Hydrographic Services and Standards Committee

Report of the EAHC E-MIO Working Group

To HSSC6, November 2014

Progress on Development of e-MIO product specification
for East Asia region

Introduction / Background

✦ Recognition of importance on the marine environment

- At the EAHC Coordinating Meeting held in Jan 2013 in Busan, Republic of Korea, the EAHC recognized the importance of the blue economy as well as the need to protect the marine environment and organized e-MIO WG.

- The e-MIO WG led by the Republic of Korea was tasked to produce a test bed on marine environment MIO for the region.
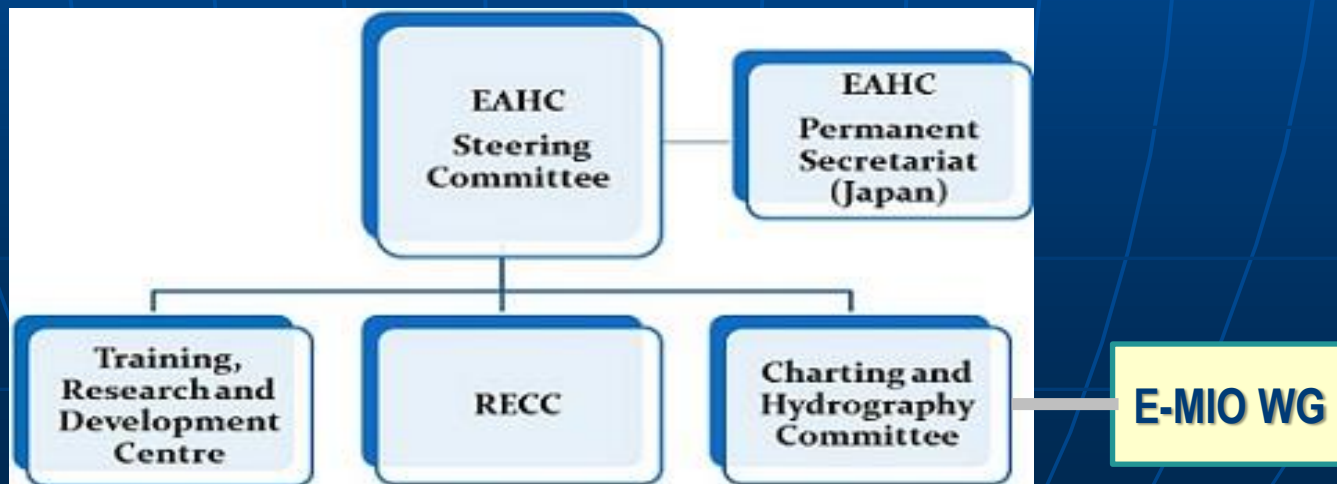
Analysis/Discussion

Marine Information Overlay

Marine Information Overlays are <u>additional information layers</u> to be displayed in conjunction with electronic charts on an ECDIS or other chart display system. They provide the mariner, researcher or other user with additional information about important non-navigation information in a standards based format.

* <u>MIO sub-categories include:</u>

A **Aids-to-navigation** (AtoN)
C **Current flow**
D **sailing Directions**
I **Ice coverage**
L **Logistics**
M **Marine environmental protection**
  - coral reef
  - Marine Protected Area (MPA)
O **Oceanographic**
P **Pipelines/cables**
S **Security**
T **Tide/water level**
V **Viewpoint** (as exists in AMLs)
W **Weather/meteorological**

➢ MIOs are supplemental geo-spatial information that are used with an ENC.
✓ ENCs for safety-of-navigation
✓ MIOs for additional information (marine environmental protection, coastal zone management, etc.)

