

Für Schutz und Nutzung der Meere – für eine lebenswerte Zukunft

Das Bundesamt für Seeschifffahrt und Hydrographie



Navigating the future

IHO S-100 and the Baltic Sea e-Nav Project

Interreg
Baltic Sea Region



Co-funded by
the European Union



BLUE ECONOMY

Baltic Sea e-Nav

18.06.2025

Hydrographentag

Agenda

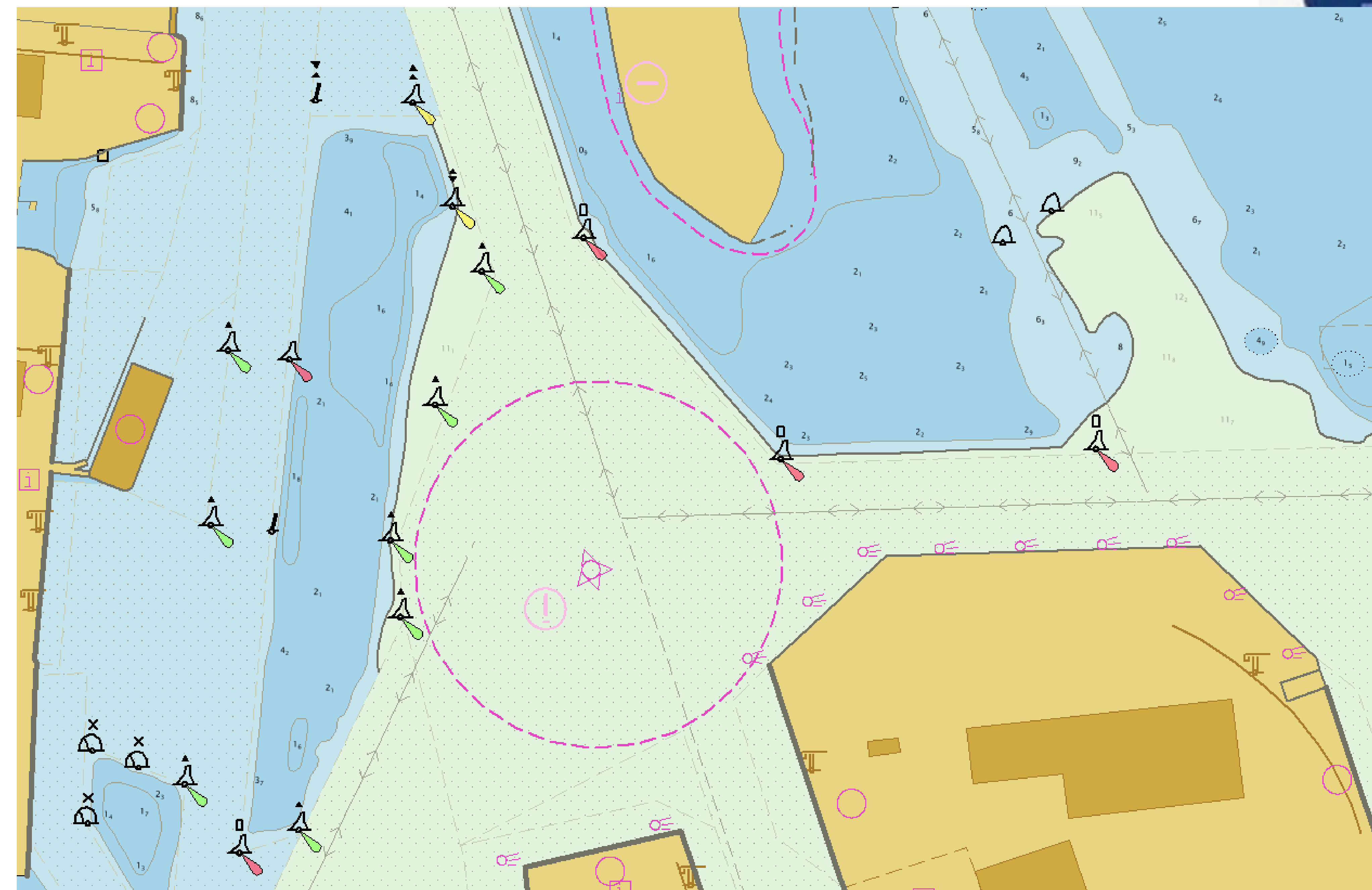
- **Introduction S-100 framework**
- **Future navigation with S-100**
- **Baltic Sea e-Navigation Project**

