

IC-ENC Overview for EAthC

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IC-ENC General Manager

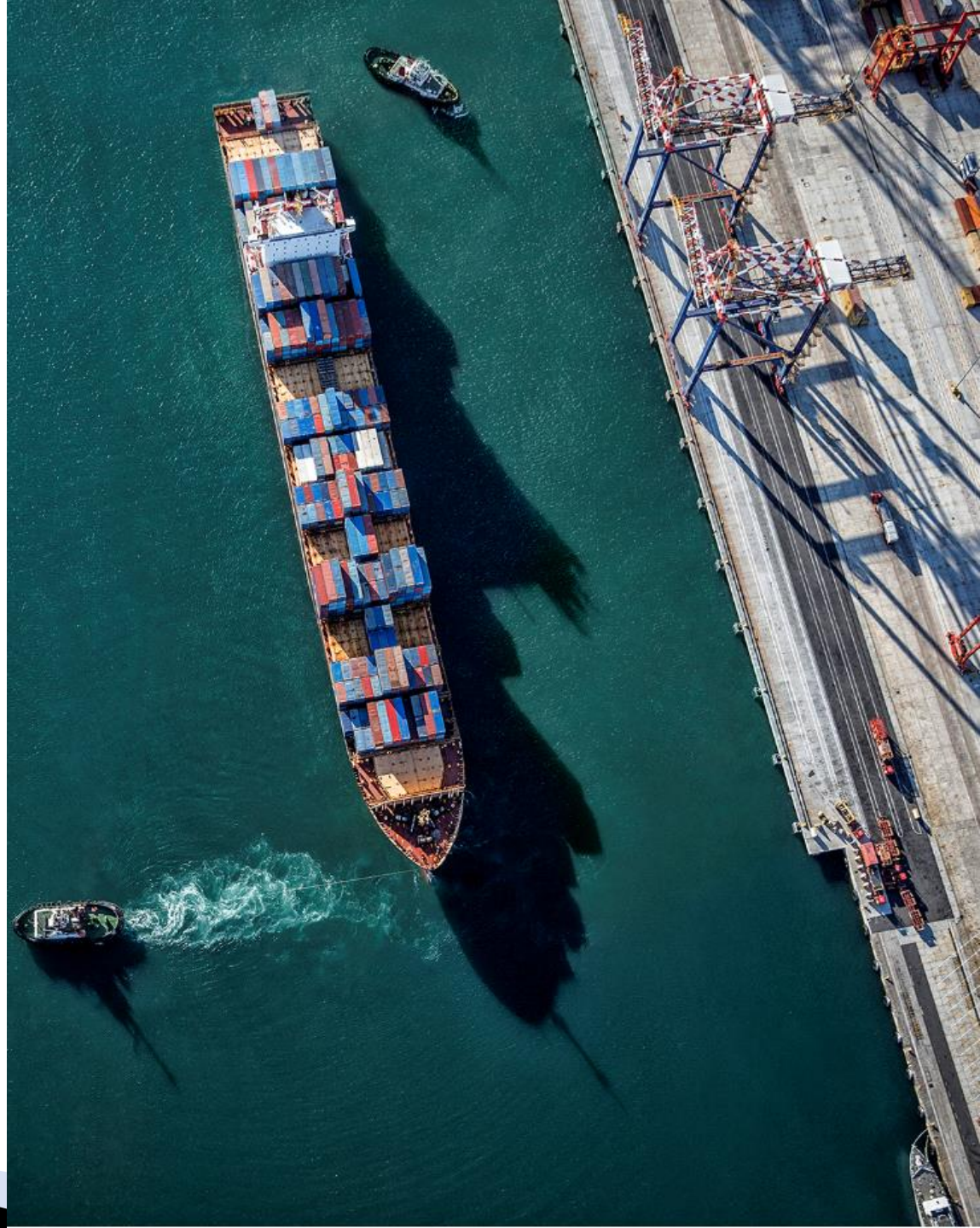
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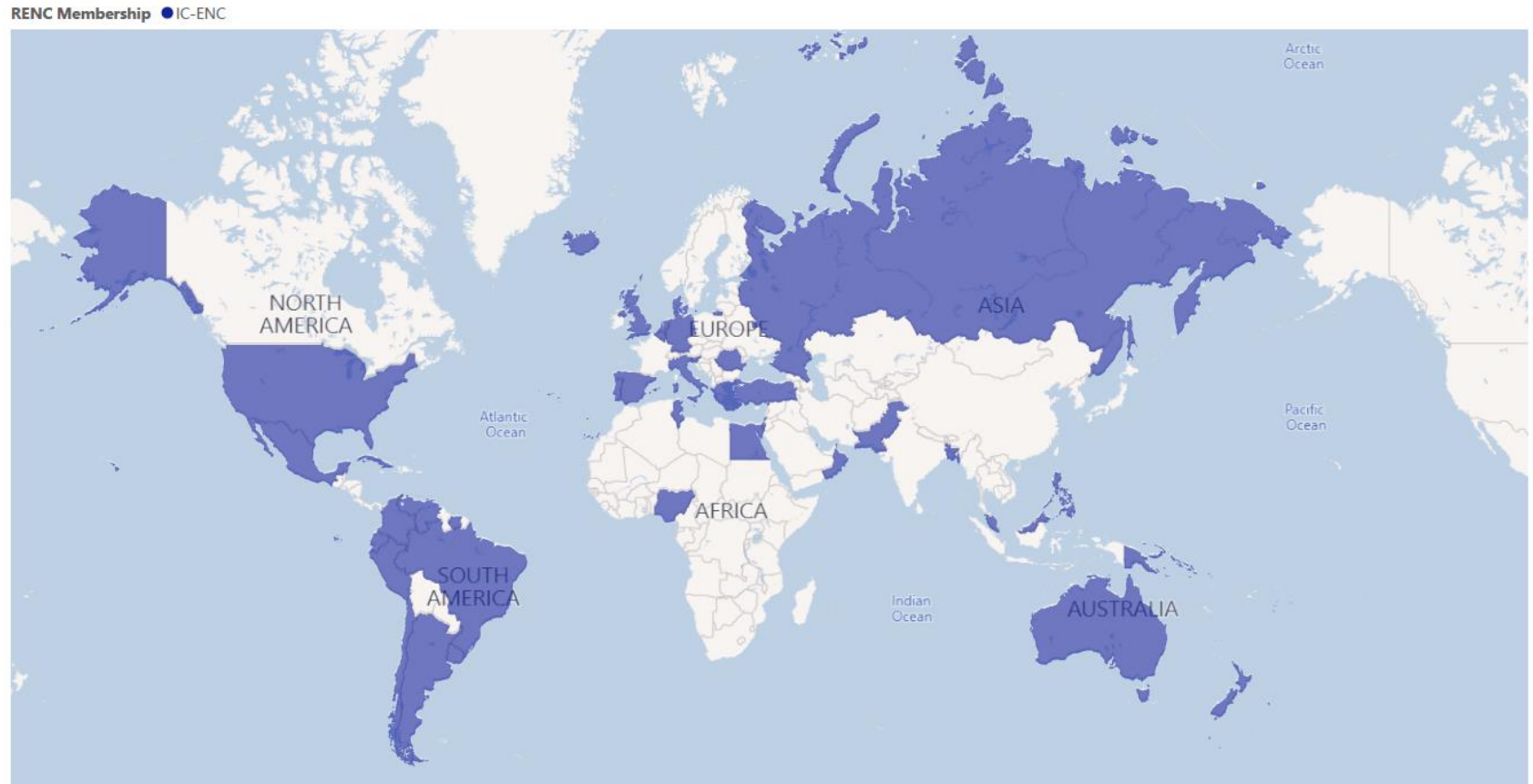
IC-ENC

