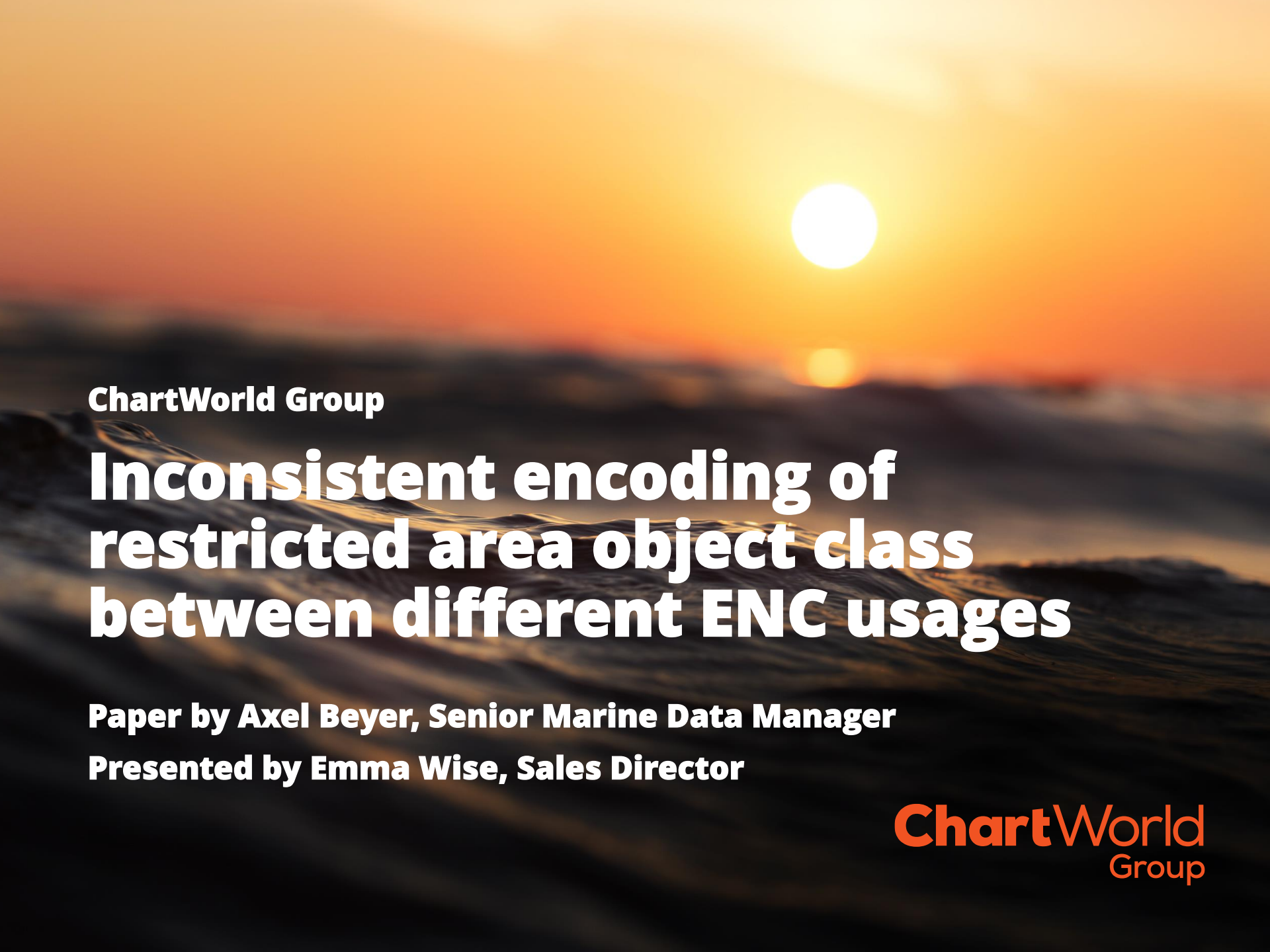

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Inconsistent encoding of restricted area object class between different ENC usages

Paper by Axel Beyer, Senior Marine Data Manager

Presented by Emma Wise, Sales Director

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Background

Paper was submitted with the primary aim being to raise awareness awareness

Process:

Extracting information from ENCs from the best scale usage band for inclusion in the ChartWorld Route Network. The RNW is making use of the data making it available in Voyage Plans.

