Paper for Consideration by S-101PT1

Concept of DCEG editor and Prototype development

Submitted by:	Republic of Korea (KHOA)
Executive Summary:	ROK studied the concept of DCEG Editor and developed a prototype to support consistency between DCEG and Feature Catalogue on S-100 based product specifications. This paper reports the progress and result of the research.
Related Documents:	TSMAD29_10.4A and 10.7A, S-101 DCEG, S-101 Feature Catalogue
Related Projects:	IHO S-100/S-101 Test Bed Project

Introduction / Background

TSMAD29 discussed comparison results between S-101 DCEG and Feature catalogue and a method of improving consistency of those documents. (Refer to TSMAD29 10.4A and 7-10.7A) KHOA has studied the method of DCEG Editor and developed a prototype since the meeting. This paper introduces the result of prototype development based on the concept of DCEG Editor.

Analysis/Discussion

Comparison between DCEG and Feature Catalogue

S-100 based product specifications including S-101 contain the DCEG and Feature Catalogue as an appendix document. While the feature catalogue is a machine readable document (standard) to describe in detail the application schema within the product specification, the DCEG is a document to describe on how to encode the digital product. Although the two document should contain same information on binding results between features and attribute type, it's natural to be inconsistency due to different sources and working tools on those.

Table 1. Comparisons between DCEG and Feature Catalogue

	DCEG	Feature Catalogue
Source data	Application schema, S-4	S-100 Registry (FCD Register)
Working Tool	MS Word	S-100 FCB(Feature Catalogue Builder)
Output/Maintenance	DOC Document	XML

An agenda on the comparisons of S-101 DCEG and Feature catalogue was discussed in the 29th TSMAD meeting and it was reported that there are serious inconsistencies between DCEG and Feature Catalogue which were developed in the S-100/S-101 test bed project.

Similarities between DCEG and Feature catalogue

Figure 1 is an example of similarities between DCEG and Feature catalogue. Part 1 of figure 1 which contains feature name, definition, primitives, binding results between feature and attribute and relationship on feature to feature and feature to information, is same with relevant parts of feature catalogue. Part 2 of figure 2 is about encoding guide like S-4.

