

S-100 STANDARDISERING – BEDRE KOORDINERING AV SKIP OG LAND

TIRSDAG 17. SEPTEMBER
INNOVASJONSKONFERANSEN E-NAV.NO 2019

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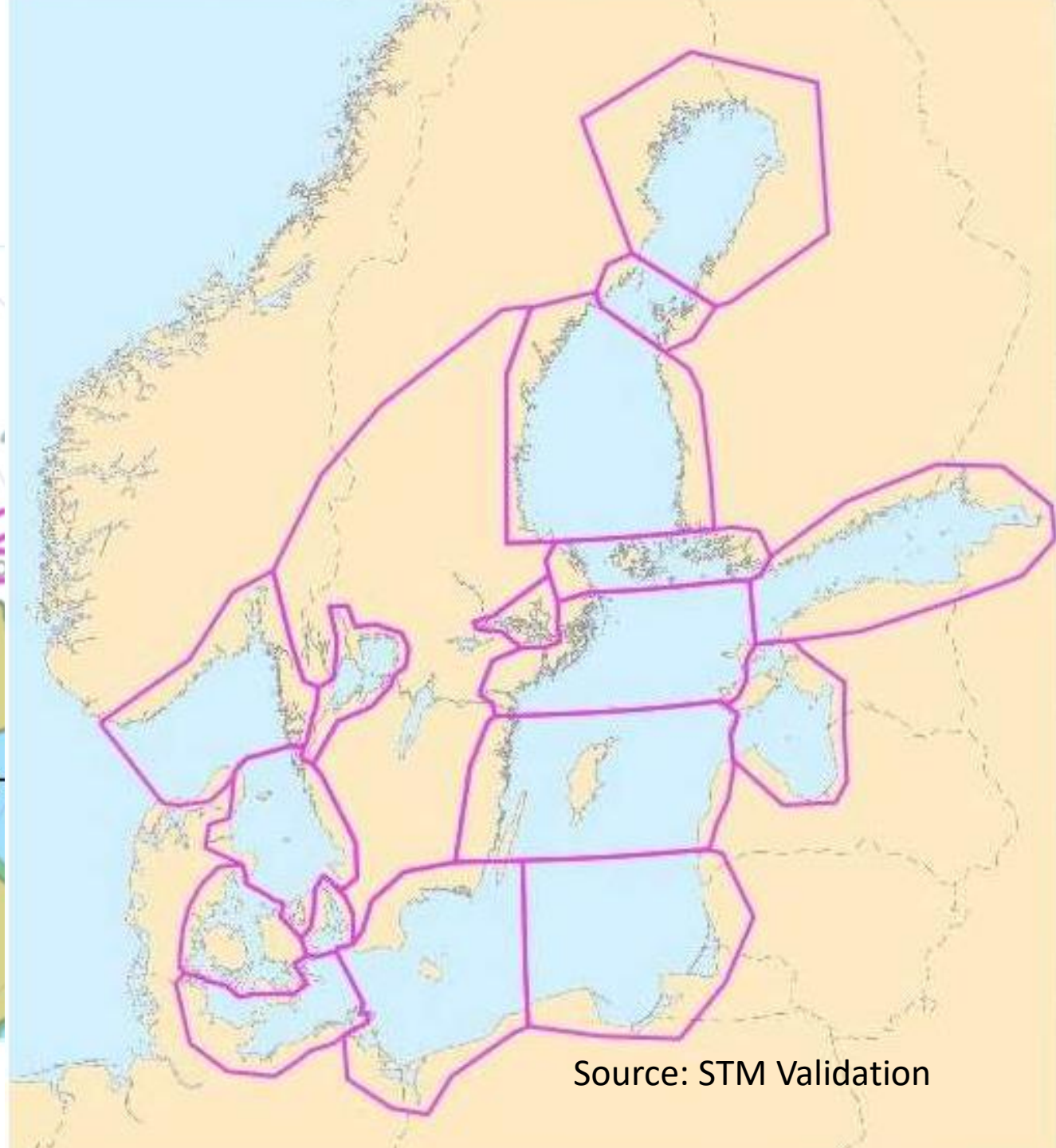
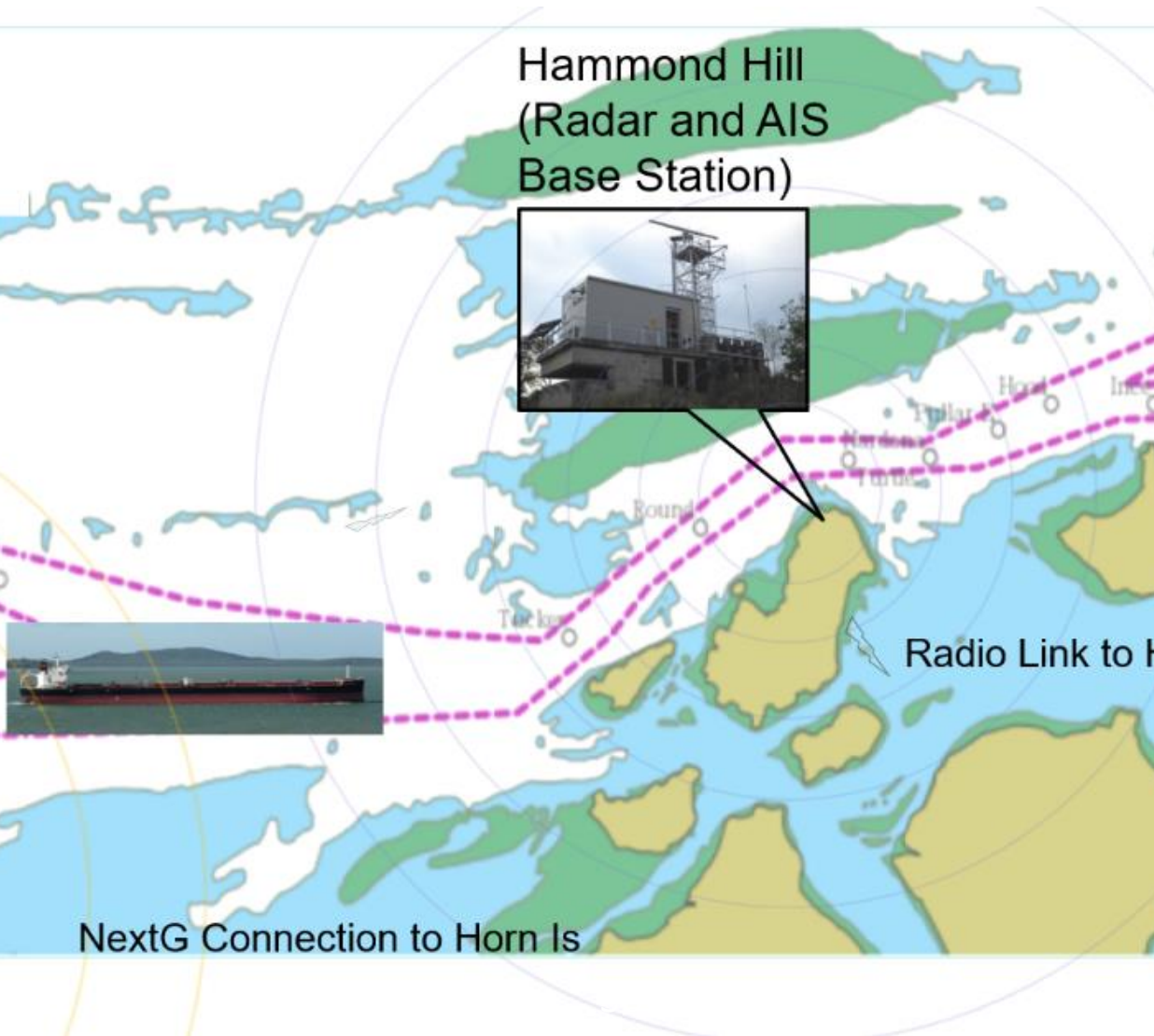
Motivasjon 1 => Enklere rapportering

- Et container-skip som anløper 6 havner i Schengen-området må fylle inn og levere mer enn 80 dokumenter,
- Hvis det har f.eks. 200 containere ombord som skal losses i f.eks. Danmark, så utgjør dette ca 20 sider som skal rapporteres (hvis de har sendt pre-arrival-melding, og kommer fra et annet EU-land)

Information reported at one port call:	Occurrences
Ship's name	15
Signature of master	10
IMO/MMSI identification number	9
Date of signature	9
Call sign	8
Planned arrival time	6
Port of departure	6
Date of departure	5
Length of ship/overall length	5
Name of master	5
Date of arrival	4
Total number of persons on board	4
Last port of call	4

Ankomstmeldinger, avgangsmeldinger:
I gjennomsnitt 4 timer alt i alt
(www.ufficiensea2.org , WP 5)

Motivasjon 2 => Sikrere navigasjon



IMO e-Navigasjon - Definisjon



IMO:

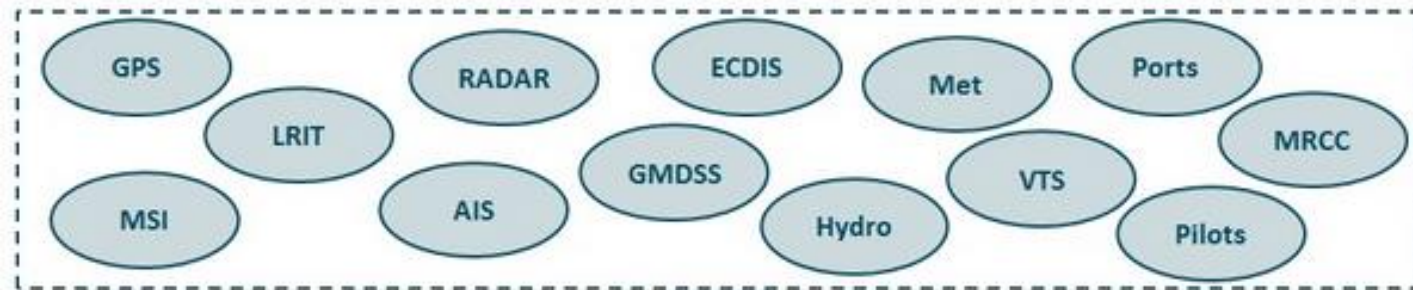
- e-Navigation is the harmonized
 - collection, integration, exchange, presentation and analysis of marine information
 - **on board** and
 - **ashore**
 - by electronic means to
 - enhance berth to berth **navigation** and related **services**
 - for safety and security at sea and protection of the marine environment.