- “International Centre for Electronic Navigational Charts”
- A “club” of Hydrographic Offices that work together multilaterally.
- Aim is to provide an overview of IC-ENC for those EAthC delegates considering aspects of electronic production

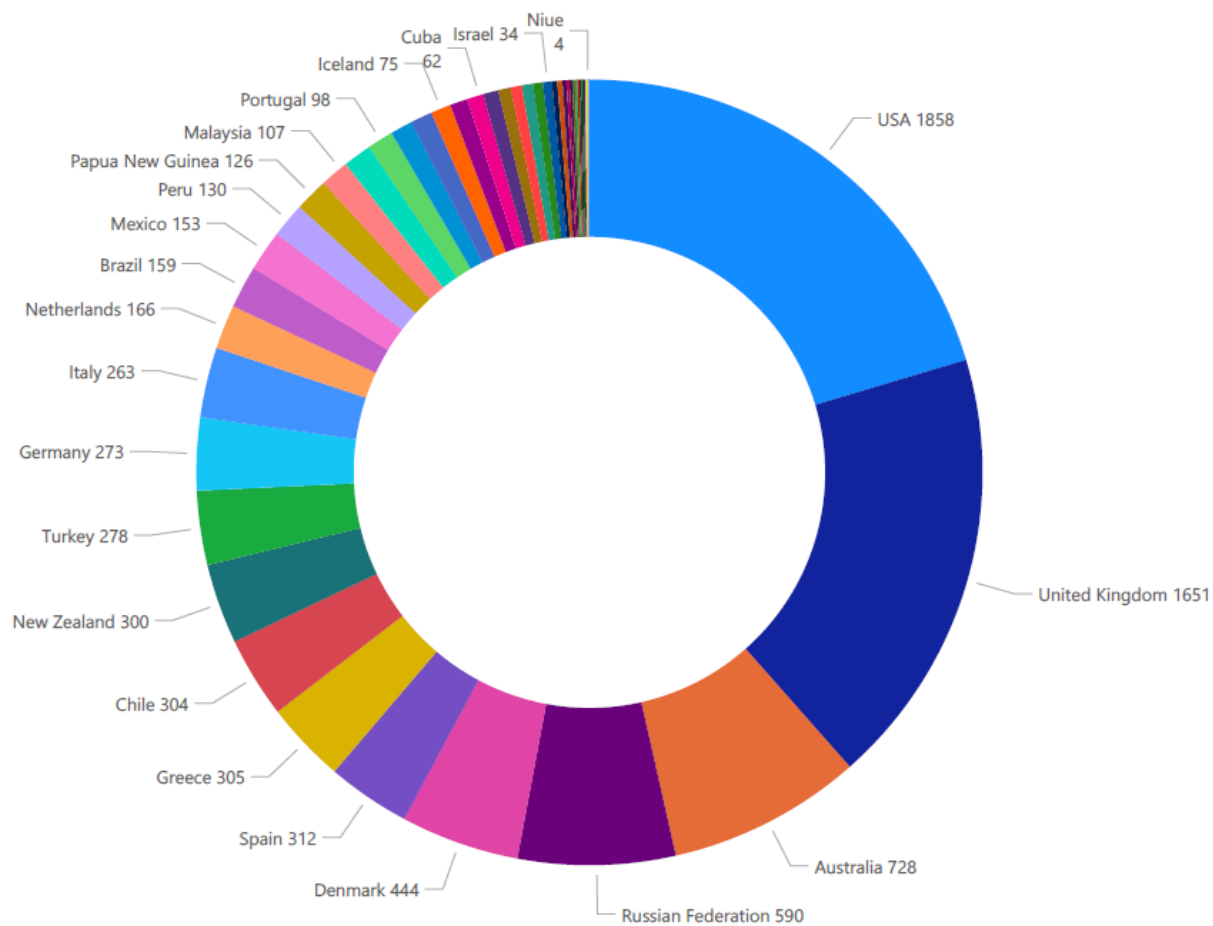
Agenda

- IC-ENC structure
- IC-ENC Services
 - Production Support
 - Validation
 - ENC Overlaps
 - Distribution
 - ECDIS
 - Non-ECDIS
 - Revenue Management
- IC-ENC S-100 services
- IC-ENC Co-operation Arrangement
- Summary





