

I Research on symbols for S-100 product Service in Korea



1. Studying hydrographic information for Korean e-nav service

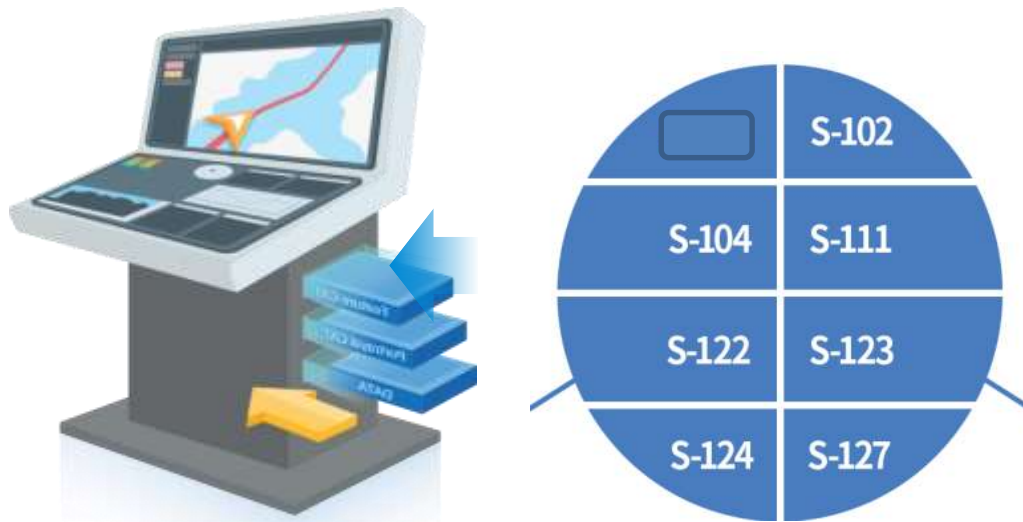
- Studying Symbols of PS related to Korean e-nav service
 - S-102 Bathymetric Surface
 - S-104 Water Level Information for Surface Navigation
 - S-111 Surface Currents
 - S-122 Marine Protected Areas
 - S-123 Radio Services
 - S-124 Navigational Warnings
 - S-127 Traffic Managements
 - (S-129 UKCM)

2. Surveying symbols being used in INT1, S-12x and commercial products

- Surveying symbols being used in INT1 and S-12x including commercial products such as GPS plotters to find out things to be introduced

3. Finding issues to display symbols from two or more PSs simultaneously

- Assuming no issues to display symbols of individual product specifications separately
- Making scenarios to combine two or more product specifications, such as combining S-102 and S-104, combining S-104, S-124 and S-127 and so on
- Finding out possible issues to disturb to display symbols clearly



II

Outputs *(for now)*



01. Comparisons of symbols from different resources

INT1, S-12x and Commercial product

- Aims:
 - Any symbols to use similar names for different contexts
 - Any symbols to use similar names with same meanings
- Regarding on commercial symbols:
 - Any symbols which is not used in ENC but used in commercial chart?
 - If the symbols are useful to users and/or the symbols are better-looking than ENC symbols?

INT1 categories

- Chart Number – Title – Marginal Notes
- Positions – Distances – Directions – Compass
- Natural Features
- Cultural Features
- Landmarks
- Ports
- Tides – Currents
- Depths
- Nature of the Seabed
- Rocks – Wrecks – Obstructions – Aquaculture
- Offshore Installations
- Tracks – Routes
- Areas – Limits
- Lights
- Buoys – Beacons
- Fog Signals
- Radar, Radio – Satellite Navigation Systems
- Services
- Small Craft(Leisure Facilities)

01. Comparisons of symbols from different resources

Commercial products

- 70 manufacturers use C-map symbols including compatible symbols
- 600 and more devices of PDA and GPS plotter

Example of commercial product categories

- POSITIONS, DIRECTIONS, COMPAS
- NATURAL FEATURES
- RIVERS, LAKES
- CULTURAL FEATURES
- PORT, SERVICES
- LANDMARKS
- SEABED TYPE
- DEPTHS, SOUNDING
- WRECKS, OBSTRUCTIONS
- TRACKS, ROUTES
- ATTENTION AREA
- NAV-AIDS

01. Comparisons of symbols from different resources

🌐 Symbols in S-12x

- Categorizing the S-12x features aligning to INT1 categories to find out differences and overlaps
 - Landmarks
 - Radio / Station / Communication
 - Pilot
 - Vessel Traffic
 - Tracks / Routes
 - Attentions
 - **Under Keel Clearance Management**
 - **Safety Service**

