Paper for Consideration by TSMAD TSM2

[S-101 Simple Viewer Status and SVG Review]

Submitted by:	Republic of Korea (KHOA)
Executive Summary:	To introduce KHOA's S-101 Simple Viewer development plans and share the SVG review results.
Related Documents:	S-101 ENC Product Specification, S-52 PL 4.0, S-100 System Test Flow Diagram
Related Projects:	IHO S-100/S-101 Test Bed Project

Introduction / Background

According to the rule that New Standards (including S-100) have to follow Resolution 2.2007, IHO TSMAD is implementing S-100/S-101 test bed consisted of nine (9) phases. Phase 3, in particular, indicates the development of S-101 Simple Viewer. It is an important stage at which Phase 1 and Phase 2 are verified using S-100 Registry as the backbone. ROK is currently conducting a research and development project in order to build an S-100 based national marine geospatial information standard management system and also to support IHO's S-100/S-101 test bed. As part of its research activities in 2014, ROK is planning to develop the initial version of S-101 Simple Viewer. This paper aims to introduce the progress in the ROK's development of the initial version of S-101 Simple Viewer and to share the results of the SVG Symbol review.

Analysis/Discussion

ROK has developed ENC Viewer based on IHO S-57 3.1 and S-52 PL 3.4 as a user platform for S-57 based customized ENC services. ROK will be utilizing ENC Viewer as the baseline to create S-101 Simple Viewer, and S-101 Converted Dataset, Feature Catalogue, Portrayal Catalogue, and SVG Symbol are to be applied. The main process of KHOA ENC Viewer can be defined as follows in consideration of the ECDIS Display Concept in S-52 PL 4.0:
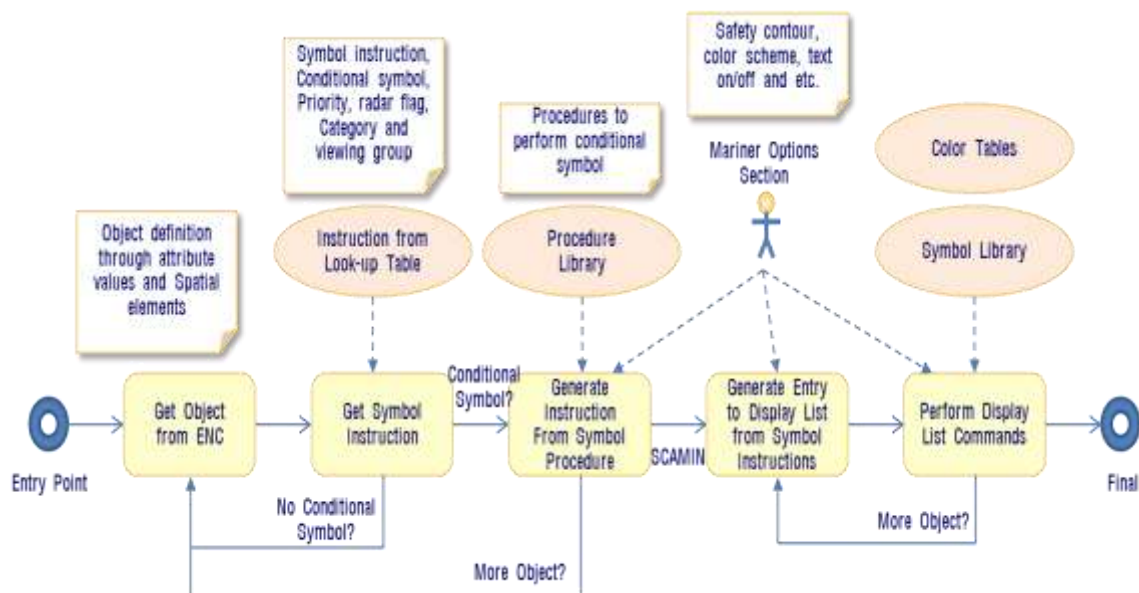

Fig. 1 Display Concept of KHOA ENC Viewer

Figure 2 below shows the screen display of KHOA ENC Viewer:

Fig. 2 Screen Image of KHOA ENC Viewer

KHOA applied the S-101 Feature Catalogue loading module currently being developed and the point-type SVG Symbols provided by DIPWG Chair. Once Portrayal Catalogue is provided by DIPWG, it will be applied as shown in Figure 3.
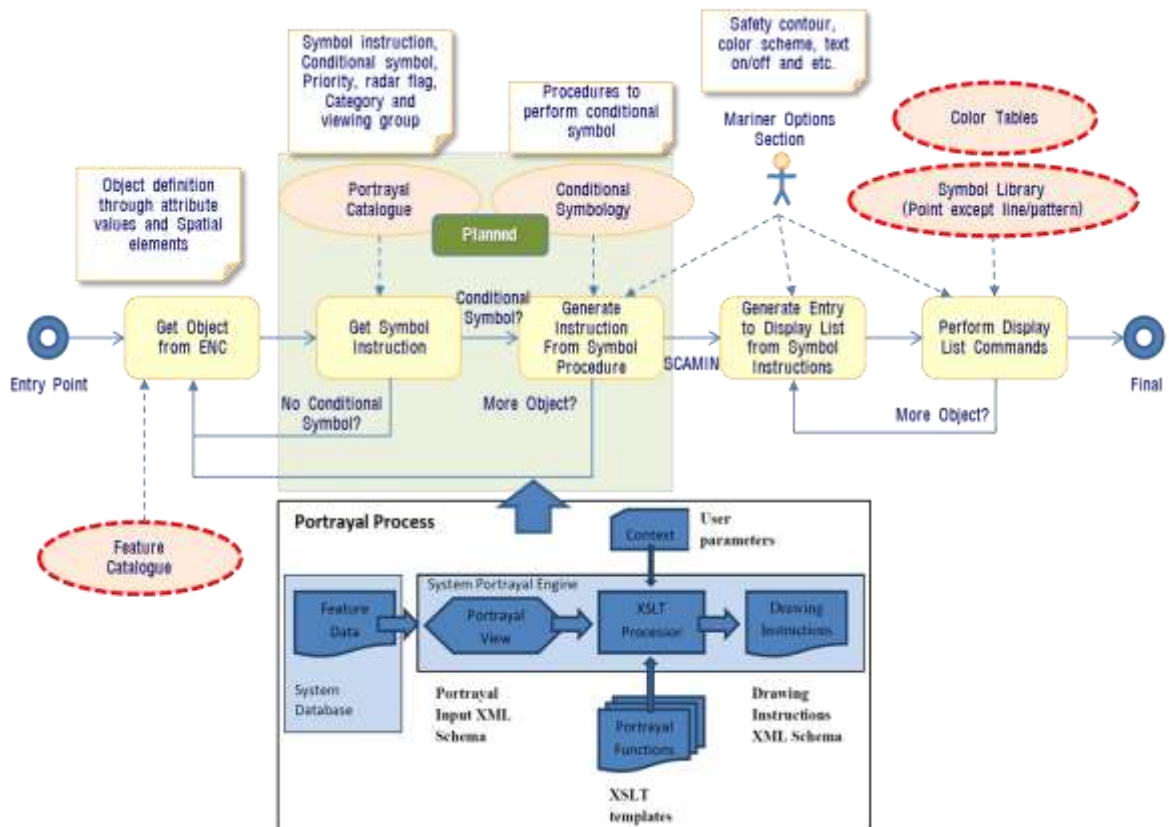

Fig. 3 Progress and Plan of S-101 Simple Viewer

In June 2014, KHOA was provided with the point-type SVG Symbols from DIPWG Chair. It then launched research to review the SVG Symbols. As KHOA's ENC Viewer did not contain a software module to enable SVG display, KHOA needed to develop an SVG Drawing module. As a result, a software was developed allowing individual display and identification of SVG Symbols as shown in Figure 4.
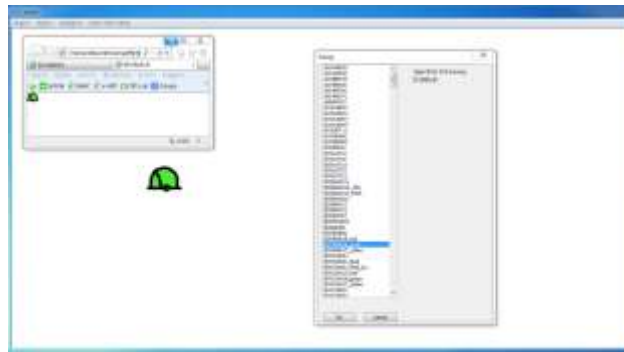
Fig. 4 SVG Viewer Module Developed to be applied to S-101 Simple Viewer