- Green = RESARE object found in best usage chart
- Red = RESARE object of a worse usage, not covered by a corresponding RESARE object from the chart of best available usage

Inconsistencies found between both the same and different country producers.

Why is the polygon in a worst usage and not a best usage band?

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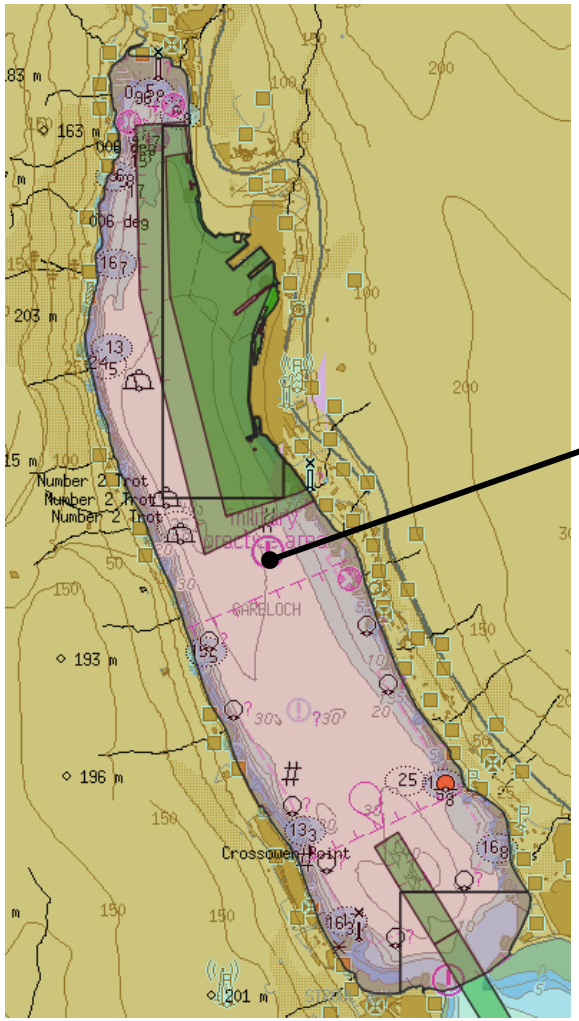
1) UK: 56.04370068, -4.81883798



class_code	RESARE
usage	3
best_usage	4
cell_name	GB302131
best_cell_name	GB40782K
cell_cscale	45.000
best_cell_cscale	12.000
area_objnam	NULL
area_restriction	entry restricted
area_scamin	54.463
area_cscale	Not applicable
area_category	NULL
area_datsta	NULL
area_datend	NULL
area_inform	SPECIAL AREA - FASLANE PROTECTED ...
area_persta	NULL
area_perend	NULL
area_status	NULL
area_foid	540/10117688/1
geometry_type	Area

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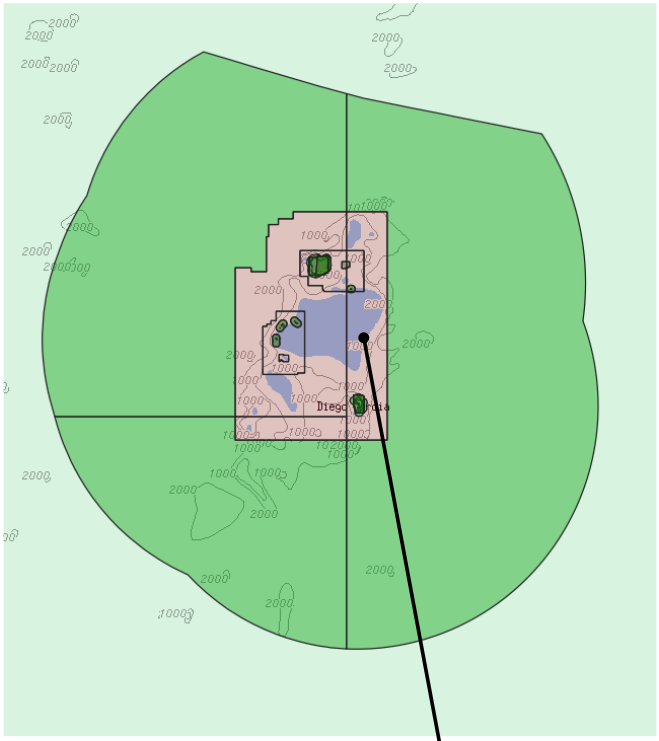
2) Chagos Archipelago: -6.21813694, 71.86604923