IMO e-Navigasjon



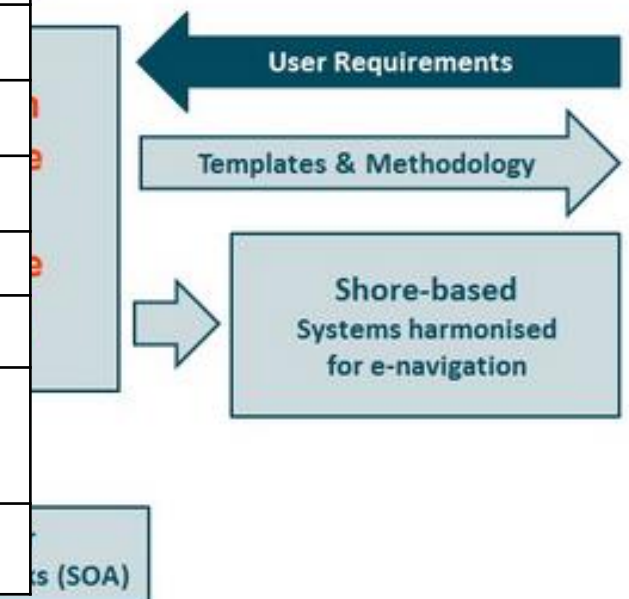
- Maritime Safety Committee (MSC) i IMO godkjente e-Navigation Strategy Implementation Plan (SIP) i 2014, oppdatert 2018.

- 16 Maritime Service Portfolios (MSPs)
- Common Maritime Data Structure (CMDS)



MS1	VTS Information Service (IS)
MS2	VTS Navigational Assistance Service (NAS)
MS3	Traffic Organization Service (TOS)
MS4	Port Support Service (PSS)
MS5	Maritime Safety Information (MSI) Service
MS6	Pilotage Service
MS7	Tugs Service
MS8	Vessel Shore Reporting

MS9	Telemedical Maritime Assistance Service
MS10	Maritime Assistance Service (MAS)
MS11	Nautical Chart Service
MS12	Nautical Publications Service
MS13	Ice Navigation Service
MS14	Meteorological Information Service
MS15	Real-Time Hydrographic and Environmental Information Services
MS16	Search and Rescue (SAR) Service

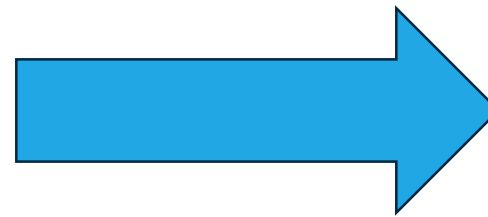




NCSR (Sub-committee Navigation, Communications and Search and Rescue) i 2019:

*All Maritime Services should be conformant with the International Hydrographic Organization (IHO) **S-100 framework standard**, which specifies the method for data modelling and developing product specifications.*

CMDS – Common Maritime Data Structure



**Bruke S-100
rammeverket**

S-57 → S-100

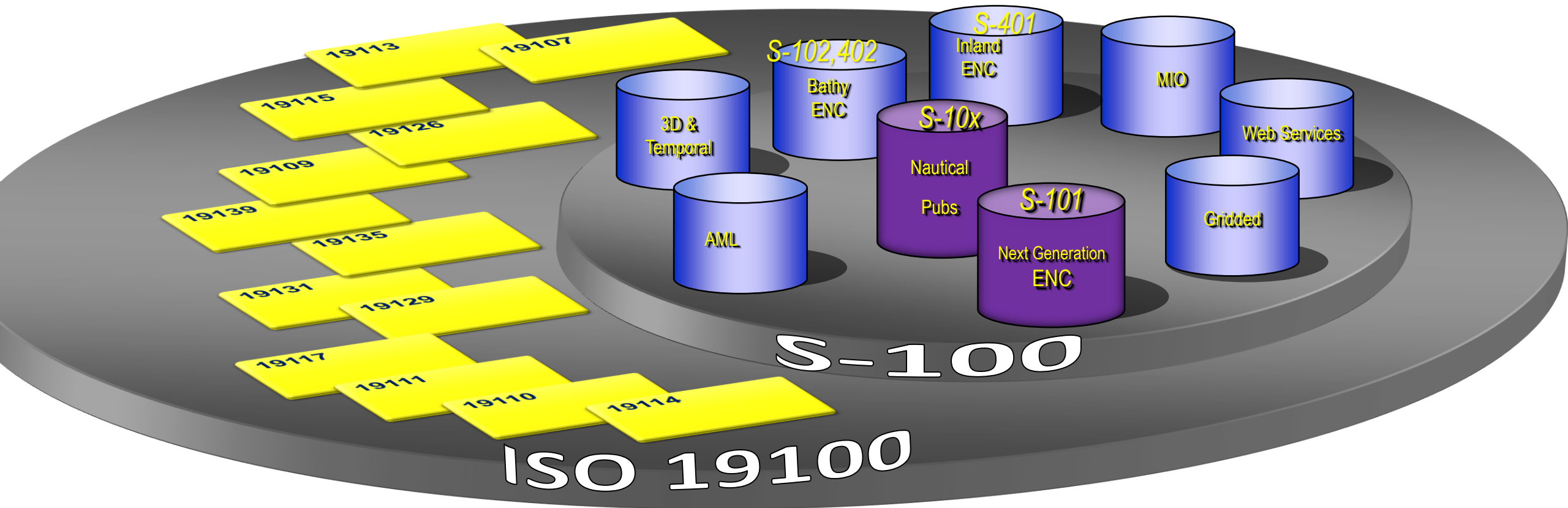
Begrensninger med S-57:

- Statiske vektordata
- S-57 er ikke mye brukt i GIS-systemer, men for ENC
- Lite fleksibelt vedlikehold, lang tid mellom versjoner
- Kan ikke utvides, f.eks. med dynamisk informasjon
- Datamodellen er innebakt i filformatet