Half the world's ENC's – over 9000

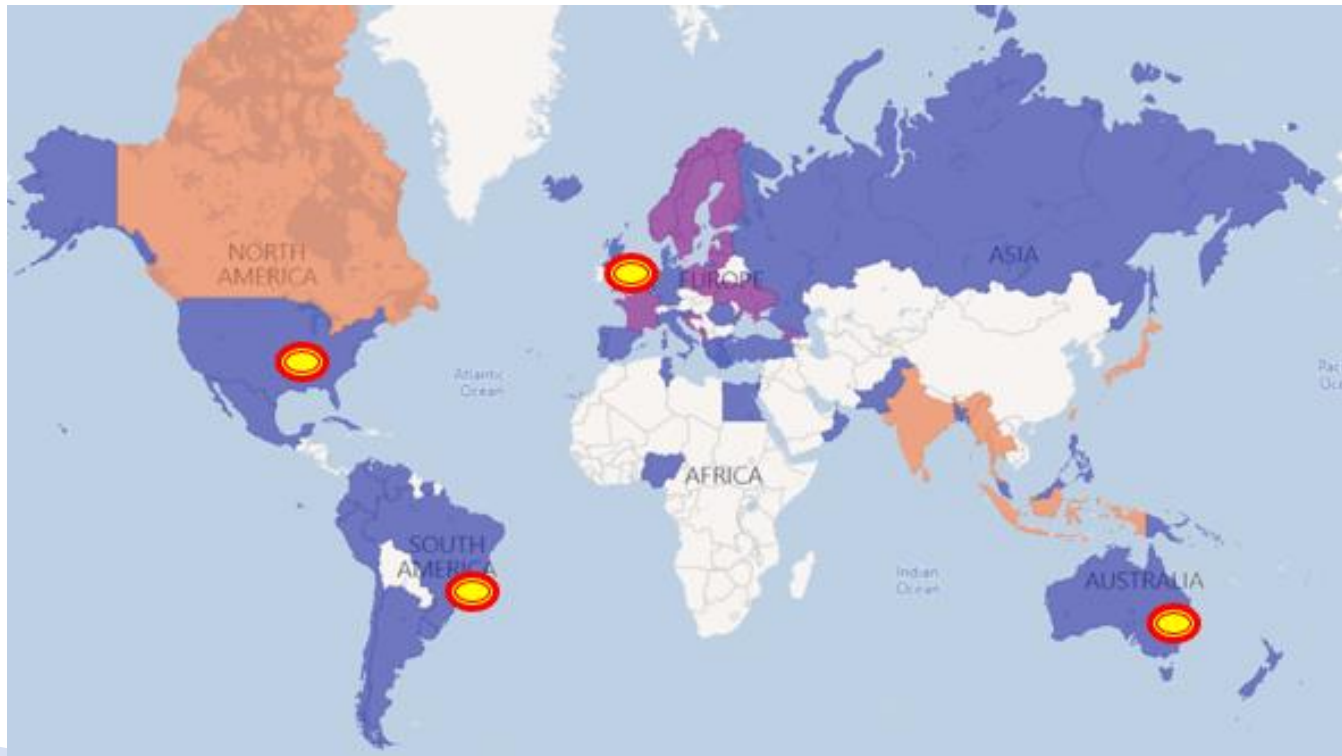


IC-ENC organisational structure

- IC-ENC Headquarters in UKHO
- Regional Offices in Australia, Brazil and United States (Offices are hosted by these Hydrographic Offices)
- Further Regional Offices are subject to IC-ENC Steering Committee approval

Regional Office benefits

- Coordination of validation work in the region
- Training and production support in the region
- Communication advantages
- Promotes consistency amongst producing HOs
- Regional Offices use the IC-ENC standard tool set and working practices.



