Paper for Consideration by TSM5

Procedures for S-100 Interoperability Catalogue

Submitted by:	Republic of Korea (KHOA)
Executive Summary:	This paper outlines the procedures to create S-100 Interoperability Catalogue
Related Documents:	S-100, S-100 Test Framework
Related Projects:	IHO S-100/S-10X Test Bed Project

Introduction / Background

As part of NOAA-KHOA Joint Project Agreement, NOAA carried out to develop a draft S-100 ECDIS Interoperability Specification (IS) which provides standardized mechanism to control display role for S-100 based products and services. KHOA has been conducting the S-100/S-10X testbed project and tried to implement the S-100 Interoperability Catalogue (IC) in the KHOA S-100 Viewer.

This paper describes the procedures of creating S-100 IC identified during the S-100 IC practical exercise in S-100 Interoperability Workshop held at the KRISO, Republic of Korea,

Analysis/Discussion

Structure of S-100 Interoperability Catalogue

The S-100 interoperability catalogue consists of the followings including the case of turning off all interoperability processing.

- **Level 0**: all interoperability processing is turned off. In this case, feature data is passed through unchanged to ordinary portrayal processing

- **Level 1**: feature types from different products, including S-101, are interleaved as specified by display plane and drawing priority information contained in the interoperability catalogue

- **Level 2**: If feature types in other products are determined to be superior to specific ENC feature types, the ENC feature types are suppressed.

- **Level 3**: The ENC is treated as one of the components of the data stack, and selected feature instances from other products may be treated as being superior to or enhancing selected ENC feature instances. The feature instances are selected using selector expressions that use feature type and values of thematic attributes.

- **Level 4**: This level is the same as Level 3, but permitted spatial queries (to determine related subsets) and operations (to define the interoperation result) are explicitly defined using an adequate set of spatially-capable rules.

Since the S-100WG and TSM decided to focus on the Level 1 and Level 2 among the interoperability levels, the structure of two levels was investigated like the followings;

- Product covered: S-100 product specification covered in S-100 interoperability catalogue

- Display Planes: This group is for Level 1. Assign the promotion and demotion in the number of display priority considering the order of displaying feature types.

- Predefined Product Combination: This group is for Level 2. Assign suppressed feature layer by comparing semantically similar feature types in covered products, which means to turn off suppressed feature layers.

In order to define the interoperability catalogue of S-100 ECDIS for the Level 1 and Leve 2, it's required to list covered products, assign feature types that display priority needs to be changed in Display Planes group and assign suppressed feature layers in Predefined Product Combination group.

S-100 Interoperability Catalogue Builer

A Builder was experimentally developed to support the easy creation of the catalogue according to the interoperability scenario. It's possible to edit the catalogue with the IC schema without editing the IC XML file manually. The research team will continue to verify and improve the S-100 IC builder.

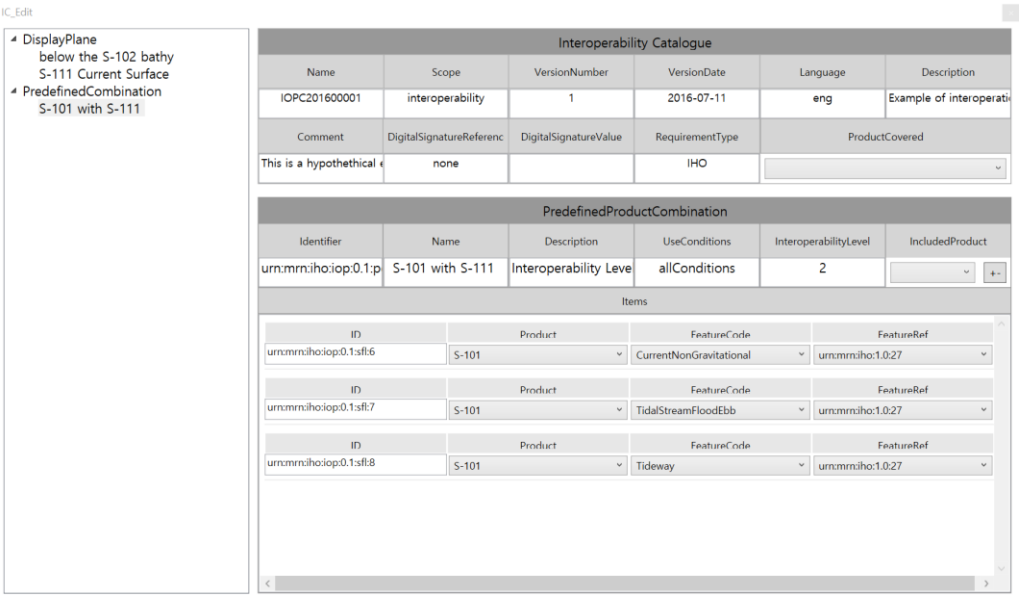

Fig. 1 S-100 Interoperability Catalogue Builder (ICB)

Procedures of S-100 Interoperability Catalogue

The procedure of creating S-100 interoperability catalogue was summarized from the analysis of S-100 IC specification and sample IC.xml.

(1) Step 1 - Selection of purpose and covered products
- Purpose of S-100 interoperability catalogue
- Scope of covered products

(2) Step 2 – Level 1 Interleaving
- Identify the drawing order through the comparison of feature types among covered products
- Consider the primitives and attribute combination in the comparison of relevant feature types
- Decide promotion and demotion in terms of display priority of each feature type
- Define the decision in <S100_IC_Feature>

(3) Step 3 – Level 2 Suppressed Feature Layer
- While the Level 1 allows interleaving between feature layers, Level 2 turns off one of semantically overlapped feature layers
- Identify which feature layer needs to be suppressed
- Assign the feature layer as suppressed feature layer in the PDC group

Conclusion

The procedure of S-100 IC was drafted for creating it based on the proposed S-100 interoperability specification, which was developed for displaying all S-100 products together in S-100 enabled ECDIS. In order to support the IC work, the IC buider was experimentally developed. The research team created the IC test data focusing the Level 1 and Level 2 according to the S-100 interoperability specification and the discussion result of S-100 IC workshop. The IC data was tested in the KHOA S-100 Viewer.

Recommendations

KHOA suggests that the procedure f S-100 IC should be managed by the IHO as part of the process of updating IHO standard. KHOA will continue to support the creation and management of S-100 IC in cooperation with S-100WG.

Action Required of TSM5

The TSM5 is invited to:

a. Note the progress reported in this paper.

b. Provide comments on the procedure of S-100 interoperability catalogue and suggestion.