

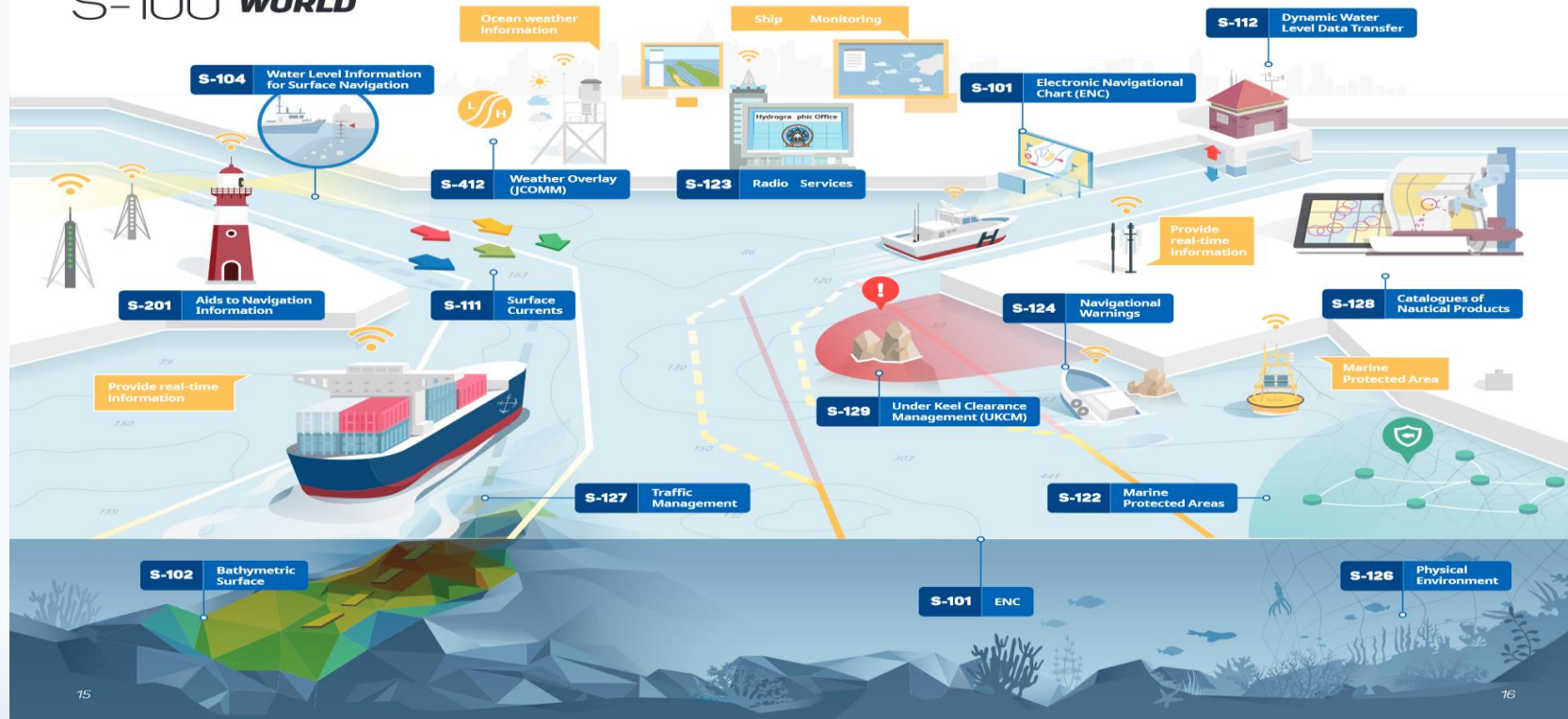
Making official information about maritime limits and boundaries digitally available

IHO's new S-121 Maritime Limits and Boundaries data standard
is now ready to be brought into action



The IHO S-100 Standards Aquarium

S-100 **WORLD**



15

16



UN Sustainable Development Goals

14 LIFE
BELOW WATER



Goal 14.C: Enhance the conservation and sustainable use of oceans and their resources by **implementing international law as reflected in UNCLOS**, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of *The Future We Want*.

Indicator 14.2.1: Proportion of national **exclusive economic zones managed** using ecosystem-based approaches.



