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5th S-100 Working Group (S-100WG) Meeting

International
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Progress Report on S-100 Infra-System Development

Republic of Korea (**KHOA**)



International Hydrographic Organization
Organisation Hydrographique Internationale

S-100WG5, Taunton, UK 3 – 6 March 2020

1. Introduction

- Improvement of S-100 infrastructure
 - S-100 GI Registry
 - Feature/Portrayal Catalogue Builders
 - Other toolkit
- Development of S-100 launcher
 - ✓ to integrate and manage the S-100 Infra-systems efficiently.

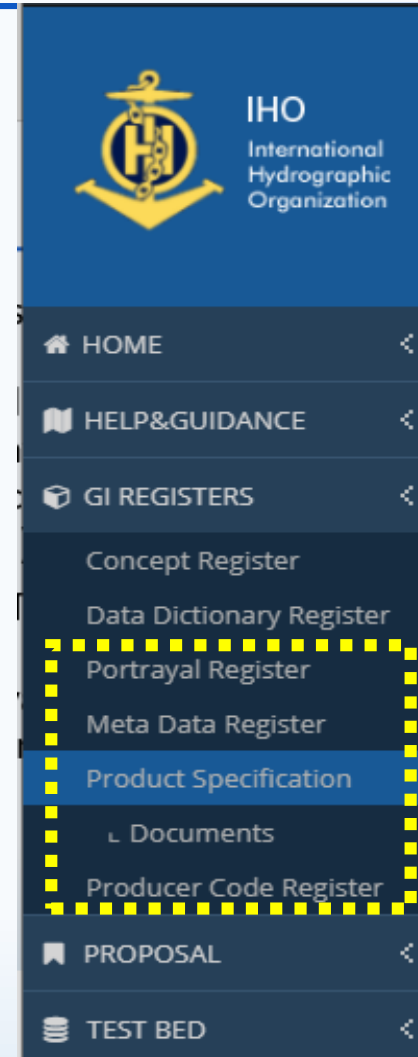


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2. S-100 GI Registry

- The 3rd GI Registry(beta) was launched last year
 - ✓ supporting the entire Portrayal factors
 - ✓ Metadata Register (MR)
 - ✓ Product Specification Register (PSR)
 - ✓ Producer Code Register (PCR)
 - ✓ Testbed (TB): *more details in other KHOA paper*

