

Paper for Consideration by S-100WG**Proposals to improve machine readability in S-100**

Submitted by:	Canadian Coast Guard, Korean Hydrographic and Oceanographic Administration, and Korea Research Institute of Ships and Ocean Engineering
Executive Summary:	This paper seeks an in-principal approval to carry out the work need to add multilingual support to S-100 support components, mainly various XML catalogues, required by MS and user communities.
Related Documents:	S-100
Related Projects:	Any S-100 Product Specifications

Introduction / Background

Within S-100 some ambiguities exist that may impact overall machine readability. For example in both metadata and data models (feature catalogues) file references are commonly modelled as character strings. It is then up to implementors to add code that identify an attribute as a file references. This paper seeks to propose guidance be added in S-100 to improve consistent use of the framework and therefore give implementors greater predictability and thus improve overall machine readability.

Analysis/Discussion

Issue # 1

Within S-100 there is no format given for how file references should be encoded, making this practice ambiguous and a potential issue for achieving full machine readability in metadata and feature catalogues. This is due to the possibility of the various product specifications implementing file references in different ways. It is advisable to add guidance for how S-100 compliant product specifications should create file references.

The Internet Engineering Task Force (IETF) has created the 8089 standard to provide a framework for specifying references to file, both local and non-local, using URIs. Since S-100 contains URI as a specific attribute type derived from character string, it would be possible to utilize the 8089 standard as the means for capturing file references. This approach has the advantage that no new data type is needed and additional guidance within

relevant parts of S-100 seems to be sufficient to provide an unambiguous method for referencing files within S-100 based product specifications.

Recommendation # 1

Add guidance to S-100 Part 1 – Conceptual Schema Language, 1-4.6, that all file references should be URI attribute types and follow the syntax in RFC 8089 for how to reference files.

Example URIs

Local files:

A traditional file URI for a local file with an empty authority. This is the most common format in use today. For example:

* "file:///path/to/file"

The minimal representation of a local file with no authority field and an absolute path that begins with a slash "/". For example:

* "file:/path/to/file"

Non-local files:

A non-local file with an explicit authority. For example:

* "file://host.example.com/path/to/file"

Reference to this method should also be added in Part 4 – Metadata and all cases of file references in metadata should be updated to comply with this guidance.

Reference to RFC 8089 should be added to the normative references in Part 1, 1-3

Issue # 2

Currently the Feature Catalogue data model does not distinguish between product specification identifier and product specification name. For example, the S-101 feature catalogue includes only product specification identifier:

```
<S100FC:name>S-101</S100FC:name>
```

While S-129 feature catalogue includes both identifier and name:

```
<S100FC:name>S-129 Under Keel Clearance</S100FC:name>
```

The identifier and name should be encoded separately in to enhance machine readability to better match with the data model of portrayal catalogues. It includes a product identifier attribute;

```
<portrayalCatalog xmlns:xsl="http://www.w3.org/2001/XMLSchema" productId="S-123" version="1.0.0">
```

Recommendation #2

To harmonize between the feature catalogue and portrayal catalogue models, and attribute productId should be added to the feature catalogue along with sufficient guidance. This would give a result like below;

<S100FC:name>Marine Radio Services</S100FC:name>

<S100FC:productId>S-123</S100FC:productId>

Conclusions

The standardizing the method of referencing files within S-100 based products will improve machine readability and easy implementation. Harmonizing the method of product specification identification between feature and portrayal catalogues reduces ambiguities and provides for better harmonization between product specifications.

Action Required of S-100 WG

The S-100 WG is invited to:

- a. Note this paper
- b. Discuss the recommendations of this paper