

E-NAVIGATION UNDERWAY

(24 – 26 January 2018)



IHO S-100 FRAMEWORK - BASELINE STANDARD FOR E- NAVIGATION MARITIME SERVICES

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What is the International Hydrographic Organization ?

.... **intergovernmental** consultative and technical organization

.... established in **1921**

.... to support **safety of navigation** and the **protection of the marine environment**

The Mission of the IHO is;

... to facilitate the provision of **adequate and timely hydrographic information**

... for world-wide **marine navigation** and other purposes

... through the co-ordination of the endeavors of **national hydrographic offices**



How did the Organization Come About?

- 1899** International **cooperation** in the field of hydrography began with a **Conference held in Washington**
- 1908** International **Congress of Navigation**, St Petersburg
- 1912** International **Maritime Conference**, St Petersburg
- 1919** International **Hydrographic Conference**, London ...



How did the Organization Come About?



1919 International Hydrographic Conference, London



How did the Organization Come About?

.....

1921 IHB established - based in Monaco

1970 International Convention: established

2005 Protocol of Amendments to the IHO Convention

2016 ... majority of Member States' approved the amendments

2016 International Hydrographic Bureau (IHB) changed to the IHO
Secretariat

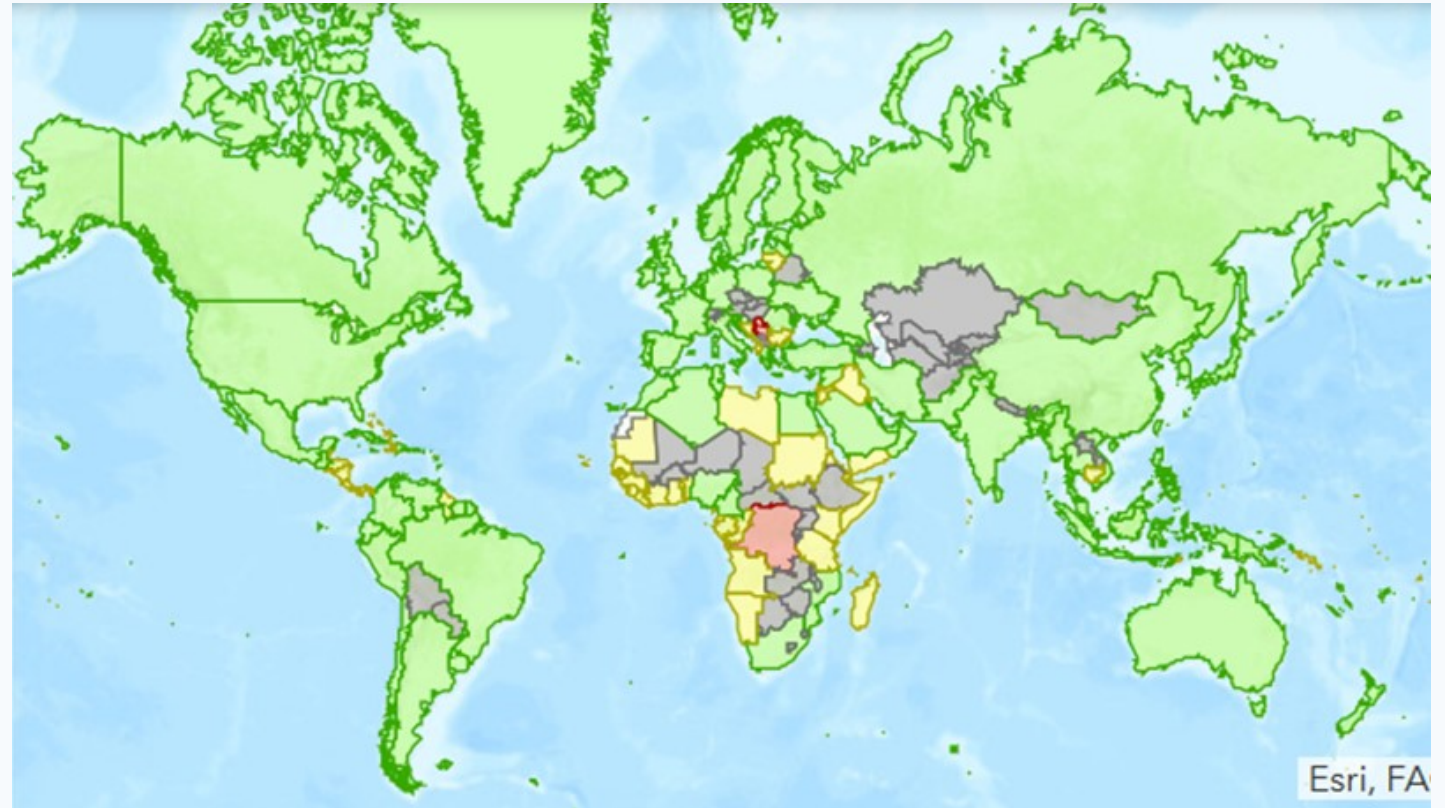
2017 IHO held its first Assembly and Council meeting