Restricted area encoded in chart of usage 1 but not in chart of best usage 2.

class_code	RESARE
usage	1
best_usage	2
cell_name	GB104707
best_cell_name	GB200003
cell_cscale	3.500.000
best_cell_cscale	350.000
area_objnam	NULL
area_restriction	entry restricted
area_scamin	11.519
area_cscale	Not applicable
area_category	nature reserve
area_datsta	NULL
area_datend	NULL
area_inform	MARINE PROTECTED RESERVE
area_persta	NULL
area_perend	NULL
area_status	NULL
area_foid	540/12860944/1
geometry_type	Area

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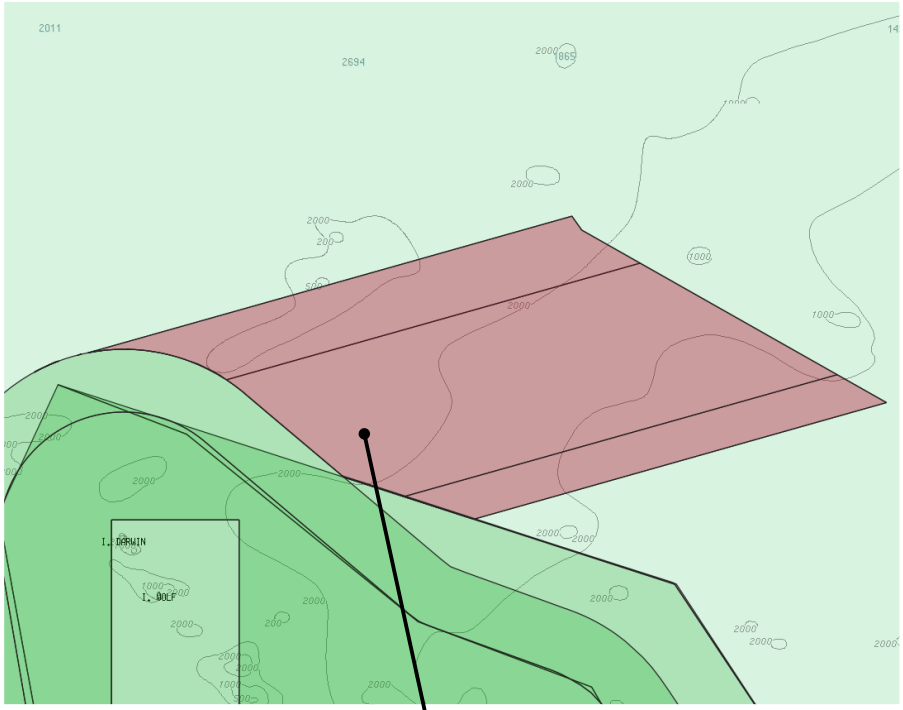
3) Galápagos Islands: 2.52929627, -89.99360468



Restricted areas encoded in chart of usage 1 but not in chart of best usage 2.

class_code	RESARE
usage	1
best_usage	2
cell_name	GB1BQ000
best_cell_name	EC200020
cell_cscale	3.000.000
best_cell_cscale	700.000
area_objnam	NULL
area_restriction	entry restricted
area_scamin	11.519
area_cscale	Not applicable
area_category	nature reserve
area_datsta	NULL
area_datend	NULL
area_inform	NO TAKE ZONE
area_persta	NULL
area_perend	NULL
area_status	NULL
area_foid	540/3926959939/1
geometry_type	Area

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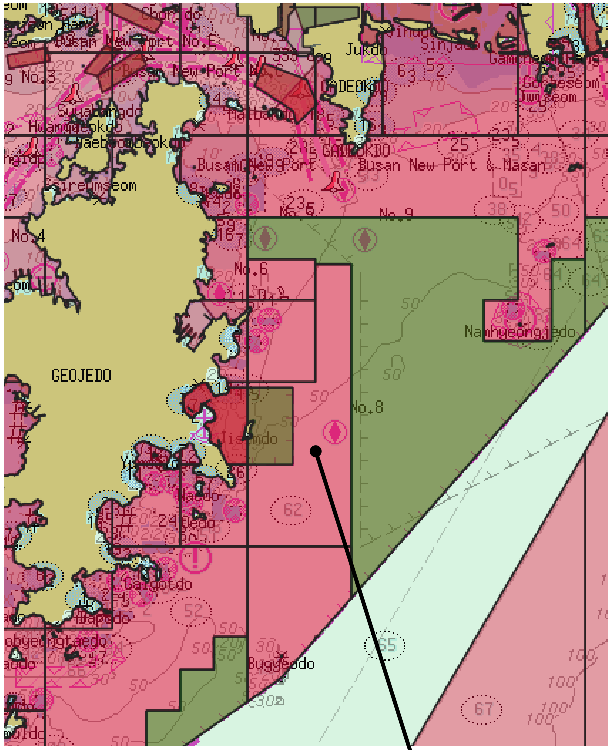
4) South Korea: 34.78952595, 128.80092065