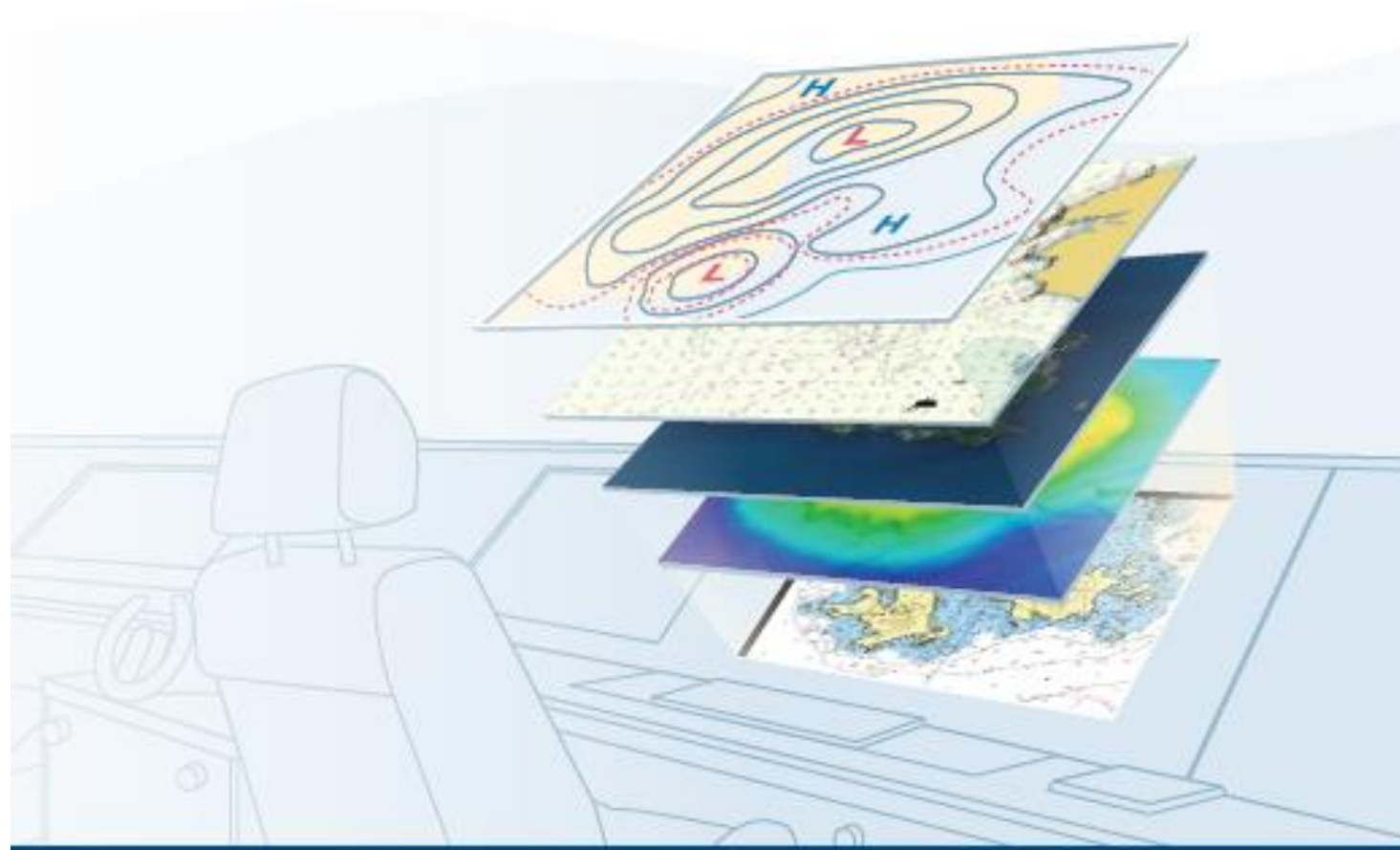
S-100 Standard network

=> Geografiske data



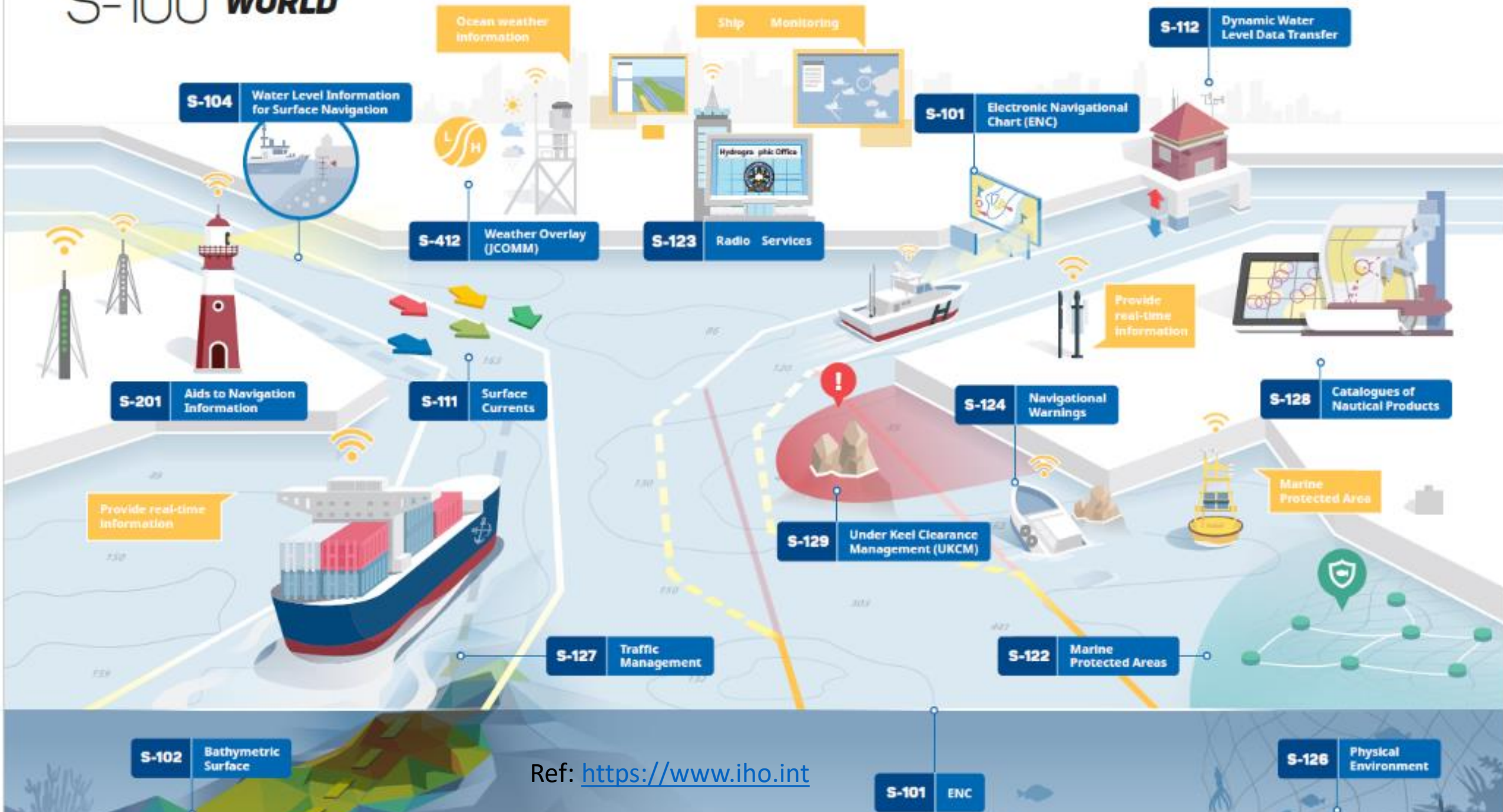
Dynamisk, lag på lag

- Geografisk og maritim informasjon på GIS format
- Nye komponenter utviklet i sammenheng
- Rammeverk for utvidelser av ECDIS-funksjonalitet (Electronic Chart Display and Information System) f.eks. Dynamisk informasjon
- Harmonisering av kart-funksjonalitet



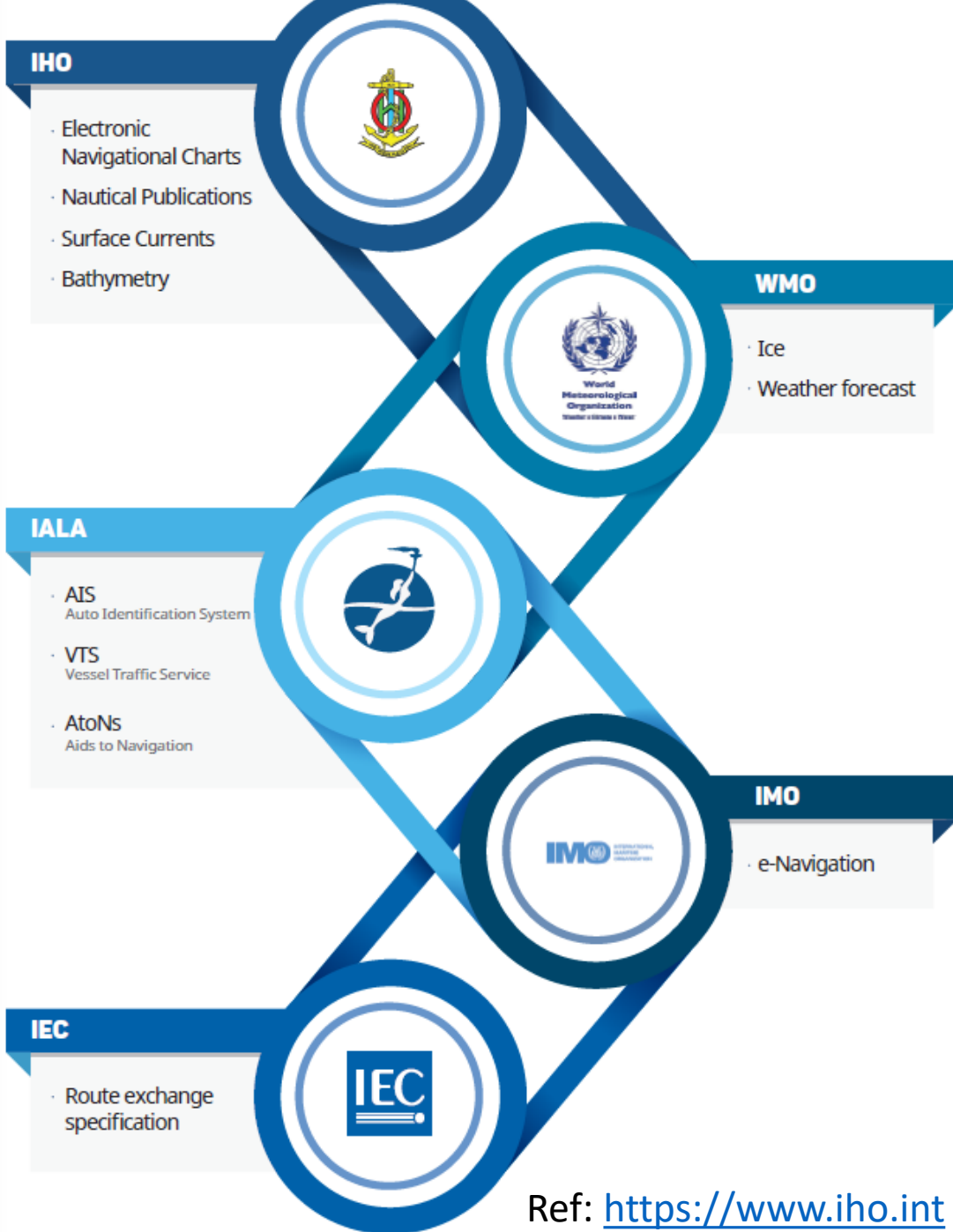
Ref: <https://www.iho.int>

S-100 WORLD



Ref: <https://www.iho.int>

S-100 -Organisasjoner



Ref: <https://www.iho.int>

S-100 Group - IHO



S-101 Electronic Navigational Chart (ENC)
S-102 Bathymetric Surface
S-103 Sub-surface Navigation
S-104 Water Level Information for Surface Navigation
S-111 Surface Currents
S-112 Open - (See Decision HSSC9/38)
S-121 Maritime Limits and Boundaries
S-122 Marine Protected Areas
S-123 Marine Radio Services
S-124 Navigational Warnings
S-125 Navigational Services
S-126 Physical Environment
S-127 Marine Traffic Management
S-128 Catalogues of Nautical Products
S-129 Under Keel Clearance Management (UKCM)
S-1xx Marine Services
S-1xx Digital Mariner Routing Guide
S-1xx Harbour Infrastructure
S-1xx (Social/Political)

S-200 Group - IALA



S-201 Aids to Navigation Information
S-210 Inter-VTS Exchange Format
S-211 Port Call Message Format
S-230 Application Specific Messages
S-240 DGNSS Station Almanac
S-245 eLoran ASF Data
S-246 eLoran Station Almanac
S-247 Differential eLoran Reference Station Almanac

S-300 Group - IOC

Intergovernmental Oceanographic Commission (**IOC**) (S-301 to S-399)

S-400 Group - IEHG

Inland ENC Harmonization Group (**IEHG**) (S-401 to S-402)
S-401 IEHG Inland ENC
S-402 IEHG Bathymetric Inland ENC

S-400 Group – WMO/IOC JCOMM

Joint Technical Commission for Oceanography and Marine Meteorology (**WMO/IOC JCOMM**) (S-411 to S412)
S-411 JCOMM Ice Information
S-412 JCOMM Weather Overlay

S-400 Group – IEC

International Electrotechnical Commission - Technical Committee 80 (**IEC-TC80**) Numbers (S-421 to S-430)
S-421 – Route Exchange



S-500 Group – AML

NATO Geospatial Maritime Working Group (**GMWG**) for Additional Military Layers (**AML**) Numbers (S-501 to 525)

S-100 => Rammeverk

ENC

Produktspefikasjoner for geografiske data

"Location-oriented" data

Kart-funksjonalitet

Nautisk informasjon

Bathymetry osv.

