

# NPUB User Interfaces

# Background

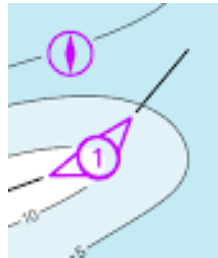
- Currently, ECDIS (and S-100 ECDIS) is a data “browser”.
- Features (and information types) are portrayed on screen and ECDIS functionality allows end users to interrogate features which are on screen.
  - **No formatting** is done of features as they are displayed to users
  - **No specific ECDIS functionality** takes place because of values of feature attributes. Context parameters determine all added functionality
- S-98 reflects this arrangement in how it specifies ECDIS functionality.

# Modelling of features in S-127, S-131 and others.

- Some features can be associated with an Applicability Information Type which notes which vessel types and voyage phases individual rules or regulations apply to.
- This allows for complex regulatory structures to be modelled in product specifications and data constructed which encodes textual rules from existing publications.
- So, for example where ship reports are required, there may exist:
  - Feature Type, e.g. ShipReportingServiceArea or VesselTrafficServiceArea
  - Applicability, “who” reporting obligations apply to (or, don’t apply to)
  - Report, the details of the actual report required
  - Contact Details, who reports need to be sent to

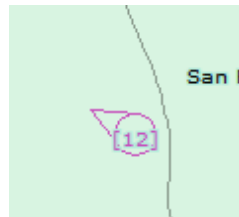
e.g. Reporting Obligations

Currently ENC only contains static data which is supplemented by publications.



### Radio Calling in point

- Designator or communication Channel
- Vessel type



### RDOCAL

OBJNAM: G4  
ORIENT: 300 deg  
Traffic Flow: outbound  
COMCHA: 12



### 3.5 Local Vessel Traffic Services (VTS) Zones

With respect to the VTS zones specified in the Vessel Traffic Services Zones Regulations, these regulations apply in respect of:

- every ship 20 metres or more in length;
- every ship engaged in towing or pushing any vessel or object, other than fishing gear, where:
  - the combined length of the ship and any vessel or object towed or pushed by the ship is 45 metres or more in length, or
  - the length of the vessel or object being towed or pushed by the ship is 20 metres or more in length.

With respect to the VTS zones specified in the Vessel Traffic Services Zones Regulations, these regulations do not apply in respect of:

- a ship engaged in towing or pushing any vessel or object within a log booming zone;
- a pleasure yacht that is less than 30 metres in length; and
- a fishing vessel that is less than 24 metres in length and not more than 150 tonnes gross weight. Participation is mandatory.

#### 3.5.1 Local Vessel Traffic Services (VTS) Zone Reports

With respect to local VTS zones as prescribed in the Vessel Traffic Services Zones Regulations, the master of the ship shall report to an MCTS officer in accordance with the following:

#### 3.5.2 Information Required

Dependent upon the reporting requirement, the following information may be required:

- the name of the ship;
- the radio call sign of the ship;
- the position of the ship;
- the estimated time that the ship will enter the VTS zone;
- the destination of the ship;
- the estimated time that the ship will arrive at its destination;
- whether any pollutant or dangerous goods cargo is carried on board the ship or any vessel or object being towed or pushed by the ship;
- the estimated time that the ship will depart the berth; and
- the estimated time at which the ship will next arrive at a location requiring a report.

#### 3.5.3 Entering a Zone

At least 15 minutes before a ship intends to enter a VTS zone, a report shall be made specifying the information listed in a), b), c), d), e), f) and g).

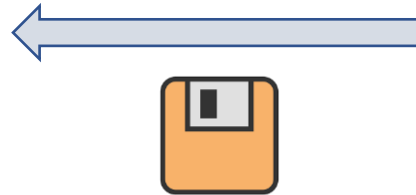
Exception: Ships already in possession of a valid Traffic Clearance issued by ECAREG, NORDREG or VTS Offshore are not required to provide this report.

##### 3.5.3.1 Arrival at a Calling-In-Point (CIP)

When a ship arrives at a CIP, a report shall be made specifying the information listed in a), c) and i).

