

Paper for Consideration by S-101PT

Merging of features Restricted Area Navigational and Regulatory

Submitted by:	France
Executive Summary:	Proposal to merge the features Restricted Area Navigational and Restricted Area Regulatory in S-101 Edition 1.2.0.
Related Documents:	S-101FC, S-101DCEG.
Related Projects:	S-101.

Introduction / Background

1. As compared to S-57, restricted areas are split into two categories in S-101 - 1.1.0: **Restricted Area Navigational** and **Restricted Area Regulatory**, mainly to avoid excessive alerts on the ECDIS. The unique criteria for encoding one feature or the other is the type of restriction(s) that apply in the area.
2. The disadvantage of this data model is that it opens the door to a (frequent) double encoding when the regulation in a restricted area includes both a navigational and regulatory value for attribute **restriction**.

Analysis/Discussion

3. In S-57, when no specific object exists, restricted areas are encoded with RESARE. Attribute RESTRN contains 27 values which all trigger an alert on the ECDIS.
4. In order to reduce the number of alerts with S-101 ENC's, it was decided to create two separate features: **Restricted Area Navigational** and **Restricted Area Regulatory**. Only **Restricted Area Navigational** would trigger an alert on the ECDIS.
5. S-101 edition 1.1.0 states that a **Restricted Area Navigational** will be encoded when attribute **restriction** contains at least one value from the following list: 1, 2, 7, 8, 13, 14, 25, 26, 27. A **Restricted Area Regulatory** will be encoded when attribute **restriction** contains at least one value from the following list: 3, 4, 5, 6, 9, 10, 11, 12, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 39. When attribute **restriction** contains values from both list, one instance of both features will be encoded, each one carrying the appropriate/allowable values for **restriction**.
6. This data model has a couple of shortcomings:
 - For a unique official regulation that applies to a specific area, encoders will have, in many cases, to encode two areas sharing the same geometry. This double encoding is not optimum in terms of database management.
 - There is a risk that, when the regulation is no longer in force or when the restrictions are changed, that one of the areas is not suppressed or correctly amended.
7. In order to avoid this double encoding, it is proposed to review the data model to come (nearly) back to what it is in S-57:
 - Replace **Restricted Area Navigational** and **Restricted Area Regulatory** by a unique **Restricted Area** feature;
 - In terms of ECDIS functionalities, an alert will only be triggered if restriction contains at least one value from the following list: 1, 2, 7, 8, 13, 14, 25, 26, 27;
 - Note: the portrayal catalogue also assigns an alert when **category of restricted area** = 28 (PSSA).
8. The following S-101 DCEG guidance is proposed (based on guidance for **Restricted Area Navigational** as in edition 1.1.0):

17.8 Restricted area

Deleted: navigational

IHO Definition: RESTRICTED AREA. A specified area on land or water designated by an appropriate authority within which access or navigation is restricted in accordance with certain specified conditions. (Adapted from IHO Dictionary – S-32).

Deleted: A navigational restricted area is an area where the restrictions have a direct impact on the navigation of a vessel in the area.

S-101 Geo Feature: Restricted Area (RESARE)

Deleted: Navigational

Primitives: Surface

<i>Real World</i>	<i>Paper Chart Symbol</i>	<i>ECDIS Symbol</i>
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S-101 Attribute	S-57 Acronym	Allowable Encoding Value	Type	Multiplicity
category of restricted area	(CATREA)	1 : offshore safety zone 4 : nature reserve 5 : bird sanctuary 6 : game reserve 7 : seal sanctuary 8 : degaussing range 9 : military area 10 : historic wreck area 12 : navigational aid safety zone 14 : minefield 18 : swimming area 19 : waiting area 20 : research area 21 : dredging area 22 : fish sanctuary 23 : ecological reserve 24 : no wake area 25 : swinging area 27 : environmentally sensitive sea area 28 : particularly sensitive sea area 29 : disengagement area 30 : port security area 31 : coral sanctuary 32 : recreation area	EN	0,*
feature name			C	0,*
display name			(S) BO	0,1 †
language		ISO 639-2/T	(S) TE	0,1 †
name	(OBJNAM) (NOBJNM)		(S) TE	1,1
fixed date range		See clause 2.4.8	C	0,1
date end	(DATEND)		(S) TD	0,1
date start	(DATSTA)		(S) TD	0,1
periodic date range		See clause 2.4.8	C	0,*
date end	(PEREND)		(S) TD	1,1

