



**A guideline for establishing feature and symbol
standard management system
for national HOs**

**Joint 26th TSMAD and 5th DIPWG Meeting
Silver Spring, Maryland, USA (10-14 June 2013)**

Republic of Korea (ROK)

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- ◆ Introduction / Background
- ◆ Analysis/Discussion/Conclusions
- ◆ Recommendations/Justification and Impacts
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Introduction / Background

- ◆ A number of national HOs now publish not only traditional products for **maritime activities**, but **'customized' ENC**-related datasets and thematic maps associated with various types coastal zone management activities.
 - ❖ Traditional products
 - Paper nautical charts, ENCs, nautical publications
 - ❖ Customized ENC-related datasets
 - Port ENC, Inland ENC, MIOs, AMLs, etc.
 - ❖ Thematic maps
 - Fishing, recreational boating, port guidance, and marine environmental protection

Introduction / Background

◆ List of product production projects of ROK (1)

No.	Project	Year	Target information
1	Establishing Electronic Nautical Publication DB and improving its system	2013	Electronic Nautical Publication
2	Producing small craft chart(Western part of Korea)	2013	Small craft chart
3	Producing ocean floor chart	2013	Ocean floor chart
4	Producing coastal flooding prediction chart	2013	Coastal flooding prediction chart
5	Producing fishing ground information chart	2013	Fishing ground information chart
6	Producing survey for basic maps of the sea and analyzing its integrated data(Southern part of Korea)	2012	Chart of southern part of Korea
7	Producing and providing coastal flooding prediction chart of southern part of Korea etc	2012	Coastal flooding prediction chart
8	Producing ocean floor chart	2012	Ocean floor chart
9	Producing marine thematic chart	2012	Small craft chart, yacht and fishing information chart
10	A study on producing current chart with sea area around Korea	2012	Current chart with eastern part of Korea
11	Establishing a hydrographical survey DB for harbor sea area and developing related information system	2011	Harbor sea area
12	Producing and providing coastal flooding prediction chart	2011	Coastal flooding prediction chart
13	Producing marine thematic chart	2011	Marine thematic chart