Deposit obligation under UNCLOS

- Straight baselines and closing lines of mouths of rivers and of bays (article 16);
- Archipelagic baselines (article 47);
- The outer limits of the territorial sea, the exclusive economic zone and the continental shelf (articles 16, 75, and 84), including the lines of delimitation.



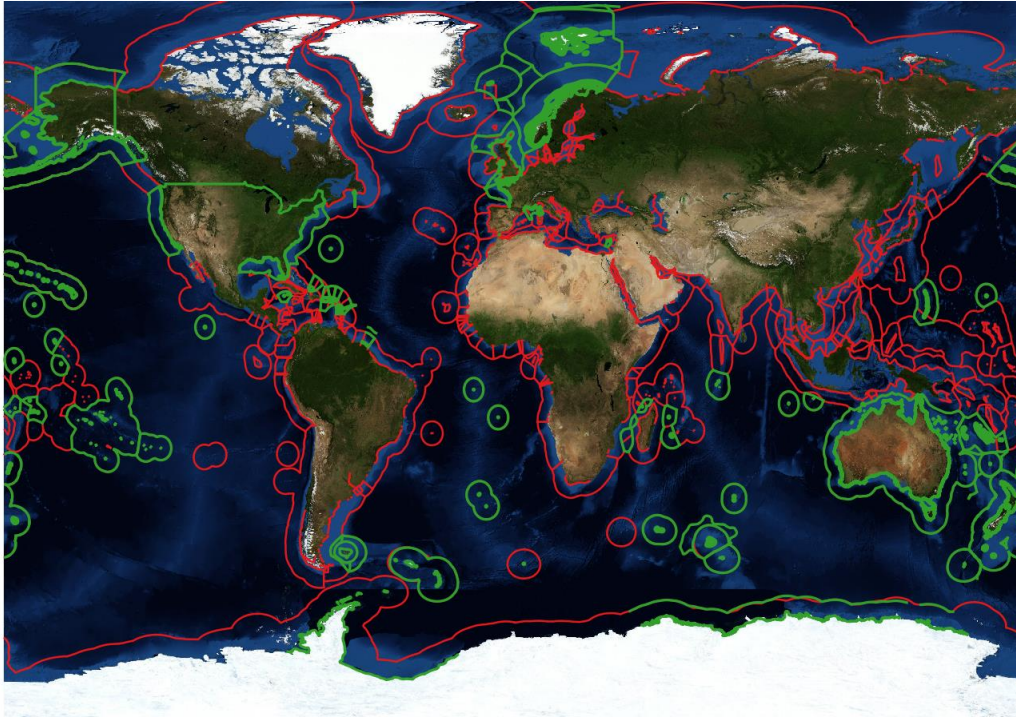
Current situation of States' deposits

80 coastal States made 134 mainly partial deposits;

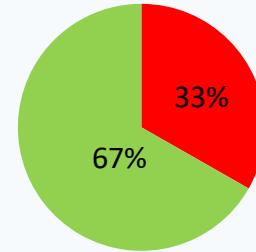
- paper charts
- lists of geographical coordinates



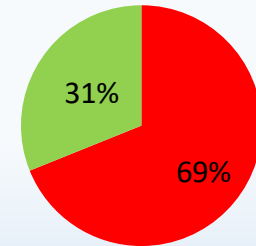
Maritime Limits and Boundaries Spatial Data Published & Online



Deposited



Digital data available



Fruitful cooperation



The United Nations General Assembly requested the Secretary General to

“**improve** the existing **Geographic Information System** for the deposit by States of charts and geographical coordinates concerning **maritime zones**, including **lines of delimitation**, submitted in compliance with the Convention, and to **give due publicity thereto**, in particular by implementing, in cooperation **with ... the International Hydrographic Organization**, the technical standards for the collection, storage and dissemination of the information deposited, in order to **ensure compatibility** among the Geographic Information System, electronic nautical charts and other systems developed by these organizations.”