E-MIO : Environmental Marine Information Overlays

Static
Bathymetric (e.g., gridded data)
Geophysical data (seismic, gravity, magnetic)
Seafloor classification/physiography
Archeological (wrecks, heritage sites)
Critical Habitats (e.g., coral reefs, nesting sites)

Dynamic
Tides (predicted, real-time, forecast)
Current flow (speed, direction, time of occurrence)
Meteorological (wind speed/direction)
Oceanographic (wave height/direction, salinity, temp)
Ice Coverage

Analysis/Discussion

- The e-MIO WG established in January 2013 drew up the following plans for the establishment of the marine environment MIO:

  – e-MIO Test Bed Establishment Stage (2013 - 2014)

  - the draft Marine Environment Product Specification

  - the production of test dataset

  - the development of e-MIO Viewer

  S-57 Domain

  – e-MIO Dataset Establishment Stage (2015 -)

  – S-10X Transfer Study Stage (2015 -)

Analysis/Discussion

✦ Draft of e-MIO Product Specification

NOAA, Environmental Sensitivity Index Guidelines	**E-MIO Spec. of HGMIO**

NOAA Technical Memorandum NOS OR&R 11

Environmental Sensitivity Index Guidelines Version 3.0

GEO OBJECT CLASSES

Object Class: **Coral Reef**

Acronym: **crlref**   Code: 31400

Set Attribute_A: catref, crlcov, strctr, COLOUR, NATSUR, NATQUA; NOBJNM; OBJNAM
Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;
Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

reef (general) - A mass of rock or coral which either reaches close to the sea surface or is exposed at low tide, posing a hazard to navigation. (IHO Dictionary, S-32, 5th Edition)

Coral reef - A reef, often of large extent, composed chiefly of coral and its derivatives. (IHO Dictionary, S-32, 5th Edition)

IMO/IPIECA, Sensitivity mapping for oil spill response	**S-122 MPA of IHO SNPWG**

IPIECA   IMO   OGP

Sensitivity mapping for oil spill response

GEO OBJECT CALSSES

Object Class: Environmental Sensitivity Index

Acronym: esilne   Code: 31300
Set Attribute_A: catesi; COLOUR; CONRAD; CONVIS; ELEVAT; NOBJNM; OBJNAM;
Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;
Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;
Geometric Primitives: Line; Area;

GEO OBJECT CALSSES

Object Class: Marine Protected Area

Acronym: mpaare   Code: 30501
Set Attribute_A: catiuc; typmpa; consty; DATEND; DATSTA; DRVAL1; DRVAL2;
                        confcs; levprt; ecoscl; NOBJNM; OBJNAM; PEREND;
                        perman; PERSTA; RESTRN; STATUS;
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Geometric Primitives: Point; Area;

GEO OBJECT CALSSES

Object Class: Sensitive Biological Resources

Acronym: biores   Code: 31100
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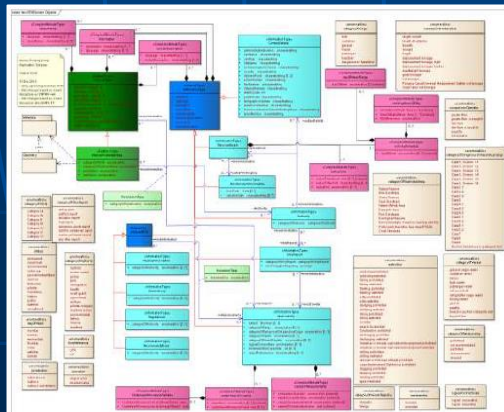Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;
Geometric Primitives: Point; Area;

GEO OBJECT CALSSES

Object Class: Socio economic human features

Acronym: humres   Code: 31200
Set Attribute_A: cathum; DATEND; DATSTA; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS;
Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;
Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;
Geometric Primitives: Point; Area;

Analysis/Discussion

+ ## The e-MIO WG recognized

  – The Product Specification needs to be further supplemented and expanded in order for an EAHC Member State to build a database