Production Support

- **Goal:** Better products, more of them, harmony across the global dataset

Validation

- **Goal:** every ENC file provided to users is firstly “safe”, and secondly “as good as it can be”

Distribution

- **Goal:** ENCs to navigators, securely and quickly
 - ECDIS
 - Non-ECDIS

Revenue Management

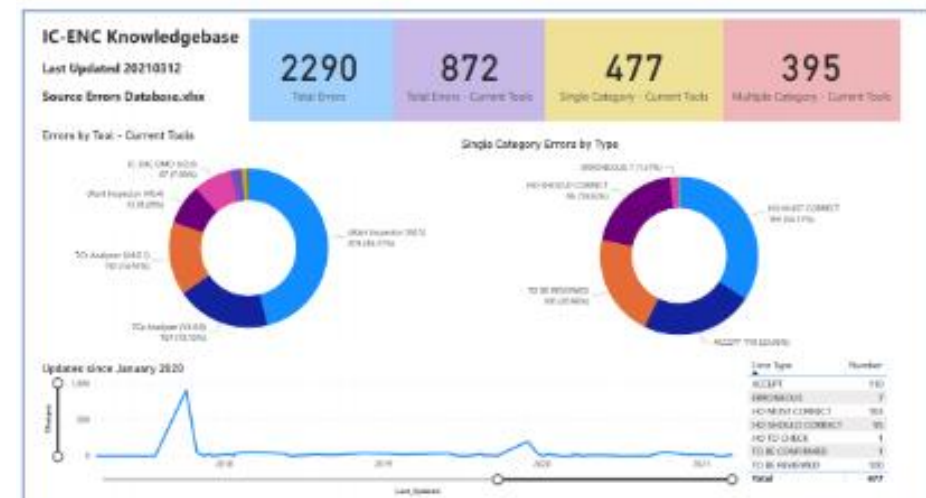
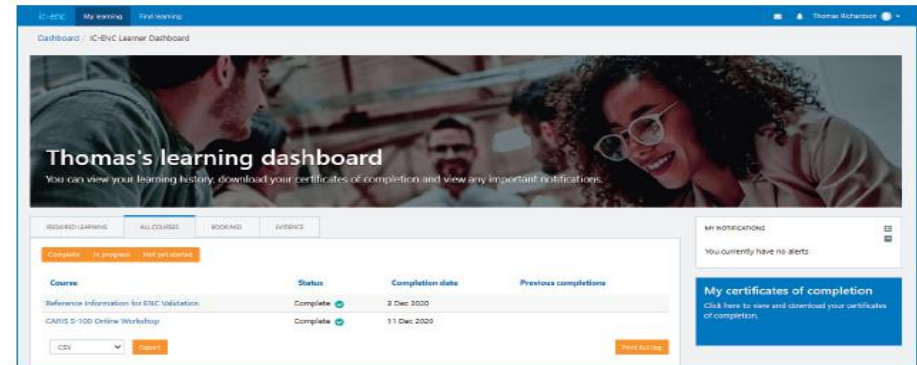
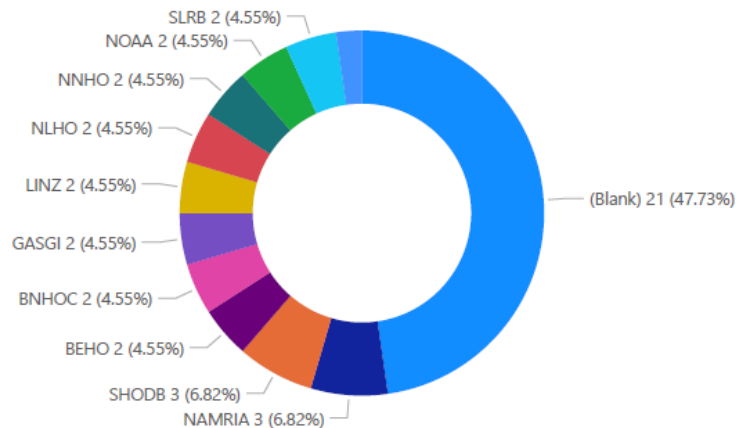
- **Goal:** Correct revenue for ENCs is returned to the ENC Producer (last FY, USD50M)