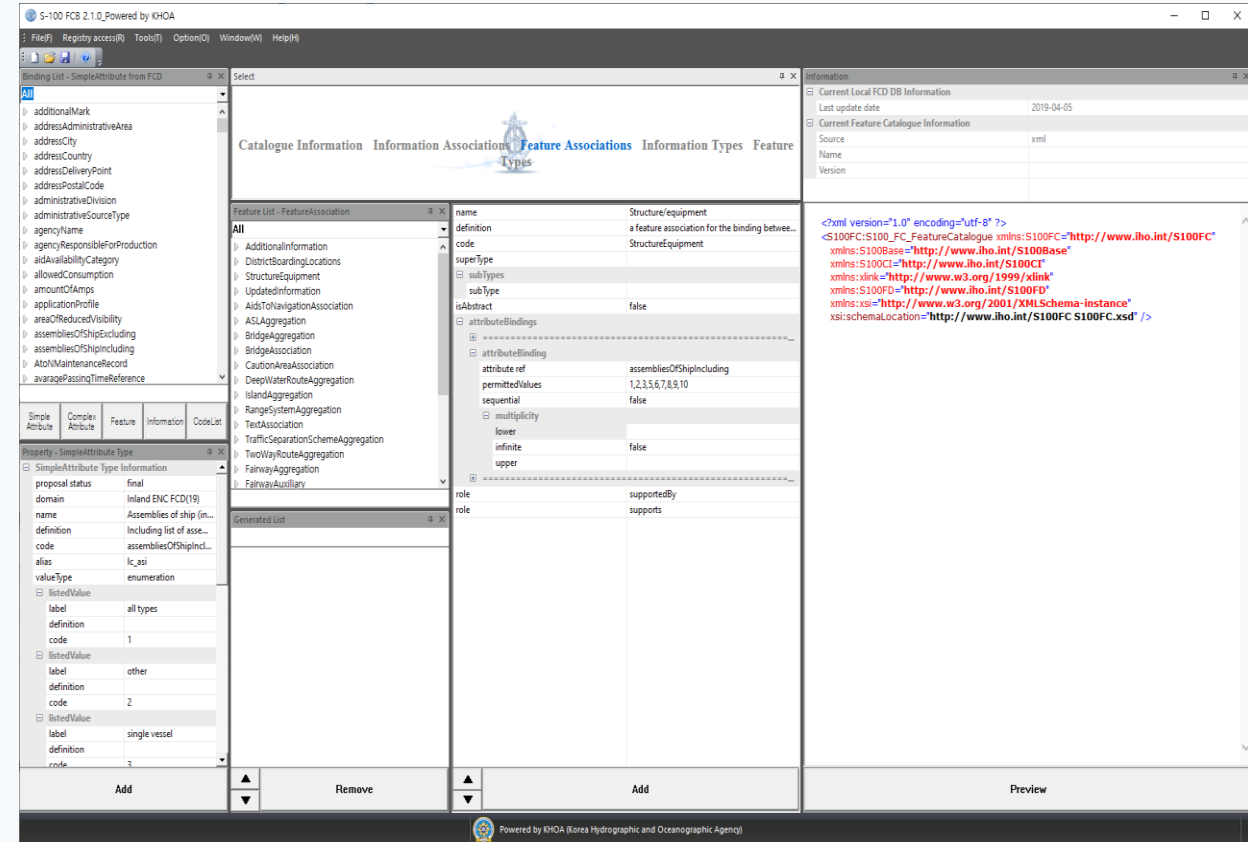


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3. Feature Catalogue Builder

- Improvement on connection between the GI registry and FCB
 - ✓ The upgraded FCB has been built with a Rest API enabling the connection between the Registry and FCB in a secure and efficient way.
- Other changes are to provide attribute **binding for Information association and Feature association** as specified in the PS with the UI improvement.

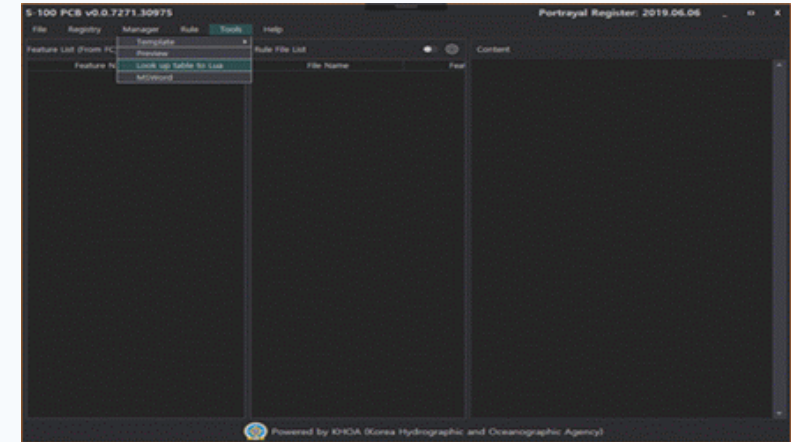


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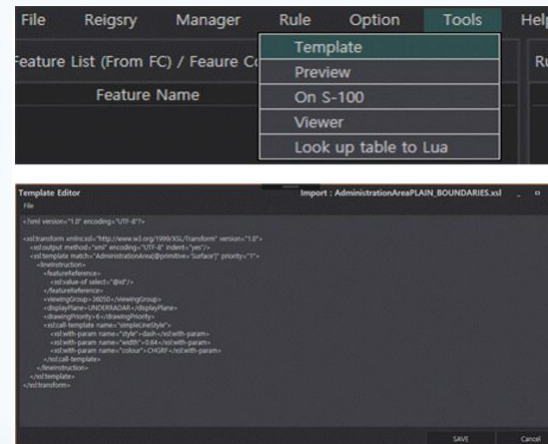
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4. Portrayal Catalogue Builder

- S-100 Portrayal Catalogue Builder has been built with an option to **generate the new S-10X PC packages** with a Template.
- Regarding the S-101 PC provided by NIWC, the **functions of the converter algorithm to S-101 LUA PC** using S-52 Lookup table were also applied to the upgraded S-100 PCB.