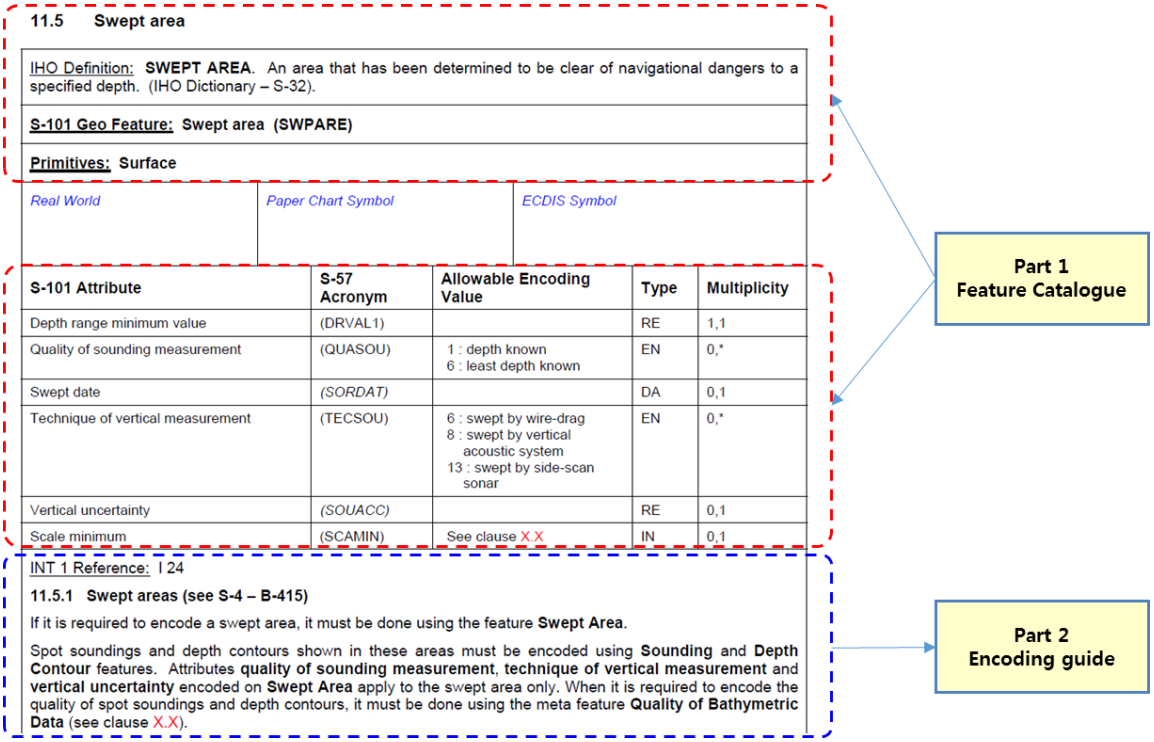


Figure 1. Example of DCEG

The concept of DCEG Editor

The DCEG and Feature catalogue is quite similar in many parts. If those documents can be developed in an agreed working process from same source, it's possible to secure a consistency between DCEG and feature catalogue.

Regarding the working process, it's recommended to adopt a sequential working process on DCEG and Feature catalogue. Figure 2 describes the process, which the feature catalogue is compiled based on the application schema and DCEG can be developed with the feature catalogue.

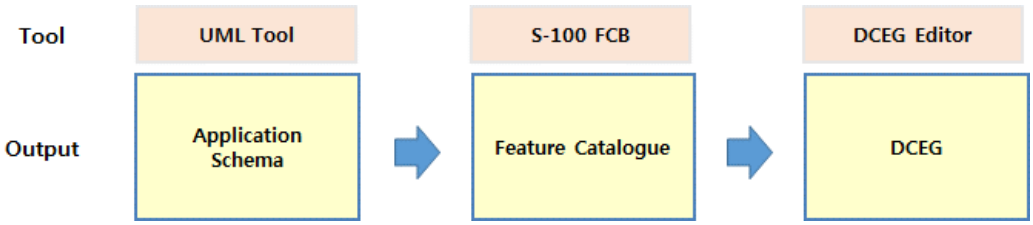


Figure 2. Working process of FC and DCEG

S-100 FCB can produce feature catalogue according to the application schema and the feature catalogue can be saved into the FC DB or external XML feature catalogue. (Refer to S-100WG1 9.1B) DCEG Editor include a function to load the FC DB or FC XML to prepare the part 1 of figure 1 in the DCEG structure. The part of encoding guide in DCEG can be maintained in a separate DB.

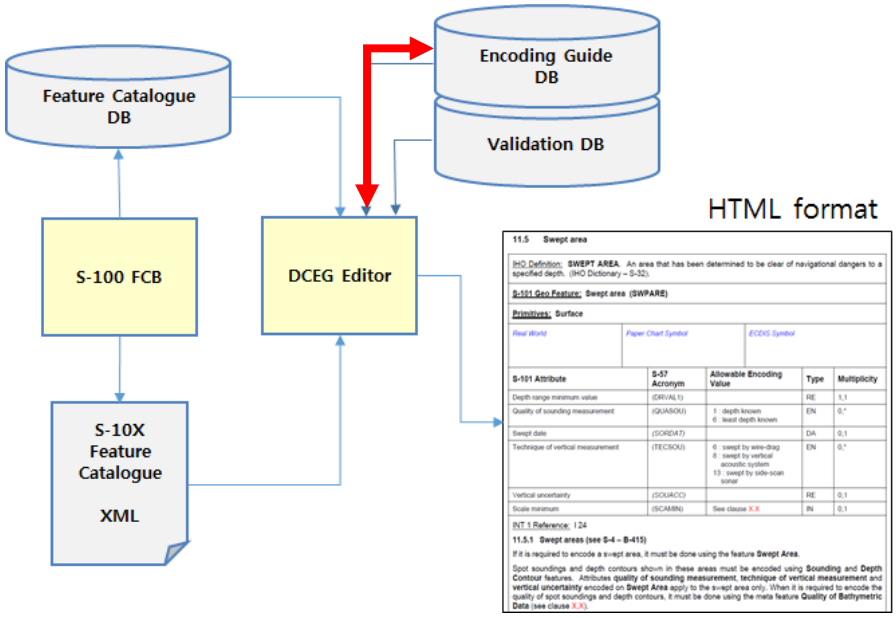


Figure 3. The concept of DCEG Editor

DCEG Editor just has a function to load FC and edit the part of encoding guide. If the DCEG work is done, the DCEG contents can be exported as HTML files.

Prototype development of DCEG Editor

ROK has studied the concept of DCEG Editor and developed to implement those. S-10X feature catalogue can be loaded from FC DB in the DCEG Editor. The part 1 of figure 1 can be builded up automatically as a table form and part 2 of figure 2 can be added into the table form. The function to include validation rules of S-58 was also developed.