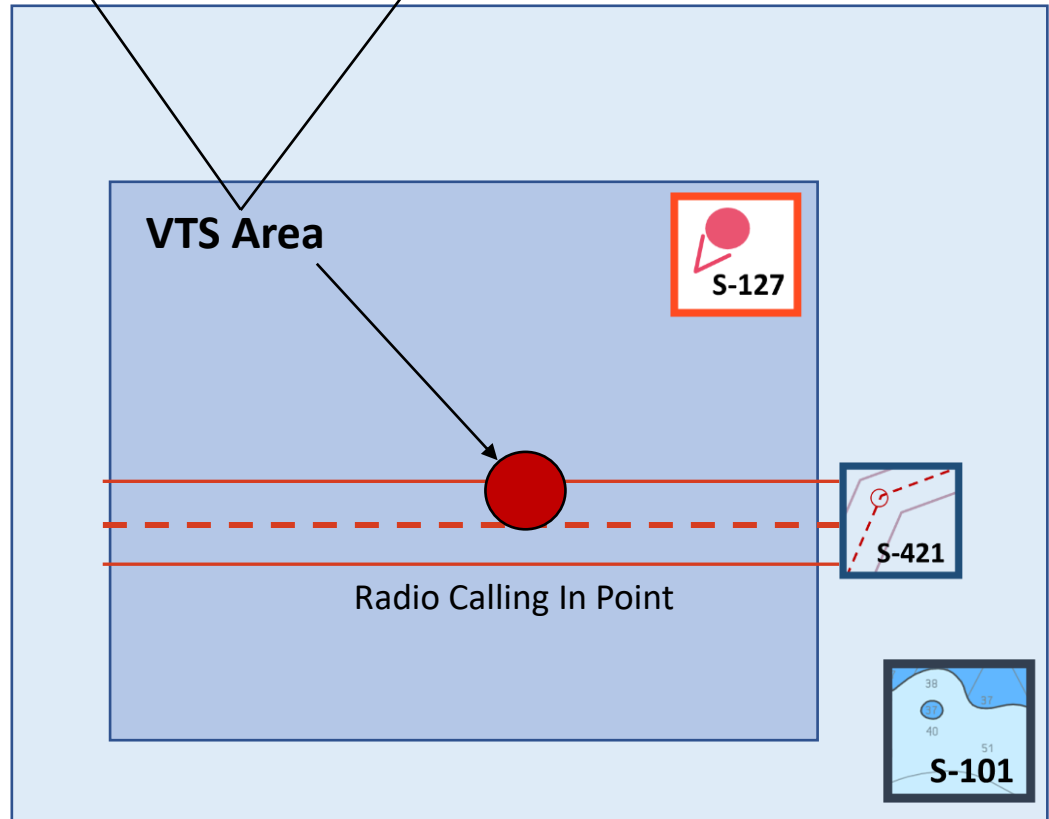


In “this area”, “these vessels” are “required” to “do this”