Restricted area encoded in chart of usage 2, 3 and 4 but not in chart of best usage 5.

More issues can be seen, indicated by the red coloured polygons. The darker the red colour, the more issues:

- RESARE object found in several other usages, except for best usage chart

or

- several different RESARE polygons (cases) over one another.

class_code	RESARE
usage	4
best_usage	5
cell_name	KR4G3E20
best_cell_name	KR5G3E22
cell_cscale	75.000
best_cell_cscale	25.000
area_objnam	NULL
area_restriction	entry prohibited
area_scamin	48.927
area_cscale	Not applicable
area_category	NULL
area_datsta	NULL
area_datend	NULL
area_inform	Traffic Prohibited Area for Tanke
area_persta	NULL
area_perend	NULL
area_status	NULL
area_foid	280/2491666/10001
geometry_type	Area

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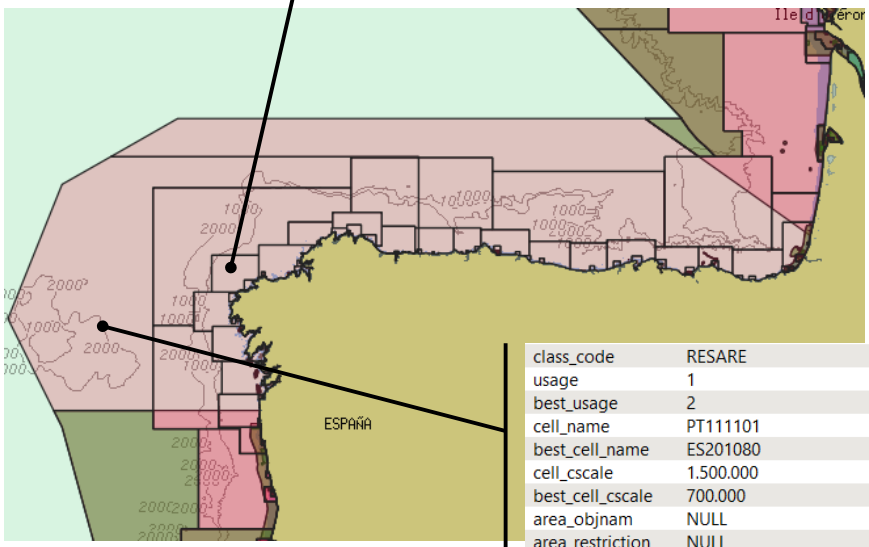
5) Off Cap Finisterre: 43.18641317, -11.07985927

Restricted area encoded in charts of usage 1 but not in chart of best usage (2 or 3 or 4 or 5).

class_code	RESARE
usage	1
best_usage	4
cell_name	PT111101
best_cell_name	ES400413
cell_cscale	1.500.000
best_cell_cscale	45.000
area_objnam	NULL
area_restriction	NULL
area_scamin	38.527
area_cscale	Not applicable
area_category	Particularly Sensitive Sea Area (PSSA)
area_datsta	NULL
area_datend	NULL
area_inform	Particularly sensitive sea area (PSSA).
area_persta	NULL
area_perend	NULL
area_status	NULL
area_foid	410/657675/1
geometry_type	Area



class_code	RESARE
usage	1
best_usage	2
cell_name	PT111101
best_cell_name	ES201080
cell_cscale	1.500.000
best_cell_cscale	700.000
area_objnam	NULL
area_restriction	NULL
area_scamin	38.527
area_cscale	Not applicable
area_category	Particularly Sensitive Sea Area (I
area_datsta	NULL
area_datend	NULL
area_inform	Particularly sensitive sea area (P
area_persta	NULL
area_perend	NULL
area_status	NULL
area_foid	410/657675/1
geometry_type	Area