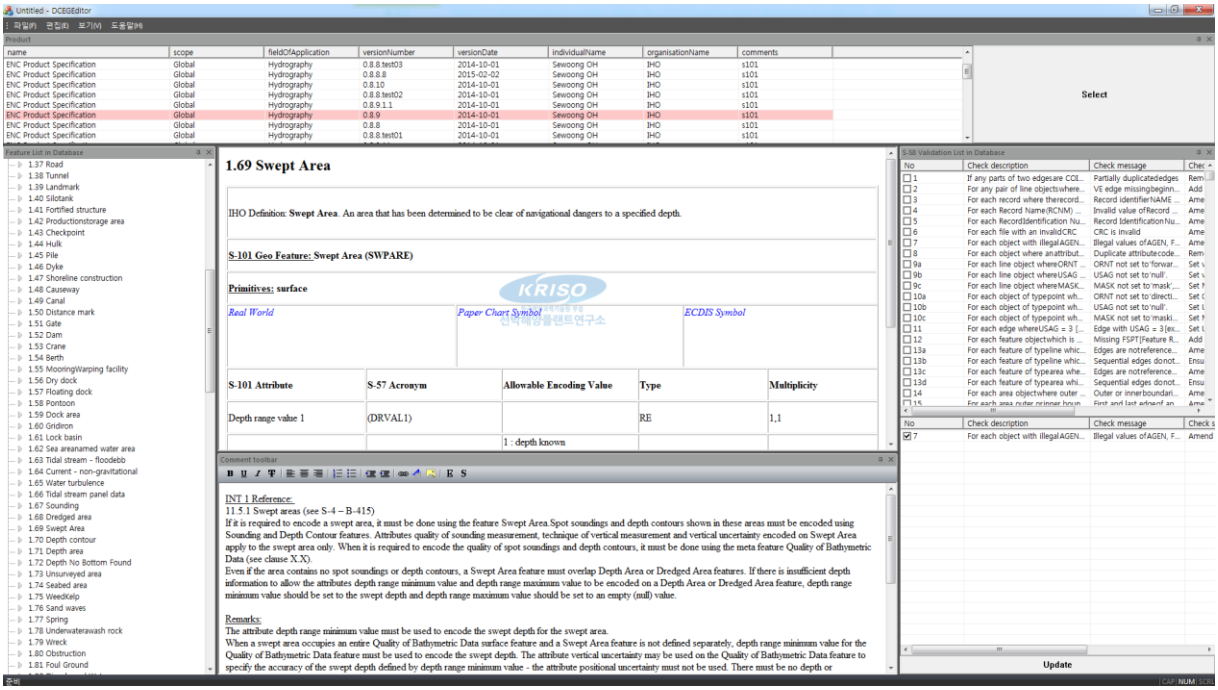
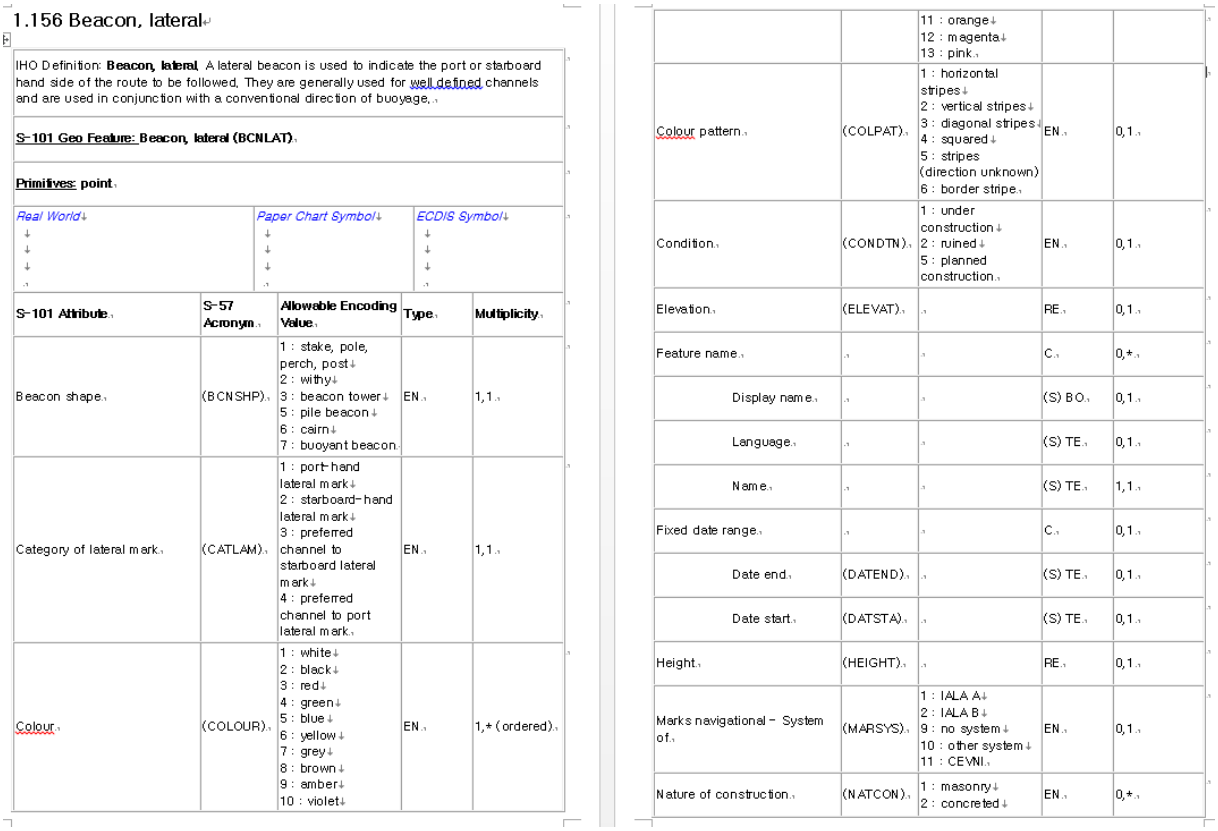