Utvidelse

Operasjonelle, ikke-geografisk, maritim informasjon

"Message-Oriented" data (request/response)

Skip-Land-kommunikasjon

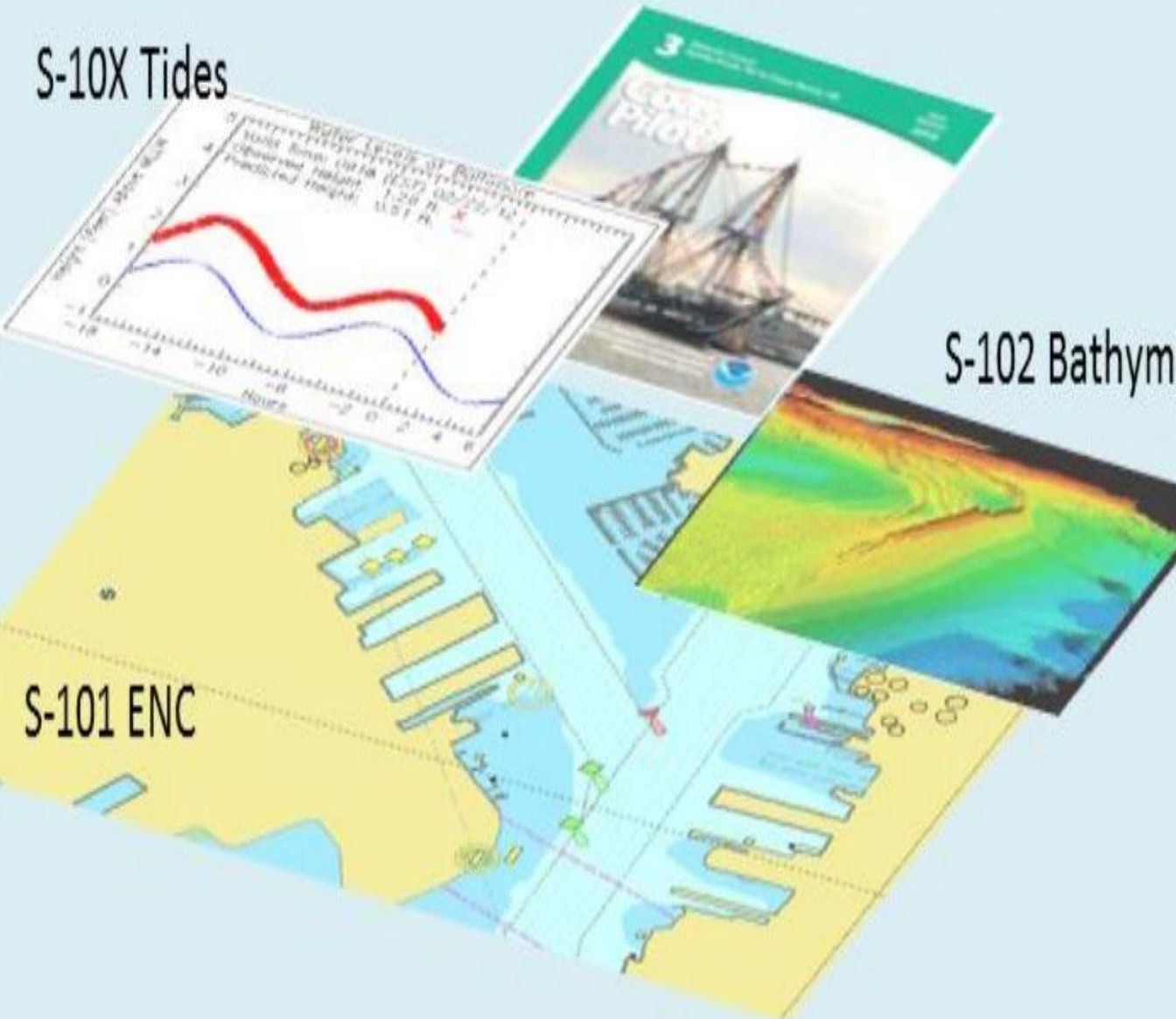
Ankomstmelding

Los-forespørsel

Utveksling av ruteinformasjon osv

S-10X Nautical Publications

S-10X Tides



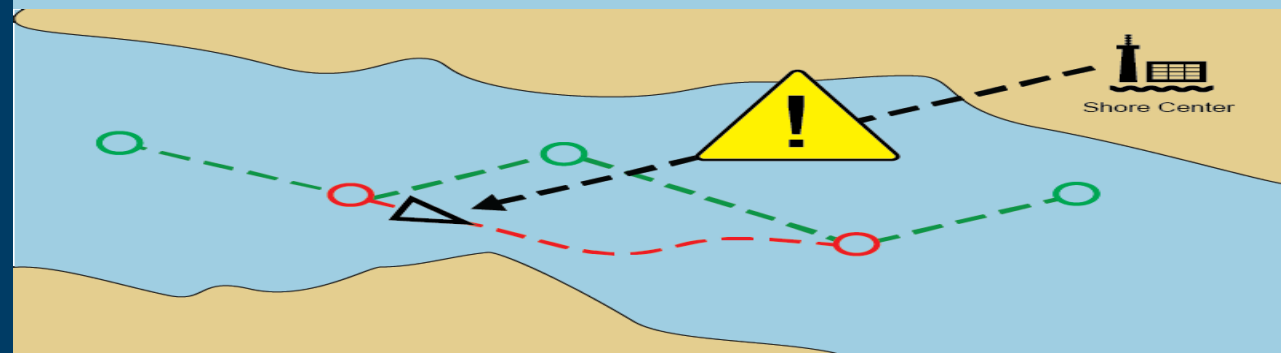
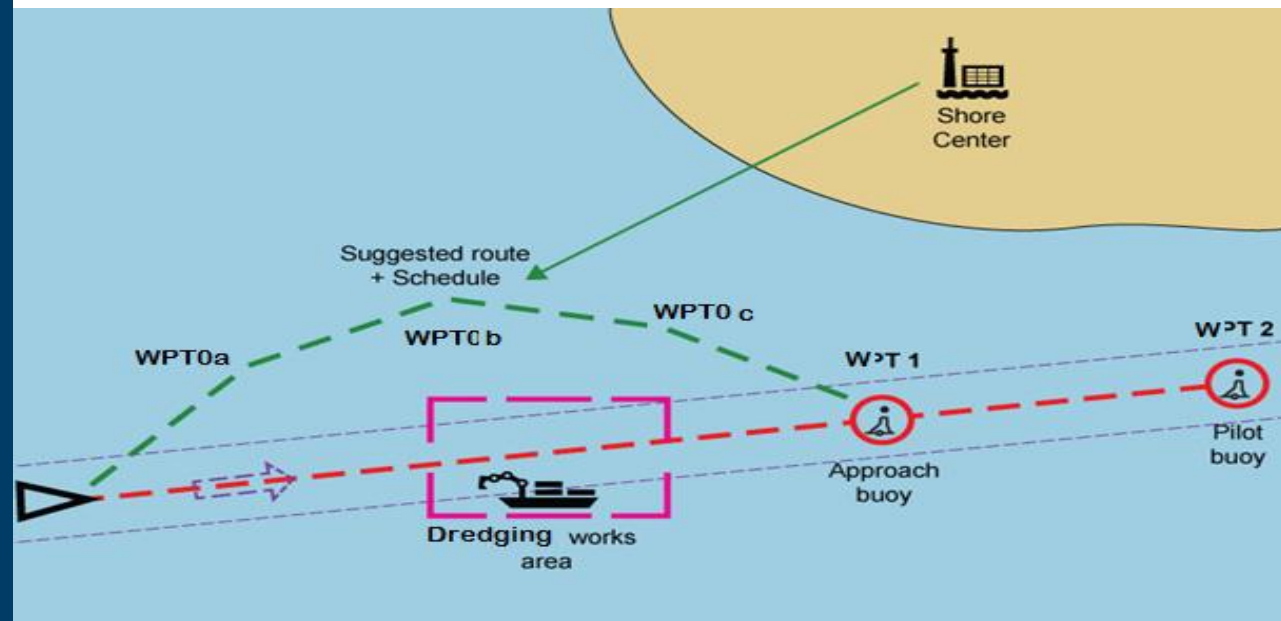
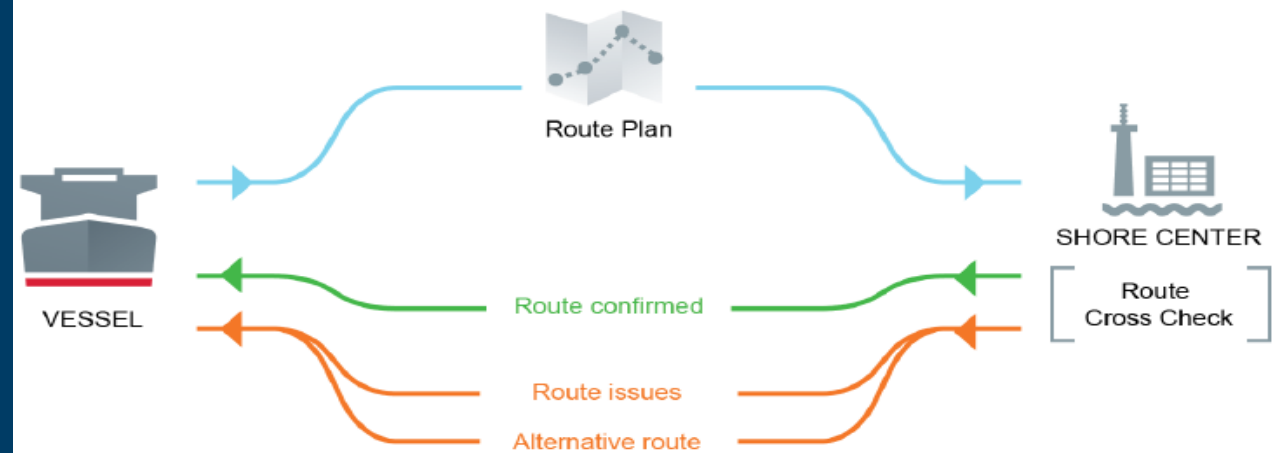
S-102 Bathymetry

