage.
The TSM team is conducting implementation tests to investigate if ideas are feasible and if the results justify further work. This enables the S-100WG to prioritise their work items and reduce wasting time on unfeasible items. The TSM meets once a year. The last meeting was in September 2017.

Analysis/Discussion

The main discussion point was the determination of the prioritised portrayal scripting support language. The two options are LUA and XSLT. Although LUA provides more flexibility to implement portrayal requests, the use of XSLT is, overall, more common and supported by the W3C consortium. The outcome of a lengthy discussion was that the next S-100 edition will offer the use of both languages. The product specification should specify which portrayal script language should be used.
It has been investigated that future ECDIS should be able to work with ENC and other S1xx products in parallel. If that procedure would not have been harmonised, ECDIS manufacturers might be forced to develop proprietary solutions that would not be harmonized resulting in unexpected situations, and likely more ECDIS anomalies.

KHOA presented an update on improvements of the GI Registry functions, including producer agency code register. The interface has undergone comprehensive style improvements and the release is scheduled for spring 2018. A revised structure of the S-100 registry including a 'concept register' and 'feature dictionary' are also planned – the implications for NPUB modelling and product specifications are TBD.

The identification of features by providing Marine Resource Name (MRN) has been discussed. Issues noted during the S-100 adaptation process were:

- XML syntax rules do not allow the '**:**' character in certain items such as attributes of the built-in XML type ID, and that when used in XML tags the '**:**' character is a namespace separator.
- As a consequence, MRNs cannot be used as the value of any XML attribute of type ID (in particular, they cannot be used as the values of gml:id attributes, which are mandatory in the GML specification), nor can they be used in XML tags. This means they cannot be used directly as record identifiers in GML datasets, nor can they replace camel-case codes. (They would have to be made additional object attributes and/or transformed in some way.)
- It should be noted that the PortCDM specification makes heavy use of MRN for object (message) identifiers (as object attributes, not XML attributes or XML IDs), but this specification does not use GML but an 'ordinary' XML format which is product-specific and not conformant to S-100 Part 10b.

It was decided to recommend to HSSC that the IHO should develop a management process for the urn:mrn:iho name space, including draft sub name management policy, that member states and other organizations with name space under the urn:mrn:iho name space can use as a starting point for their name space management policy.

Several GML encoding limits of the current S-100 edition have been addressed:

- CircleByCenter, ArcByCenter geometries are not defined in ISO19107 (added to S-100 in Edition 3.0.0, no change now)
- The current S-100 profile doesn't support
    - DynamicFeatures
    - Topology
    - Linear Referencing

- Coverages (S-100 expects to use HDF5 – see S-100 Part 10c)
- CRS Definition.
- Incremental updates (the S-122/S-123 approach was presented, see below for details)
- Spline geometry (an S-100 maintenance proposal for Edition 4.0.0 was prepared, see below for details)

Additions to Part 10b (GML Encoding) describing conventions for standardized software for processing GML datasets were described. The updated Part 10b have been proposed inclusion in the next edition of S-100.

The draft Interoperability Specification (since assigned the IHO standard number S-98) was presented. KHOA and KRISO have worked on preliminary explorations of its use. The draft of S-98 has since been circulated for comments to the S-100 working group and others.

The incremental updates for GML data formats approach as being used in S-122/S-123 was presented. The relevant TSM5 paper (TSM5-4.11 on the TSM site) also includes an analysis of other possible approaches. There was some discussion of whether different update methods would work better for different data products (e.g., the 'whole-dataset replacement' for products such as weather, navigational warnings). There was no objection to the "whole-object" approach which is currently specified in S-122 and S-123, though there were doubts regarding data volume especially as regards geometry (coordinates). There were some questions about whether and how updating spatial objects (specifically, long coordinate strings for curves and surfaces) could be made more efficient. **The group wanted NIPWG** to resource further work on updating GML datasets, including testing of the approach proposed in S-122 and S-123 in test-beds and reporting on the results. The S-100 WG Chair will respond accordingly to NIPWG leadership.

Extensions to the S-100 spatial model for supporting spline geometry were proposed. Spline geometry is expected to be used by S-412 weather overlays, and similar products. The extensions have been proposed for inclusion in the next edition of S-100. Spline geometry is expected to be of peripheral interest to NPUB modelling since use cases in NPUB domains have not been identified.

An update to S-100 Metadata was also proposed, which bring the metadata more in line with the latest version of ISO 19115. Also included in the metadata proposals were extensions and corrections to various existing classes and attributes.

Reports were also presented from the various test beds, including SPAWAR, ROK and Furuno's involvement in STM Validation Project.

Justification and Impacts
The work of the TSM may influence the development of the next S-100 edition. Usually, NIPWG proposals on S-100 improvements will be considered by the TSM as well.

Action required of NIPWG5
The NIPWG5 is invited to:

a. note this paper
b. discuss the resources to support test on updating GML datasets.