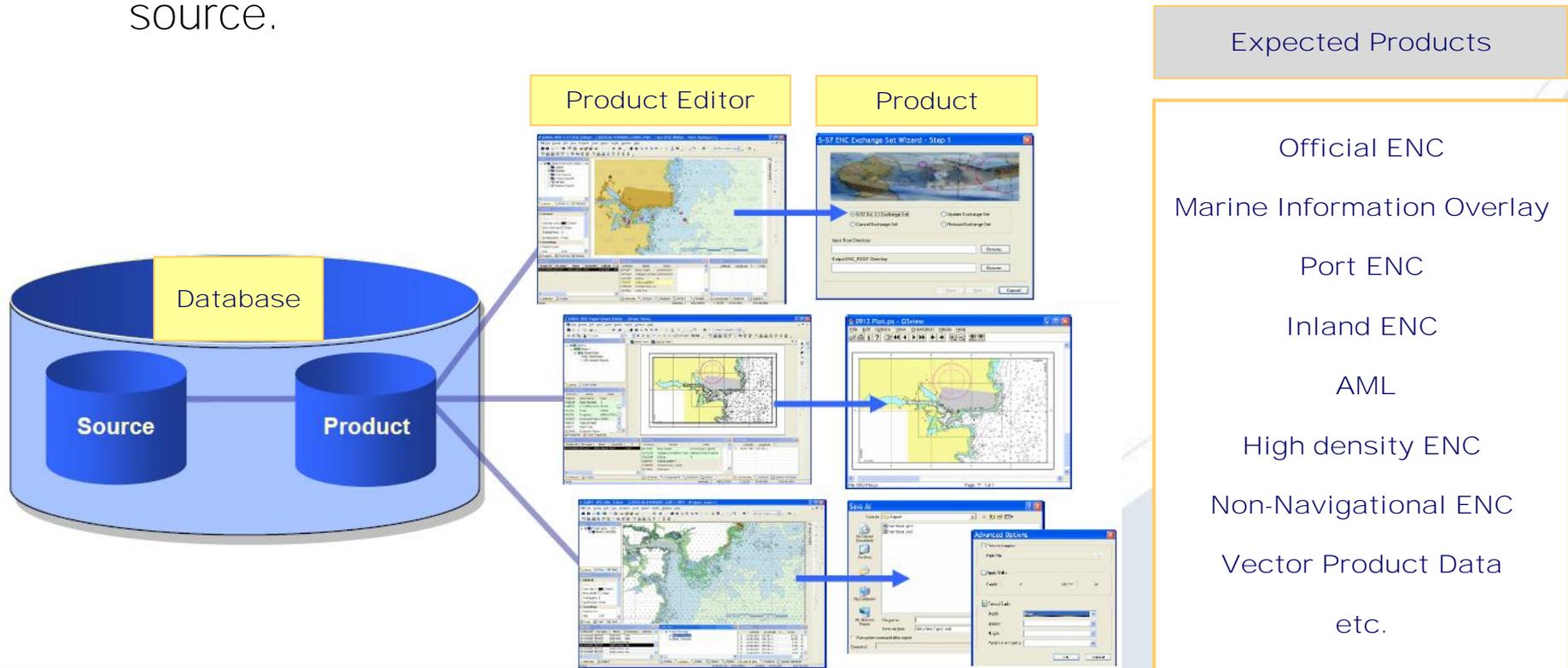
Introduction / Background

◆ List of product production projects of ROK (continued)

No.	Project	Year	Target information
14	Project on producing fishing information chart	2010	Fishing information chart
15	Establishing marine spatial information DB and improving its application function	2010	Measure survey chart
16	Producing marine geophysics materials	2010	Basic maps of the sea
17	Producing marine thematic chart	2010	Small craft chart
18	Producing coastal detailed ENC	2010	Coastal detailed ENC
19	Establishing artificial coastline change information DB	2009	Main harbor
20	Producing tidal current chart	2009	Tidal current chart
21	Establishing coastline survey materials DB	2009	Coastline survey materials
22	Establishing basic plan for coastline vulnerability chart and its pilot production	2009	Coastline vulnerability chart
23	Producing marine GIS numerical chart	2009	Marine GIS numerical chart
24	Establishing measurement survey DB	2009	Measure survey chart
25	Producing small craft chart	2009	Small craft chart
26	Data processing on bathymetric chart	2009	Basic maps of the sea
27	Establishing common scale DB per object	2009	Nautical chart