IHO standards

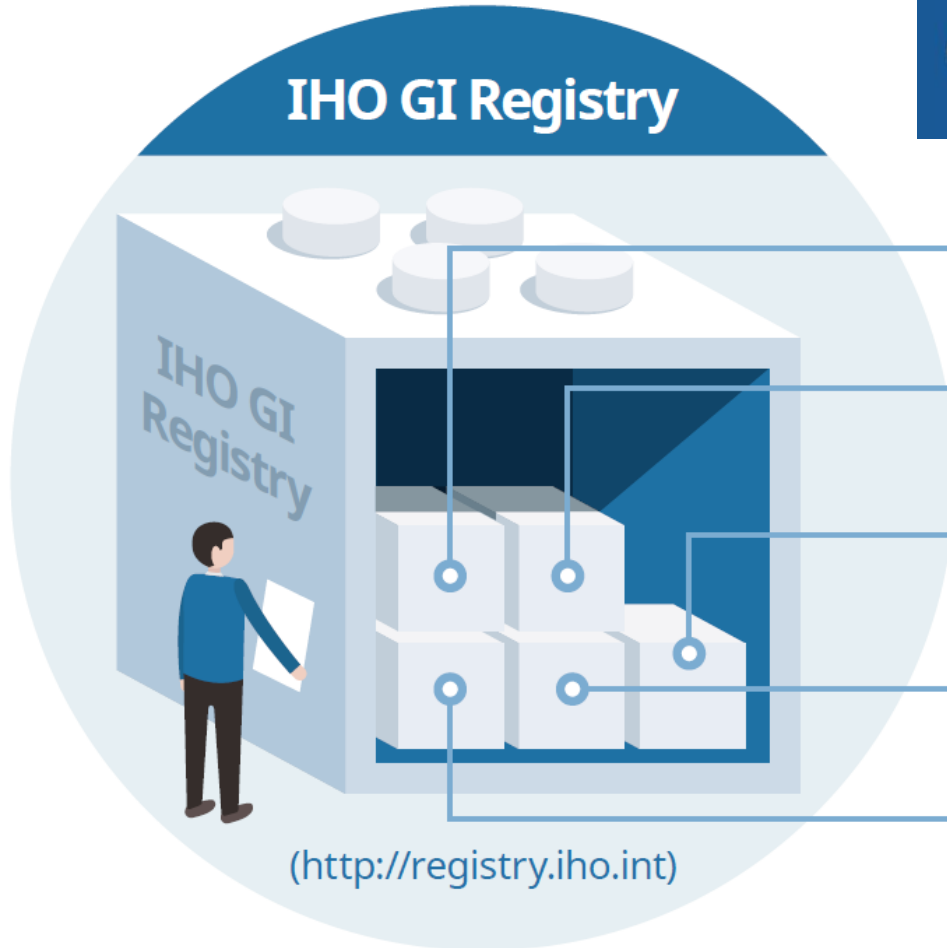
- Geografisk informasjon
- Kart-data
 - Navigasjonsmerker
 - Batymetri
- Kartfunksjonalitet
 - Tidevann
 - ++

IEC

- Skipsoperasjoner
- Informasjon om et skip
 - For eksempel navn, MMSI, rute, ankomst, last, passasjerer, mannskap, waste, security,...
- Skip-Land kommunikasjon



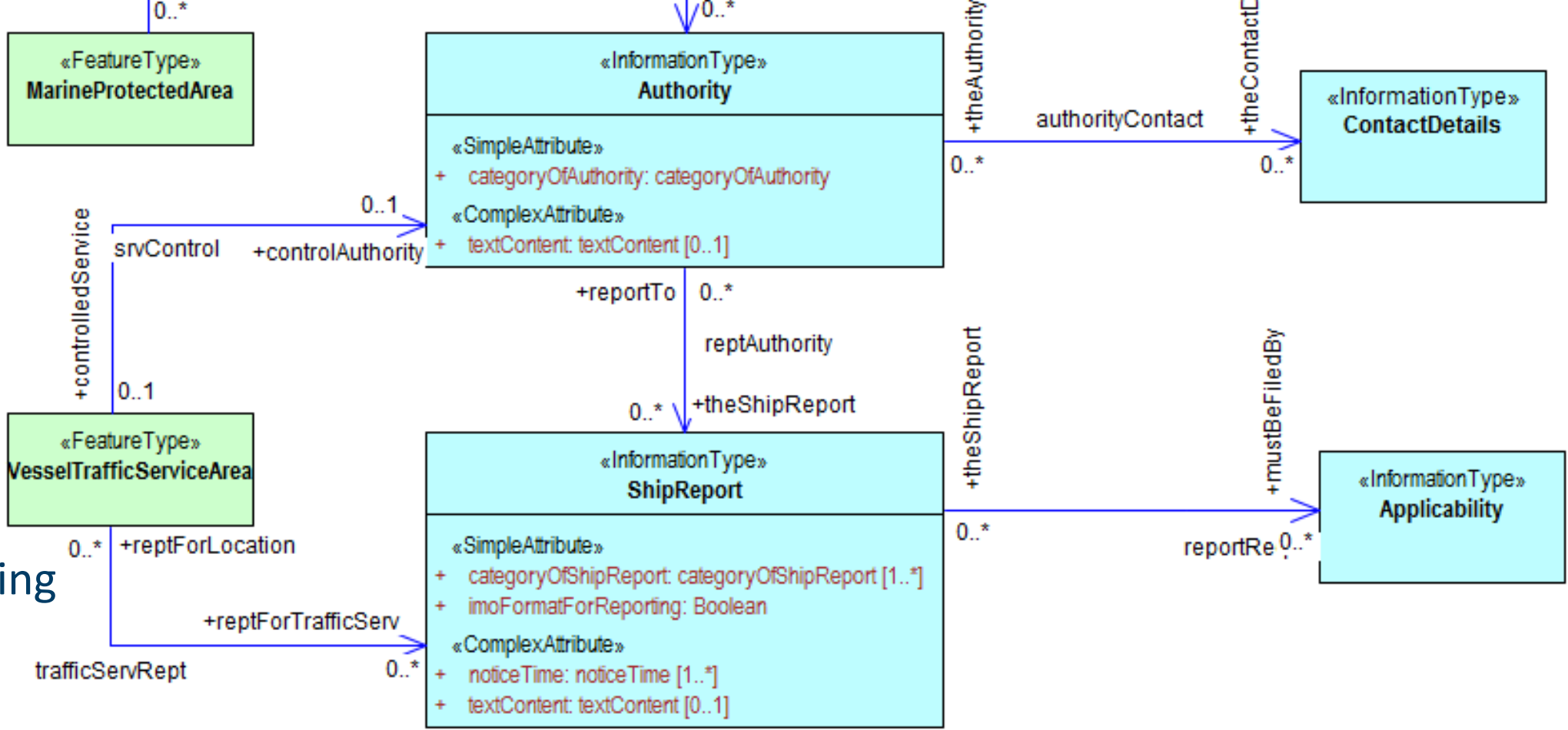
S-100 Rammeverk



- Feature Concept Dictionary Register
- Portrayal Register
- Product Specification Register
- Producer Code Register
- S-100 Test Bed