- In order to enhance connectivity to the Registry, the PCB also has the **Rest API**.



AdministrationArea.lua	2019-11-19 오후 5:54	LUA 파일
AirportAirfield.lua	2019-11-19 오후 5:54	LUA 파일
AnchorageArea.lua	2019-11-19 오후 5:54	LUA 파일
AnchorBerth.lua	2019-11-19 오후 5:54	LUA 파일
ArchipelagicSeaLaneArea.lua	2019-11-19 오후 5:54	LUA 파일
ArchipelagicSeaLaneAxis.lua	2019-11-19 오후 5:54	LUA 파일
BeaconCardinal.lua	2019-11-19 오후 5:54	LUA 파일
BeaconIsolatedDanger.lua	2019-11-19 오후 5:54	LUA 파일
BeaconLateral.lua	2019-11-19 오후 5:54	LUA 파일
BeaconSafeWater.lua	2019-11-19 오후 5:54	LUA 파일
BeaconSpecialPurposeGeneral.lua	2019-11-19 오후 5:54	LUA 파일
Berth.lua	2019-11-19 오후 5:54	LUA 파일
Bridge.lua	2019-11-19 오후 5:54	LUA 파일

5. Other toolkit - DCEG Builder

- DCEG Builder has been updated to support the **export functions** as a **Word** format

✓ So it can be saved or converted a whole or some sections of the product specification.

Data Classification and Encoding Guide 1

1 Geo Features -

1.1 Surface Current -

IHO Definition: Water or other fluid in essentially horizontal motion.