Introduction S-100 framework

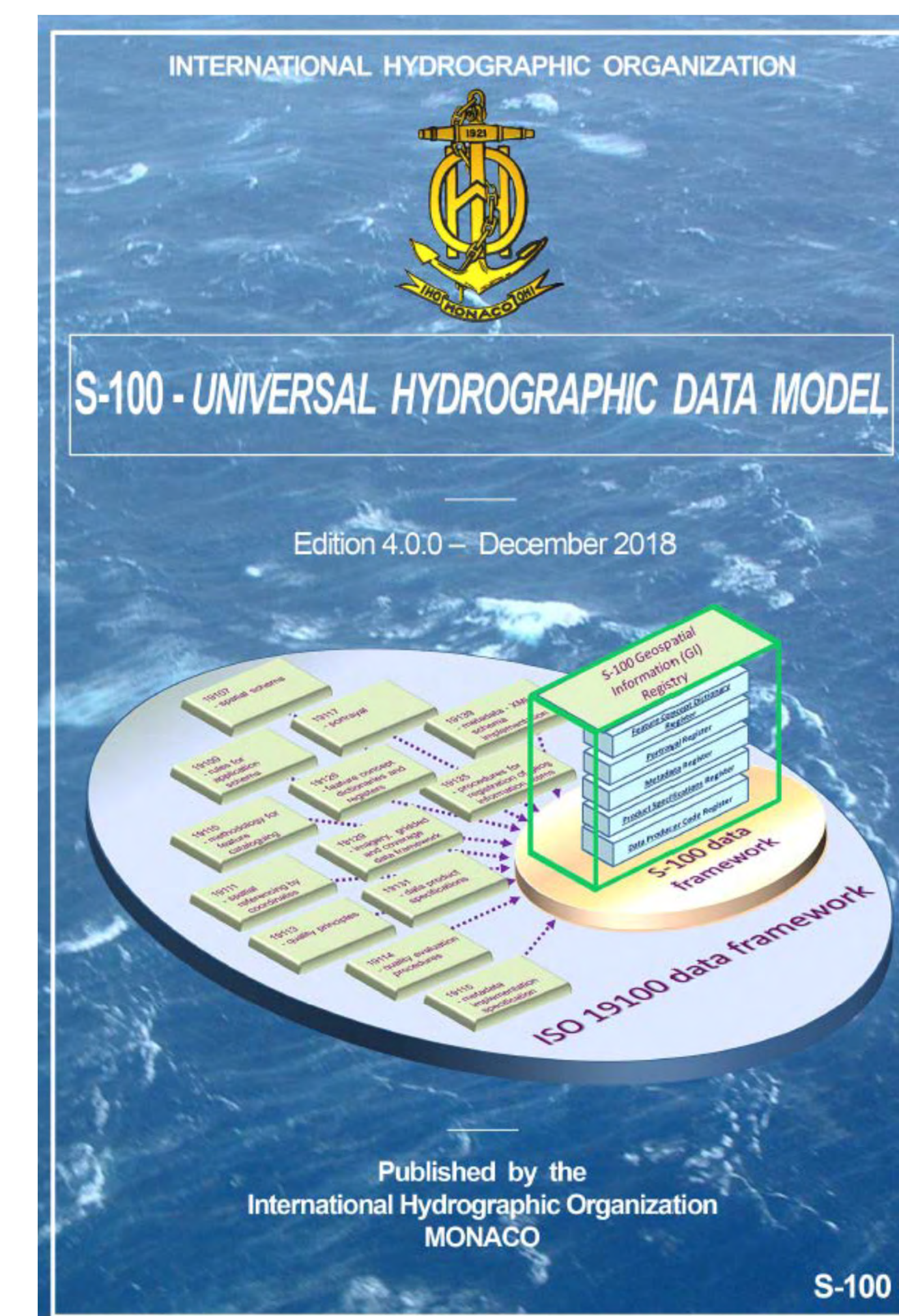
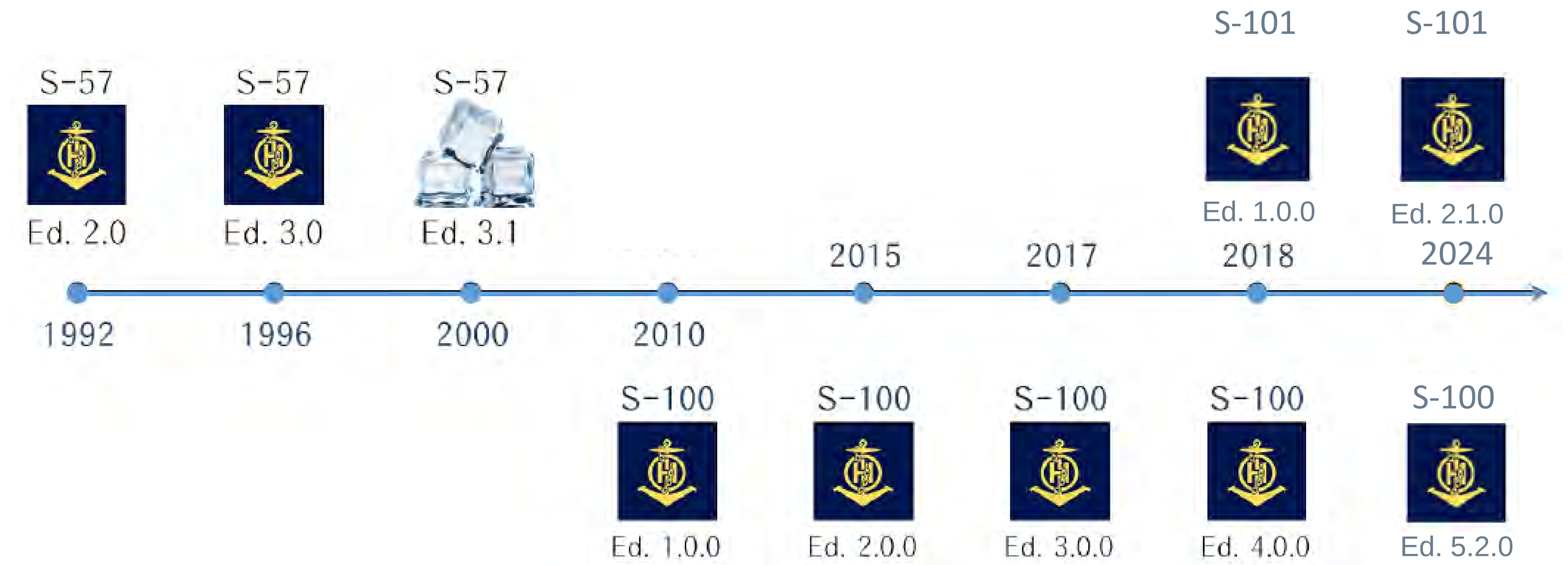
Paper chart