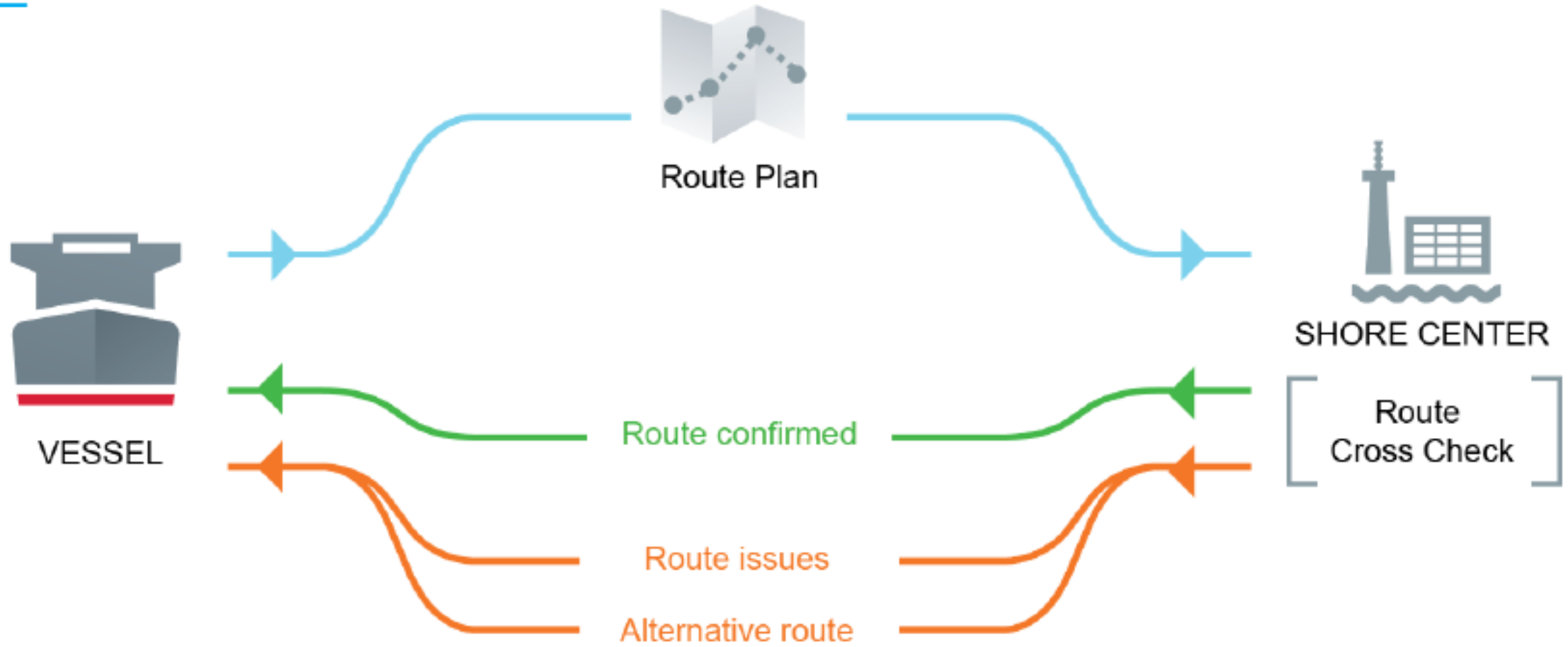
S-122

- Marine Protected Areas => Rapportering

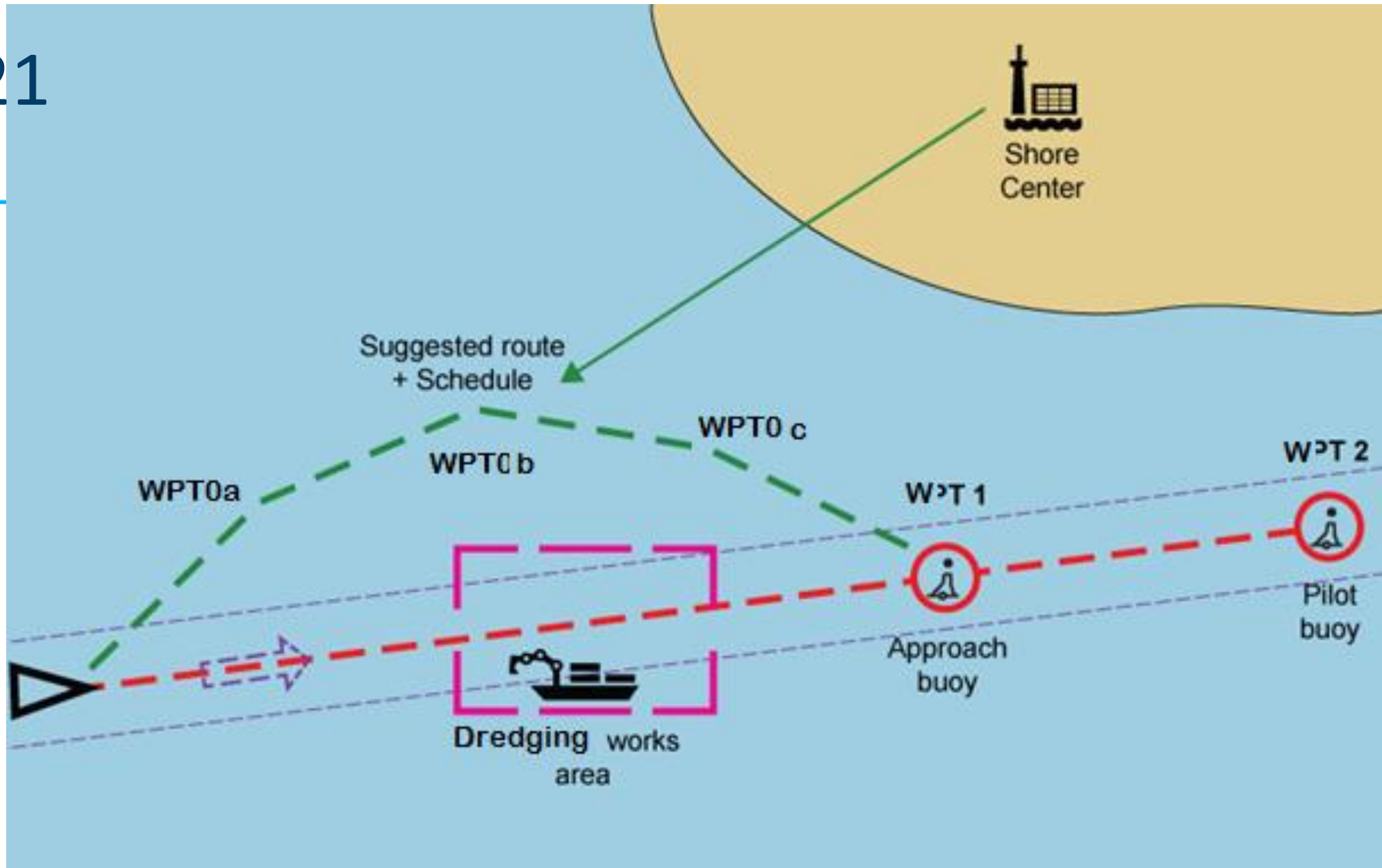


<p>«FeatureType» MarineProtectedArea</p> <p>«SimpleAttribute»</p> <ul style="list-style-type: none"> + categoryOfMarineProtectedArea: categoryOfMarineProtectedArea + categoryOfRestrictedArea: categoryOfRestrictedArea [0..*] + jurisdiction: jurisdiction + restriction: restriction [0..*] + status: status [0..*] 	<p>«FeatureType» RestrictedAreaNavigational</p> <p>«SimpleAttribute»</p> <ul style="list-style-type: none"> + categoryOfRestrictedArea: categoryOfRestrictedArea [0..*] + restriction: restriction [1..*] + status: status [0..*] <p>«SpatialAttribute»</p> <ul style="list-style-type: none"> + geometry: GM_OrientableSurface [0..*] 	<p>«FeatureType» RestrictedAreaRegulatory</p> <p>«SimpleAttribute»</p> <ul style="list-style-type: none"> + categoryOfRestrictedArea: categoryOfRestrictedArea [0..*] + restriction: restriction [0..*] + status: status [0..*] <p>«SpatialAttribute»</p> <ul style="list-style-type: none"> + geometry: GM_OrientableSurface [0..*] 	<p>«FeatureType» VesselTrafficServiceArea</p> <p>«SimpleAttribute»</p> <ul style="list-style-type: none"> + categoryOfVesselTrafficService: categoryOfVesselTrafficService <p>«SpatialAttribute»</p> <ul style="list-style-type: none"> + geometry: GM_OrientableSurface [0..*]
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S-421