Production Support

Goal: Better products, more of them, harmony across the global dataset

- Knowledgebase
- Tools (e.g. ECDIS software)
- Training – via a Learning Management System
- Technical Conference(s)
- Training Courses
- Advice and Support

User Logins by HO (last 30 days)



S-100 Online Training

Description	Dates	Time
S-100 Live Event - A	5 th October & 7 th October 2021	13:00 -16:00 UTC +1
S-100 Live Event - B	12 th October & 14 th October 2021	09:00 – 12:00 UTC +1
S-100 Live Event - C	26 th October & 27 th October 2021	07:00 – 10:00 UTC +1
S-100 Live Event - D	9 th November & 10 th November 2021	10:00 – 13:00 UTC
S-100 Live Event - E	16 th November & 17 th November 2021	07:00 – 10:00 UTC
S-100 Live Event - F	30 th November & 1 st December 2021	19:00 – 22:00 UTC

Outline of content for the day(s)

Day 1 S-I00	Why develop S-I00? S-57 limitations What is S-I00? S-I00 Advantages Decade of Implementation	S-I00 UHDM Overview S-I00 Parts Geospatial Information Registry S-I00 Product Specifications	S-98 Interoperability S-I00 Sea Trials S-I00 Support Working groups Test Bed Catalogue Builder
Day 2 S-I0I	Dataset Discovery Metadata Display Scale Range Data Coverage Data Classification and Encoding Guide (DCEG) Skin of the Earth Feature Types Feature Relationships Information Types Feature Attributes Feature Geometry	Data Quality S-58 Meta Data Data Delivery Dataset loading – ECDIS	S-57 to S-I0I Compared S-57 to S-I0I Conversion

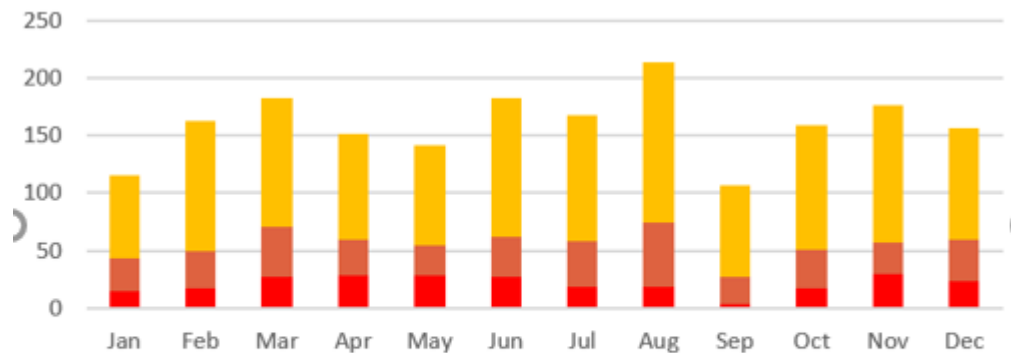
ENC Validation

Goal: every ENC file provided to users is firstly “safe”, and secondly “as good as it can be”

- Independent validations on data it receives
- IC-ENC uses 2 validation tools in addition to registration checks and checks in ECDIS
- Additional horizontal/vertical consistency checks and checks for overlaps/gaps are conducted
- Upon completion a feedback report is provided to the member.
- Validation is conducted by the international team in the four office sites

3.1.1 Volume of cells validated

Number of cells validated throughout the individual month by job type (New cell, New Edition, Update)