  – Finding CeisNET, established by the Japan Coast Guard, includes a wide range of information on marine environment
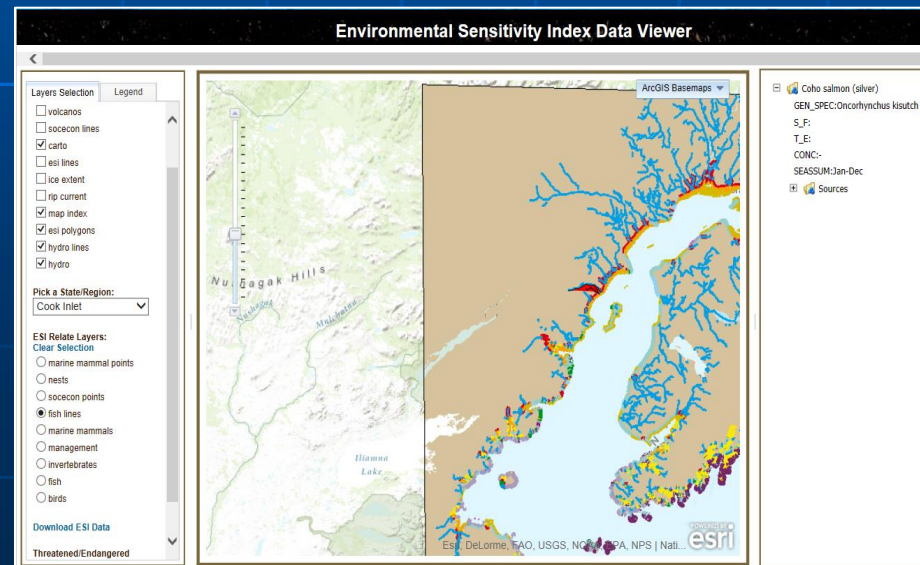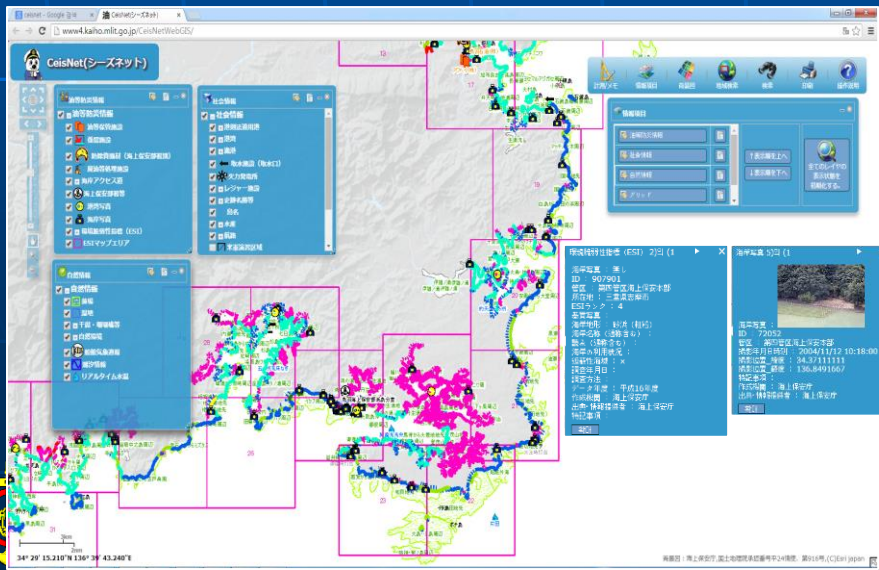
Analysis/Discussion

✦ Supplement of e-MIO Product Specification

– Identification of Object type for marine environment info. of CeisNet

| Oil-spill response information		Social information		Natural information	
Layers	Object Definition	**Layers**	Object Definition	**Layers**	Object Definition
Oil storage facility	**Oil facility (New)**	**Navigational Regulation application information**	Harbour area (S-57)	**Sea Weed Farm**	Weed/Kelp (S-57)
Mooring facility	Mooring facility (S-57)	**Harbour (Harbor area)**	Harbour facility (S-57)	**Wetland**	Land region (S-57)
Oil-spill response material	Oil facility (New)	**Fishing Port (Fishing Port Area)**	Harbour facility (S-57)	**Coral Reef**	**Coral reef (HGMIO)**
Waste oil disposal facility	Oil facility (New)	**Water-intake facility**	Building, Single (S-57)	**Mangrove**	**Mangrove (New)**
Coastal access route	Road way (S-57)	**Thermo-electric Power plant**	Building, Single (S-57)	**Marsh**	**Tide flat (New)**
Maritime Security Office	Building, Single (S-57)	**Leisure Facility, Beach**	**Leisure facility (New)**	**Marine organism**	**Marine biology (New)**
Harbor picture	Harbour facility (S-57)	**Fishery zone**	Fishery zone (S-57)	**Meteorological forecast for vessels**	Signal station, warning (S-57)
Coastal picture	**ESI (New)**	**Fairway**	Fairway (S-57)	**Tidal Information**	Signal station, warning (S-57)
ESI Environmental Sensitivity Index	ESI (New)	**Marine Park and Protected Area**	**MPA (HGMIO)**	**Real time fixed water temperature information**	Signal station, warning (S-57)