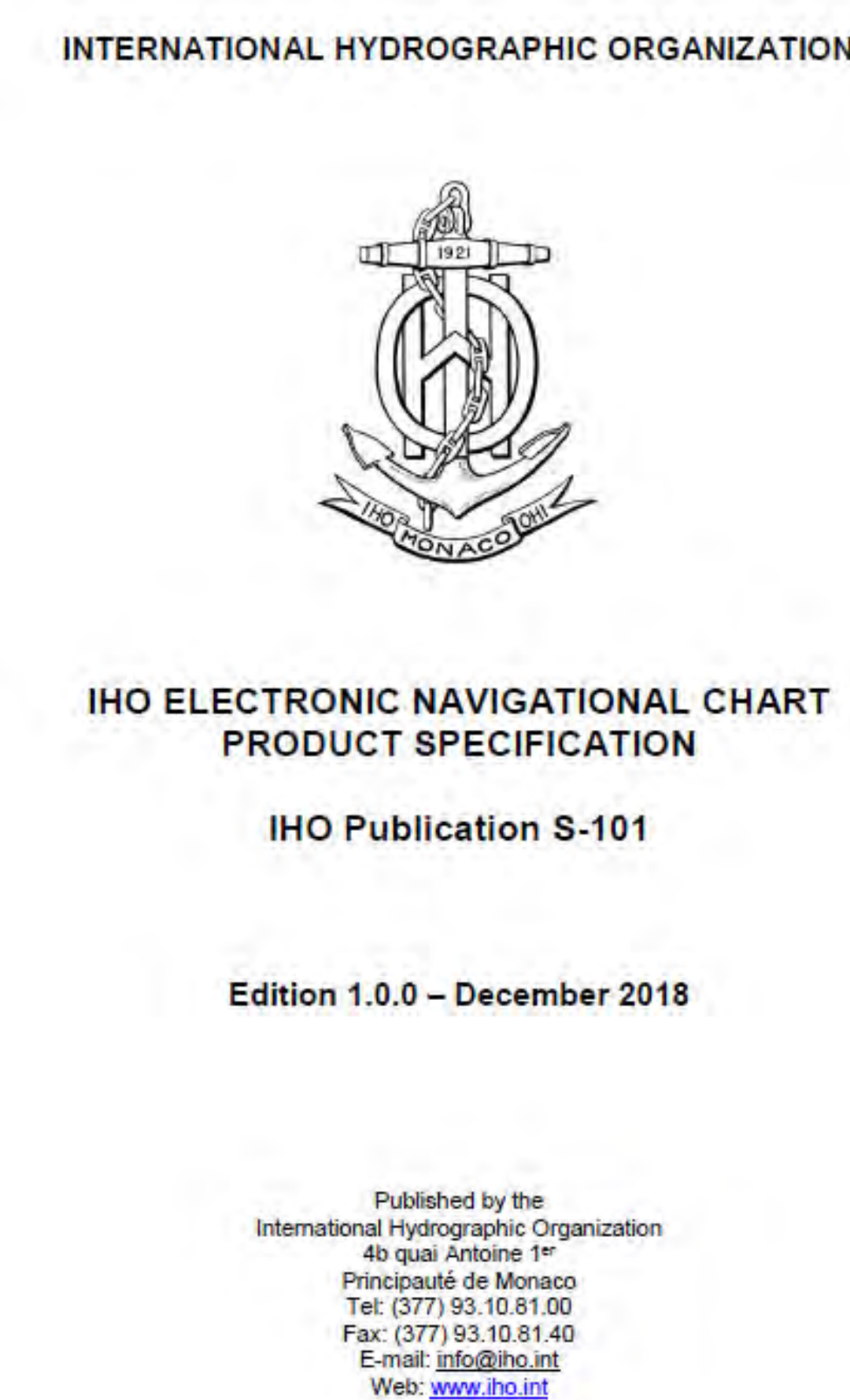
S-57 ENC



Introduction S-100 framework



**IHO Universal
Hydrographic Data
Model**



**S-101 ENC Product
Specification**

	IHO International Hydrographic Organisation	S-101 to S-199 • Electronic Navigational Charts • Bathymetry • Nautical Publications • Surface Currents
	IALA International Association of Marine Aids to Navigation and Lighthouse Authorities	S-201 to S-299 • AIS / VTS / ATONs
<u>Inland ENC</u> <u>Harmonization Group</u>	IEHG Inland ENC Harmonization Group	S-401 to S-410 • Inland ENC • Inland Bathymetry
	WMO World Meteorological Organization	S-411 to S-420 • Dynamic Ice Information • Weather Warnings
 International Electrotechnical Commission	IEC International Electrotechnical Commission	S-410 • Route Plan



Introduction S-100 framework

Key
Product Specification

Phase 1 / Route Monitoring

Phase 1 Route Monitoring Mode

S-101 ENC
S-102 Bathymetry
S-104 Water Level
S-111 Surface Currents
S-124 Navigational Warnings
S-129 UKC Management

Critical Framework

IHO Geospatial Information Registry
S-98 Interoperability Specification
S-100 Universal Hydrographic Data Model
S-128 Catalogue of Nautical Products
S-164 Test Data Set for S-100 and ECDIS
Type Approval



Phase 2 / Route Planning

Phase 2 Route Planning Mode

S-122 Marine Protected Areas
S-123 Marine Radio Services
S-125 Marine Aids to Navigation (AtoN)
S-126 Marine Physical Environment
S-127 Marine Traffic Management
S-131 Marine Harbour Infrastructure
S-411 Ice Information (WMO)
S-412 Weather and Wave Hazards (WMO)