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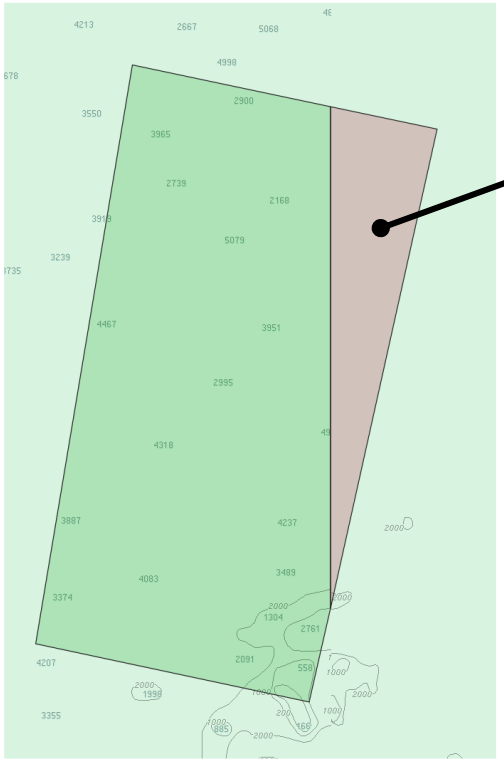
6) Atlantic Ocean: 40.24618075, -13.53452617

A restricted area in the Atlantic Ocean, off the Portuguese coast, only existent in usage 1 but not in usage 2.



class_code	RESARE
usage	1
best_usage	2
cell_name	PT111101
best_cell_name	PT221101
cell_cscale	1.500.000
best_cell_cscale	700.000
area_objnam	NULL
area_restriction	area to be avoided
area_scamin	38.527
area_cscale	Not applicable
area_category	NULL
area_datsta	20.230.101
area_datend	20.230.131
area_inform	Rocket debris fall. Temporary nc
area_persta	NULL
area_perend	NULL
area_status	NULL
area_foid	410/787819/1
geometry_type	Area

Note: *This issue may be caused by the fact that the restricted area should have been deleted from th usage 1 chart, given the timeframe of validity (DATSTA & DATEND).*

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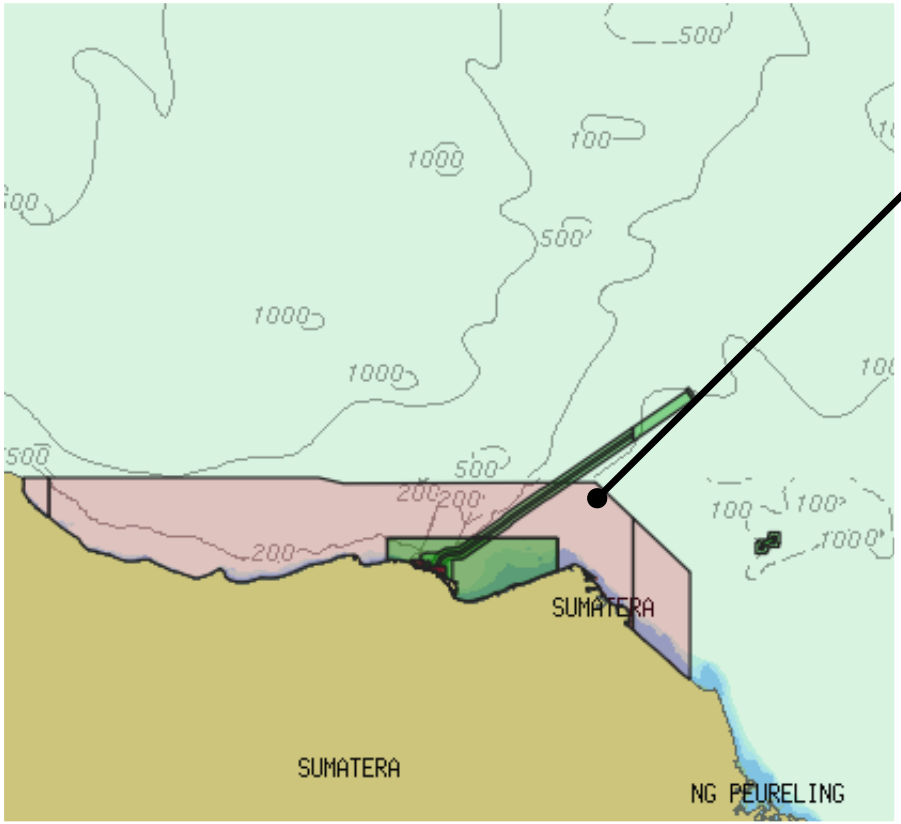
7) Malacca Strait: 5.37009339, 97.54577521