S-122	MarineProtectedArea	RestrictedAreaNavigational	RestrictedAreaRegulatory	Vessel
S-123	Radio_Station	Navtex_StationArea	WeatherForecastWarningArea	S-123_App...
S-124	S124_TextPlacement	S124_NavigationalWarningFeaturePart		
S-127(1)	RadioCallingInPoint	SignalStationWarning	RadarRange	ConcentrationOf...
S-127(2)	MilitaryPracticeArea	RestrictedAreaRegulatory	RestrictedAreaNavigational	WaterwayAr...
S-129	UnderKeelClearanceNonNavigableArea	UnderKeelClearanceAlmostNonNavigableArea	UnderKeelClearanceControlPoint	

	Landarks
S-123	Landmark
S-123	Building

	Radio / Station / Commu
S-123	Radio Station
S-127	ShipReportingServiceArea
S-127	RadioServiceArea
S-127	RadioCallingInPoint
S-123	Navtex StationArea
S-123	CoastguardStation
S-123	InmarsatOceanRegionArea

	Pilot
S-127	PilotService
S-127	PilotBoardingPlace
S-127	PilotageDistrict

	UKCM
S-129	UnderKeelClearanceControlPoint
S-129	UnderKeelClearanceNonNavigable
S-129	UnderKeelClearanceAlmostNonNa
S-127	UnderKeelClearanceAllowance Area
S-127	UnderKeelClearanceManagement/

	Safety Service
S-127	GMDSSArea
S-127	IspsCodeSecurityLevel
S-127	PlaceOfRefuge


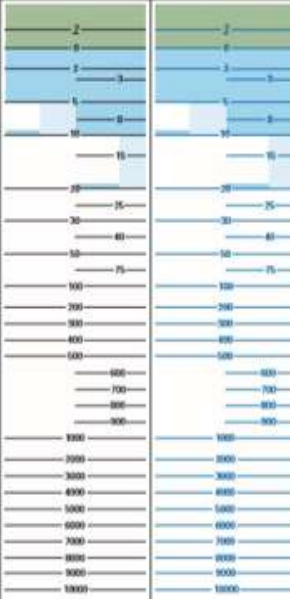
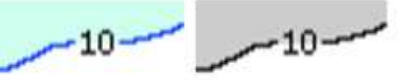
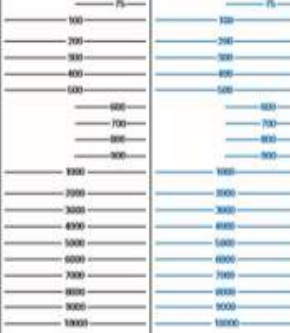




	Traffic
S-122	VesselTrafficServiceArea
S-127	VesselTrafficServiceArea
S-127	SignalStationTraffic

	Attentions
S-122	MarineProtectedArea
S-127	MillitaryPracticeArea
S-123	WeatherForecastWarningArea
S-127	PiracyRiskArea
S-127	CautionArea
S-127	ConcentrationOfShippingHazardArea
S-122	RestrictedAreaNavigational
S-122	RestrictedAreRegulatory
S-122	SignalStationWarning
S-127	RestrictedAreaNavigational
S-127	SignalStationWarning
S-127	RestrictedAreaRegulatory

	Etc
S-124	S124_TextPlacement
S-124	S124_NavigationalWarningFeaturePart
S-123	S-123 ApproximateAreas







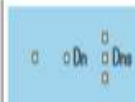




01. Comparisons of symbols from different resources

Example of Depths and Soundings

Depts, Soundings			
	Intertidal area *, with	S-102 DepthCoverage	 <p>Isobathe découvrante Drying contour Laisse de basse mer Low water line</p> <p>Une ou deux teintes de bleu plus clair peuvent être utilisées à la place du bandeau pour marquer les profondeurs inférieures à 10 ou 20 mètres One or two lighter blue tints may be used instead of the ribbons of tint at 10 or 20 m</p>
	Depth area, with de	S-102 DepthCoverage	
	Depth line (out of s	S-102 DepthCoverage	 <p>Isobathes approchées Approximate depth contours</p>
	Sounding (depth of 2 meters and 5)		 <p>Sondes en position réelle Sounding in true position</p> <p>Sondes hors position (sonde le long d'un quai, roche isolée, sonde océanique) Sounding out of position</p>