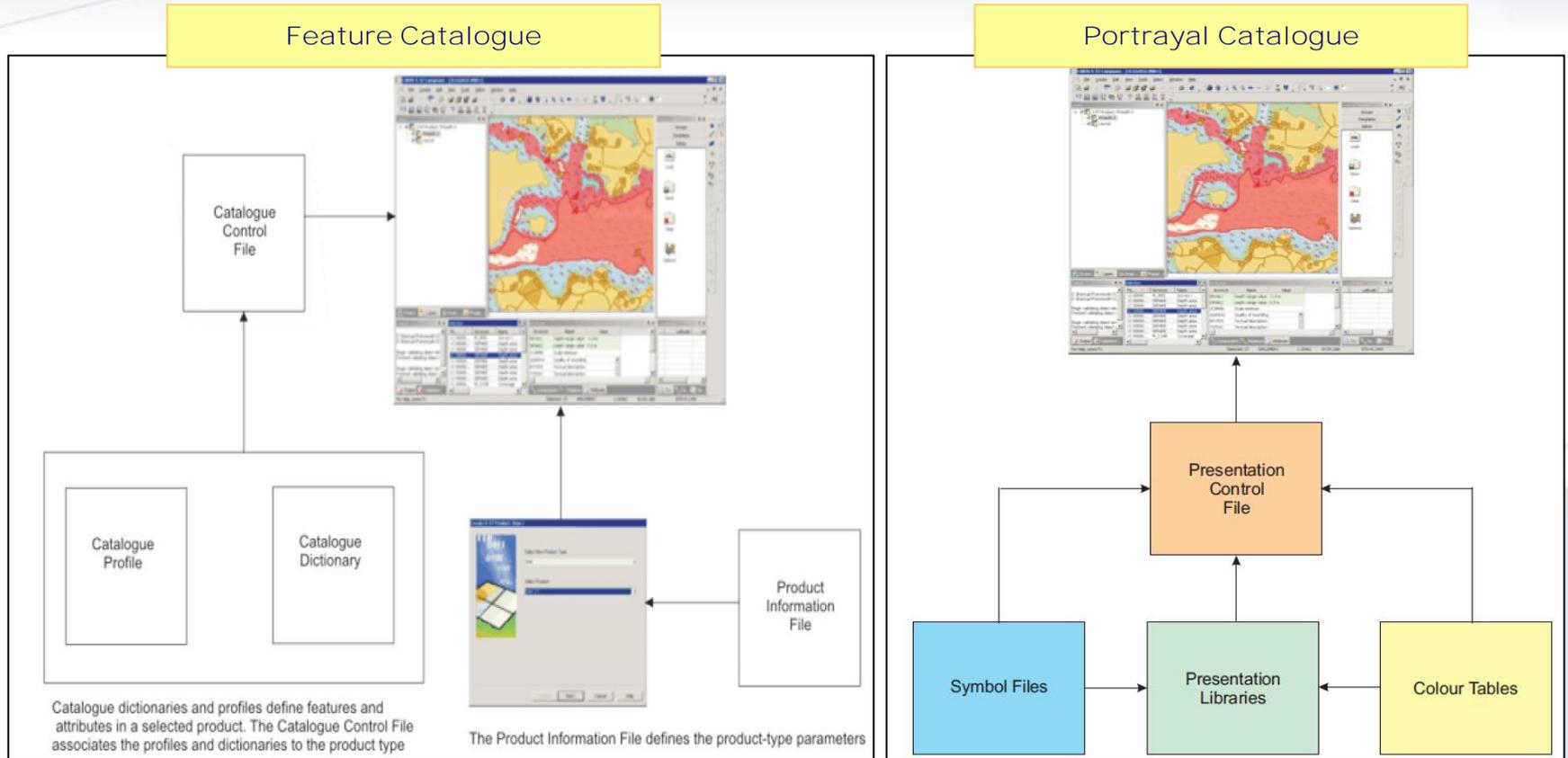
Introduction / Background

- ◆ As most hydrographic and stakeholder organizations transition from file-based production systems to database system approach, there is a need for standard management system to produce various types of products and services from a comprehensive hydrographic database source.



Introduction / Background

◆ Creating Custom Products of “C”S/W Company



Create Product Dictionary

Create Product Profile

Add Feature And Attribute Code Entries

Create Group Table

Update Product Information File

Update Catalogue Control File

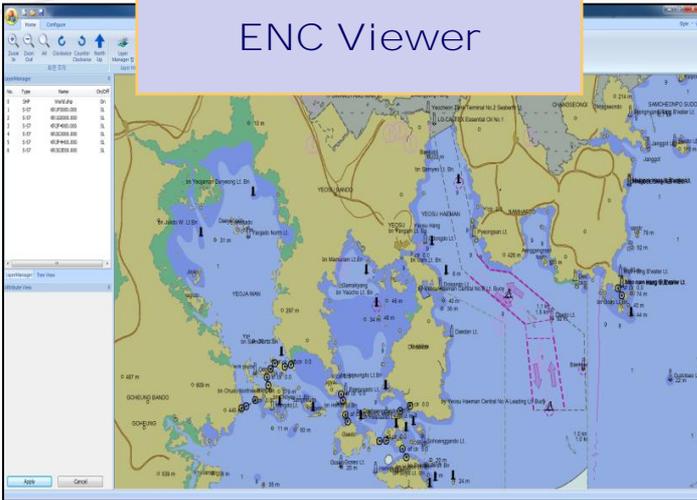
Introduction / Background

- ◆ Recently, the IHO S-100 standard framework has been designated as the basis for establishing a Common Maritime Data Structure **(CMDS)** in support of **IMO's e-Navigation** initiative.
- ◆ For instance, S-100 will become the basis for the structure and organization of AtoN metadata standard under development by IALA.
- ◆ It is expected S-100 will be the basis for standardizing other forms of maritime and marine information both on a national and international level (e.g., marine protected areas).