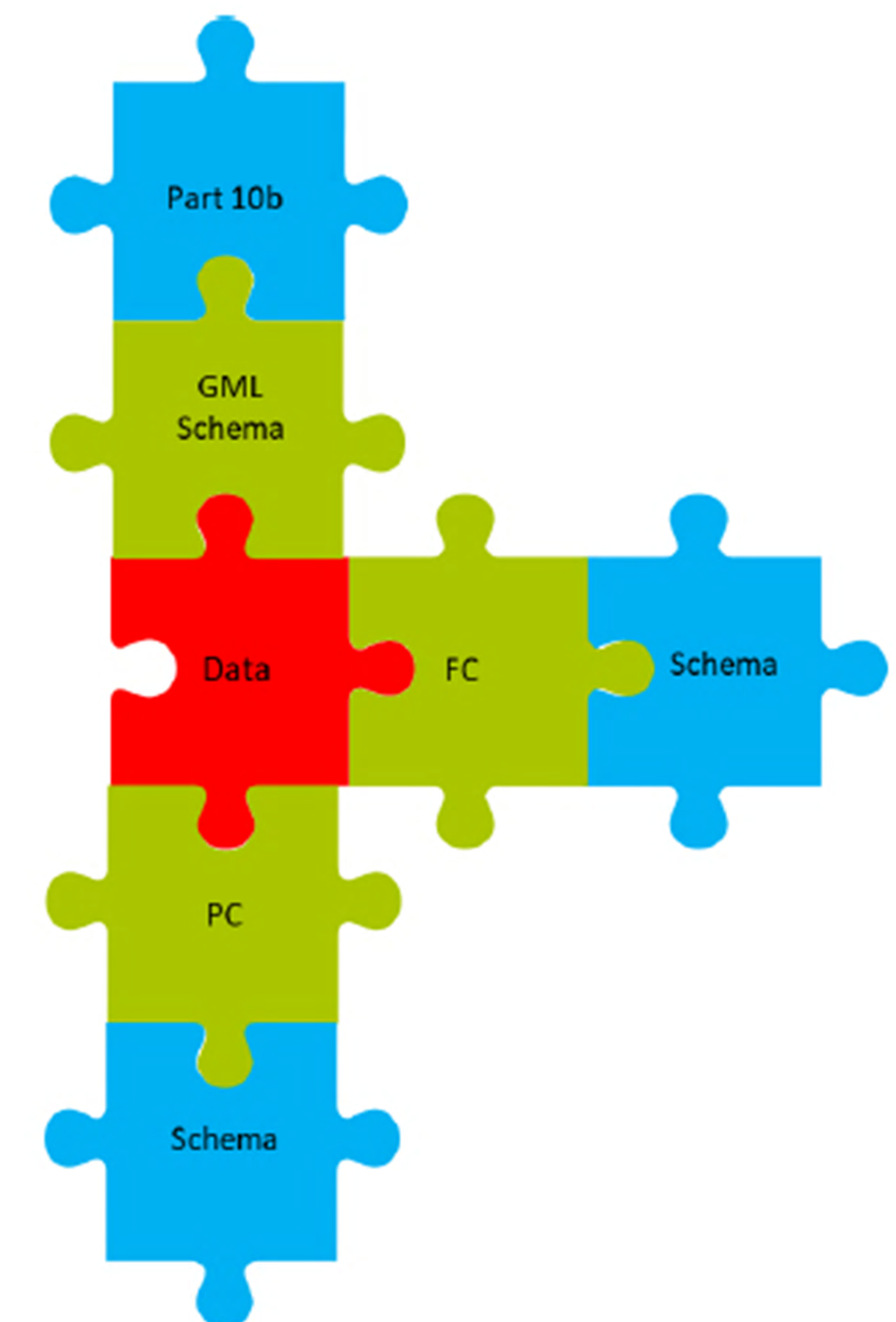
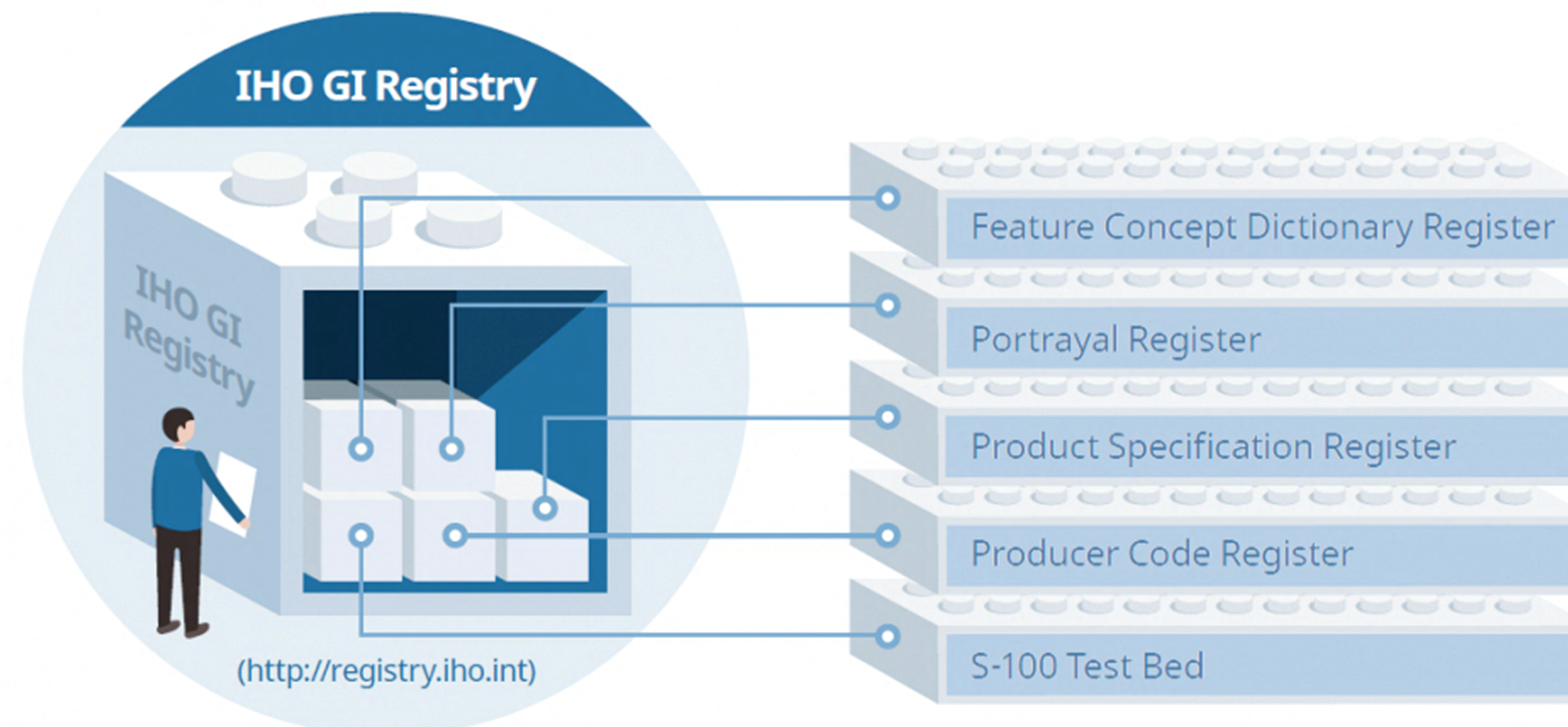
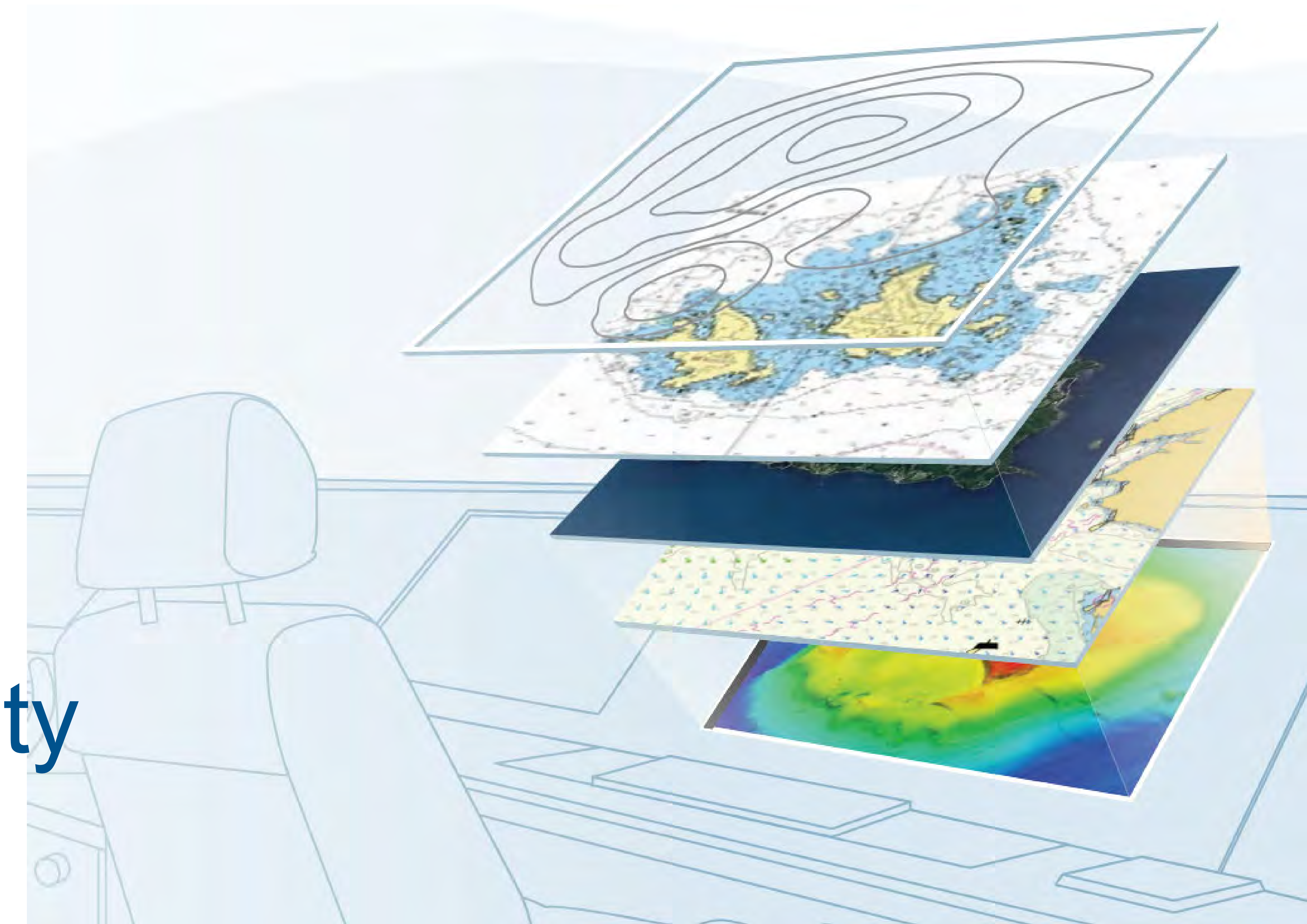
+ S-100 Products used in
Monitoring Mode



Introduction S-100 framework

Key Characteristics Why S-100 is a Game- Changer?