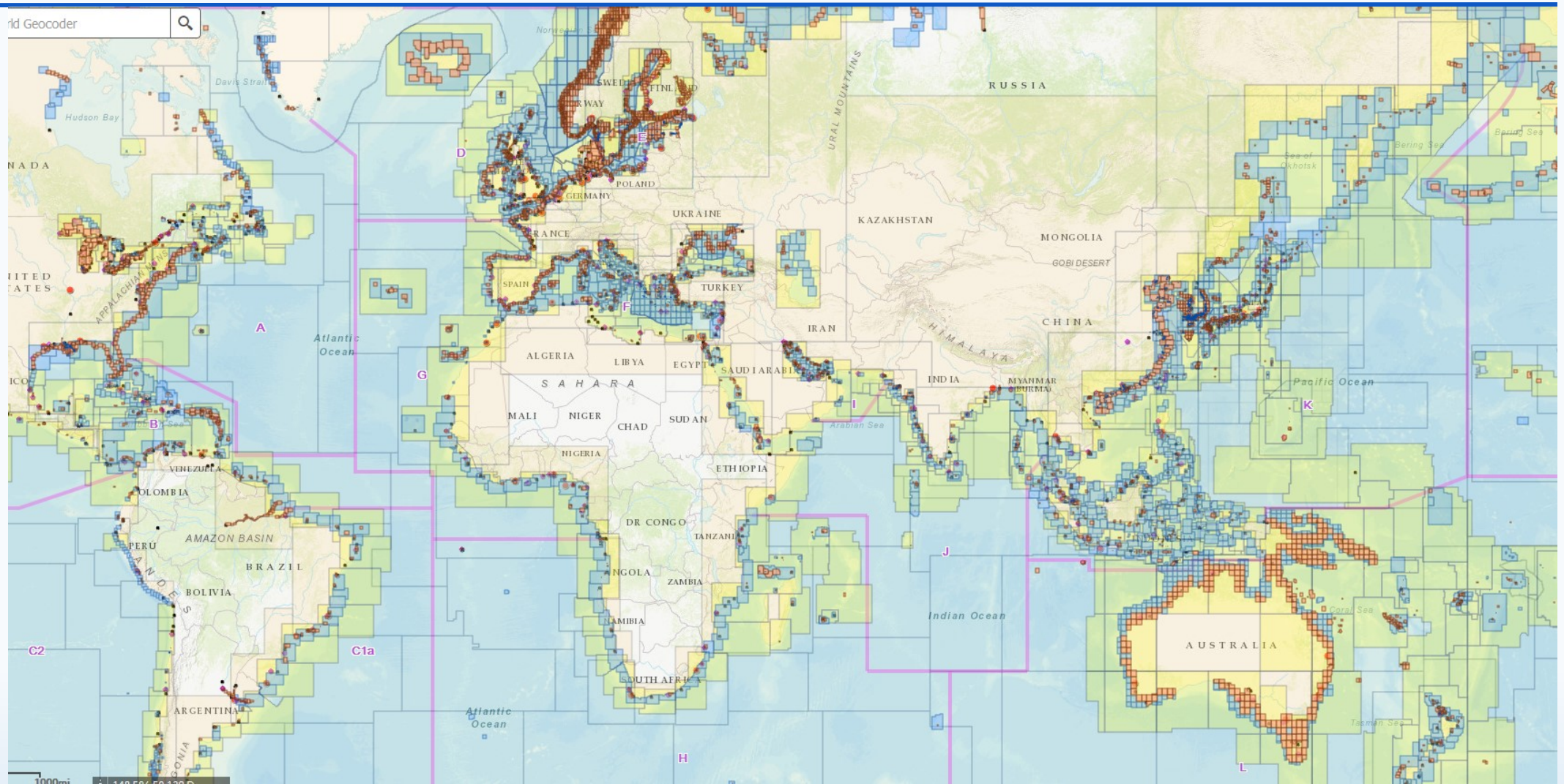
The International Hydrographic Organization

Current Status of the IHO

- 87 Member States
- 43 Observer organizations



IHO ENC Coverage



The times – they are a changing



Come gather 'round people Wherever you roam And admit that the waters Around you have grown And accept it that soon You'll be drenched to the bone If your time to you is worth saving Then you better start swimmin' or you'll sink like a stone For the times they are a-changin' [Bob Dylan]



Why Change from S-57?