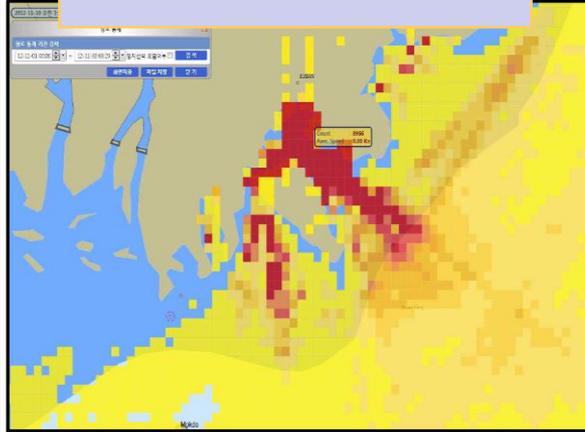
Introduction / Background

- ◆ e-Navigation(value-added) information on ENCs

ENC Viewer



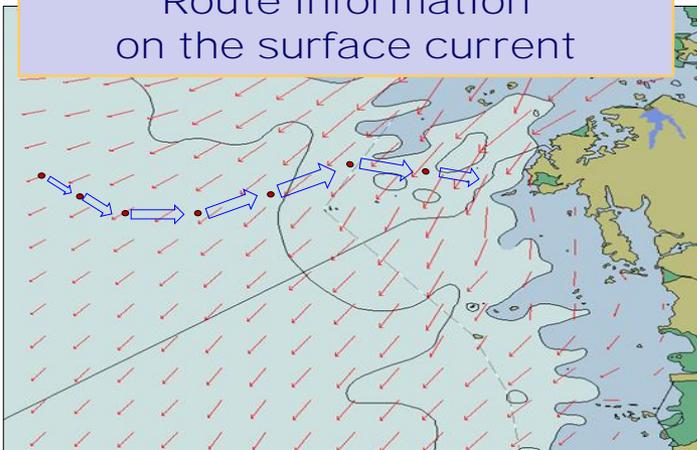
Traffic pattern (Grid)



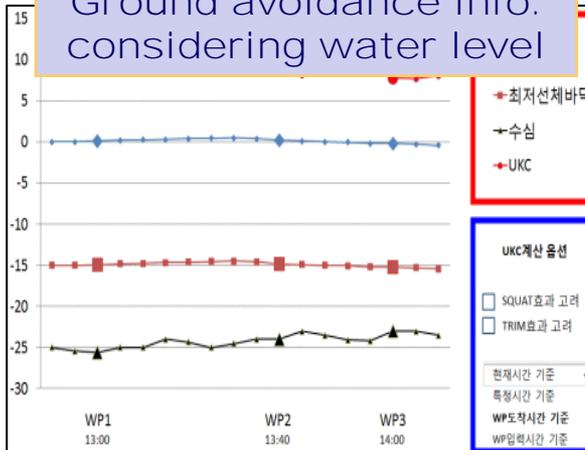
Surface Current



Route information on the surface current



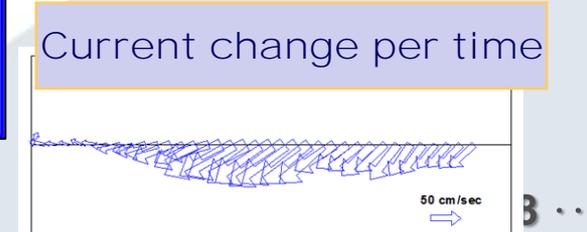
Ground avoidance info. considering water level



Collision avoidance info. Of vessel



Current change per time



Analysis/Discussion/Conclusions

- ◆ IHO S-99 and S-100 describe a Registry and associated Registers which can be used to define a system for features and symbols for use in a wide variety of applications.
 - ❖ Collectively, they also describe the overall process that can be used to develop new product specifications.
- ◆ The S-100 standard is very comprehensive, contains wide range of contents, and intended be used to produce a wide range of products and services.
 - ❖ But, the specifications and descriptions are rather complicated and difficult understand as to how they can be used to produce other types of hydrographic and e-Navigation related products and services.