Figure 4. Prototype development of DCEG Editor

Meanwhile, DCEG Editor can export the contents as HTML format, which is available to load and edit in the MS word program.



1.156 Beacon, lateral

IHO Definition: **Beacon, lateral** A lateral beacon is used to indicate the port or starboard hand side of the route to be followed. They are generally used for well defined channels and are used in conjunction with a conventional direction of buoyage.

S-101 Geo Feature: Beacon, lateral (BCNLAT)

Primitives: point

Real World	*Paper Chart Symbol*	*ECDIS Symbol*

S-101 Attribute	S-57 Acronym	Allowable Encoding Value	Type	Multiplicity
Beacon shape	(BCNSHP)	1 : stake, pole, perch, post 2 : withy 3 : beacon tower 5 : pile beacon 6 : cairn 7 : buoyant beacon	EN	1,1
Category of lateral mark	(CATLAM)	1 : port-hand lateral mark 2 : starboard-hand lateral mark 3 : preferred channel to starboard lateral mark 4 : preferred channel to port lateral mark	EN	1,1
Colour	(COLOUR)	1 : white 2 : black 3 : red 4 : green 5 : blue 6 : yellow 7 : grey 8 : brown 9 : amber 10 : violet	EN	1,* (ordered)
		11 : orange 12 : magenta 13 : pink		
Colour pattern	(COLPAT)	1 : horizontal stripes 2 : vertical stripes 3 : diagonal stripes 4 : squared 5 : stripes (direction unknown) 6 : border stripe	EN	0,1
Condition	(CONDTN)	1 : under construction 2 : ruined 5 : planned construction	EN	0,1
Elevation	(ELEVAT)		RE	0,1
Feature name			C	0,*
Display name			(S) BO	0,1
Language			(S) TE	0,1
Name			(S) TE	1,1
Fixed date range			C	0,1
Date end	(DATEND)		(S) TE	0,1
Date start	(DATSTA)		(S) TE	0,1
Height	(HEIGHT)		RE	0,1
Marks navigational - System of	(MARSYS)	1 : IALA A 2 : IALA B 9 : no system 10 : other system 11 : CEVNI	EN	0,1
Nature of construction	(NATCON)	1 : masonry 2 : concreted	EN	0,*

Figure 5. DCEG HTML file loaded in MS word program

TSMAD29 has discussed the necessity of S-101 DCEG web service. In order to make the DCEG contents be ready for web service, DCEG HTML files made from the DCEG Editor can be used for the purpose.

Conclusions

KHOA and research team has studied the concept of DCEG editor to secure the consistency between S-10X DCEG and S-10X feature catalogue. It's expected that the concept will support not only the consistency of S-100 PS documents but also a web service development of those contents.

Action Required of S-101PT1

The S-101PT1 is invited to:

a. note the progress reported in this paper.

b. discuss comments and considerations on the concept of DCEG Editor.