A restricted area in the Malacca Strait exists only in GB chart of usage 2 but not in Indonesian chart of usage 3:



class_code	RESARE
usage	2
best_usage	3
cell_name	GB22777A
best_cell_name	ID300436
cell_cscale	350.000
best_cell_cscale	180.000
area_objnam	NULL
area_restriction	entry restricted
area_scamin	16.959
area_cscale	Not applicable
area_category	NULL
area_datsta	NULL
area_datend	NULL
area_inform	RESTRICTED AREA
area_persta	NULL
area_perend	NULL
area_status	NULL
area_foid	540/24219389/1
geometry_type	Area

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Request to the WENDWG

- Ensure vertical consistancy between usage bands so data is not lost. **AT LEAST** for the same country producers.

- It is critical this is resolved as S-100 data comes into play.

- To note SevenCs SDMS (S-100 Data Management Service) will validate vertical consistancies as data is concerted.

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Expectations from Mariners and End-User Service Providers on ENDS Provision

Emma Wise, Sales Director

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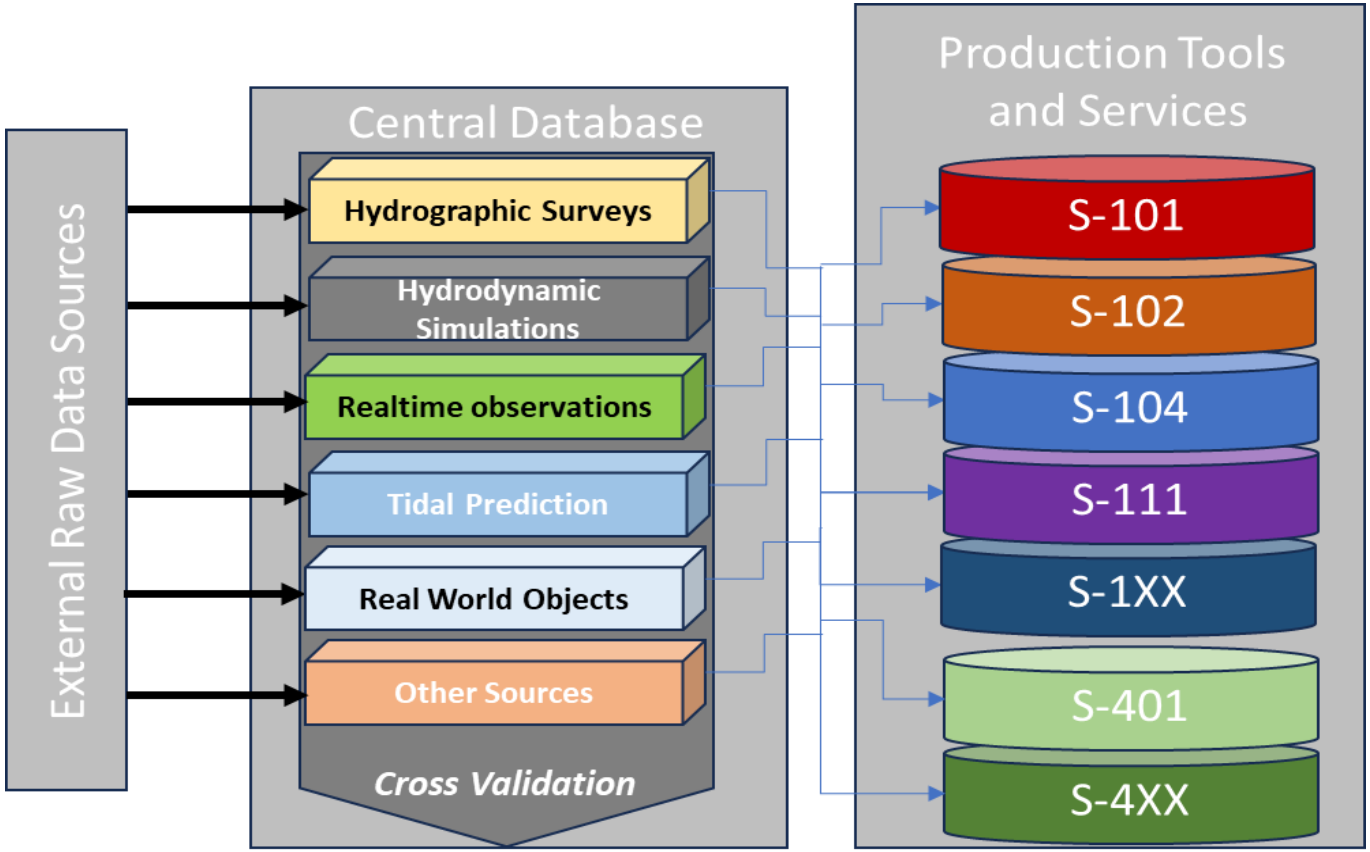
ENC Services – S-100 Data Processing