- Multi domain Interoperability
- Extensible, Modular
- Standardized Registry System



Text Placement

S-57



S-101

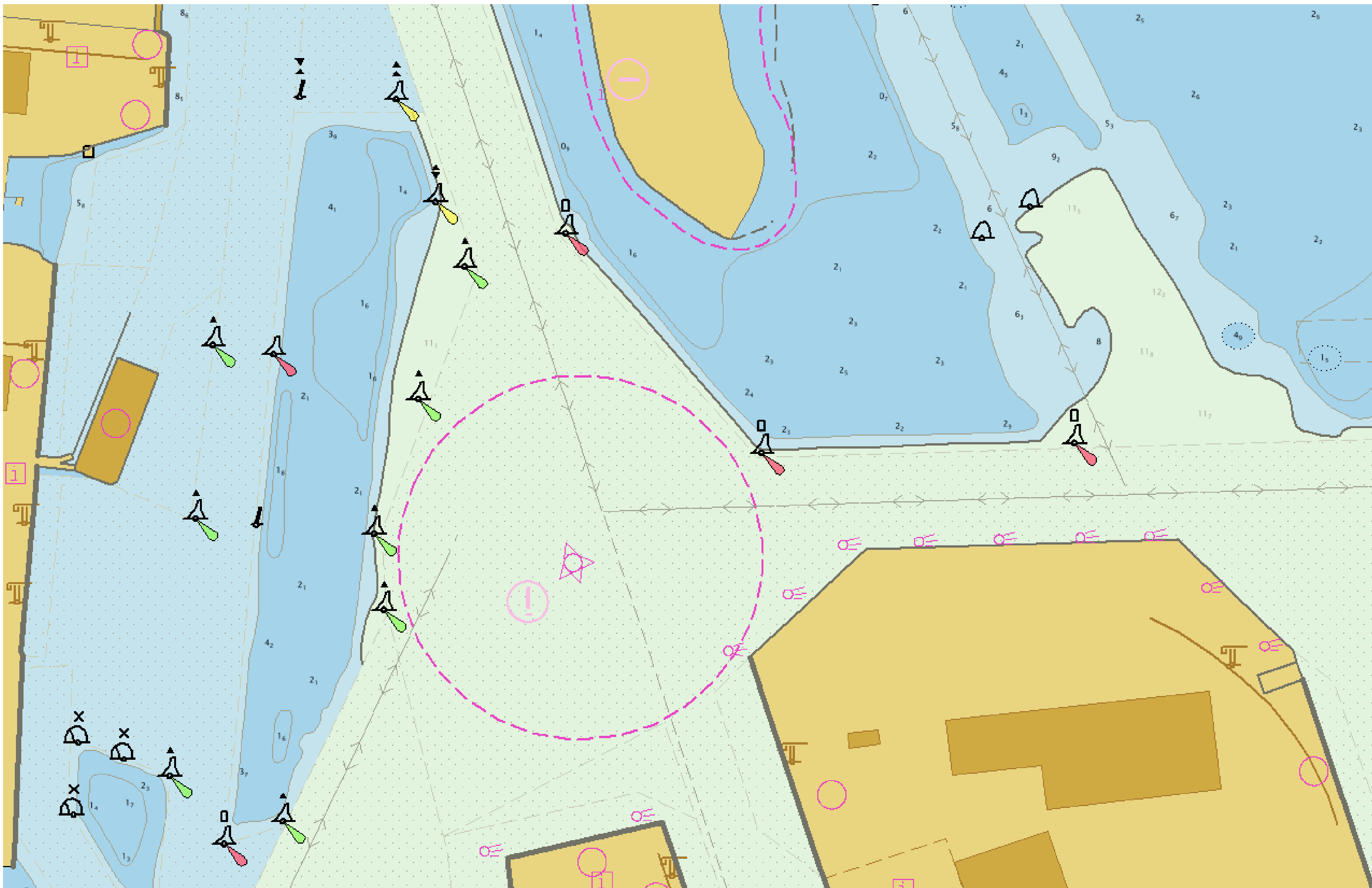


Future navigation with S-100

S-101 ENC vs S-57 ENC

Intuitive Symbolology

S-57



S-101

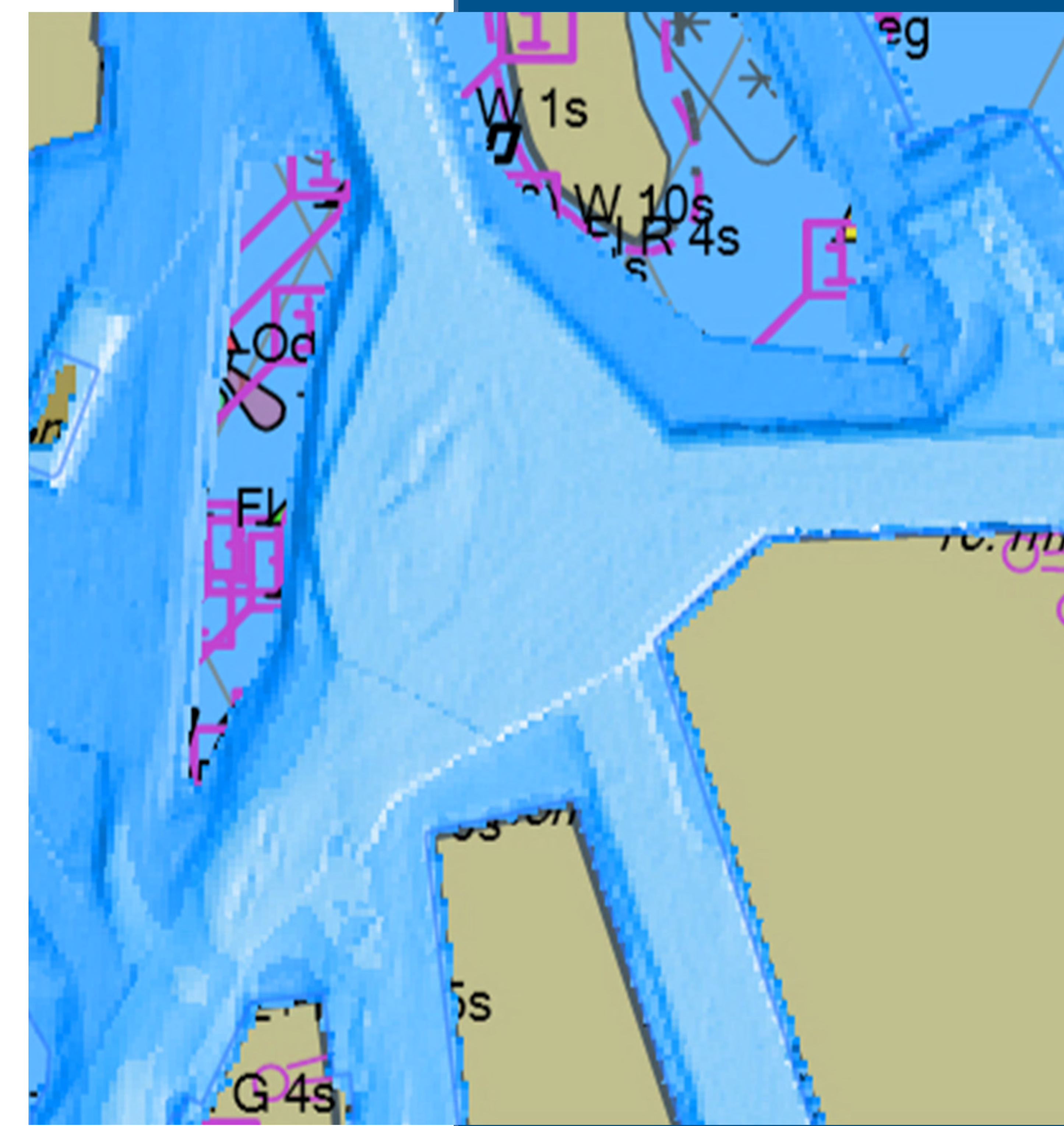


Testing example S-101 ENC + S-102 Bathymetry

Future navigation
with S-100



Safety contour 10m



13m

Future navigation with S-100

- Supporting safety
Multiple data layers into a single view
- Enhancing efficiencies
Combining critical information for more efficient decisions
- Optimising voyages
Fuel consumption, efficient voyage plan