- Advisory Comments - Product Improvement (validation, ECDIS, manual assessment)
- Safety Critical Prevented - Full Validation (tools, ECDIS, manual assessment)
- Safety Critical Prevented - Immediate IC-ENC Response on ENC upload

ENC Distribution - ECDIS

Goal: ENC data to navigators, securely and quickly

- Achieved by the appointment of Value Added Resellers (VARs) (6 at the moment, see opposite)
- VARs are delivered ENC data which allows them to provide integrated services to users.
- IC-ENC central licensing terms and conditions – endorsed by Steering Committee, via the **IC-ENC Distribution Working Group**
- VARs are actively managed by IC-ENC Distribution Team

ENC Distribution – non-ECDIS

Goal: ENC data to more vessels

- New service from IC-ENC (optional for Members to join in with)
- A service that supports safe navigation to those vessels who choose not to carry an ECDIS

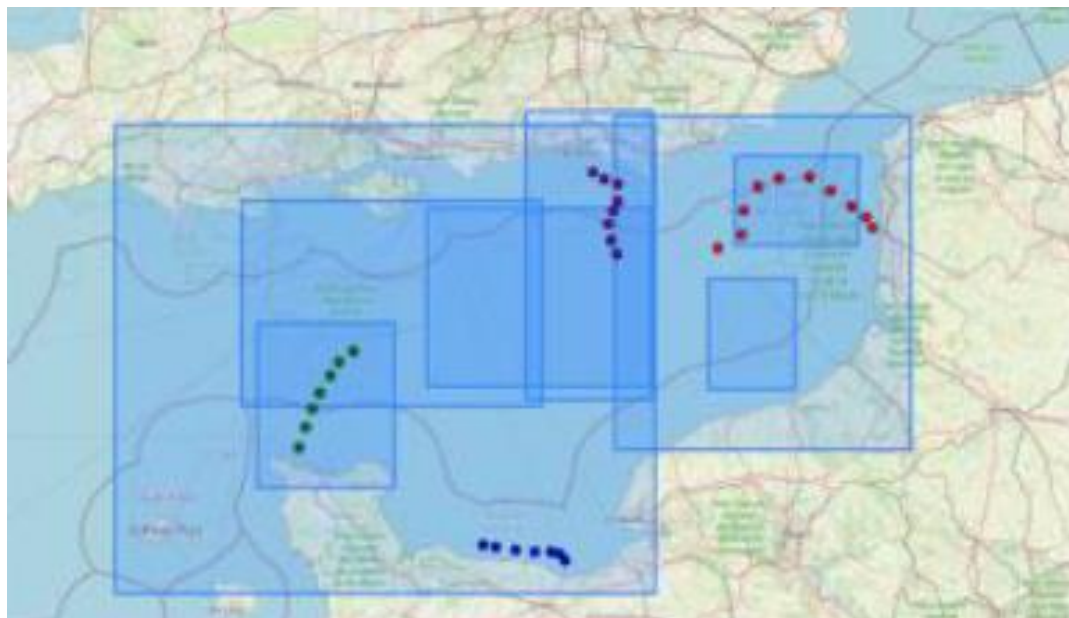
OneOcean



Revenue Management

Goal: Correct revenue for ENC is returned to the ENC Producer (last FY, USD50M)

- IC-ENC operates a Real Time Reporting System to track sales by VARs and report back to its members
 - Sales must be reported within 24 hours to IC-ENC
- Real Time Reporting System supports quarterly reports to members
 - Detailed sales information provided
 - Financial settlement to Members made
- ENC Wholesale price is set by each Member
- ENC sales audit tool is in development