S-57;

- ... was developed during the late 1980s to the late 1990s –
- ... it reflects the technology of that period
- ... was developed primarily for ENC data exchange

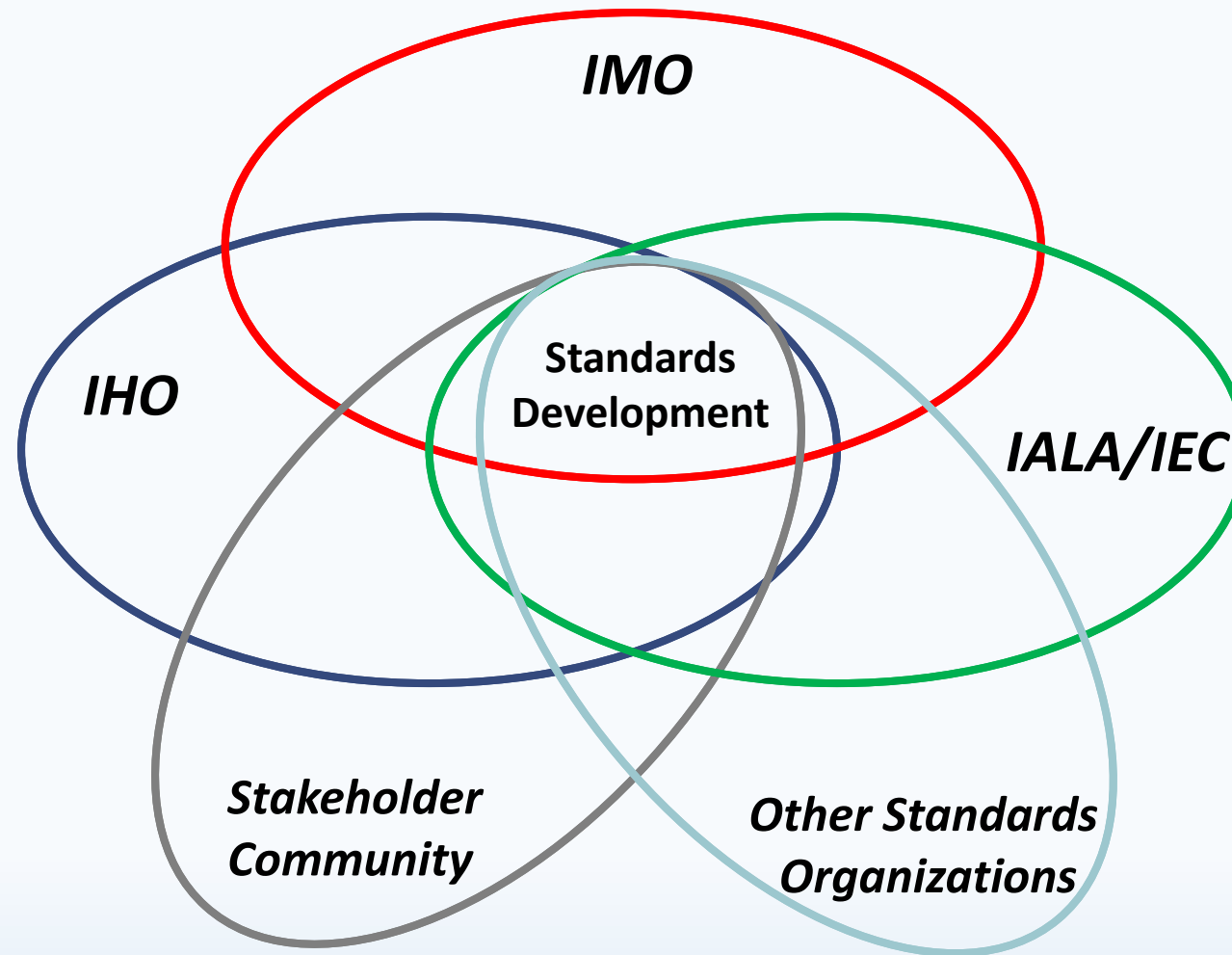
S-57 has a number of limitations which include;