S-111 Geo Feature: Surface Current -

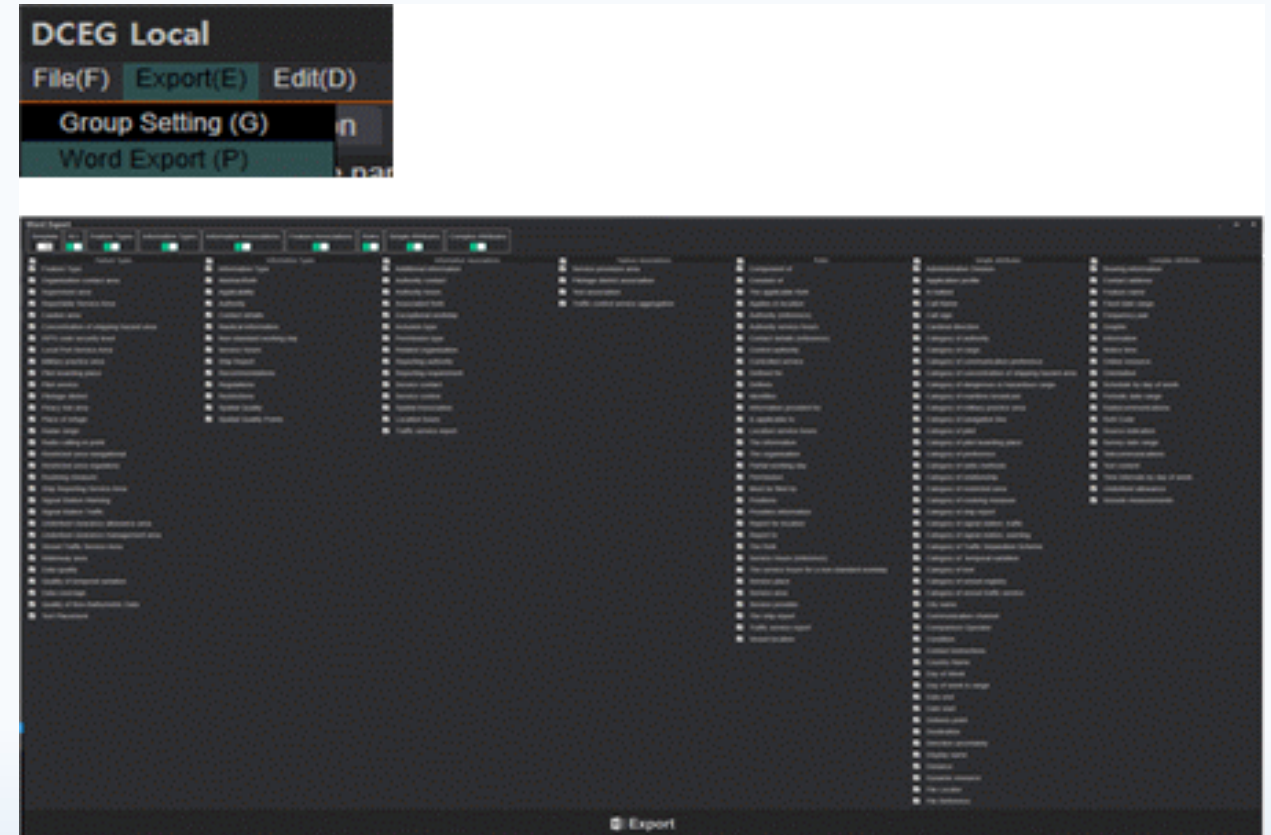
Super Type: -

Primitives: coverage, pointSet -

Real World - Paper Chart Symbol - ECDIS Symbol -

S-111 Attribute -	S-57 Acronym -	Allowable Encoding Value -	Type -	Multiplicity -
Surface current speed -			RE -	1, 1 -
Surface current direction -			RE -	1, 1 -

This paper was generated by the IHO DCEG builder.

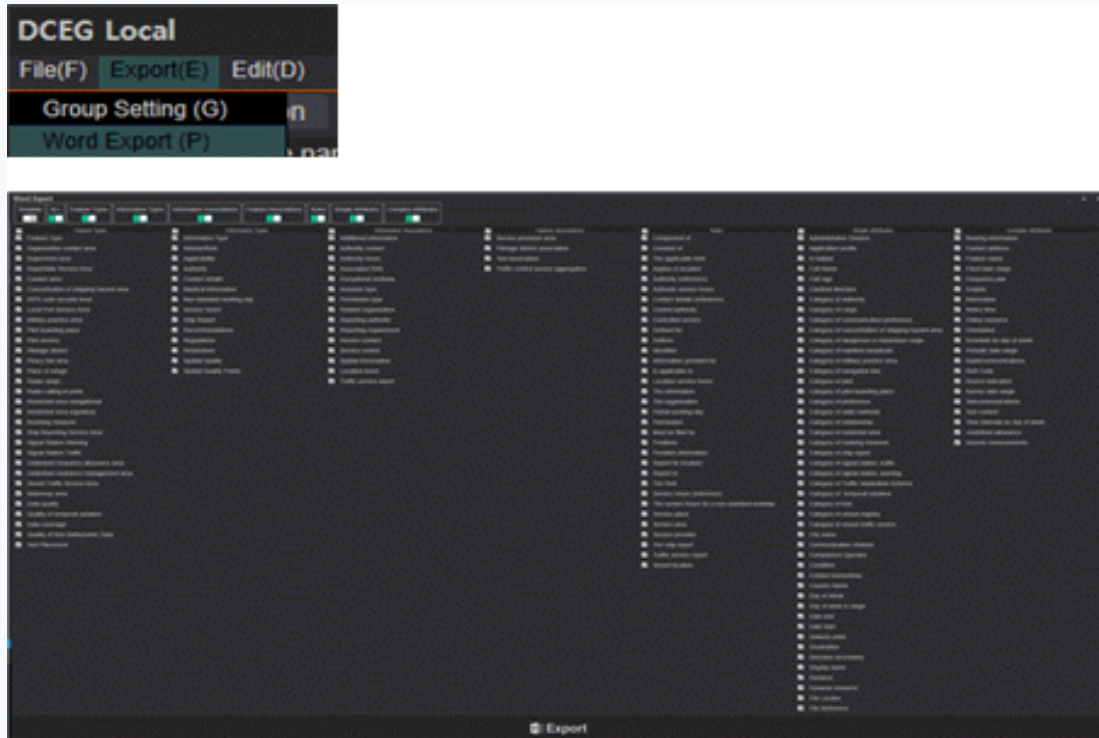


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5. Other toolkit - DCEG Builder

- It also can support to add “text” information, not belonging to the FC



Data Classification and Encoding Guide

1.