- Integrate S-100 product group (phase 1)
- Tie all available components together for best integrated data for optimal use

→ All raw data sources valuable for navigational purposes at a central DB in HO or producer level to achieve data consistency

→ Data production tools should connect to such Database to ensure consistent and validated content

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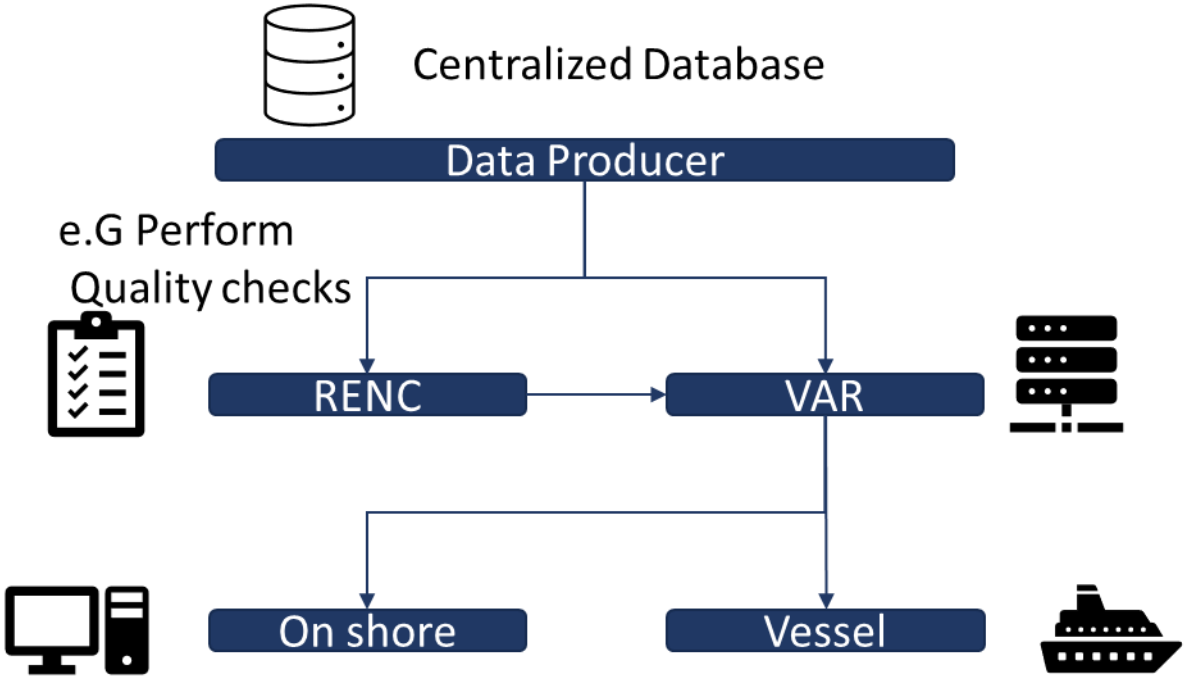
Provision and Distribution methods



- Request of data by (e.g. route) polygon from the vessel against the Database and charged as such
- Pay-by-Polygon license approach with unified rules; overcome current PAYS licensing limitations
- Best case scenario is that Data is available for onshore and onboard keeping RENCS and VARS in their roles to ensure best services
- Any data on the bridge needs to be validated and assessed for risk. Is data volumes are too high, a large workload and bridge procedures are required to ensure best use of the data for a specific voyage.

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Expectations, Update Routine

- ECDIS and high-end Sub-ECDIS can officially use an approved protection scheme (like today with S-63).
- The vessels visualisation system is prepared for processing consistent data and provides the best visualisation depending on the users' tasks (e.g., different displays in planning and monitoring modes).
- Update routine should be event driven.