- ... difficult to extend or change;
- ... has limited support for different data types e.g. gridded data and encoding formats

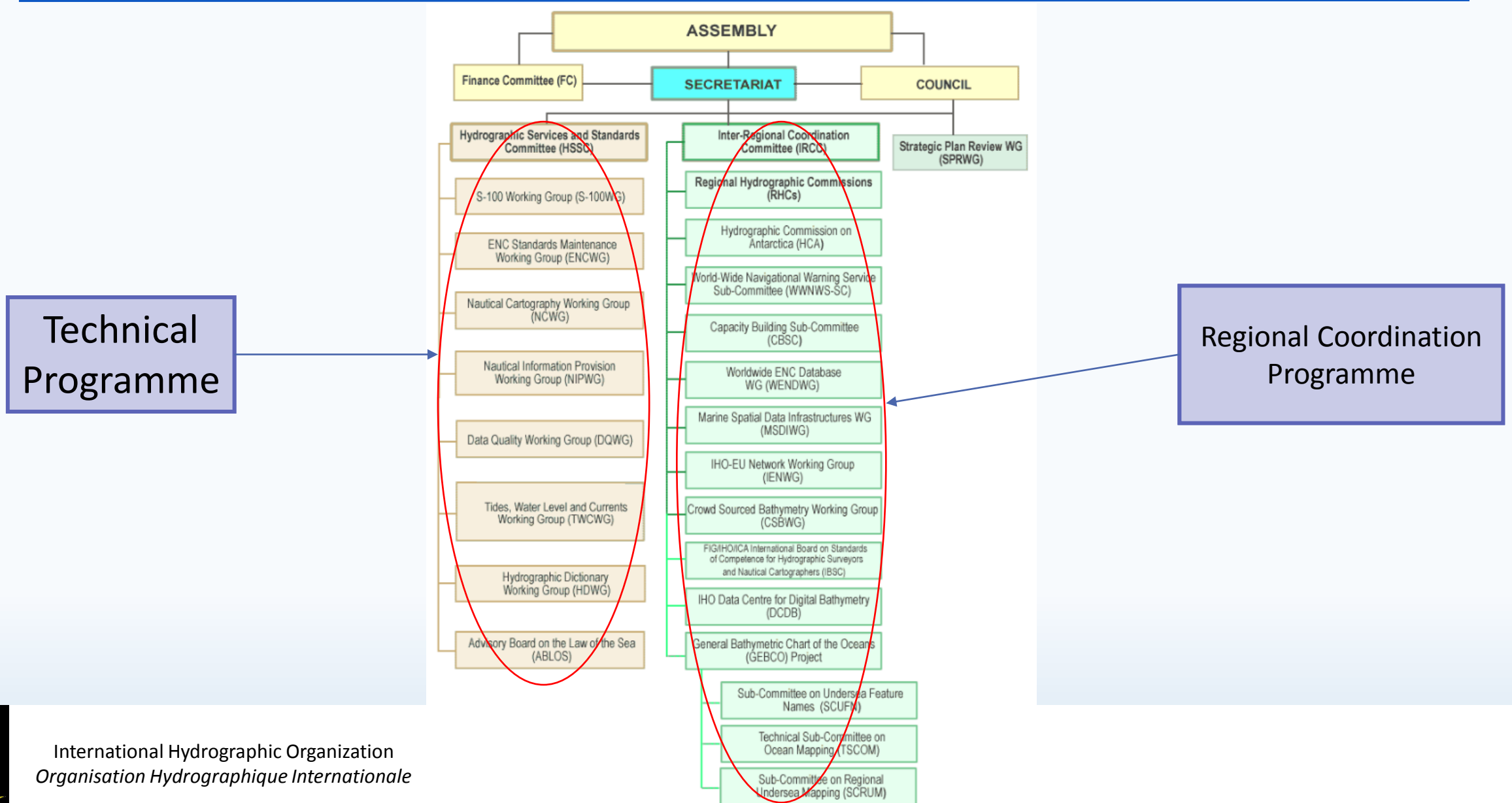
These limitations prompted the development of the S-100 standard framework.