IHO S-100 Implementation timeline

Roadmap for the S-100 Implementation Decade (2020 – 2030)

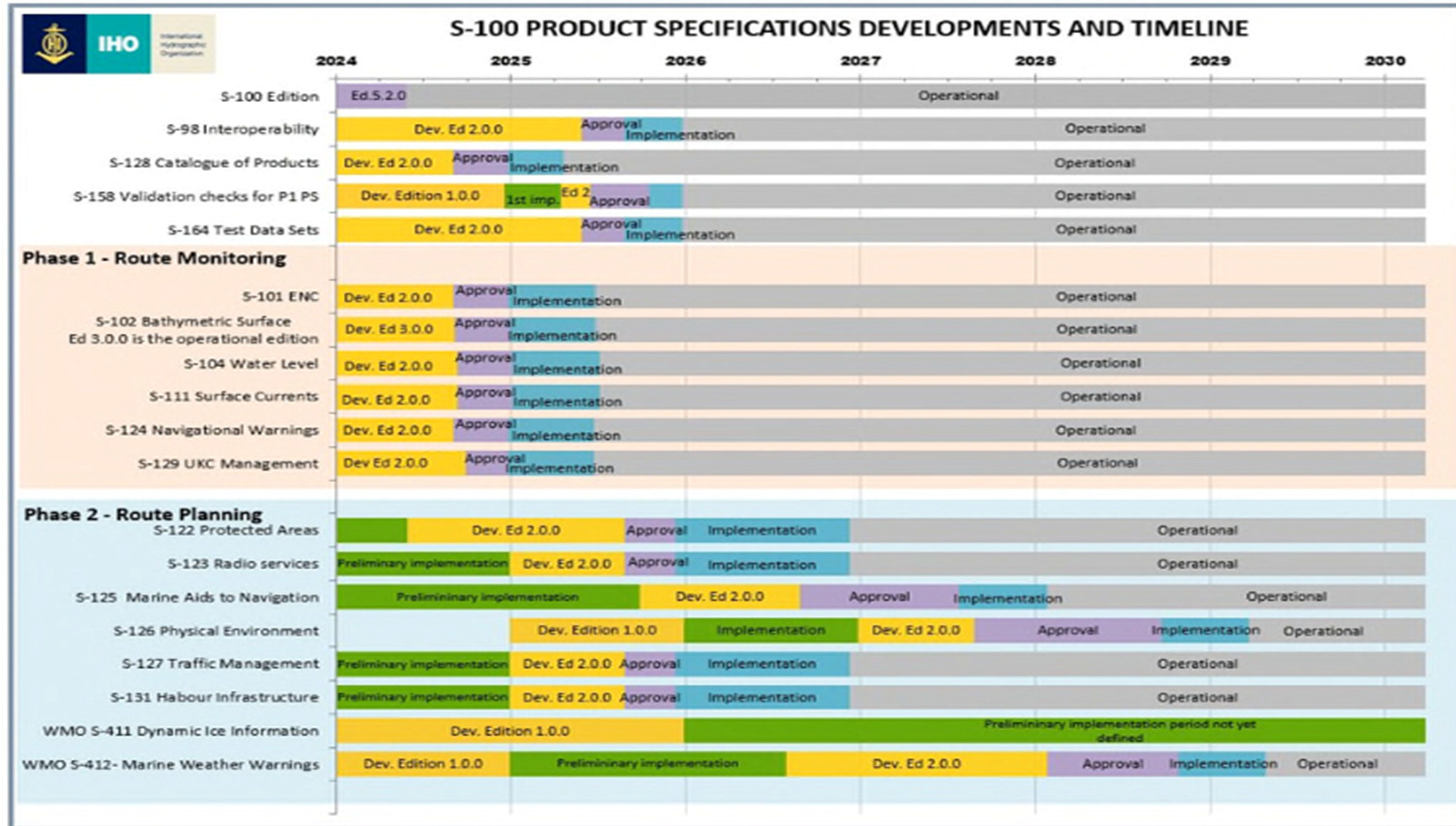
Amendments were made in IMO's ECDIS Performance Standards to incorporate S-100, approved by MSC in November 2022. **S-100 ECDIS can be used voluntary from 1 January 2026 and will be mandated in new installations from 1 January 2029.**

S-100 ECDIS Requirements:

If used for SOLAS chart carriage, an ECDIS must be:

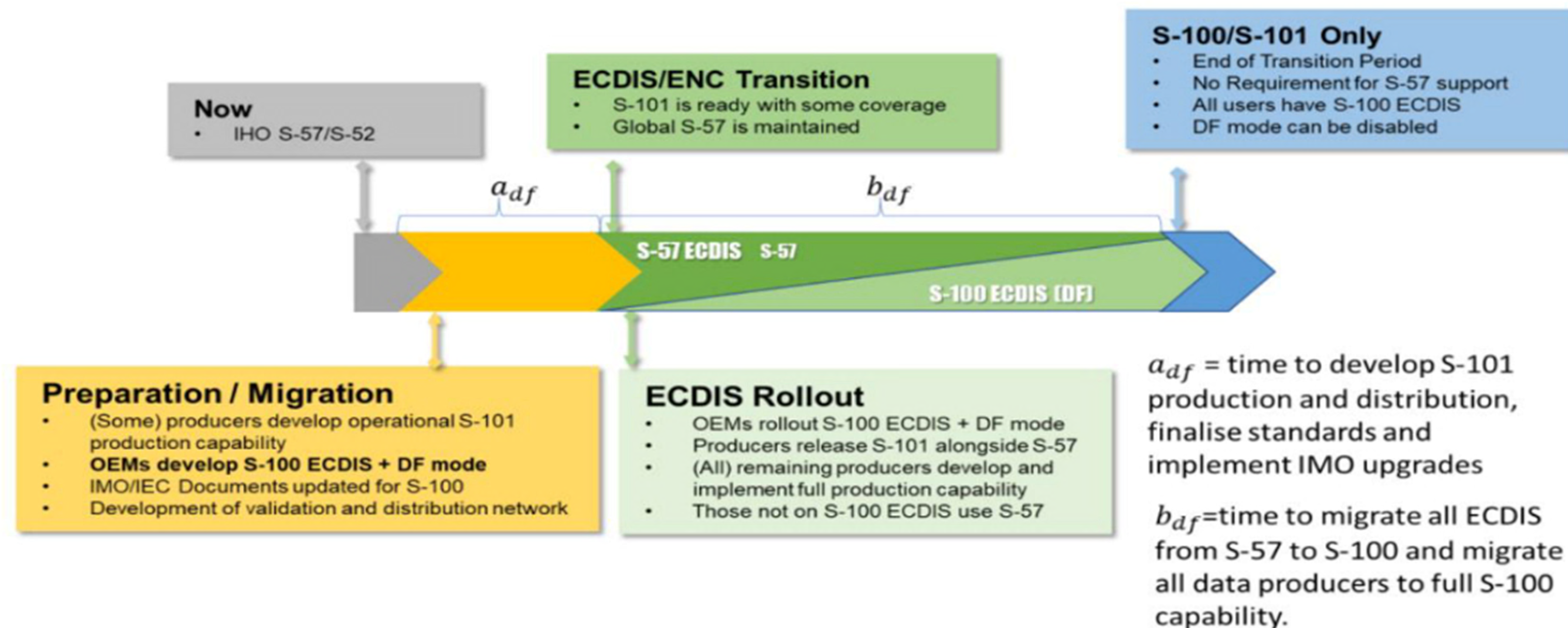
- Type-approved
- Use up-to-date Electronic Navigational Charts (ENCs)
- Maintained to be compatible with the latest applicable IHO Standards
- Have adequate, independent back-up arrangements in place

IHO S-100 Implementation timeline



Dual Fuel

Future navigation with S-100



Baltic Sea e-Navigation

Shared waters – same standards

Project Partners



The project is expected to benefit primarily the hydrographic offices, who are the main target group. Its goal is to work collaboratively advance our production in line with the IHO's implementation plan, ultimately enhancing shipping operations in the Baltic Sea.