A/RES/59/24



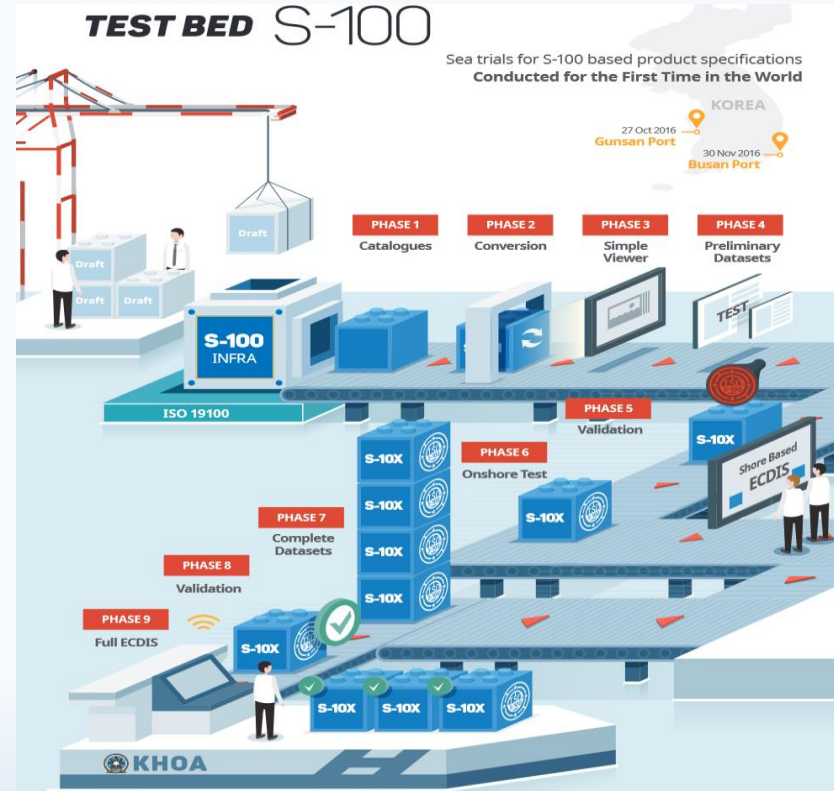
A global holistic approach

International Hydrographic Organisation's **S-100 Universal Hydrographic Data Model** provides the **framework** to develop the **next generation** of Electronic Nautical Chart **data products**, as well as other marine oriented digital products required by **all communities** who have a use with the seas.

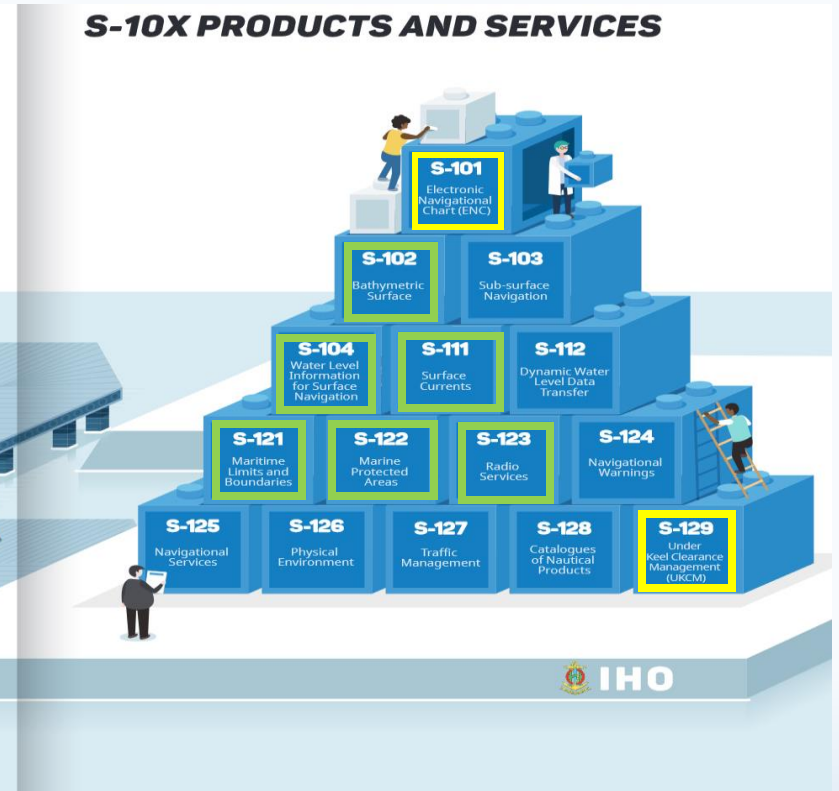
All data products based on the **S-100** model are **interoperable**; this means that they can easily **combined** in GIS-Systems: **visually as well as semantically**.