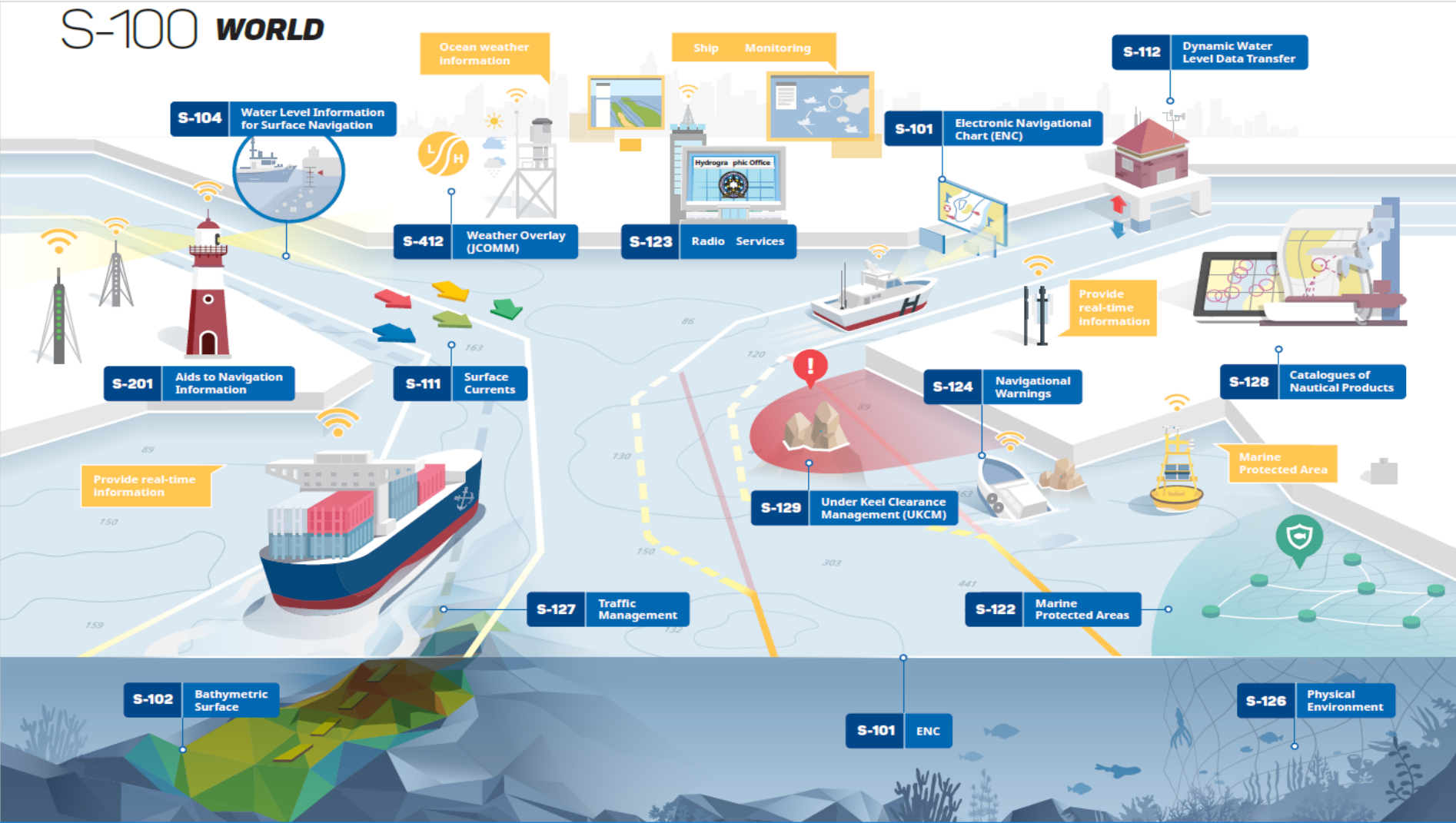
IHO Standards Development with Respect to Other Important Organizations



The Structure of the IHO?



S-100 Universal Hydrographic Data Model



S-100 Based ECDIS

- will need to support multiple products that will interoperate within the same system
- will have a more manageable maintenance regime
- will be able to support different data types (e.g. gridded, vector)



Product Interoperability – Domains of use.