Analysis/Discussion/Conclusions

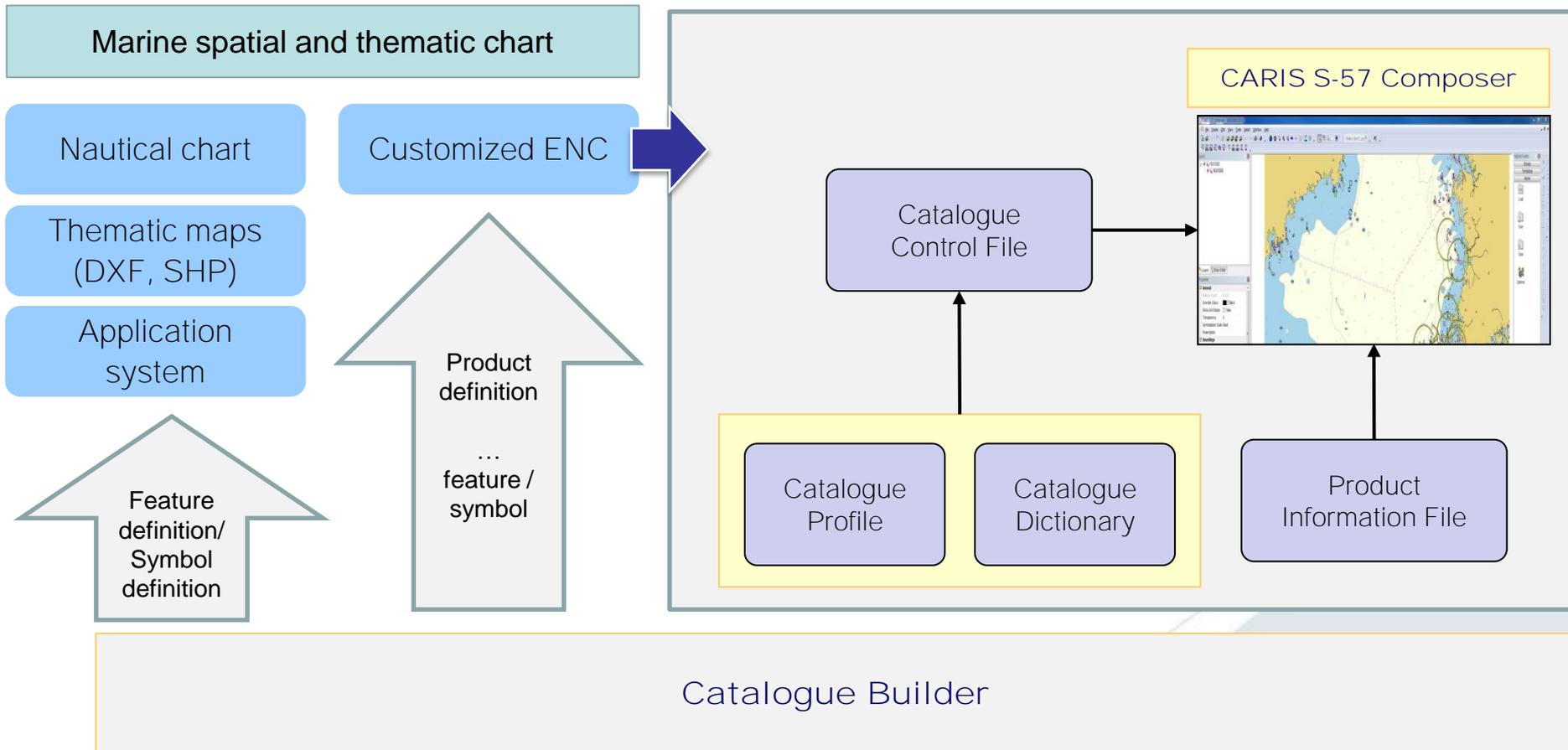
- ◆ IHO has been operating IHO Registry as the basis of a new international standard for providing traditional hydrographic products and services.
 - ❖ But, there are other product specifications which are also required internally by a national HOs.
- ◆ There is a need to develop a simplified feature and symbol management system at a national HO level based on a standardized approach.
 - ❖ More specifically, there is benefit in establishing a process to create catalogues of feature types for previously non-catalogued products.

Analysis/Discussion/Conclusions

- ◆ ROK is conducting a research project to establish feature/symbol standard management system to standardize thematic maps and customized ENC's as a part of implementation of S-100 related standards.
- ◆ The expected outcome is a feature/symbol standard management system that can be used not only by the ROK, but other national HOs as well.
- ◆ An important outcome will be the development of a Guideline for establishing a feature and symbol standard.

Analysis/Discussion/Conclusions

- ◆ Feature and symbol standard management system for national HOs



Feature and symbol standard management system for national HOs
(Feature / Portrayal Register considering S-100 Registry)

Recommendations

- ◆ TSMAD is requested to:
 - ❖ Assess the need for (or benefit of) developing a Guideline to support the establishment of a feature/symbol standard management system based on the S-100 and S-99 standards, that can be used by national HOs for other types of hydrographic products/services.
 - ❖ Advise on what should be included in the Guideline when used to establish a feature/symbol standard management system at the national HO level.