Analysis/Discussion

- ✦ Sample dataset in the e-MIO Viewer

ESI Guideline Symbol of IPIECA/IMO/OGP
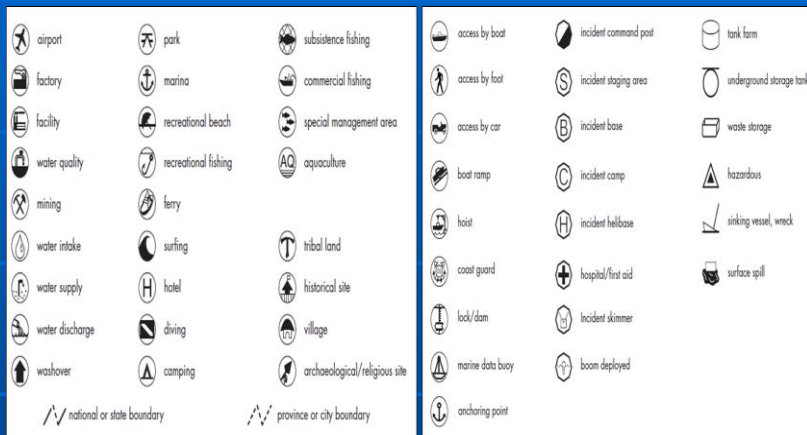
Symbol of CeisNet
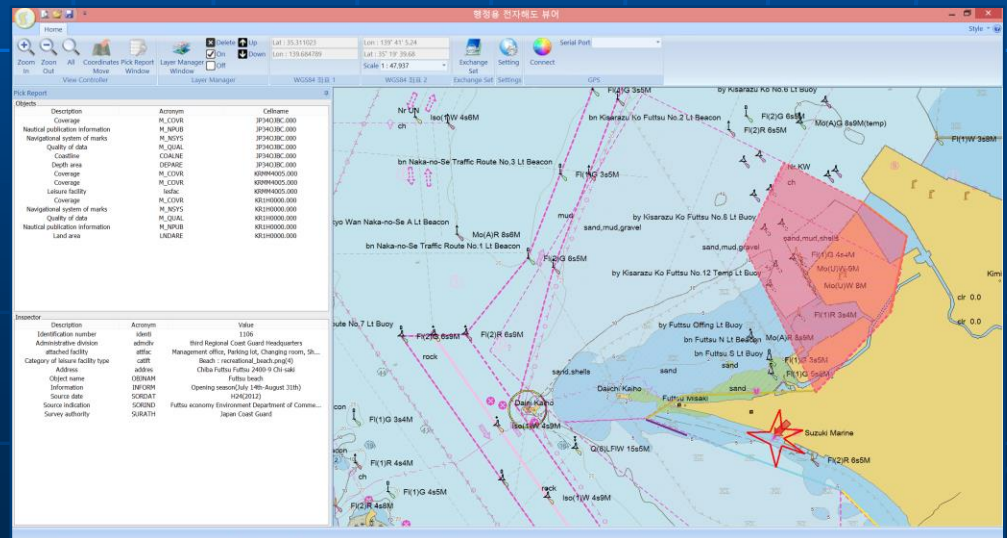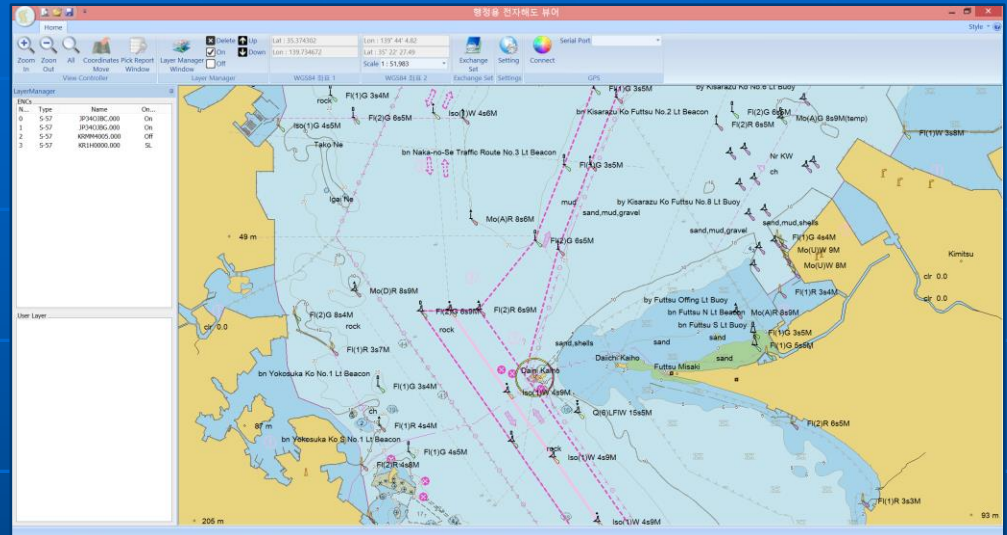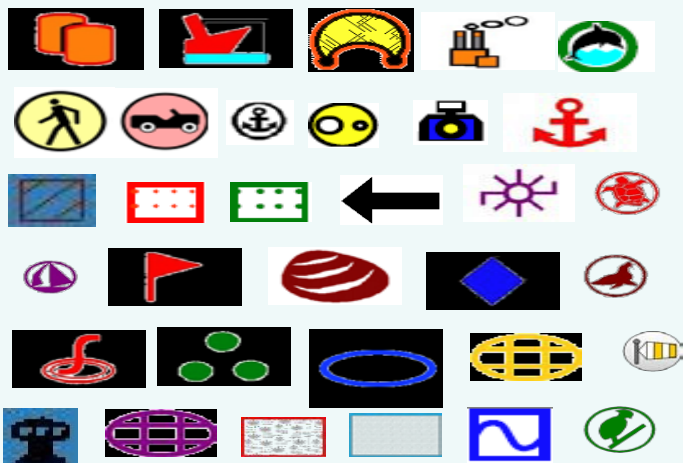
Analysis/Discussion