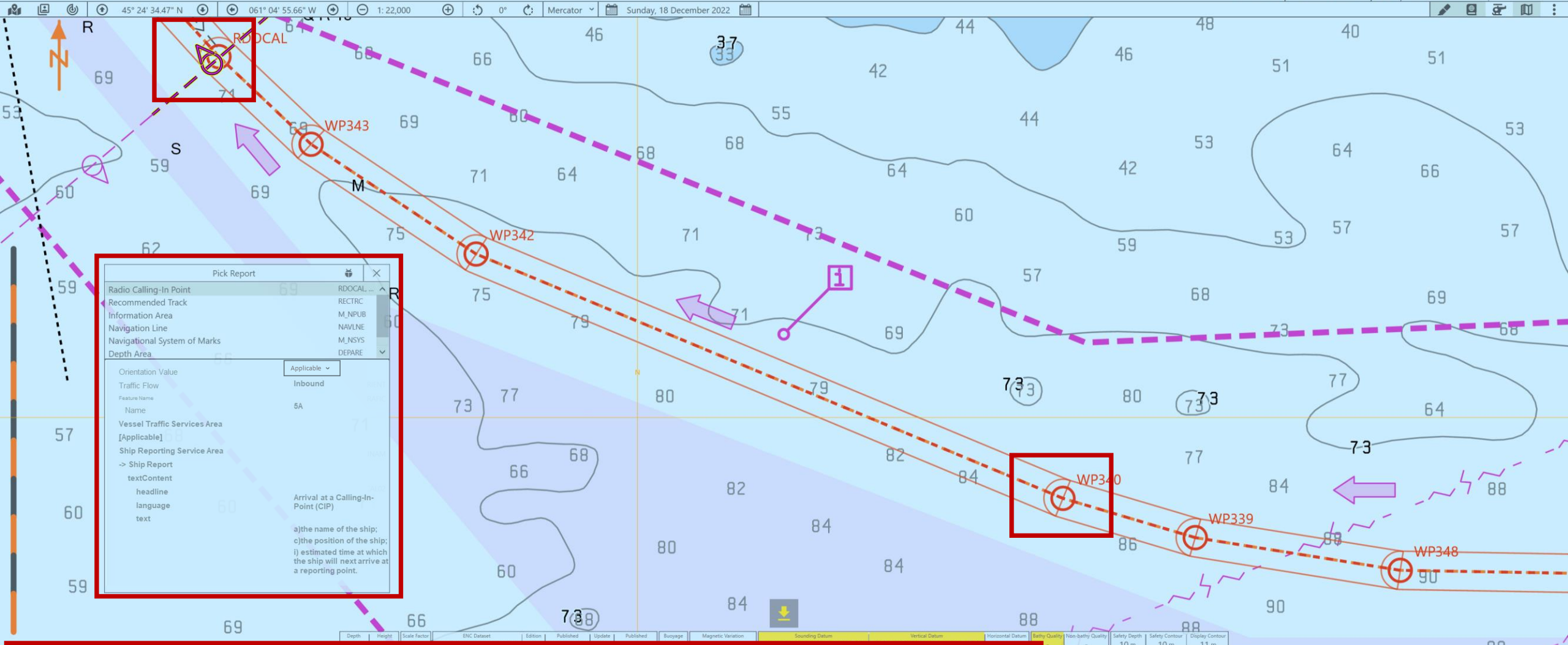


**Applicability**  
Does it apply to "me"

**Ship Report**  
What do I need to do?  
When do I need to do it?



There is an opportunity to provide more functionality to an end user...



**Pick Report**

- Radio Calling-In Point
- Recommended Track
- Information Area
- Navigation Line
- Navigational System of Marks
- Depth Area

Orientation Value: Applicable

Traffic Flow: Inbound

Feature Name: 5A

Name: 5A

Vessel Traffic Services Area [Applicable]

Ship Reporting Service Area

-> Ship Report

textContent

headline

language

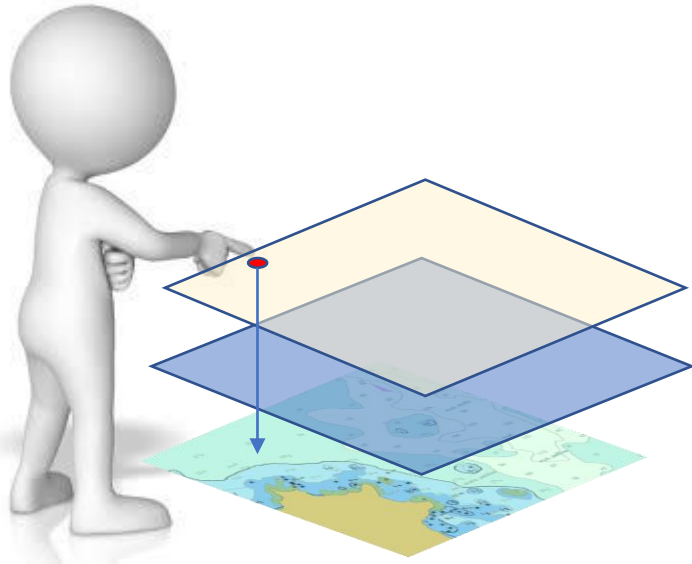
text

Arrival at a Calling-In-Point (CIP)

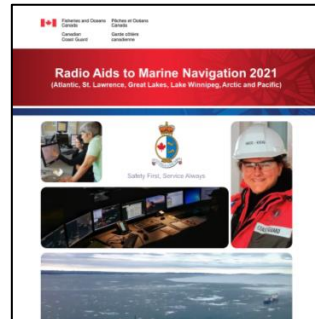
a) the name of the ship;  
 c) the position of the ship;  
 j) estimated time at which the ship will next arrive at a reporting point.