Justification and Impacts

- ◆ The proposed Guideline will help to:
 - ❖ Ensure that a consistent approach is followed by national HOs and other organizations to implement a S-100 based feature/symbol management system.
 - ❖ Facilitate the development and use of other types of marine information based on S-99 and S-100.

Action Required of TSMAD

- ◆ TSMAD is invited to:
 - ❖ Confirm that this ROK project initiative will help further TSMAD activities related to the broader use of S-99 and S-100 related standards.

Research project of ROK

- ◆ Subject : A study on the introduction plans for S-100 standard
- ◆ Period : Every year (from March to November, until S-101 is implemented)
- ◆ Funded by : KHOA under Ministry of Maritime Affairs and Fisheries
- ◆ Main research contents of this year
 - ❖ IHO S-100 standard and IMO e-Navigation monitoring
 - ❖ Establishing feature/symbol standard management system to apply for HOs
 - ❖ Developing ENC Viewer technology to establish S-10X testbed
 - ❖ A study on publishing customized ENC (Port ENC, Marine Envir-ENC)

Establishing feature and symbol standard management system to apply for HOs

- ◆ Feature and Portrayal Register (<http://s100.ezshosting.com/main/index.php>)


Sign In

Feature & Portrayal Register

HOME INTRODUCTION PROPOSAL ADMINISTRATION FEATURE PORTRAYAL

Feature

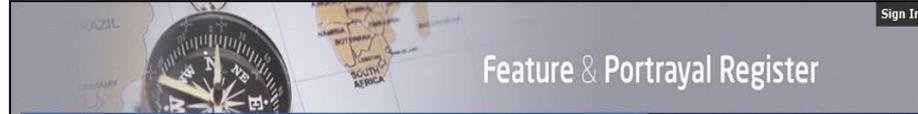
Domain: All | Item Type: All | Name: Go to index

Status: Valid notValid Superseded Retired

All Domain

Features : 199 items found

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213		right_justified	right_justified [0/0]	1999-10-24
210	\$CHARS	characterSpecification	Character specification [0/0]	1999-10-27
209	\$CHARS	characterSpecification	Character specification [0/0]	1999-10-15
208	WRECKS	Wreck	Wreck [1/0]	2012-08-27
207	WEDKLP	WeedKelp	Weed/Kelp [1/0]	2012-08-27
206	WATTUR	WaterTurbulence	Water turbulence [1/0]	2012-08-27
205	WATFAL	Waterfall	Waterfall [1/0]	2012-08-27
204	VEGATN	Vegetation	Vegetation [1/0]	2012-08-27
203	UWTR0C	UnderwaterAwashRock	Underwater/awash rock [1/0]	2012-08-27
202	UWTR0C	UnderwaterAwashRock	Underwater/awash rock [1/0]	2012-08-27