01. Comparisons of symbols from different resources

Example of Port Services symbols

Port,Services																																																																																																																																																																																																																																
 	Fishing harbor		 <div>Port de pêche Fishing harbour</div>																																																																																																																																																																																																																													
 	Dolphin		  <div>Duc d'Albe, dauphin</div>  																																																																																																																																																																																																																													
 	Signal station, Coastguard	S-123 CoastguardStation S-127 SignalStationWarning, Traffic	<table><tr><td>20</td><td>SS</td><td>Station de signaux en général <i>Signal station, in general</i></td><td>1</td><td>SS</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25.1</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td></tr><tr><td>21</td><td>SS(NT)</td><td>Station de signaux de trafic internationaux <i>Signal station, showing International Port Traffic Signals</i></td><td>1</td><td>SS</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25.1</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td><td></td></tr><tr><td>22</td><td>SS(entré)</td><td>Station de signaux d'entrée et de sortie <i>Traffic signal station, Port entry and departure 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02. Issues

Naming confused amongst S-12x

	Radio / Station / Communication		
S-123	Radio Station		UKCM
S-127	ShipReportingServiceArea	S-129	UnderKeelClearanceControlPoint
S-127	RadioServiceArea	S-129	UnderKeelClearanceNonNavigableArea
S-127	RadioCallingInPoint	S-129	UnderKeelClearanceAlmostNonNavigableArea
S-123	Navtex StationArea	S-127	UnderKeelClearanceAllowanceArea
		S-127	UnderkeelClearanceManagementArea

S-123 CoastguardStation

S-123 InmarsatOceanRegionArea

	Traffic
S-122	VesselTrafficServiceArea
S-127	VesselTrafficServiceArea
S-127	SignalStationTraffic

	Attentions
S-122	MarineProtectedArea
S-127	MillitaryPracticeArea
S-123	WeatherForecastWarningArea
S-127	PiracyRiskArea
S-127	CautionArea
S-127	ConcentrationOfShippingHazardArea
S-122	RestrictedAreaNavigational
S-122	RestrictedAreaRegulatory
S-122	SignalStationWarning
S-127	RestrictedAreaNavigational
S-127	SignalStationWarning
S-127	RestrictedAreaRegulatory

02. Issues

Screen Clutter issue

Issuable occasions as displaying two or more PSs at once

- Symbols are not clearly distinguishable
 - If areas are overlapped
- Confusing or misunderstanding
 - If areas are almost same but the different colors are used for displaying boundaries
 - If areas are overlapped but different colors and/or lines inside the areas are used



02. Issues

Two more values for one symbol

Example: 'WeatherForecastWarningAreas' feature of S-123

- Several attributes are assigned to one feature - the attribute 'categoryOfFrcstAndWarningArea' has seven different enumerate values.

	Text and Area (with patten)	TAI	
	Text and Area (without patten)	TAO	
Attributes (속성)	featureName (complexAttribute)		
	textContent (complexAttribute)		
	categoryOfFrcstAndWarningArea (enumeration)	1	The forecast and warning area defined by VMO
		2	The forecast and warning area defined by national authorities covering High Seas
		3	The forecast and warning area defined by national authorities covering offshore waters
		4	The forecast and warning area defined by national authorities covering coastal waters
		5	The forecast and warning area defined by national authorities covering inshore waters
		6	The forecast and warning area defined by national authorities covering local waters
		7	The ice forecast area defined by international or national authorities
	nationality (text)		

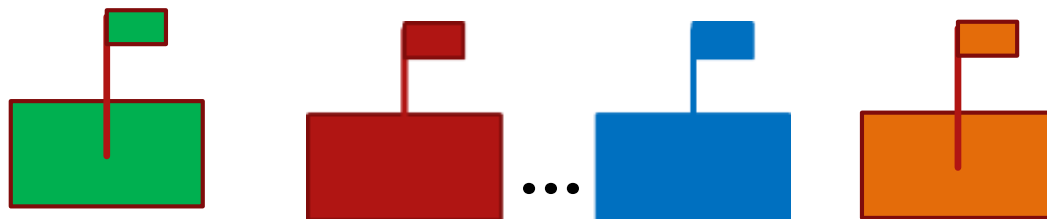
7 different shapes are needed?

02. Issues

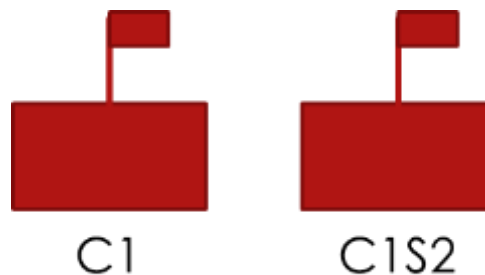
Two or more status for one symbol

Candidate solutions

- Different symbols with different color
 - Shape is same



- Same symbol with text-based code



What's the next?

ongoing works and challenges

Factors contemplated

- Harmonizing colors, contexts of symbols
- Operational modes including day, night and dust etc

Challenges

- Time schedule is limited
- the target PSs are still going on

Thank you!