Depth	Height	Scale Factor	ENC Dataset	Edition	Published	Update	Published	Buoyage	Magnetic Variation	Sounding Datum	Vertical Datum	Horizontal Datum	Bathy Quality	Non-bathy Quality	Safety Depth	Safety Contour	Display Contour
metres/meters	m	1.0	101CA00376044.000	4	0	20130214	0	[INDA]	[MVAR]	Lower-Low Water-Large-Tide	Higher-High Water-Large-Tide	WGS84	-	-	10 m	10 m	11 m

Leg	Priority	Alert Geometry	Alert Message	Feature	Feature Geometry	Name	Dataset	Edition	Update	Latitude	Longitude	
1	Indication	Surface	Crossing prohibited or special conditions area	Restricted Area Navigational	Surface	101CA00376044.000	101CA00376044.000	4	0	43° 11' 17.12" N	064° 57' 40.14" W	
2	Info	Curve	Ship Report	Radio Calling In Point	Curve	127CA00EC35.GML	127CA00EC35.GML	2	3	45° 25' 30.95" N	061° 06' 30.14" W	Notice Time (Hours) 0.25 <a href="#">Add</a>
3	Indication	Surface	Crossing prohibited or special conditions area	Restricted Area Navigational	Surface	101CA00376044.000	101CA00376044.000	4	0	43° 04' 01.02" N	065° 15' 41.68" W	



**IF** you are >300 gross tons  
**AND** in Roseway Basin Seasonal Area  
**AND** the date is between June 1<sup>st</sup> and December 31<sup>st</sup>  
**AND** you see a North Atlantic Right Whale  
**THEN** Report it to Halifax MCTS