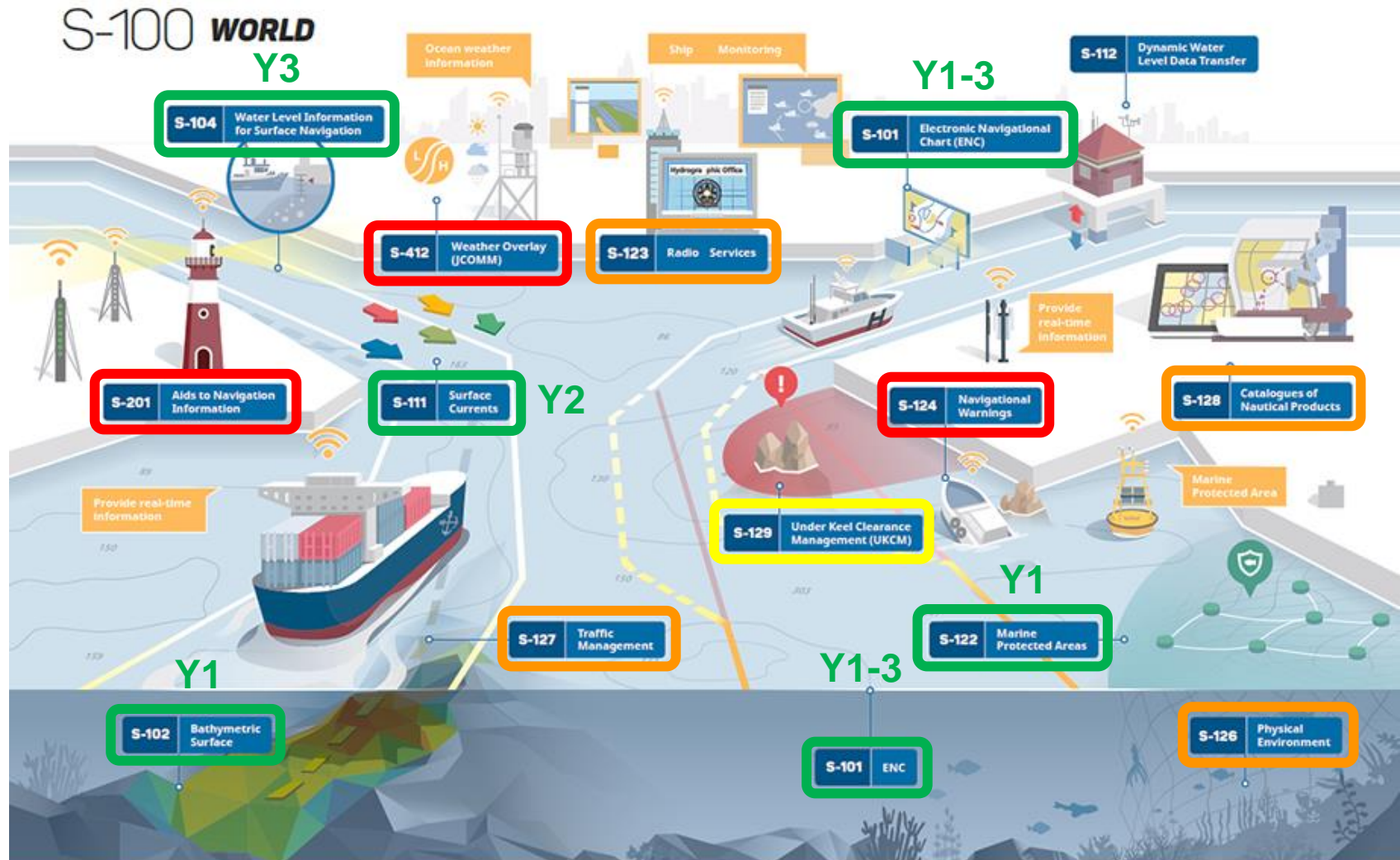
	2020 Q2	2020 Q3	2020 Q4	2021 Q1	2021 Q2
Total Revenue in Quarter	\$11,567,156.91	\$11,432,460.02	\$11,504,561.28	\$12,612,441.01	\$13,235,202.93
Percentage change from the preceding quarter	2.06%	-1.18%	0.63%	8.78%	4.71%
IC-ENC Fee	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50
Percentage change on the preceding year	3.45%	2.53%	-5.22%	10.18%	12.60%
Sales Reports and Invoices	2020 Q2	2020 Q3	2020 Q4	2021 Q1	2021 Q2
Sales reports sent to members in Quarter	45	46	47	47	48
Total Member revenue in Quarter	\$11,567,156.91	\$11,432,460.02	\$11,513,466.64	\$12,612,441.01	\$13,235,202.93
Invoices Settled in Quarter	24	25	45	27	0
Invoices Outstanding in Quarter	0	0	0	0	28
Total Invoices Outstanding	2	2	4	4	4

ic-enc

S-100



2021-23 Work Plan – S-100 focus



Based on S-100 Options Paper:

- First generation - green
- The exception - between first and next generation - yellow
- Next generation - orange
- Out of scope - red

S-100 services

Goal: Develop new services to support the S-100 era

- Three year Work Plan & Budget approved by IC-ENC Steering Committee
- IC-ENC Technical Conference is the process through which IC-ENC Members approve the service features
 - Vision
 - Description
 - (Deliver)
- “Product Profile” concept
- Licensing concepts are being discussion by the Distribution Working Group

The following example, shows the horizontal datum in the S-102 Product Specification, Edition 2.0.0:

5.3 Horizontal Coordinate Reference System

Table 5-1 - S-102 Coordinate Reference Systems (EPSG Codes)