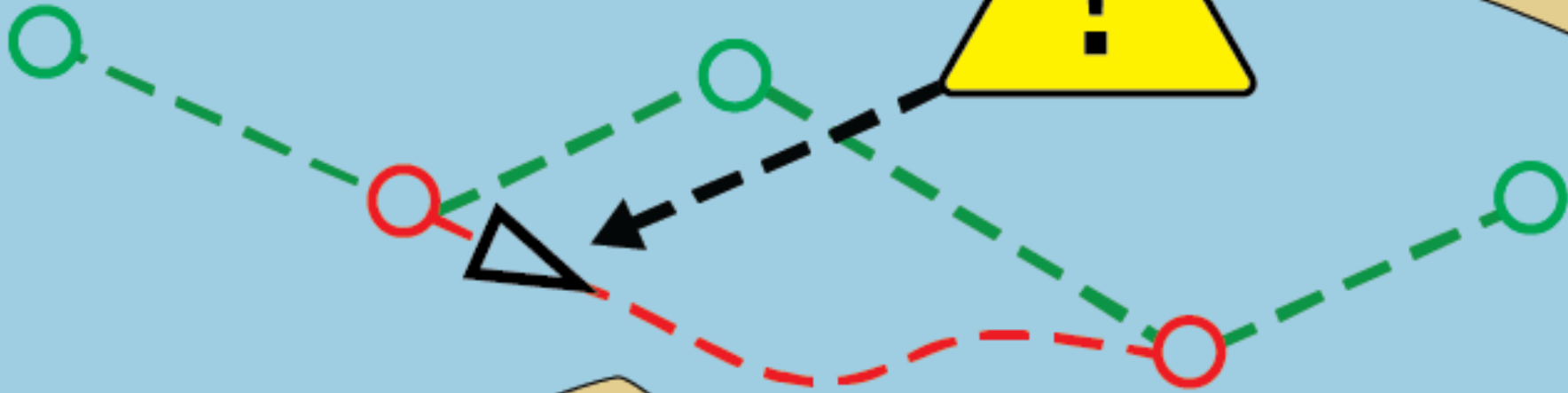
S-421



S-421

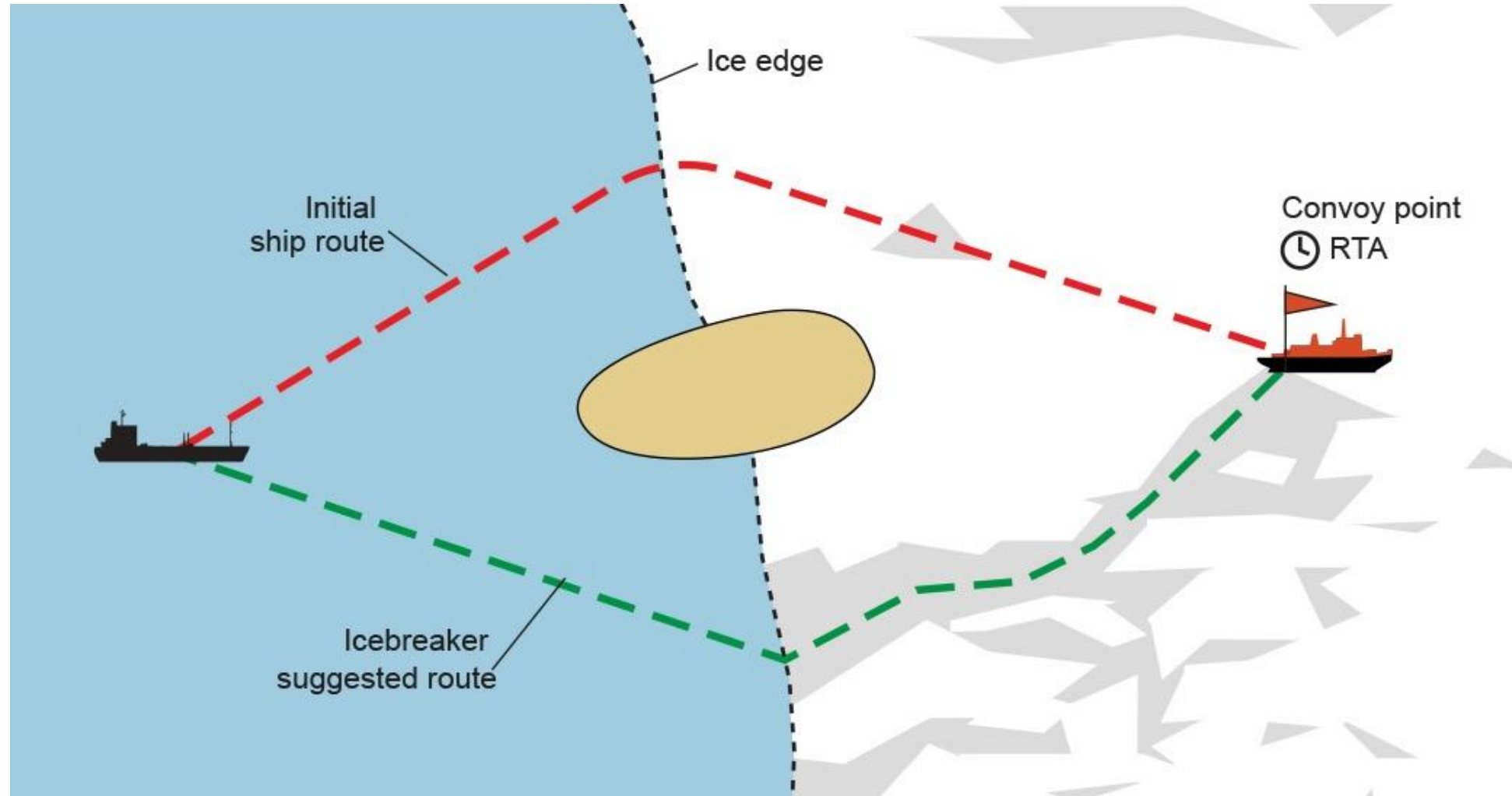


Shore Center

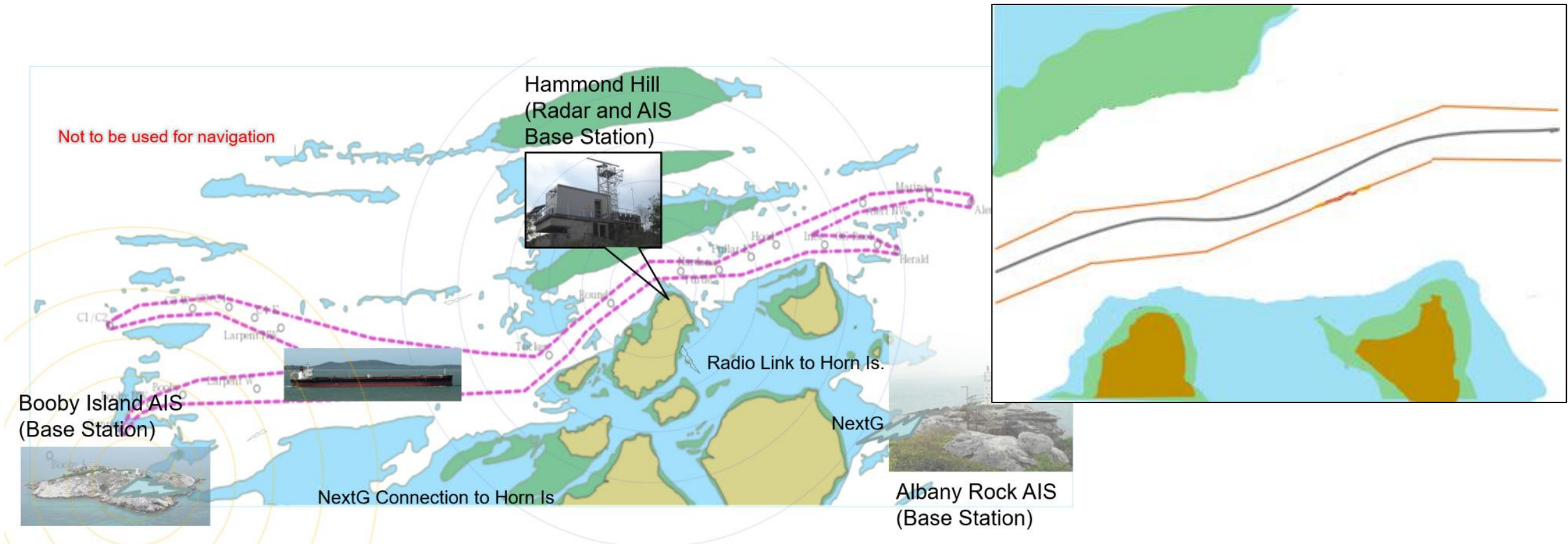


S-421vIce Navigation

Ice navigation example



S- 421 Under Keel Clearance Management



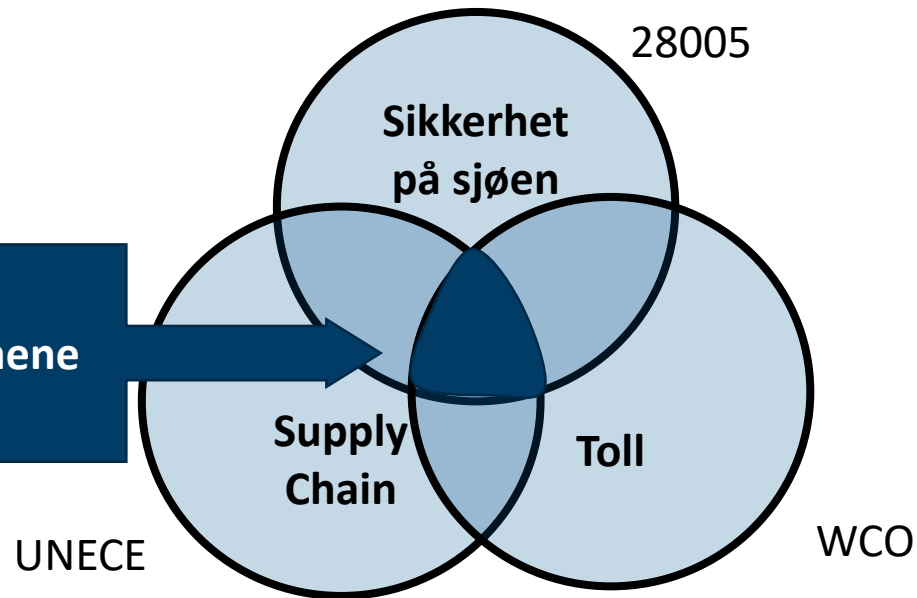


Harmonisering av data
(IMO/ISO/WCO/UNECE)



Harmonisering av data
(IMO/ISO/WCO/UNECE)

Overlapp i dataene



- IHO S-100 rammeverk og standarder
- IMO FAL compendium dataset
- IALA port call meldinger
- ISO 28005 on Electronic Port Clearance
- WCO, EDIFACT meldinger

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IMO FAL Convention and Compendium



E

IMO INTERNATIONAL MARITIME ORGANIZATION

4 ALBERT EMBANKMENT
LONDON SE1 7SR
Telephone: +44 (0)20 7735 7611 Fax: +44 (0)20 7587 3210

FAL.5/Circ.40
4 July 2012

IMO CREW'S EFFECTS DECLARATION (PAXLST – Annotated)
BGM: C002-1001=744

		Page No.
1 Revis	1.1 Name of ship SG2-TDT: 8051=20, C222: 8212	
2 all pa	1.2 IMO number SG2-TDT: C222: 8213 1.3 Call sign SG1 NAD: 3035=CA, CTA: 3139=CA, COM: C076: 3148, 3155=AW 1.4 Voyage number SG2-TDT: 8028	
3 with c oppo consi	2. Flag State of ship SG2/TDT: C222: 8453	
	3. No.	4. Family name, given names
		5. Rank or rating
		6. Effects ineligible for relief from customs duties and taxes or subject to prohibitions or restrictions*
		7. Signature
	SG4-NAD: 3035=FM: C058: 3124-3207(Nationality)	SG4-ATT: 9017=5, C956: 9018
		SG6-GID: 1496: C213: 7224, 7065, 7064, 7223=57, FTX: 4451=AAA, C108: 4440, QTY: C186: 6063=118, 6060, 6411
		6411 (UNECE/ Rec.20 to be used)

al Maritime Traffic

FAL Convention and Annex & Other IMO Data Reporting

General Declaration – Arrival
...
Name of ship
...
Name of master
...