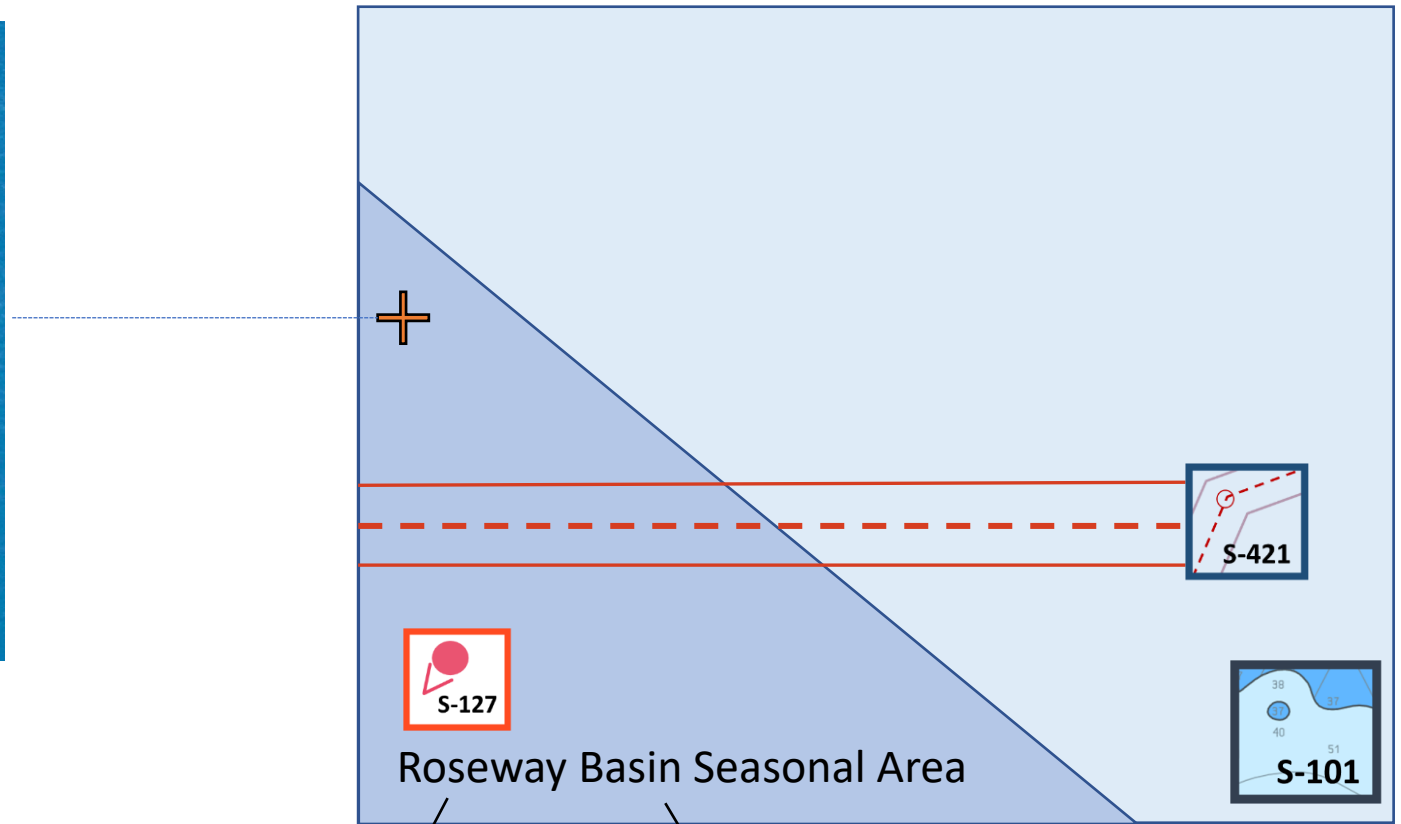
### 1.1.2 Marine Mammal Protection

Working in collaboration with other government departments/agencies, Canadian Coast Guard's (CCG) Marine Communications and Traffic Services (MCTS) Centres are monitoring vessel traffic for compliance with new measures toward the protection of marine mammals.

Note: Roseway Basin Seasonal Area is to be avoided. In order to significantly reduce the risk of ship strikes of the highly endangered North Atlantic Right Whale, it is recommended that ships of 300 tons gross tonnage and upwards in transit during the period of June 1<sup>st</sup> through December 31<sup>st</sup> should avoid this area. Any sightings are to be reported to Halifax MCTS.

Note: Grand Manan Basin is to be avoided. In order to significantly reduce the risk of ship strikes of the highly endangered North Atlantic Right Whale, it is recommended that ships of 300 tons gross tonnage and upwards in transit during the period of June 1<sup>st</sup> through December 31<sup>st</sup> should avoid this area. Any sightings are to be reported to Halifax MCTS.

Note: Roseway Basin Seasonal Area is to be avoided. In order to significantly reduce the risk of ship strikes of the highly endangered North Atlantic Right Whale, it is recommended that ships of 300 tons gross tonnage and upwards in transit during the period of June 1<sup>st</sup> through December 31<sup>st</sup> should avoid this area. Any sightings are to be reported to Halifax MCTS.



Roseway Basin Seasonal Area

**Applicability**

Vessels > 300Gt

June 1<sup>st</sup> – December 31<sup>st</sup>

**Contact Details**

Halifax MCTS





#### 4.2.1.9 Regulations applying only to vessels with specific characteristics or cargoes

Certain regulations apply only to vessels of specified dimensions, types, or carrying specified cargo, etc.

This is modelled by first defining the relevant subset of vessels according to the dimension, type, cargo, etc., and then associating that subset to the appropriate feature or information type. The subset of vessels is modelled using the **Applicability** class, which contains attributes for the most common vessel characteristics used in nautical publications. These include measurements (length, beam, draught), type of cargo, displacement, etc. Constraints which cannot be modelled using the attributes of **Applicability** can be described in plain text in its **information** attribute.

Conditions relating to vessel dimensions are modelled by the complex attribute **vesselsMeasurements**, which has sub-attributes for naming the dimension and indicating the limit (whether the condition applies to a vessel which exceeds or falls below the limit). For example, the combinations below describe the condition “length overall > 50 m” (Condition 1) and “length overall < 90 m” (Condition 2):

Table 4.1 - Conditions relating to vessel dimensions

	Condition 1	Condition 2	Condition 3
<b>vesselsCharacteristics</b>	length overall	length overall	breadth
<b>comparisonOperator</b>	greater than	less than	greater than
<b>vesselsCharacteristicsValue</b>	50	90	20
<b>vesselsCharacteristicsUnit</b>	metre	metre	metre

The **logicalConnectives** attribute is used to indicate how to interpret the case where multiple conditions are encoded using attributes of measurements - whether the conditions described by condition attributes are cumulative (conjunctive, AND) or alternatives (disjunctive, OR). A **logicalConnectives**=AND combined with Conditions 1 and 2 above describes a vessel of length between 50 and 90 metres; **logicalConnectives**=OR combined with conditions 1 and 3 describes a vessel of length greater than 50 metres or beam greater than 20 metres.

This modelling cannot represent subsets defined by both AND and OR combinations of conditions, but it is always possible to convert such complex conditions into multiple combinations each using only AND ('conjunctive normal form') or OR ('disjunctive normal form'), and model the subset using more than one **Applicability** object. Multiple instances of **Applicability** associated to the same feature or information type are interpreted as alternatives (inclusive OR).

Figure 4.16 depicts the classes and attributes that can be used to define subsets of vessels according to specified characteristics.