The IHO S-100 Standards Factory



S-10X PRODUCTS AND SERVICES



S-121 based on the mainstream of GIS standardization



International Organization for Standardization's 19152: Land Administration Domain Model

- Applies to land and water, above and below the surface
- Describes Parties and their associated Rights, Responsibilities, and Restrictions (RRR)
- Authorises Basic Administrative Units (BAU)
 - Spatial sources (data)
 - Legal sources (legislation)



**Dec.
2016**

The first S-121 Project Team meeting was officially launched in the United Nation Head-Quarters, NY.

**June.
2018**

The S-121 V1.0 was officially provided to the IHO governing body (HSSC – Hydrographic Services and Standards Services Committee)



Items been done

S-121 MLBs Project team was tasked to:

- Define a **data model**
- Create a specification for MLBs supporting States' **depository obligations** in accordance with UNCLOS
- Determine if IHO S-100 **needs to be extended**

The Real Challenge is to provide a solution that is:

- Inclusive of State's needs
- Sympathetic to each State's domestic deposit/legal requirements
- Satisfy the broad range of end points in with such information must be consumed in
- Interoperable and is expressed through a single GIS framework



Membership of the S-121 MLBs project team

IHO States

- *Australia*
- *Canada*
- *China*
- *France*
- *Netherlands*
- *Republic of Korea*
- *Sweden*
- *United Kingdom of Great Britain and Northern Ireland*
- *United States of America*

