Paper for Consideration by S-100 Focus Group

Complicated Portrayal Rules in S-100

Submitted by:	S-100WG Chair
Executive Summary:	A brief update on where we are with the CSPs in S-100 and the alternative called Lua
Related Documents:	S-100, S-52 CSP Survey
Related Projects:	S-100 PCB

Introduction / Background

This paper is intended to provide an update on the different activities that are happening concurrently in developing the standardized portrayal mechanisms for the traditional S-52 Conditional Symbology Procedures that will be used in S-101 that will lead to a decision regarding which path to take in coding conditional symbology procedures.

Analysis/Discussion

It has long been noted by the S100WG that for S-101, there would still be a need to maintain conditional symbology procedures that are similar to S-52, but would be amended to utilize the constructs outlined in S-100 and the new features that have been developed for S-101.

Due to a multitude of delays, the S-100WG has not been able to properly develop the CSP in XSLT rules for S-101 conditional portrayal. In 2015, Hugh Astle of Caris provided some draft XSLT CSPs for the purpose of testing, but it did not cover some of the more complicated CSPs – such as the safety contour.

Post the March 2016 S-100WG meeting, it was recognized that further work needed to be done on the complete set of CSPs and there was some concern that the methodology of XSLT may not be the most optimal machine readable solution. However, this was all a theoretical exercise until an attempt was made to create all the appropriate CSPs in the methodology prescribed by S-100.

So in order to move forward, a brief survey was sent out to determine the CSPs that were still valid and to let out a NOAA contract to draft an official S-100WG edition of the CSPs for S-101. The following CSPs were addressed and will be discussed in greater detail in a follow on presentation.

#	CSP Description	CSP Name	Comments
1	Depth area colour fill and dredged area pattern fill (S-57)	DEPARE02 (DEPARE03)	
2	Depth contours, including safety contour (S-57)	DEPCNT03	
3	Contour labels, including safety contour (S-57)	SAFCON01	This CSP is related to DEPCNT03 and is process that indicates the depth of the unsafe side of the border between the safe and unsafe skin of the earth feature.
4	Wrecks (S-57)	WRECKS04 (WRECKS05)	No draft has been created. Additional S-101 attributes have been created that may eliminate the need for the XSLT. The vendor shall propose a way forward.
5	Obstructions and rocks (S-57)	OBSTRN06 (OBSTRN07)	The S-101 Attribute Default Clearance Depth was added to reduce the complexity of this CSP. A draft has been created called - **UnderWaterAwashRock_custom.xsl** – custom UnderwaterAwashRock feature templates using logic taken from S-52 OBSTRN06 which

			will need review.
#	**CSP Description**	**CSP Name**	**Comments**
6	Light flares, light sectors & light coverage (S-57)	LIGHTS05 (LIGHTS06)	Lights in S-101 have been remodeled. S-101 has included several new system attributes to help assist with the portrayal. Baseline templates in XSL have been created that will need to be reviewed.
7	Isolated dangers in general that endanger own ship (S-57)	UDWHAZ04	The new IHO S-52 presentation library edition 4.0.0 clearly distinguishes between "safety contour" and "navigational hazards". Therefore, the functionality for this CSP should be split. The first is to modify default presentation when the "isolated danger" condition is met. The second is the "alerts and indication" part for "Navigational hazards."
8	Shoreline constructions, including accuracy of position.	SLCONS03 (SLCONS04)	S-52 uses the QUAPOS attribute on the individual spatial elements of the feature to determine the quality of position. Since there is no support for spatial attributes in S-101, information associations will have to be used instead.
9	Quality (accuracy) of position (S-57)	QUAPOS01=	
10	Quality of position of line objects (S-57)	QUALIN01=	
11	Quality of position of point and area objects (S-57)	QUAPNT02=	
12	Depth value (S-57)	DEPVAL02	A lookup table mechanism could possibly eliminate the need for XSLT since an S-101 Attribute called *Surrounding Depth* has been added.
13	Entry procedure for restrictions (S-57)	RESTRN01	Restricted Areas have been remodelled in S-101 into separate features.
14	Restricted areas - object class RESARE (S-57)	RESARE03 (RESARE04)	Restricted Areas have been remodelled in S-101 into separate features.
15	Restrictions - attribute RESTRN (S-57)	RESCSP02	Sub-procedure called by DEPARE02 and RESTRN01. An improved lookup table mechanism could possibly eliminate the need for XSLT. Previous work showed how this can be simplified and this can easily be translated into XSLT.
16	Colour fill for depth areas (S-57)	SEABED01=	Uses mariner settings. An improved lookup table mechanism that understands mariner settings and simple expressions could be used instead.
17	Symbolizing soundings, including safety depth (S-57)	SNDFRM03 (SNDFRM04)	
18	Entry procedure for symbolizing	SOUNDG02	

	soundings (S-57)	(SOUNDG03)	

In addition, to the work being done under contract, a parallel effort is being undertaken by SPAWAR to determine if there are more efficient options other than what is prescribed by S-100. SPAWAR is part of the S-100 test bed and utilized the draft CSPs as part of their implementation, but noted that the XSLT may be not be optimized for the portrayal of the safety contour or be used as part of the alerts and indications catalogue. As a result they have investigated the use of Lua to handle these capabilities. SPAWAR will present their results in a separate paper.

Conclusions

It should be noted that any kind of pivot to a different language for the CSPs will need to have the impacts carefully considered, including the effect that it may have on the PCB. Optimally, both the XSLT and the Lua methodology should be tested in the S100 test beds through the different simple viewers, but it is noted that the resources may not be available to test both approaches. Therefore, the S100WG chair would invite the members of the S100WG who would have to implement the methodology within their systems, to recommend which approach should be tested first, noting that if that approach is successful, then the second approach may not be tested.

Action Required of S-100WG

The S100WG is invited to:

a. note the paper

b. discuss which approach should undergo system testing first

c. provide any alternative approaches.