- At the 3rd Carting and Hydrographic Committee Meeting held in Hong Kong in July 2014,

  - the e-MIO WG presented the progress and outcomes in the expansion of the Product Specification, production of test dataset for Tokyo Bay, and the development of the e-MIO Viewer.

- ROK, a leading member of the e-MIO WG underlined

  - the need for the EAHC Member States to review the updated Product Specification and proposed that a guideline or a cookbook be created as a reference in building an e-MIO database.

  - The EAHC CHC to which the e-MIO WG reports reviewed the progress made by the e-MIO WG and supported the continuous work of the e-MIO WG.

Analysis/Discussion

- To finalize the current stage, the e-MIO WG is planning to report the outcomes of the following to the meeting

  - Preparation of e-MIO Product Specification (draft), as agreed on the WG level

  - Sample dataset produced in accordance with the e-MIO Product Specification

  - Outcomes of the development of e-MIO Viewer

  - Guidelines for e-MIO establishment as a reference for Member States

Analysis/Discussion

✦ As part of the preparation for the transfer to S-100 based Product Specification, the following areas will be taken into account:

– Inclusion of the marine environment MIO in the FCD (Feature Concept Dictionary)

– Development of S-10X Standard linked with the SNPWG's S-122 MPA (Marine Protected Areas)

– How to transfer the S-57 e-MIO to S-10X using the S-57 to S-10X Converter

– How to establish the S-10X Test bed on Marine Environment

Action Required of HSSC

✦ The HSSC is invited to:

– note the information in this paper