EPSG Code	Coordinate Reference System
4326	WGS84
32601 ~ 32660	WGS 84 / UTM Zone 1N to Zone 60N
32701 ~ 32760	WGS 84 / UTM Zone 1S to Zone 60S
5041	WGS 84 / UPS North (E,N)
5042	WGS 84 / UPS South (E,N)

The full reference to EPSG can be found at www.epsg.io

Horizontal Coordinate Reference System:	EPSG (see Table 5-1)
Projection:	NONE/UTM/UPS
Temporal reference system:	Gregorian Calendar
Coordinate reference system registry:	EPSG Geodetic Parameter Registry
Date type (according to ISO 19115):	002 - publication
Responsible party:	International Organisation of Oil and Gas Producers (OGP)
URL:	http://www.ogp.org.uk/

From the Product Specification, the S-102 Product Profile is populated, as shown in the extract below for horizontal datum:

* IC-ENC S-102 Profile (S-102 2.0.0 - October 2019)							
S-102 Reference	Recommendation	Requirement	In S-101	In S-102 2.0.0	Rationale	Assumptions	Conformance
5.3 - Horizontal Coordinate Reference System (Horizontal Datum)	ENCs equivalent S-102 datasets shall use the UTM Coordinate System	Horizontal Coordinate Reference System: EPSG (Codes in table) Projection: NONE/UTM/UPS	EPSG 4326 (WGS84)	Yes - same	To ensure seamless coverage.	Seamless display is required and a single coordinate system best supports this.	Registration check

From the S-102 Product Profile, items are considered and identified for the S-102 Registration Checks, as shown in the extract below for horizontal datum:

Ref	Registration Check	Message	Category	Notes
X	The dataset does not have an acceptable horizontal datum. List of allowable EPSG codes to be provided.	Dataset horizontal datum is not permitted.	Error	<S100XC:horizontalDatumReference>EPSG:<S100XC:horizontalDatumReference><S100XC:horizontalDatumValue>32611:<S100XC:horizontalDatumValue>

S-10x Service	Approval from IC-ENC Steering Committee	Draft Vision	Vision Approved	Draft Description	Description Approved
S-101					
S-102					
S-104					
S-111					
S-122					
Conversion Support					
Data Harmonisation					

- Completed/Approved
- In progress
- Not started/To be approved

IC-ENC Co-operation Arrangement

Goal: Key IC-ENC governance document

- The Co-operation Arrangement is a key governance document, it describes aspects such as:
 - IC-ENC Chair
 - IC-ENC Steering Committee
 - IC-ENC services
 - Responsibilities as an IC-ENC Member
 - IC-ENC Financial Arrangements
- IC-ENC Members join via
 - Statement of Intent
 - Membership Arrangement
- IC-ENC Finances:
 - Not for profit
 - Small fee retained from each sale to cover operating costs

INTERNATIONAL CENTRE FOR ENC's

COOPERATION ARRANGEMENT

Version 7.23

Adopted by the Issuing Authorities

that supply their Maritime Data Products through IC-ENC

Version	Date	Reason for Change
1.0	December 2003	Original
2.0	November 2012	Amended by IC-ENC Steering Committee 13
3.0	March 2013	Re-written to describe governance and operating principles, following a series of review by Participants at Steering Committee 12 and 13, and via correspondence.
4.0	June 2016	Amended to reflect discussions/decisions at Steering Committee 15 and 16.
5.0	July 2018	Prepared to assist SC20 discussions (not published).
5.1	August 2018	Amended following SC20 discussions, for SC review (not published).
5.2	December 2018	Amended following SC review of v5.1 (not published).
5.3	March 2019	Amended following SC review of v5.2 (not published).
5.4	May 2019	Editorial amendments to v5.3 following feedback from Participants, prepared for endorsement at SC21
6.0	July 2019	Published following SC endorsement of v5.4. See IC-ENC Circular Letter 2019/09
6.1	November 2019	Updated to include relevant actions, decisions and discussion at Steering Committee 21. Endorsed by SC by vote. See IC-ENC Circular Letter 2019/20 and 2019/22.
7.0	DRAFT PREPARED TO SUPPORT SC ONLINE SESSION	Updated based on SC responses to the IC-ENC S-100 Options paper, and other governance updates throughout, including SC Terms of Reference to include best use of communication technology. NOT PUBLISHED.

Services

- Production Support
- Validation
- Distribution
 - ECDIS
 - Non-ECDIS (opt in)
- Revenue Management

Structure & Governance

- HOs are joining regularly and now there are 47 Members
- Welcome new enquiries

S-100 era developments

- Year 1: S102, S122
- Years 2 & 3: S101, S104, S111
- Services are expected to follow similar structure as the ENC services

Upcoming events

- 6th October; Technical Conference – S102 focus
- October/November: online training (S100 Introduction)
- 2 & 3 November; Steering Committee