General Declaration – Departure
...
Name of ship
...
Name of master
...

Cargo Declaration
...
Name of master
...

Other FAL Standard Declaration
...

Waste Declaration
...
Gross tonnage
...

Other Electronic Messages
...

Contracting Governments
Additional requirements
...

FAL Compendium

IMO Reference Data Model
...
Ship name
...
Master name
...
Ship gross tonnage
...

Additional data elements
...
Authentication
...

International Standards

ISO 28005
ShipIDType.ShipName
...
CrewDutyType.Code=Ma
CrewMemberDataType.
PersonOnBoardType.
NameType.GivenName
...MiddleName
...FamilyName
...
GrossTonnageType

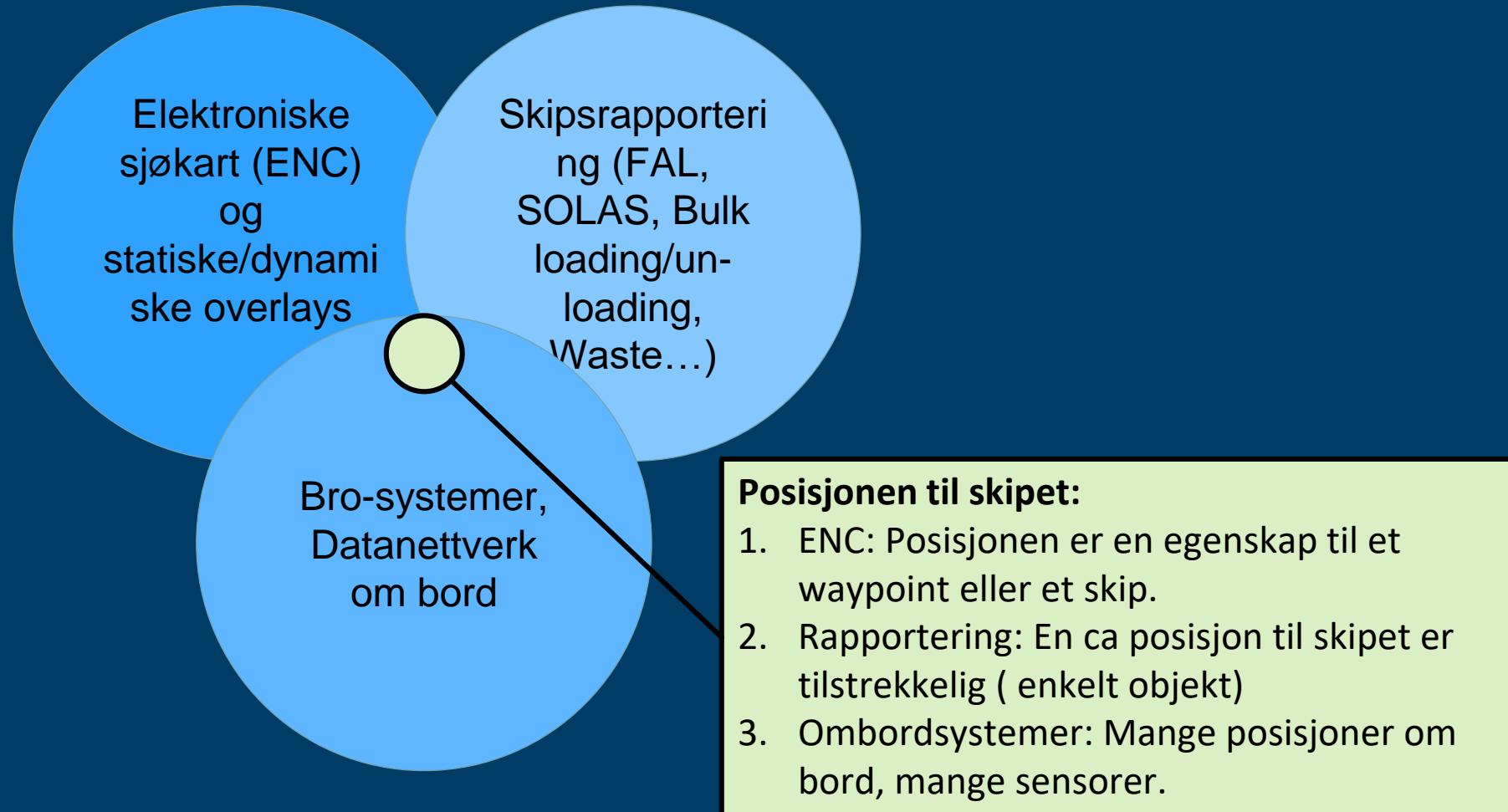
UNECE UN/CEFACT Core Library
TransportMeansName. T
...
Master. Name. Text
...
TransportMeansName. Gross Weight
Measure

WCO Data Model
WCO ID T0005 Identification
transport crossing the border
...
WCO ID 429 Person on Board
WCO ID 421 Person on Board
WCO ID 422 Person on Board
...
WCO ID Border Transport Me
Tonnage
...

- **ETA:**
 - Ankommer havneområdet => Antwerpen: 6 timer før til kommer til kai
 - Tilgjengelig for tollere til å gå om bord
 - Planlagt ETA fra skipet,
 - Time slot fra havna

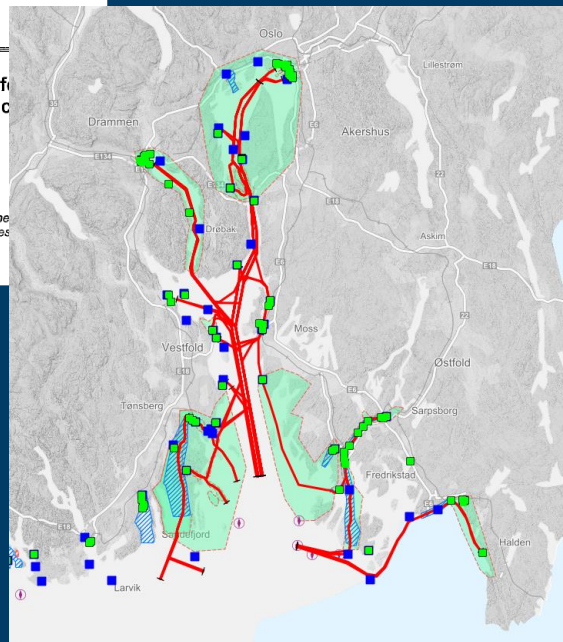
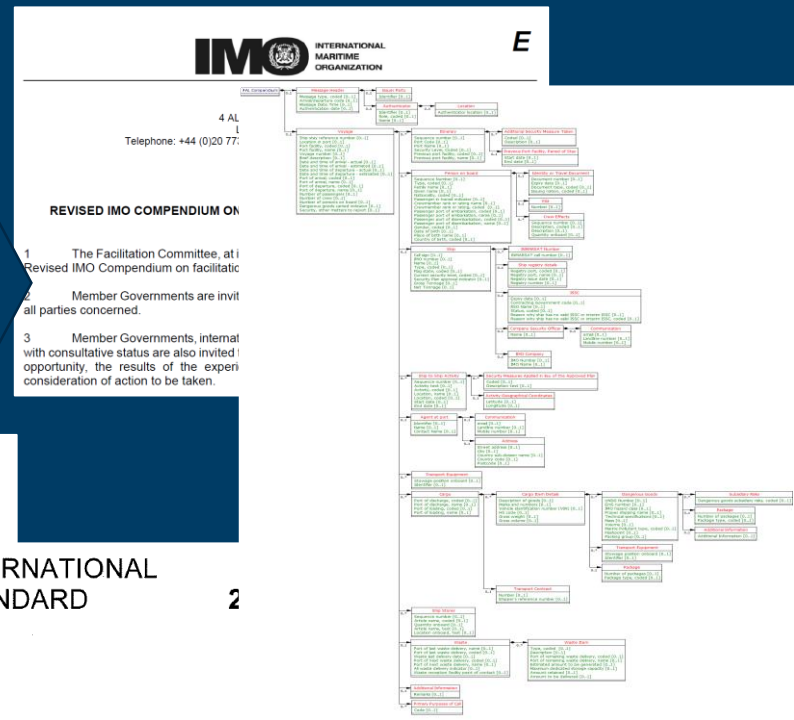
- **Venstre: Ulike rapporteringskrav**
- **Midten: IMO Referansemodell som en felles, høynivå modell som dekker rapporteringskrav i FAL konvensjonen**
- **Høyre: Mapping til tre ulike internasjonale standarder brukt i Single Window implementasjoner**

Konklusjon 1 – Semantisk interoperabilitet mellom domener



Konklusjon 2 – Semantisk interoperabilitet → Standardisering

- Ny IMO Referansemodell og datasett med rapporteringskrav FAL form 1-7 (havneanløp, skipet, crew, passasjerer, cargo), waste, security
- Utvidelser til helseinformasjon og havnelogistikk, JIT
- Oppdatering av ISO standard 28005 om Electronic Port Clearance
 - Nye krav
 - Mapping fra IMO referansemodellen.





Teknologi for et bedre samfunn