**This is what's in the data...**

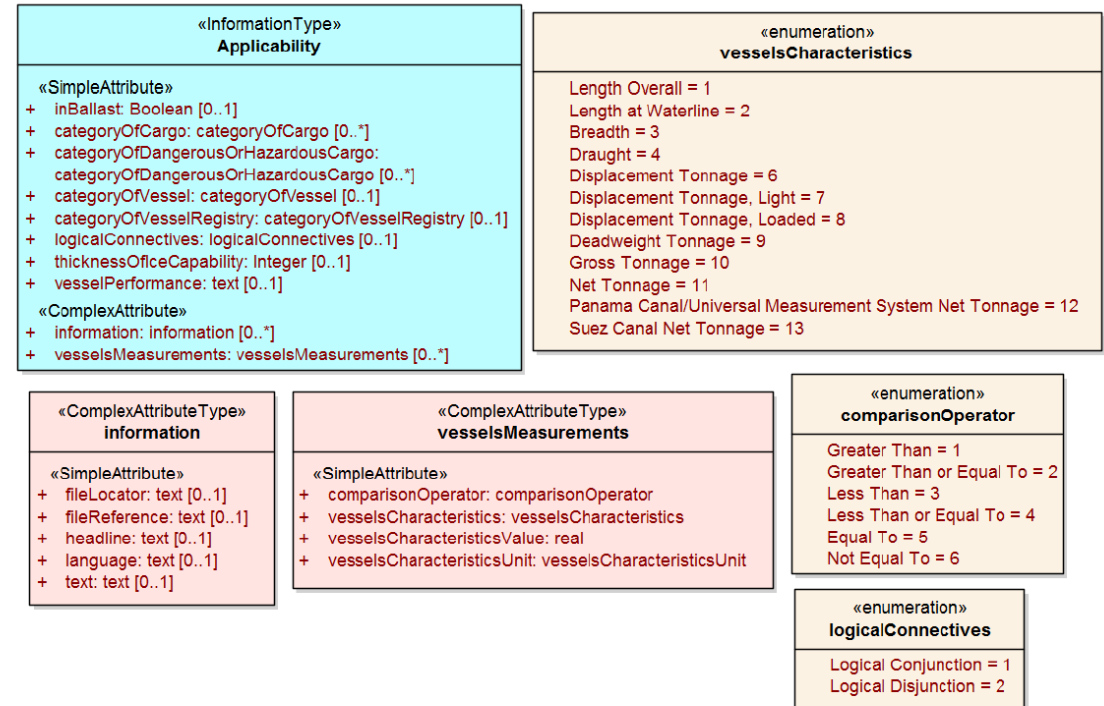


Figure 4.16 - Vessel subsets characterised by cargo, dimensions and capabilities

# How could systems resolve Applicability features?

- In isolation of anything else it is simple to program a user system to operate specific functionality
  - If vessel is within as certain distance of certain features
  - Examine Applicability against (pre-loaded) vessel characteristics
  - Offer “applicable” users contact details or use time parameters to alert users to reporting obligations at an appropriate time.
- In practice this is difficult
  1. There’s nothing in the current GFM or Portrayal model to make such calculations from the framework level so everything would have to be bespoke calculations and user interfaces
  2. ECDIS doesn’t have any requirement to hold vessel characteristics (although some may)
  3. Applicability and other “special” information types and features are product-specific, defined only in feature catalogues, so how can any computation be future proofed (what if Applicability changes attributes or even feature name?)
  4. If data is encoded using complex Applicability conditions then a simple “browser-based” ECDIS will give the user information which is extremely difficult to understand, effectively useless.

# Previously...

- This has been discussed in earlier meetings
  - Particularly in the context of HTML rendering of certain information.
  - Applicability is just a more sophisticated version of “added value” based on attributes in product specifications
  - Initial discussions held in S-164 sub working group.
    - Concluded any enhancements would have to be made to S-98 Annex C – ECDIS bespoke processing
    - No resolution to avoid “hard-wiring” feature/attribute names into ECDIS though.
- Options:
  - **Leave it for Phase 2 – difficult, ECDIS will already be defined and OEMs would have to add more detail to their implementation and retrofit to existing systems**
  - **Do something now – we need to solve the problems described. Would then need addition to S-98 Annex C**
  - **Leave it for some OEMs to implement if they wish (it’s “added-value”). Also difficult because systems which don’t have the extra functionality will show their end users unintelligible information**
  - **Abandon the idea completely and go back to text based regulatory information. Seems like a waste of a good idea which is in multiple product specifications and which has a huge potential to fully “digitize” the content of existing publications.**
- **So : Questions? Ideas?**