International bodies

- *UN*
 - *GGIM*
 - *DOALOS*
- *IHO*
 - *IHB*
 - *ABLOS*
 - *S-100*
- *OGC*
- *ISO-19152*
- *INSPIRE*

Industry

- *CARIS*
- *ESRI*

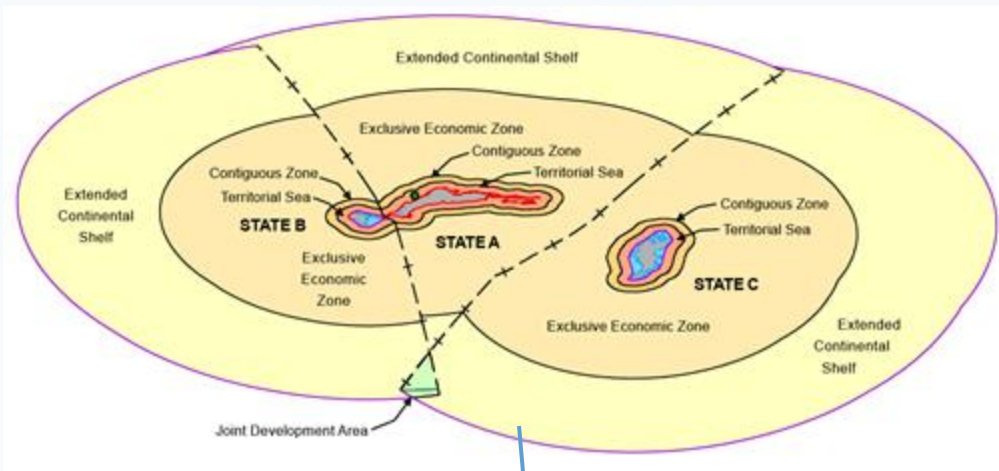
Academia

- *University of Seoul*
- *University of the West Indies*



How S-121 is constructed and serves for

DATA MODEL



USE CASES

Legal Declaration

Authoritative Public Data

Navigation and Enforcement

National and International Repositories



The Core Features as per UNCLOS

Location

- Limit Point
- Boundary Point
- Baseline Point
- Contributing Point

Limit

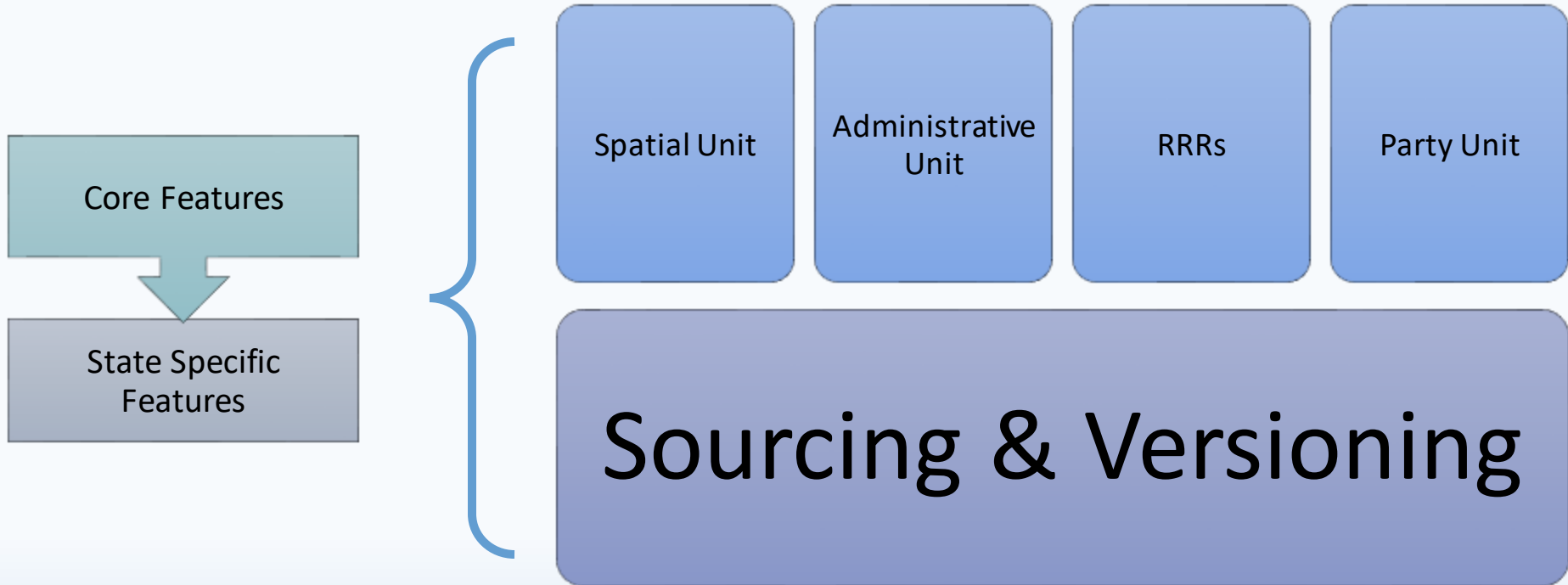
- Boundary
- International Boundary
- Normal Baseline
- Straight Baseline
- Archipelagic Baseline
- Low Tide Elevation Baseline
- Mouth Of River Baseline
- Reef Baseline
- Bay Baseline
- Port Baseline
- Outer Limit Of The Territorial Sea
- Outer Limit Of The Contiguous Zone
- Outer Limit Of The Exclusive Economic Zone
- Outer Limit Of The Continental Shelf
- Outer Limit Of The Roadstead
- Construction Line

Zone

- Internal Water
- Archipelagic Water
- Territorial Sea
- Contiguous Zone
- Exclusive Economic Zone
- Continental Shelf
- Roadstead
- High Seas
- The Area



The Model: How does it work



S-121 Canadian Implementation Example



OGC Innovation Program



- * **The OGC S-121 Pilot Project** aims to extend and develop the tools to address the use cases with real world applications using Commercial Off-The-Shelf software to **implement OGC standards making use of S-121 framework and datasets.**
- * The Pilot Project will deliver a substantial **demonstration in December 2018** at a meeting of the S-121 Project Team at the UN headquarters, and a final revisions by **March 2019.**



OGC Pilot Projects will look into the development of



1. Conformance Test Suites
2. GIS software implementations
3. Universal Exchange Format (GML and Web Services)
4. Legal Dissemination Format (Legal text)
5. Additional Administrative Layer Format (Navigation)
6. Data Display Format (Harmonised representation)
7. S-121 extension to other fields
8. Provide an overall engineering report



Cross limits and boundaries to ensure safe and prosper oceans

*“And seas but join the
regions they divide”*

Alexander Pope (English Poe, 1688 – 1744)

www.S-121.com

Image credit: <https://www.geckoandfly.com/21122/quotes-sportsmanship-teamwork/#.VzWjkCwToMw.pinterest>