Baltic sea e- Navigation Shared waters – same standards

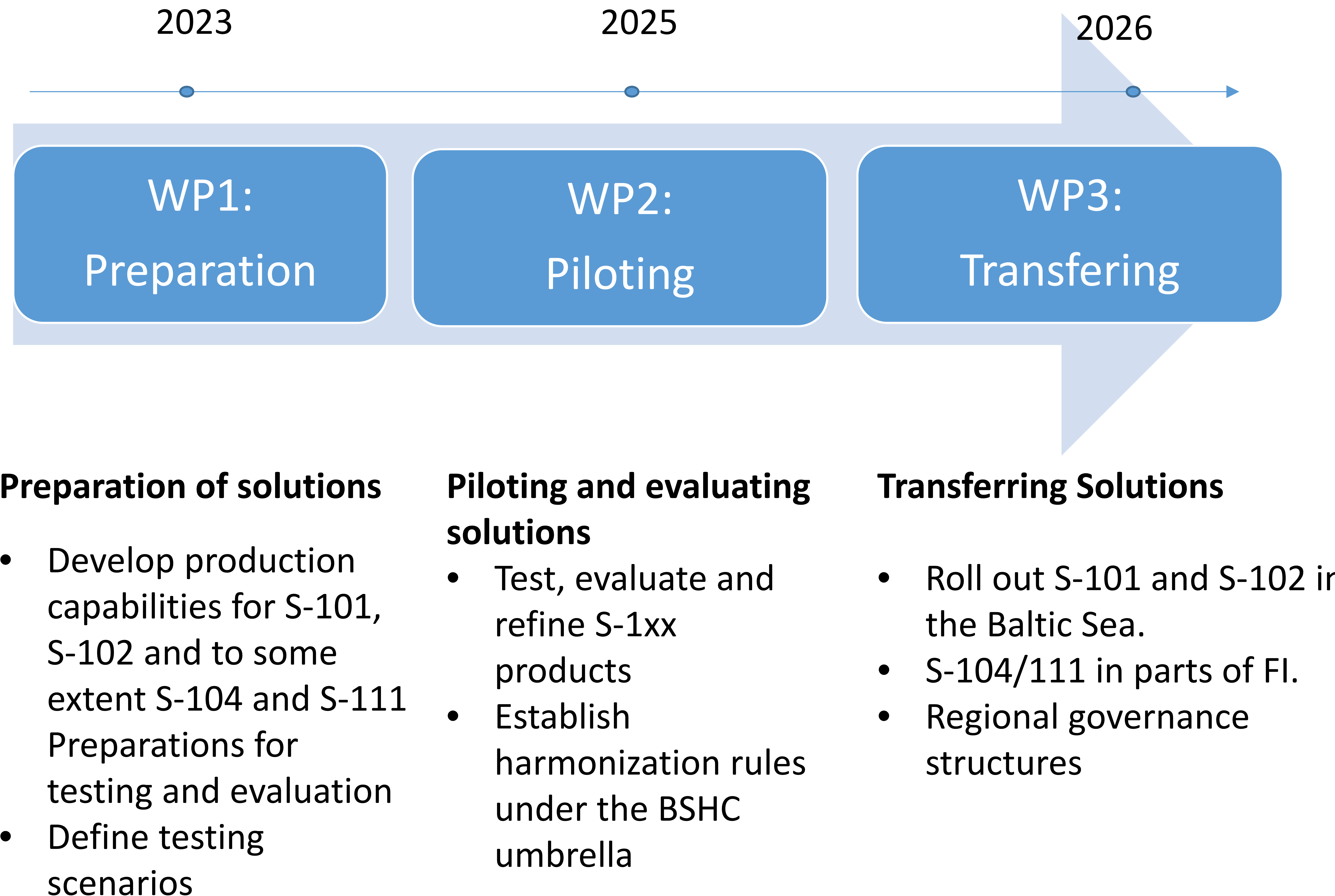
Project Goals

- **Develop production capabilities** for S-101 ENC, S-102 bathymetry and S-104 water level (2023–2025)
- **Test, evaluate and refine** the S-10x products (2025)
- **Commercial rollout** for S-101 and S-102 in the Baltic Sea (2026)
- **Establish harmonization rules** for S-10x-products, under the BSHC umbrella (2024–2026)