date start	(PERSTA)		(S) TD	1,1
restriction	(RESTRN)	1 : anchoring prohibited 2 : anchoring restricted 3 : fishing prohibited 4 : fishing restricted 5 : trawling prohibited 6 : trawling restricted 7 : entry prohibited 8 : entry restricted 9 : dredging prohibited 10 : dredging restricted 11 : diving prohibited 12 : diving restricted 13 : no wake 14 : area to be avoided 15 : construction prohibited 16 : discharging prohibited 17 : discharging restricted 18 : industrial or mineral exploration/development prohibited 19 : industrial or mineral exploration/development restricted 20 : drilling prohibited 21 : drilling restricted 22 : removal of historical artefacts prohibited 23 : cargo transhipment (lightening) prohibited 24 : dragging prohibited 25 : stopping prohibited 26 : landing prohibited 27 : speed restricted 39 : swimming prohibited	EN	0,*
status	(STATUS)	1 : permanent 2 : occasional 3 : recommended 4 : not in use 5 : periodic/intermittent 6 : reserved 7 : temporary 9 : mandatory 18 : existence doubtful 28 : buoyed	EN	0,*
vessel speed limit			C	0,*
speed limit			(S) RE	1,1
vessel class			(S) TE	0,1
scale minimum	(SCAMIN)	See clause 2.5.9	IN	0,1
information		See clause 2.4.6	C	0,*
file locator			(S) TE	0,1
file reference	(TXTDSC) (NXTDTS)		(S) TE	0,1 †
headline			(S) TE	0,1
language		ISO 639-2/T	(S) TE	0,1
text	(INFORM) (NINFOM)		(S) TE	0,1 †

Deleted: 1

† At least one of the attributes **category of restricted area** or **restriction** must be populated.

† For each instance of **fixed date range**, at least one of the sub-attributes **date end** or **date start** must be populated.

For each instance of **information**, at least one of the sub-attributes **file reference** or **text** must be populated.

INT 1 Reference: L 3; M 29.1; N 2.1-2, 20-22, 25, 31, 34, 63

Restricted areas (see S-4 – B-422; B-430.2; B-431.4; B-435.7; B-435.11; B-437.1-7; B-439; B-439.2-4; B-441,1; B-445.9; B-445.11-12; B-446.4 and B-448.1)

Deleted: Navigational r

If it is required to encode a restricted area, it must be done using the feature **Restricted Area**, or using other features having the attribute **restriction** (**Anchorage Area**, **Cable Area**, **Dumping Ground**, **Dredged Area**, **Deep Water Route Part**, **Fairway**, **Fishing Ground**, **Harbour Facility**, **Inshore Traffic Zone**, **Marine Farm/Culture**, **Military Practice Area**, **Offshore Production Area**, **Submarine Pipeline Area**, **Pipeline Submarine/On Land**, **Precautionary Area**, **Seaplane Landing Area**, **Submarine Transit Lane**, **Territorial Sea Area**, **Traffic Separation Scheme Crossing**, **Traffic Separation Scheme Lane Part**, **Traffic Separation Scheme Roundabout**).

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Remarks:

- The term “no anchoring area” is used to identify the IMO routing measure of that name. Such areas, when required, must be encoded as **Restricted Area Navigational** with attribute **restriction = 1** (anchoring prohibited).

Deleted: <#>Restricted Area Navigational must only be encoded if one of the allowable values for **restriction** apply for the area.†

Distinction: Anchorage Area; Cable Area; Caution Area; Collision Regulations Limit; Deep Water Route Part; Depth Area; Dredged Area; Dumping Ground; Fairway; Information Area; Military Practice Area; Submarine Pipeline Area; Swept Area.

Deleted: Restricted Area Regulatory;

Feature/Feature associations: Fairway Auxiliary; Traffic Separation Scheme Aggregation; Updated Information; Text Association

Feature/Information associations: Additional Information

Spatial/Information association: Spatial Association

9. Another option, based on the same data model, would be to replace attribute **restriction** by two attributes **restriction navigational** (0,*) and **restriction regulatory** (0,*) that would carry the ad hoc allowable values. The ECDIS functionality would then be based on the population of these attributes, rather than on the values populated in **restriction**.

Recommendations

It is recommended to:

- Review the data model to merge **Restricted Area Navigational** and **Restricted Area Regulatory** in favour of one single feature **Restricted Area**;
- Modify the DCEG as suggested above;
- Review the Feature Catalogue and Portrayal Catalogue accordingly;
- Evaluate any impact on the ECDIS functionalities.

Action Required of S-101PT

The S-101PT is invited to:

- a) Discuss this paper and its recommendations.