1.1 Feature Type

The maximum use must be made of **meta** features to reduce the attribution on individual features. In a base dataset (EN Application profile, see S-101 ENC Product Specification main document clause XX), some **meta** features are mandatory. ❖

These mandatory **meta** features are in the following list: ❖

Data Coverage: In order to assist in data discovery, the **meta** feature Data Coverage must be used to provide coverage of the part of the dataset covered by Skin of the Earth features. See clause XX. ❖

Navigational System of Marks: The **meta** feature Navigational System of Marks must provide an exhaustive non-overlapping coverage of the part of the dataset containing data. See clause XX. ❖

Quality of Bathymetric Data: The **meta** feature Quality of Bathymetric Data defines areas within which uniform assessment exists for the quality of bathymetric data, and is used to provide an assessment of the overall quality of bathymetric data to the mariner. Areas of a dataset at maximum display scale 1:700000 and larger containing depth data or bathymetry must be covered by one or more Quality of Bathymetric Data features, which may overlap vertically (see clause XX). At maximum display scales smaller than 1:700000, Quality of Bathymetric Data features must be encoded where no larger maximum display scale ENC data is available. ❖

3.1 Horizontal uncertainty

The attributes quality of horizontal measurement and horizontal position uncertainty may be applied to any spatial type, in order to qualify the location of a feature. ❖

If it is required to encode the uncertainty of a horizontal clearance (complex attributes horizontal clearance fixed and horizontal clearance open), it must be done using the sub-attribute horizontal distance uncertainty. ❖

Horizontal distance uncertainty applies only to horizontal clearance fixed and horizontal clearance open. There is no attribute to express the accuracy of the attributes horizontal length and horizontal width. ❖

Horizontal distance uncertainty, horizontal position uncertainty and quality of horizontal measurement must not be applied to the spatial type of any geo feature if they are identical to the horizontal distance uncertainty, horizontal position uncertainty and quality of horizontal measurement values of the underlying **meta** feature. ❖

Quality of horizontal measurement gives qualitative information, whereas horizontal position uncertainty gives quantitative information. ❖

Remarks

No remarks. ❖

3.2 Vertical uncertainty

If it is required to encode the uncertainty of a vertical clearance (complex attributes vertical clearance fixed, vertical clearance open, vertical clearance closed and vertical clearance safe), it must be done using the complex sub-attribute vertical uncertainty. ❖

If several vertical clearances are given for one feature, the uncertainty given must be that of the least accurate. ❖

Remarks

1.1 Feature Type

2.

IHO Definition: Generalized feature type which carries all the common attributes. ❖

S-10x Geo Feature: Feature Type ❖

Super Type: ❖

Primitives: noGeometry ❖

Real World: ❖ Paper Chart Symbol: ❖ ECDIS Symbol: ❖

S-10x Attribute	S-57 Acronym	Allowable Encoding Value	Type	Multiplicity
Fixed date range			C	0..1
Date end	(DATEND)		(S) TD	0..1
Date start	(DATSTA)		(S) TD	0..1
Periodic date range			C	0..1
Date end	(DATEND)		(S) TD	1..1
Date start	(DATSTA)		(S) TD	1..1
Feature name			C	0..1
Display name			(S) BC	0..1
Language	(LANGGE)		(S) TE	0..1
Name			(S) TE	1..1
Source indication	(SORIND)		C	0..1
Category of authority	(CATAUT)	1: customer 2: border control 3: police 4: port 5: immigration 6: health 7: coast guard 8: agricultural 9: military 10: private company 11: maritime police 12: environmental 13: fishery 14: finance	(S) EN	0..1