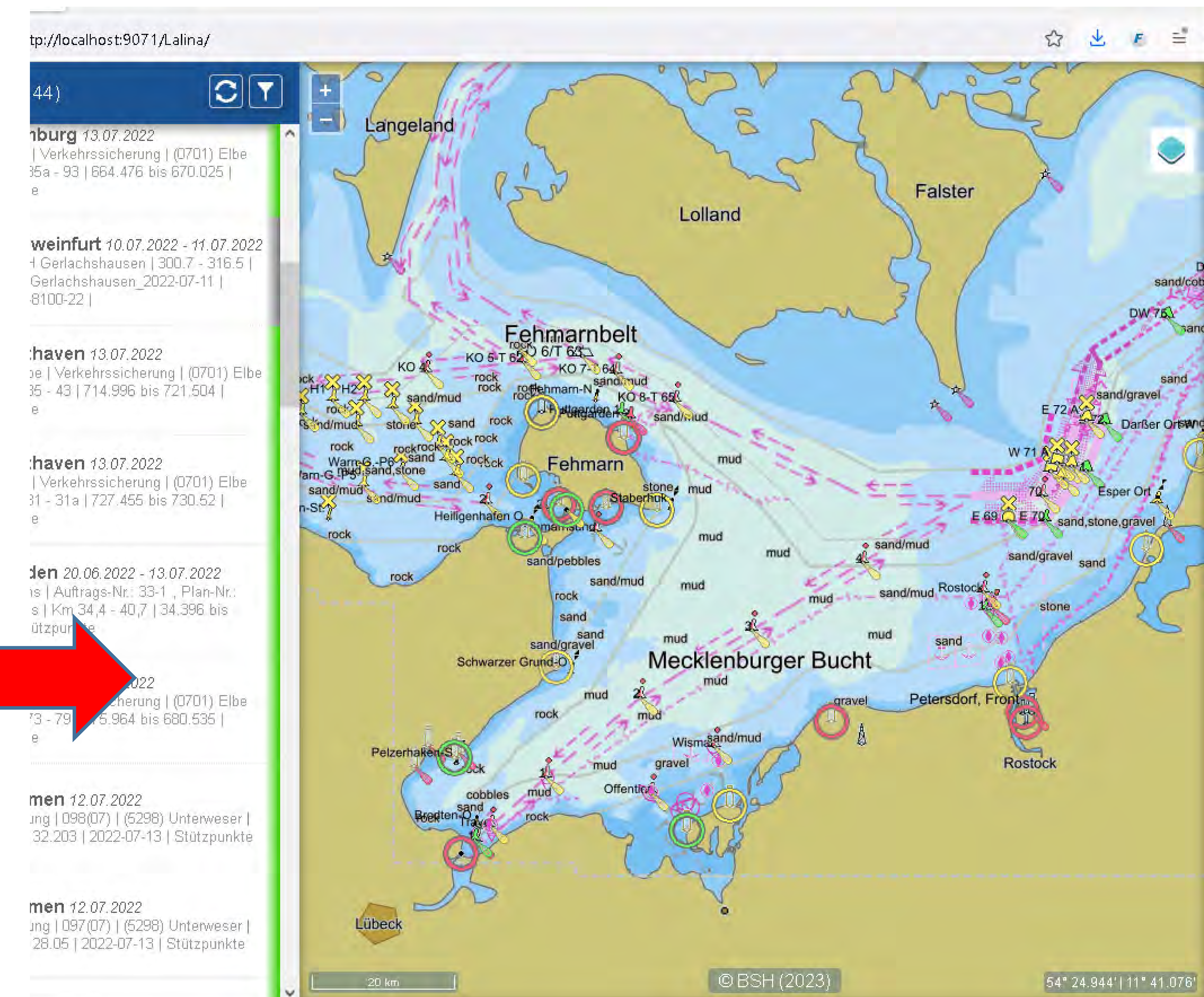
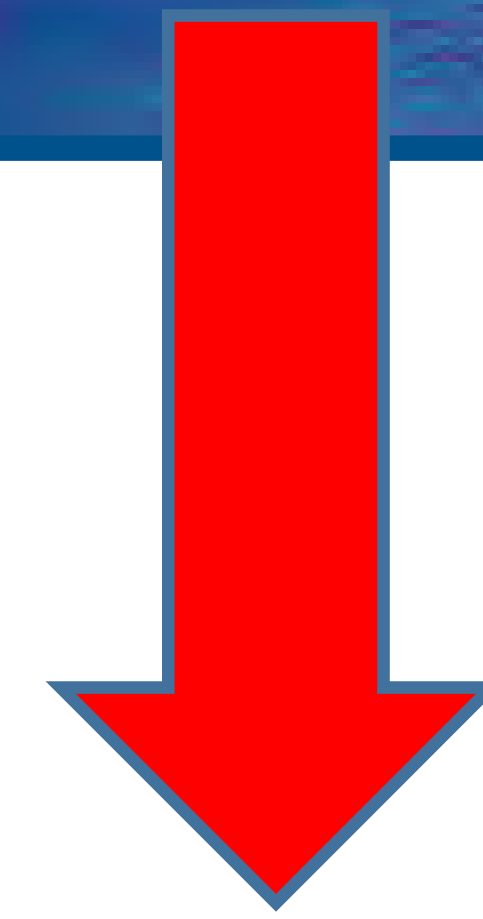
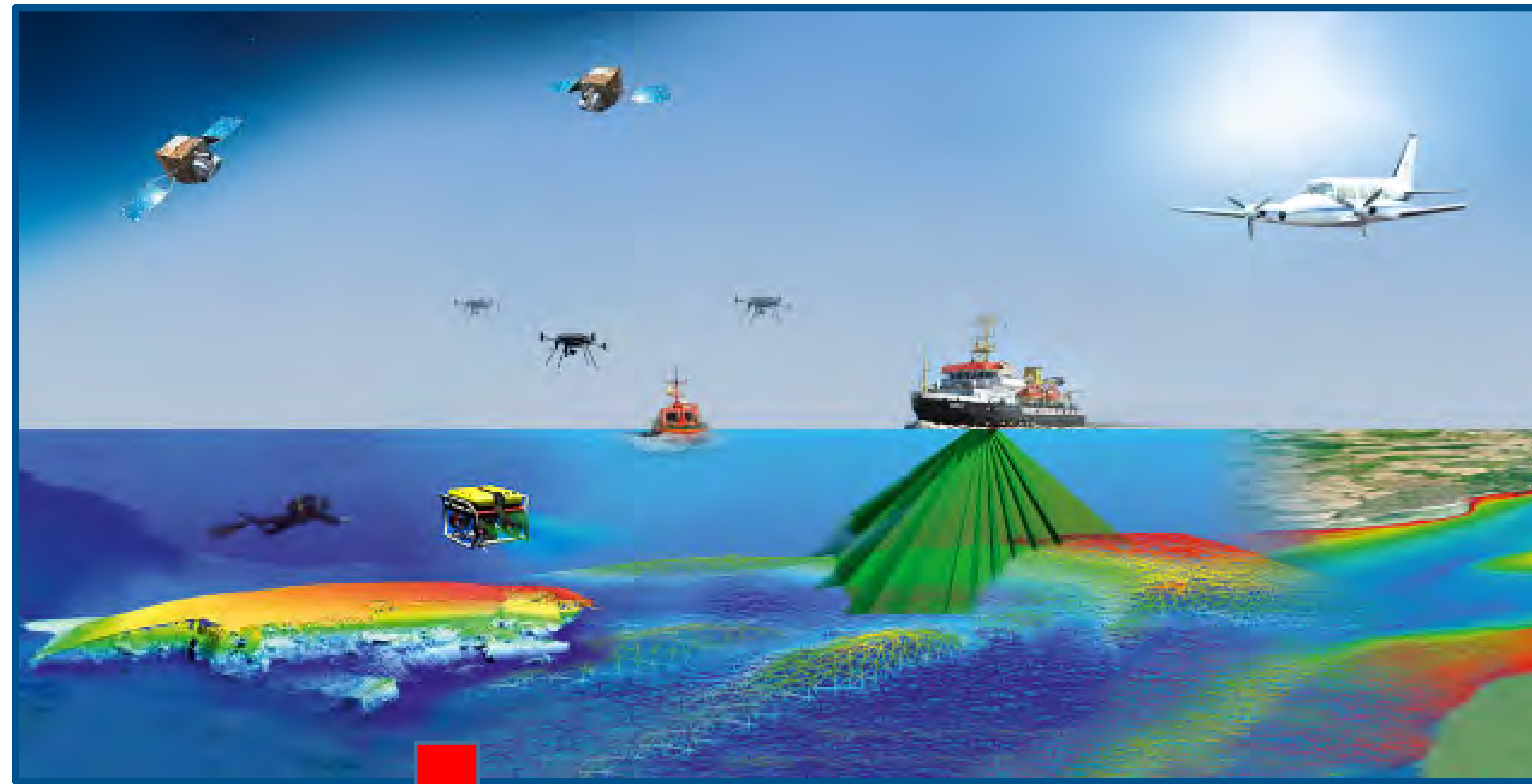
Baltic sea e- Navigation Shared waters – same standards

Work Plan



Baltic sea e- Navigation Shared waters – same standards

Work Package 1



Baltic sea e- Navigation Shared waters – same standards

Work Package 2 Piloting



S-100 Transition

Key challenges and Germany's role in the Region

Challenges

- **S-100 data distribution infrastructure**
- **Stakeholder training**
- **Technical implementation**

Germany's Role in S-100 transition

- **Data production**
- **Standards development**
- **Testing**
- **Regional coordination**



Vielen Dank für Ihre Aufmerksamkeit!

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