Paper for Consideration by S-100 TSM

[Interoperability Catalogue Process Update]

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Executive Summary:	IHO developed the interoperability catalogue for harmonized display of S-100 datasets. Level 1 and Level 2 in the interoperability catalogue needs to adjust display priority and viewing group between S-101 and other project specification. In order to implement the levels of interoperability catalogue, it' proposed to draft a guideline.
Related Documents:	S-52 PL 4.0, S-100 4.0.0, S-101 1.0, S-97, S-98
Related Projects:	IHO S-100/S-101 testbed project

Introduction / Background

Interoperability Specification (IS) defines a method to display S-100 based products in a harmonized manner and S-100WG decided that Level 0, Level 1 and Level 2 among proposed 5 Levels were used in the S-98. This paper describes considerations identified when creating the interoperability catalogue using S-98.

Analysis/Discussion

3 Levels among the proposed 5 Levels were defined in the S-98 interoperability catalogue

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

- **Level 1**: feature type 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 0 means overlap, Level 1 means interleaving and Level 2 means Suppression between S-100 datasets. Level 1 (Interleaving) can be applied by defining new Display plane and adjusting the value of display priorities.

When a portrayal catalogue for S-100 based product specifications other than S-101 ENC is created, display priority and viewing group need to be defined and can be referenced from the S-101 ENC. The S-101 Portrayal catalogue was reused by the value of S-52 as follows;

Table 1. Display priorities of S-52 PL 4.0 and S-101 Portrayal catalogue

Data Groupings	S-52 Display Priorities	S-101 Display Priorities
no data filled area pattern	priority 0	priority 0
group 1 filled areas	priority 1	priority 3
superimposed areas	priority 2, 3	priority 6, 9
restricted area	priority 5	priority 15
traffic areas	priority 6	priority 18
land features	priority 4, 5	priority 12, 15

water features	priority 3, 4, 5, 6	priority 9, 12, 15, 18
coastline features	priority 5, 6, 7	priority 15, 18, 21
routeing lines	priority 5, 6, 7	priority 15, 18, 21
symbols for lines and areas	priority 4, 5, 6	priority 12, 15, 18
hazards (bridge, safety contour)	priority 8	priority 24
Mariners VRM & EBL	priority 9	priority 27
own ship	priority 9	priority 27

In the S-100 interoperability workshop held in Korea 2017, it's discussed that the interval of display priority in the portrayal catalogue of S-101 ENC needs to be 10 considering various S-100 based product specification of IHO.

- Priority 0 : Priority 10 : Priority 20 : Priority 30 : Priority 40 : Priority 50 : Priority 60 : Priority 70 : Priority 80 : Priority 90 : Priority 100

When considering the expansion of the display priority interval, a guideline is required to support the work of defining the display priority in the other product specifications.

The way of defining the display priority is proposed as follows;

1) When creating the portrayal catalogue of S-10X PS, to define display priority according to detailed guideline
2) When creating the portrayal catalogue of S-10X PS, default value (example 100) is defined or any values are used without considering S-101. Interoperability catalogue can be used to redefine the display priority between S-100 based products
3) Mix 1) and 2)

It is necessary to discuss whether the various services of IMO e-Navigation should be included in the interoperability catalogue. If e-Navigation service is included for IC in the future, overall review needs to be required considering extensibility

Tables 2 shows the Viewing group included in S-52. When defining portrayal catalogue in S-10X PS, it's needed to review whether the viewing group is updated or not.

Table 2. Viewing group of S-52 PL 4.0

Display Base	Standard Display	Other Information
00000-09999 reserved for administrative purposes		
10000 reserved *40000 reserved*	20000 reserved *50000 reserved*	30000 reserved *60000 reserved*
11000 A,B information about the chart display *41000 tools*	21000 A,B 51000 tool	31000 A,B *61000 tools*
12000 C, D, E, F land features *42000 own ship, planned route*	22000 C, D, E, F *52000 own ship etc*	32000 C, D, E, F *62000 own ship etc*
13000 H, I depths & currents *43000 Mariners' features*	23000 H,I *53000 Mariners' features*	33000 H,I *63000 Mariners' features*
14000 J,K,L obstructions, pipelines	24000 J,K,L	34000 J,K,L

44000 other vessels	*54000 other vessels*	*64000 other vessels*
15000 M traffic,routes *45000 manufacturers' features*	25000 M *55000 manufacturers' features*	35000 M *65000 manufacturers' features*
16000 N special areas *46000 Mariners' assignments*	26000 N *56000 Mariners' assignments*	36000 N *66000 Mariners' assignments*
17000 P,Q,R,S buoys, beacons, lights, radar *47000 reserved for Mariners' information*	27000 P,Q,R,S *57000 reserved*	37000 P,Q,R,S *67000 reserved*
18000 T,U services & small craft facilities *48000 reserved for Mariners' information*	28000 T,U *58000 reserved*	38000 T,U *68000 reserved*
19000-19999 reserved *49000-49999 reserved*	29000-29999 reserved *59000-59999 reserved*	39000-39999 reserved *69000-69999 reserved*
70000-99999 reserved for future use.		

Conclusions

When applying the S-100 interoperability catalogue, display priority and viewing group is adjusted for harmonized display. Considering S-101 ENC as main product and e-Navigation service, the way of how to define display priority and viewing group needs to revisit in an extensible way.

Recommendations

IHO developed the interoperability catalogue for harmonized display when displaying various S-100 products in a single window. Before applying the interoperability catalogue, each S-10X PS needs to define display priority and viewing group, but there is not a guideline for S-10X PS developer to refer to. It's proposed a guideline for defining display priority and viewing group and invited to discuss the 3 ways proposed in this paper.

Action Required of TSM
The TSM6 is invited to:
    a.   note this document
    b.   discuss the issues raised in this document