S-10x Annex A September 2019 Version 0.0.1

S-10x Annex A September 2019 Version 0.0.1



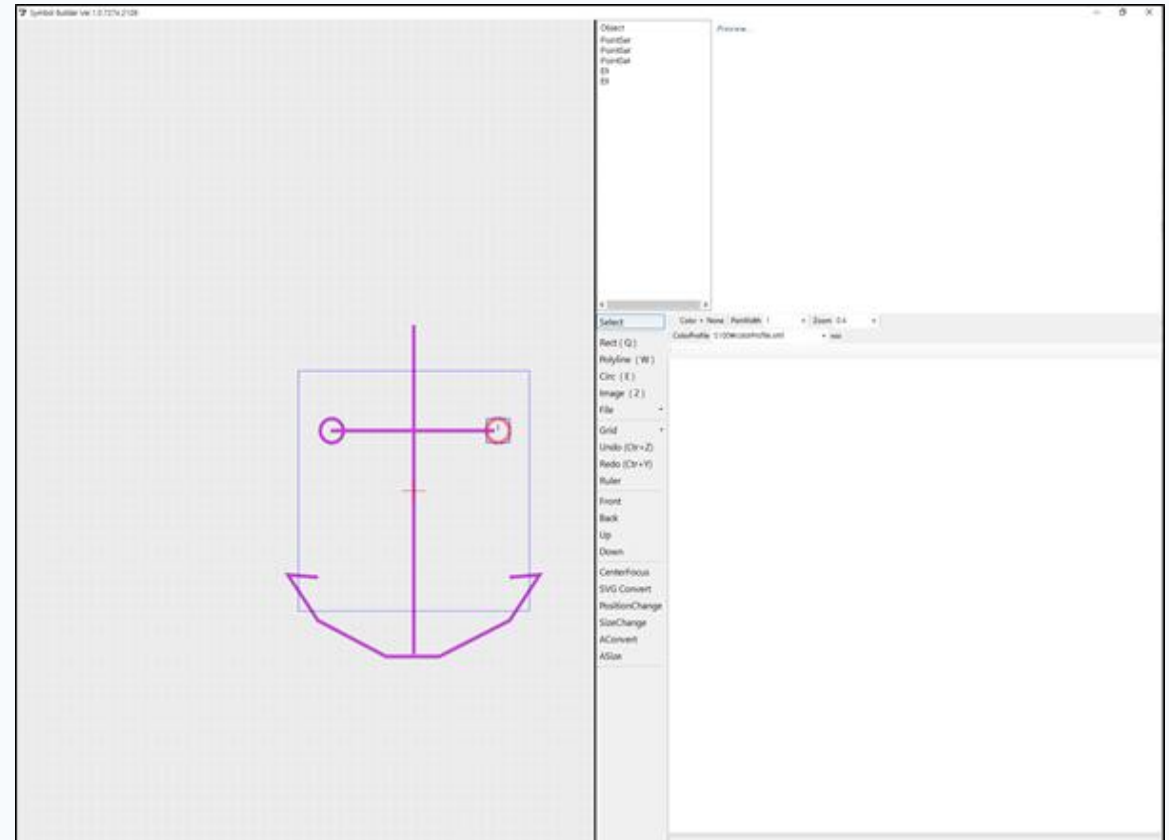
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5. Other toolkit - Symbol Editor

- KHOA S-100 Symbol Editor has been developed to **convert S-100 SVG from the AI (Adobe Illustrator)** and then loaded into the Symbol Editor for additional modifications if necessary.



6. S-100 Launcher

- KHOA has maintained S-100 Infra-systems such as S-100 FCB, S-100 PCB, S-100 DCEG Builder and other toolkits
 - ✓ But, it is difficult to share and distribute the latest
- S-100 Launcher has been developed to help integrate and manage S-100 Infra-system and maintain the latest updates at any time via the GI registry connection.



7. Conclusions and Recommendations

- KHOA has supported the S-100 ecosystem by developing and maintaining S-100 infra-system. These include 3rd S-100 GI Registry and other S-10X production tools (FCB, PCB, DCEG Builder).
- It is requested to review and comment on the S-100 infra-system developed by KHOA.



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Action requested of S-100WG

- S-100WG5 is invited to:
 - a. **Note** this paper
 - b. **Provide** comments and feedbacks of the S-100 infra-system



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