ROK applied the SVG Viewer Module to KHOA ENC Viewer as described above, and created a software module which can allow simultaneous comparison between S-52 DAI Symbols and S-101 SVG Symbols as in Figure 5.
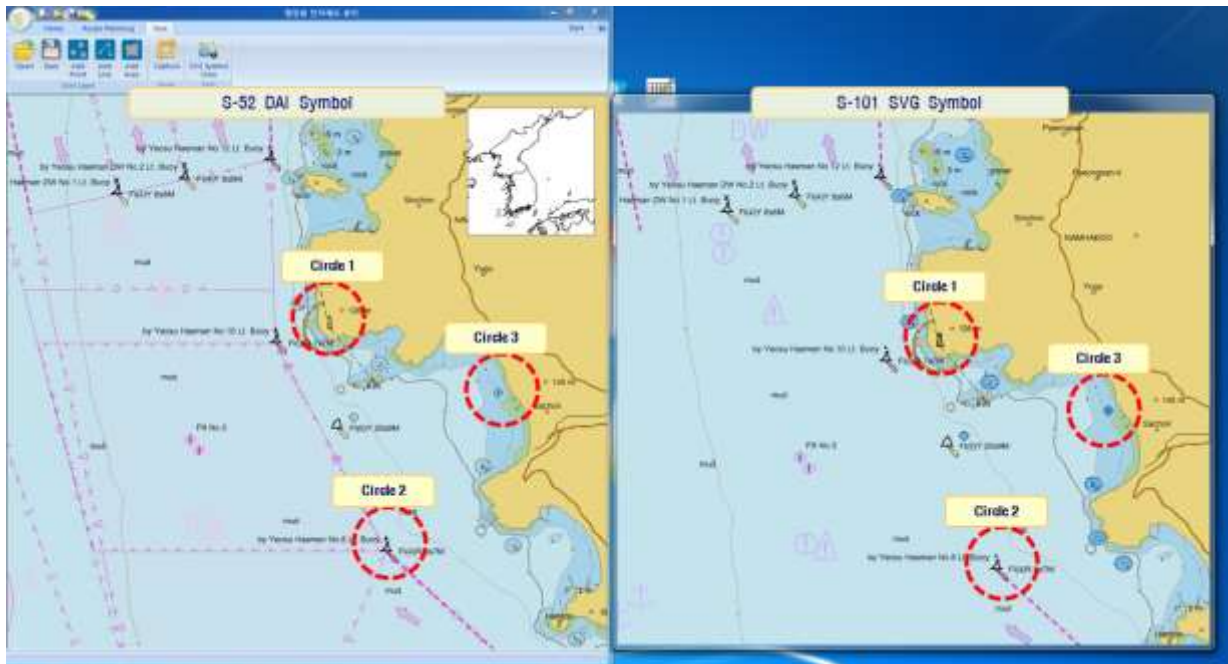

Fig. 5 Comparison of S-52 DAI Symbol and S-101 SVG Symbol

Major findings from the application of SVG Symbols can be summarized as follows:

- Circle 1: When the SVG symbol was drawn considering that 0.32 unit of SVG meet 1 unit of S-52 for the pen width, some object like landmark was drawn more thick.
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- Circle 2: There is a difference in the size of some object like Top mark.

- Circle 3: As the example of underwater rock shows, there is a difference between ENC Viewer's Colour Table and the Colour Scheme in SVG Style. However, this can be resolved by adjusting the Colour Scheme.

- File Name of SVG Symbol: In S-52, Point, Line, and Pattern symbols are categorized as SY( ), LC( ), and AP( ), and they are divided by block in the DAI file in PL 3.4. Therefore, duplicate symbol names do not create any confusion. However, as the SVG Symbol is created as an individual file, solutions need to be indentified to avoid the duplication of symbol file names.

	Circle 1	Circle 2	Circle 3
S-52 DAI Symbol			
S-101 SVG Symbol			

Table 1. Comparison with S-52 Symbol between S-101 SVG Symbol

Some of the new SVG Symbols use an Arc to display a curved surface as in Figure 6. KHOA ENC Viewer has been developed based on Microsoft MFC (Microsoft Foundation Class), and uses GDI (Graphic Device Interface) for the display of ENC information on the screen. It is currently seeking solutions to overcome the challenges in displaying the Arc information of the SVG Symbols.
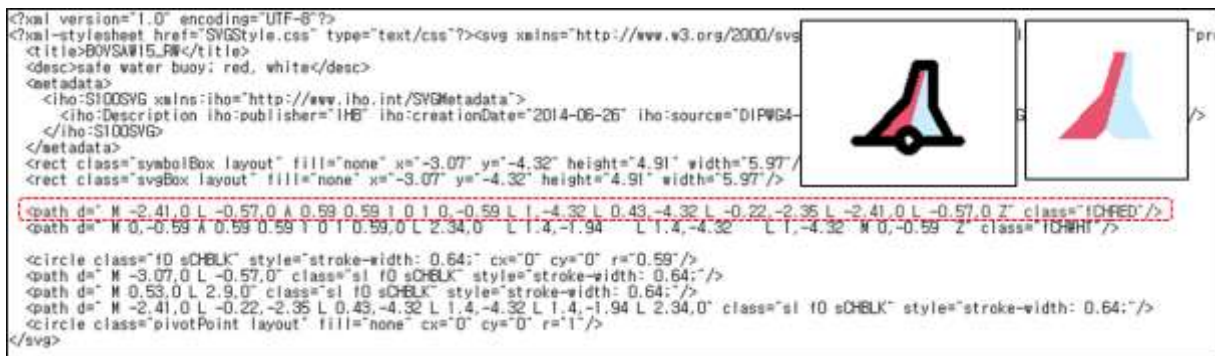

Fig. 6 Arc Example in New SVG Symbols

The review results of SVG Symbol indicated that they are displayed in the same shape in general except for issues with the Pen width and size of several symbols. The new SVG Symbols could not be tested as there was no Look-up table available to link. It is expected that the development of S-101 Simple Viewer will be further accelerated when additional SVG Symbols and Portrayal Catalogue become available.

Action Required of TSMAD TSM
The TSMAD TSM is invited to:

      a.   take note of this initiative;

      b.   provide recommendations that may be helpful in developing an S-101 Simple Viewer.