Sign In

Feature & Portrayal Register

HOME INTRODUCTION PROPOSAL ADMINISTRATION FEATURE PORTRAYAL

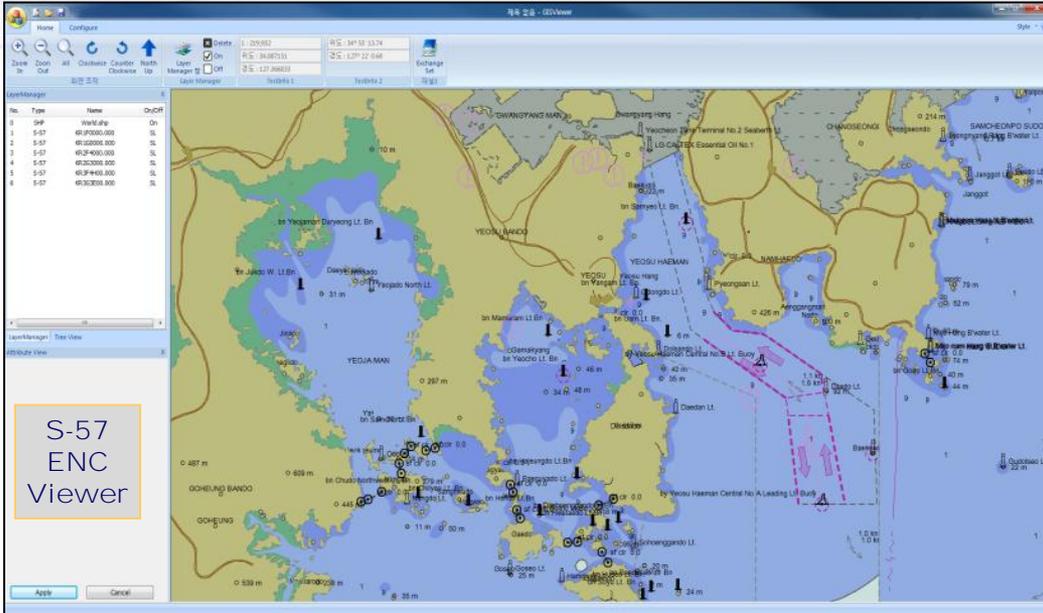
Portrayal

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Status: Valid notValid Superseded Retired

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!	896	PO_TSSCRS51 [0/0]	Valid	0000-00-00
?↑?	895	PO_TSLDEFS1 [0/0]	Valid	0000-00-00
+	894	PO_UWTR0C03 [0/0]	Valid	0000-00-00
^	893	PO_VECWTR22 [0/0]	Valid	0000-00-00
^	892	PO_VECGND22 [0/0]	Valid	0000-00-00
^	891	PO_VECWTR02 [0/0]	Valid	0000-00-00
^	890	PO_VECGND02 [0/0]	Valid	0000-00-00
+	889	PO_WRECKS05 [0/0]	Valid	0000-00-00
+	888	PO_WRECKS04 [0/0]	Valid	0000-00-00
+	887	PO_WRECKS01 [0/0]	Valid	0000-00-00

Developing ENC viewer technology for verification of customized ENC



S-57
ENC
Viewer

S/W Directory

- dic
- symbol
- World
- xml
- FeatureCatalog.lib
- GeoMetryLibrary.lib
- GISLibrary.lib
- GISViewer.exe
- PLLibrary.lib

Symbol Dir

- Color.txt
- Composite_Line.txt
- Composite_Line_Symbol.txt
- symbol(작업 - 최종).txt
- Symbol_Pattern.txt

Dic Dir

- atrcatv3.dic
- Color.txt
- linesymbol.dic
- objcatv3.dic
- pacpointsymbol.dic
- plainboun.dic
- simpointsymbol.dic
- symboun.dic

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"ACHARE", "", "SY(ACHARE51);LC(ACHARE51);CS(RESTRND1)", "3", "S", "STANDARD",
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"AI RARE", "", "AP(AI RARE02);LS(SOLD, 1, LANDF)", "2", "S", "OTHER", "32240"
"AI RARE", "CONVIS1", "AC(LANDA);AP(AI RARE02);LS(SOLD, 1, LANDF)", "2", "S", "OTHER", "32240"
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Look-up Table

```
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LNST 10LS01345NIL
LIND 38ACHARE51001080081203030000010030600814
LXPO 30boundary of an anchorage area
LCRF 6ACHMGD
LVCT 29SPA;SW1;PU306, 812;PD906, 812;
LVCT 24PU606, 812;SCEMAREMG1, 2;
LVCT 25PU1417, 812;SCEMACHAR1, 2;
LVCT 31SPA;SW1;PU1928, 812;PD2528, 812;
LVCT 25PU2228, 812;SCEMAREMG1, 2;
LVCT 31SPA;SW1;PU2732, 812;PD3336, 812;
LVCT 25PU3034, 812;SCEMAREMG1, 2;
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Object Catalogue

Composite Line Symbol

```
"ADMARE", "1", "G", "S57"
"Administration area (Named)"
"+JRSDTN;NATION;NOBJNM;OBJNAM;"
"INFORM;NINFORM;NXTDS;PICREP;^SCAMAX;SCAMIN;TXTDSC;update"
"^RECDAT;^RECIND;SORDAT;SORIND;"
"Area;"
""
""
"not specified;"
"not specified;"
"1.- 3"
"3.0"
""
"SCAMIN150000!"
```

Two related studies

- ❖ Study on Marine Envir-MIO product specifications for technical cooperation among RHC members
 - Analyze current situation and make plans for East Asia Marine Envir-MIO
 - Arrange Marine Envir-MIO objects, attributes, enumerations and symbols.
 - Develop Marine Envir-MIO product specification
 - Develop basic technology of test bed establishing Marine Envir-MIO test data set
- ❖ Study on the way to publish Customized ENCs
 - The case of publishing customized ENC and requirement analysis
 - Study on the way to publishing a Port ENC



THANK YOU!!!