Liability

- Issue remains unchanged – HO should in theory, stay liable for the content.
- Data Producer is liable for the data.
- The VAR could be liable for the end service BUT product liability insurance should be common across the field and must be standardised.

Product Expectations

- Pricing as now will not work on low-end sub-ECDIS market.
- Phase 1 product expectation for ECDIS to digest with event driven updates.

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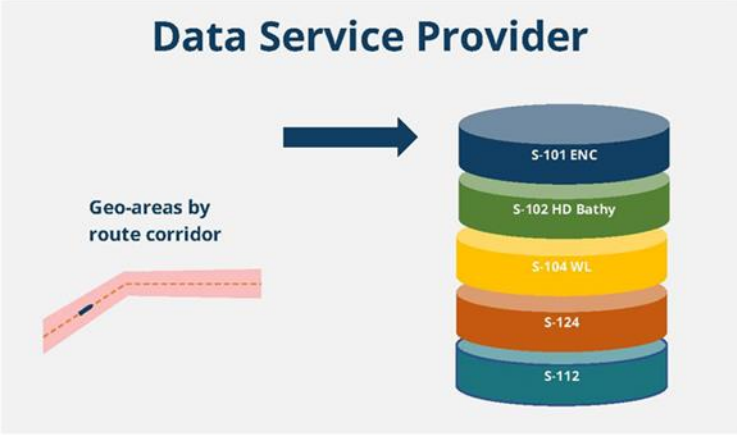

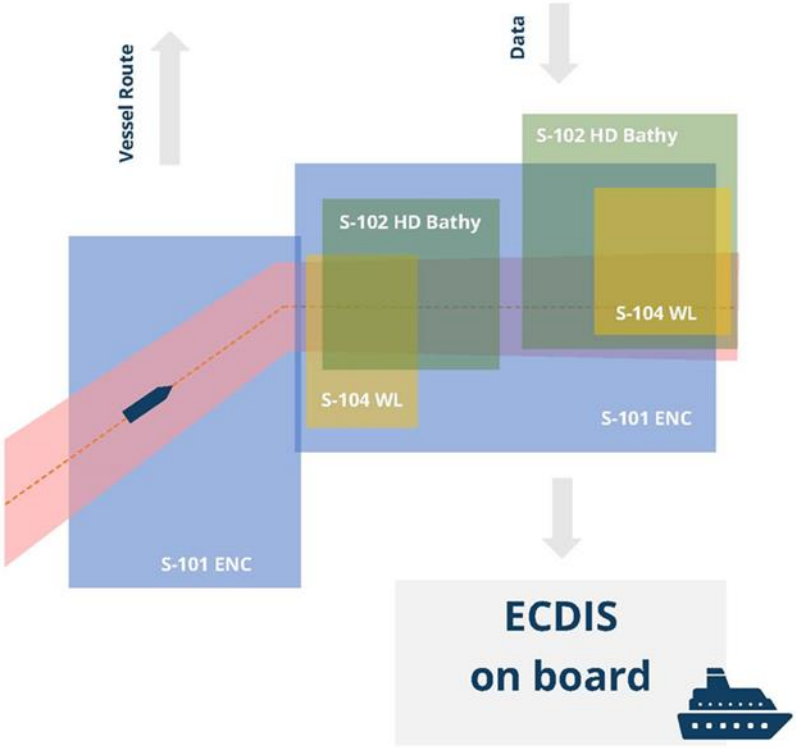

Data Value Chain Expectations

Free data; Chargeable Service

Deliver all the best data to vessels without a need to select or count or charge per cell/piece.

End User pays a Hydrographic Service Fee.

One-Stop-Shop for all S-100 data services along a given route.

How do we solve the current shore-based licensing issue?

What about the non-SOLAS market?

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Recommendations

- When it comes to ENC services, consider the entire S-100 product line.
- SOLAS and non-SOLAS markets need to be considered.
- Data distribution should connect directly to a vessel's visualisation system.
- Introduce route-driven hydrographic Service fees.
- Maintain the roles of the RENCs and VARs.
- Consider shore-based use of global S-100 data at a reasonable price.

Justifications and impacts

- Including the non-SOLAS user group leads to less control on the use of the data.
- The approached needs to be harmonised – at least at RENC level.
- Accessibility to the data in ecommerce platforms.
- The approach needs to be Nationally Agreed – if not internationally. Else we end up with a very confusing licensing scheme that is not seamless for the end user.

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