S-100 Product Specification Numbers:

IHO Domain: S-101 to S-199

IALA Domain: S-201 to S-299

International Oceanographic Commission (IOC): S-301 to S-399

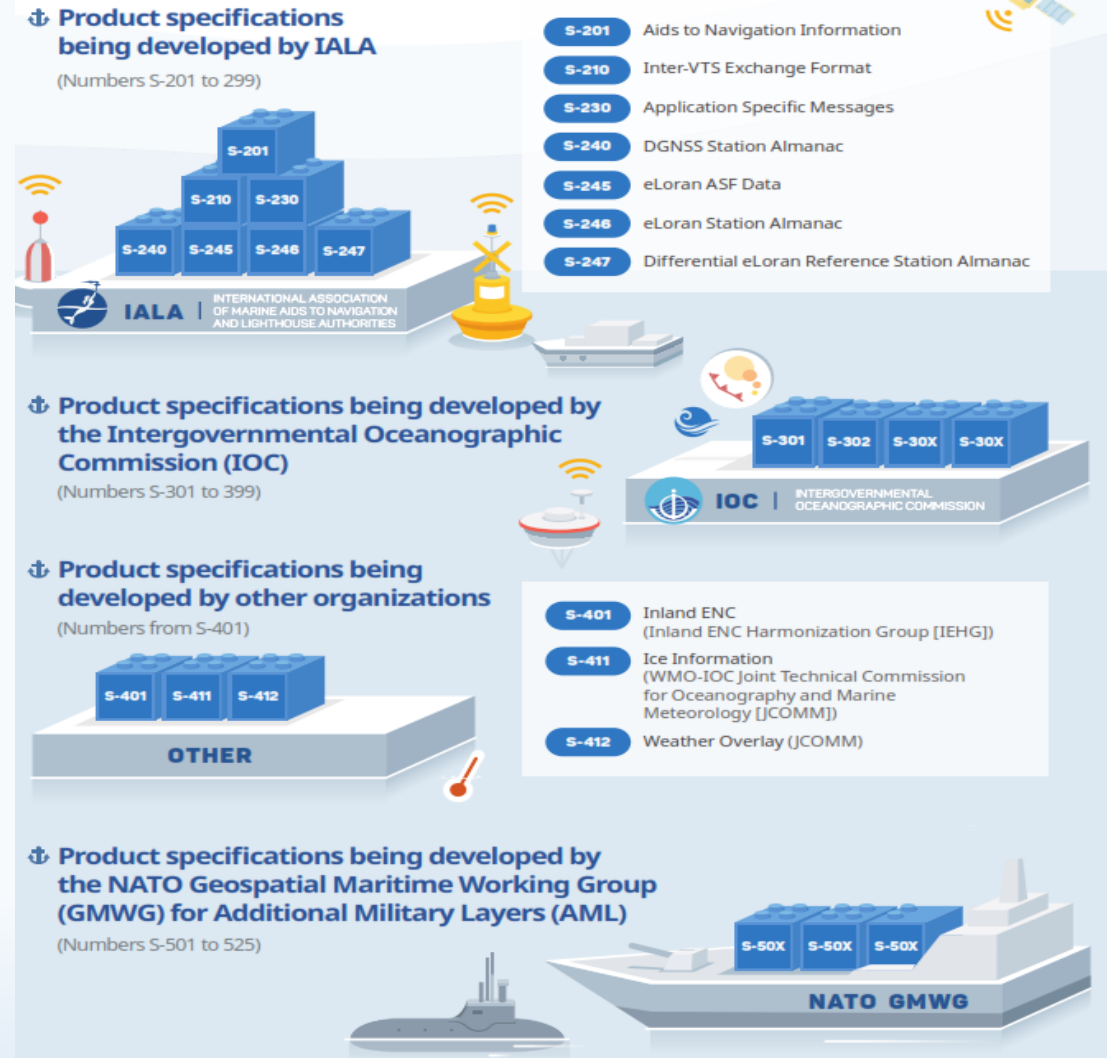
Inland ECDIS Harmonization Group Domain: S-401 to S-410

