Paper for Consideration by TSMAD

S-100 GML Profile Progress

Submitted by:	UK
Executive Summary:	This paper updates TSMAD on the development of an S-100 GML Profile.
Related Documents:	a) S-100 GML Profile draft 1.0
Related Projects:	1. N/A

Introduction / Background

1. At TSMAD 25 the UK presented progress in developing an initial GML profile for S-100. As this work was still ongoing the UK took an action to provide the complete profile and documentation to TSMAD for comment. This was done during February 2013 and this paper discusses some of the items to consider and next steps.

Analysis/Discussion

2.   The draft S-100 GML Profile provides a basic GML profile supporting simple vector datasets. For its development a route exchange example product specification was used. Following comments the UK notes the following areas for further consideration;

- Attributes on spatial objects – it is currently not clear how attributes on a spatial object such as SCAMIN can be catered for as in the S-100 spatial schema. This needs to be clarified or it specified that the profile does not support this part of the spatial schema.

- Associations, Aggregations and Compositions - although possible, it is not sufficiently clear within documentation how associations, aggregations and compositions should be modeled in UML and reflected in application schema conforming to the profile. This part of the profile document needs expansion.

- Updating – the profile does not currently support updating. Extension to support this should be explored. The OGC WFS-T specification may provide useful input.

Jeppesen have also provided comments provided at Annexe A of this paper which should be considered. The UK has not as yet been able to review these comments at the time of drafting this paper.

3. The group working on S-100 portrayal commented that the S-100 GML profile could be used as the input schema for S-100 portrayal. However there might be some issues to address and the encoding and input models might need to diverge in the future to cater for other encodings and changes to the GFM.

4. The draft GML profile can now be used in product specifications which are in development the UN DOALOS limits and boundaries specification and the MPA product specification are likely candidates. In addition the UK is using this profile for an Aids to Navigation product specification as part of an EU project called Accseas. It could also support a route exchange format for ECDIS which could be specified in future IEC or ECDIS performance standards.

Conclusion

5. This paper reports on progress with the S-100 GML profile. It proposes that interested parties form a small group to develop this profile and enhance its documentation. Feedback from initial use of the profile as described above will be useful and may raise other items to consider. One of the greatest advantages of GML is that schemas and models can be created easily and displayed in existing viewers. Therefore GML may be a means of demonstrating S-101 before true viewers are available.

Action Required of TSMAD

- To note the progress and invite TSMAD members to review and comment on the draft GML profile and its documentation

- To invite interested parties to form a small group to further develop the profile and its documentation with a view to inclusion in S-100 in the future

Annexe A Comments from Jeppesen

Comments on the Draft S-100 GML Profile

Jeppesen
26 April 2013

We thank the UKHO and Snowflake Software for the opportunity to comment on this work. The comments below refer to the documents and profile files circulated in February 2013, after TSMAD 25.

1. We support the principle of making one or more GML profiles for S-100 and consider this work important for interoperability.

2. In its current form the profile appears to be influenced more by GML than S-100. The structure diverges somewhat from the S-100 GFM, and it also includes additional elements and constructs stemming from GML but not part of S-100. The compliance levels defined in section 4 of "S-100 GML Profile" [1] are insufficient to express the relationship to S-100.

3. The profile should be packaged as two packages – a core that conforms strictly to S-100, and an extensions schema in a different package (in different namespace and XSD file).

4. A walkthrough of the instructions in the user guide [2] for generating an XML schema from an Enterprise Architect UML was attempted but produced run-time errors. The cause is probably S-100 constructs not envisaged by ShapeChange.

5. The process and settings described in the documentation for generating XSD files from Enterprise Architect should be verified with a more recent version of Enterprise Architect (currently in Ver. 10).

6. We understand this to be a work in progress and have not attempted to compile a comprehensive list of differences from S-100, however the following points were noted:

    a. structural changes e.g. around S100_GF_InformationType, S10_GF_FeatureType, S100_GF_NamedType (compare figures 3 & 4 in the documentation of version 1.2);

b. temporal attributes as compared to the impending new temporal model for S-100;

c. feature associations, information associations, and association attributes; the GML conventions could probably be made less cumbersome and easier for XML tools and XSLT;

d. an update format should be addressed; the discussion in section 6 of reference 1 is noted and ideas from web services can probably be adapted but it should not be left to web service functionality.

7. An analysis of convertibility between this and other encodings (especially the ISO 8211 encoding for S-101), is needed to minimize future schema integration and data mapping problems.

8. It is important to evaluate and test any profile by creating test datasets for a variety of application domains. Briefly, create test datasets, evaluate their expressiveness (i.e., ability to model all the relevant constructs in an application schema), their usability with off-the-shelf GML and GIS software, and by using them in application prototypes such as MapServer and BLAST DMRG.

9. We may be able to test the S-100 profile by attempting to convert the recently developed SNPWG MPA and BLAST DMRG schemas and datasets (which are already in GML).

References

[1] S-100 GML Profile. Distributed with S-100 GML Profile package, February 2013.
[2] User Guide: Declaring S-100 GML Profile within S-100 Application Schemas. Distributed with S-100 GML Profile package, February 2013.
[3] Development of a GML Profile for S-100. TSMAD25-4.3.12.