Paper for Consideration by S-100WG

GML Schemas in Exchange Sets

Submitted by:	IIC Technologies
Executive Summary:	GML Schemas in Exchange Sets
Related Documents:	S-100 Edition 5.0.0
Related Projects:	S-100 Part 10b revision, S-100 Part 4a Exchange Set Metadata

Introduction / Background

The latest revision to S-100 Metadata contains a detailed schemas and description of the content of S-100 Exchange Sets. This includes delivery of S-100 datasets for different product specifications, supplementary files, feature, portrayal and interoperability catalogues. There is currently no mechanism for delivering GML Schemas defining content of datasets encoded using Part 10b GML.

Analysis/Discussion

Under S-100 Part 10b every product specification using the GML Encoding Part 10b uses the S-100 GML Schemas and develops an individual application schema specific to the product specification. This application schema is an XML (GML) Schema which matches the structure of the product feature catalogue but may place additional restrictions on values or types within its schema.

There is currently no method for transporting the GML Schemas for a product specification within an exchange set and no way, therefore, for an implementing system to verify either:

1. Which GML elements correspond to which elements of the feature catalogue
2. The correct syntax of any GML dataset presented to it in the exchange set.

One of the major advances S-100 implements is machine-readable configuration files, all of which conform to some kind of (normally XML) schema. This enables easy syntax checking[1] of any dataset purporting to conform to such schemas. One of the advantages of GML is that it enables a tight definition of data, some of which is not easily achievable within the feature catalogue schema.

There is no general "S-100 GML Schema" and without the product specific GML Schema the implementation of compatibility with arbitrary GML S-100 datasets will be extremely challenging for OEMs.

Recommendations

This paper proposes the addition of "GML Schema" to the S-100 Exchange Set Catalogue enumeration S100_CatalogueScope (which already contains featureCatalogue, portrayalCatalogue and interoperabilityCatalogue). This will allow GML Schemas for product specifications to be packaged in exchange sets as appropriate to their contents and enables implementing systems to perform basic XML validation on delivered datasets to establish basic conformance prior to import into the system SENC.

Justification and Impacts

S-100 enables the use of machine readable files for system configuration and exchange of both data and the structures which define its contents. All XML based data should be validated prior to use by an implementing system and it is expected that both exchange set metadata and the existing XML catalogues delivered to an implementing system will be validated for their conformance to the XML schema prior to use. Without delivery of the GML Schema for GML encoded product specifications this is impossible and could lead to a system incorrectly interpreting GML data delivered to it which is wrongly encoded. Although all GML data should be validated by the data producer prior to distribution this can

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[1] This is underlined not content checking or data validation. Syntax checking only verifies that presented data matches the standardised form defined by S-100 and should be a pre-requisite for its import (which may have its own "validation" processes.)
Note: FOR REASONS OF ECONOMY, DELEGATES ARE KINDLY REQUESTED TO BRING THEIR OWN COPIES OF THE DOCUMENTS TO THE MEETING

not be guaranteed and an implementing system needs to be able to establish any issues prior to the dataset being installed.

Action Required of S-100WG

The S-100 working group is asked to:

1. Approve the addition of "GMLSchema" to the S_100 Exchange Set catalogue enumeration S100_CatalogueScope and the addition of amplifying comments in the text concerning the transport of such schemas for all GML specified products.

2. Note (1) in the analysis section of this paper remains an open problem in S-100, that the mapping between the feature catalogue and GML Schema elements is not explicit. It is hoped that a separate proposal for Part 10b will address this shortcoming and provide a normative mapping between the two for unambiguous GML representation of feature data.