JCOMM Ice Information: S-411

JCOMM Weather Overlay: S-412

International Electrotechnical Commission (IEC) domain: S-421 to S-430

NATO GMWG: S-501 to 525

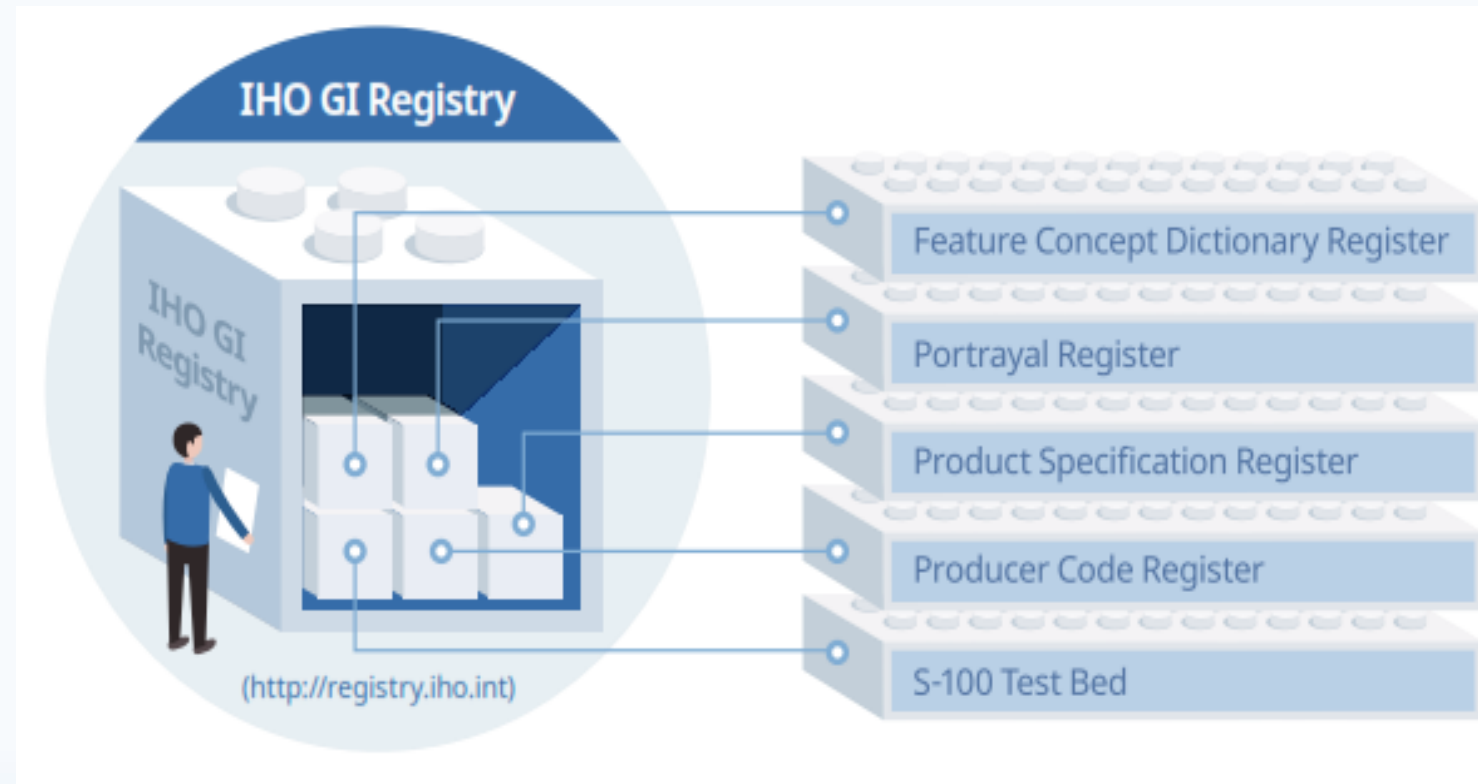


IHO – GI Registry

The Registry provides a the framework for managing several Registers (databases) that contain information about;

- Features,
- Portrayal elements,
- Data Producer Codes and
- Product Specifications and their associated catalogues and other resources.

<http://www.registry.iho.int>



S-100 Test bed Projects

Several Testbed Projects have been held over the past few years. In 29th to 31st August 2017 KHOA and NOAA held S-100 Interoperability Workshop (Daejeon, Republic of Korea) to validate the concept of the multiple product interoperability within an S-100 based ECDIS.

The S-100 Working Group have developed an Interoperability Catalogue (IC). One of the main objectives workshop was to test the use of product datasets in an S-100 ECDIS.

No.	Title
S-101	Electronic Navigational Chart (ENC)
S-102	Bathymetric Surface
S-111	Surface currents
S-112	Meteorological and Hydrographic Data AIS Application-Specific Message Dynamic Water Level Data Product Specification
S-122	Marine Protected Areas
S-124	Navigational warnings
S-411	Sea Ice (WMO-IOC Joint Technical Commission for Oceanography and Marine Meteorology [JCOMM])
S-412	Met-ocean forecasts (JCOMM)



Way Forward.....

S-100 Future

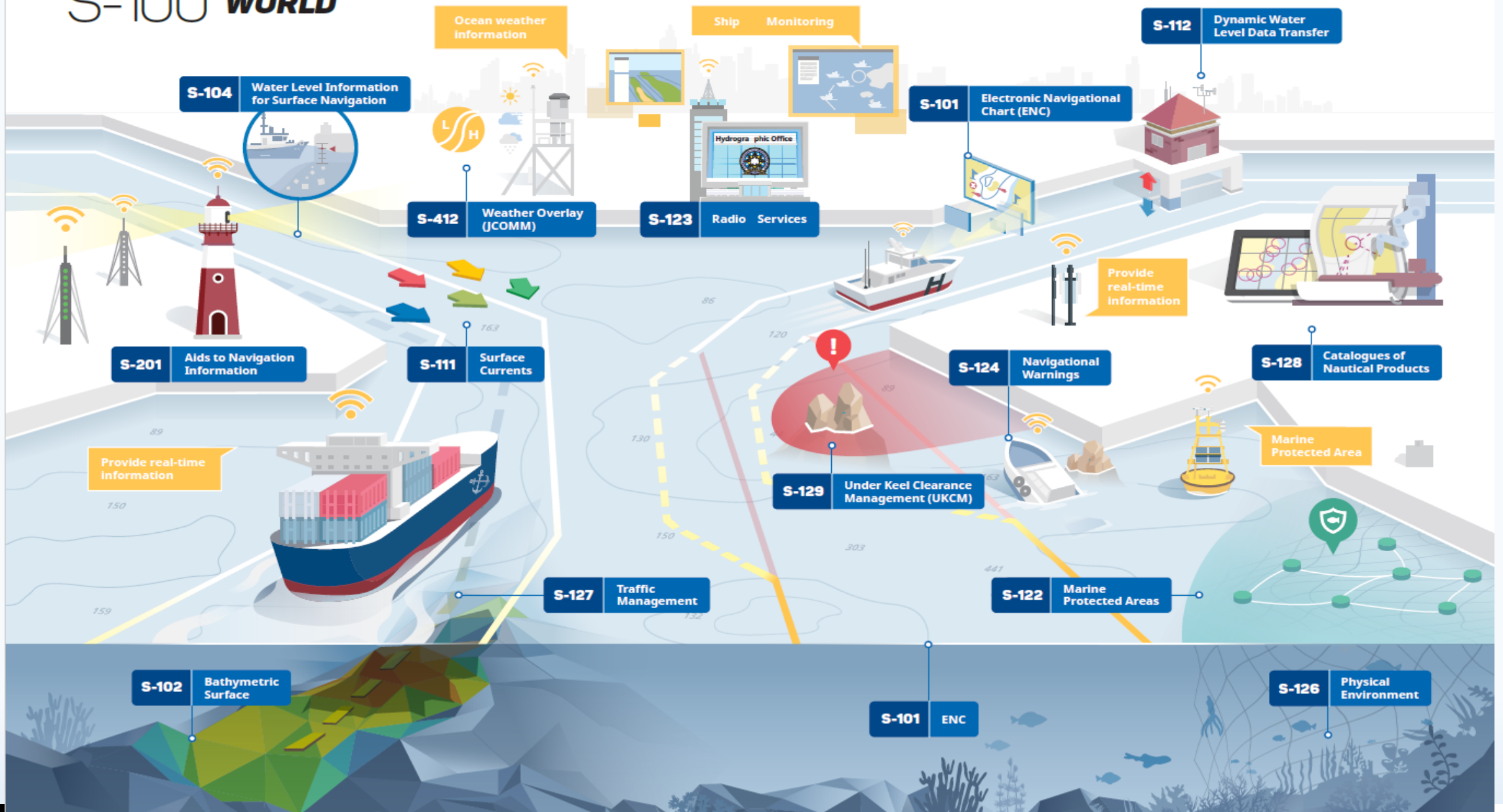
- Edition 4.0. expected to be released in 2019
 - Two proposals that are under consideration for the next edition include Data Streaming and Marine Resource Names submitted by IALA.

S-101 Status

- S-57 to S-101 Data Converter – (about 80% direct conversion)
- KHOA have built editor to insert missing features
- Feature Catalogue – for testing.
- Test datasets have been developed – used in test bed projects.
- Edition 1.0 of S-101 expected to be released in 2018 for trial purposes.



S-100 WORLD





Questions / Comments?

For more information: <http://www.iho.int>

Contact: info@iho.int

