IC-ENC Working together to assure navigational safety

IC-ENC to SAIHC 20 – September 2024

Ruth.White@ic-enc.org

Agenda

In the 15-minute agenda slot, I will cover:

1. IC-ENC Overview
2. Help and support to Members

Ruth White,

IC-ENC Support Officer

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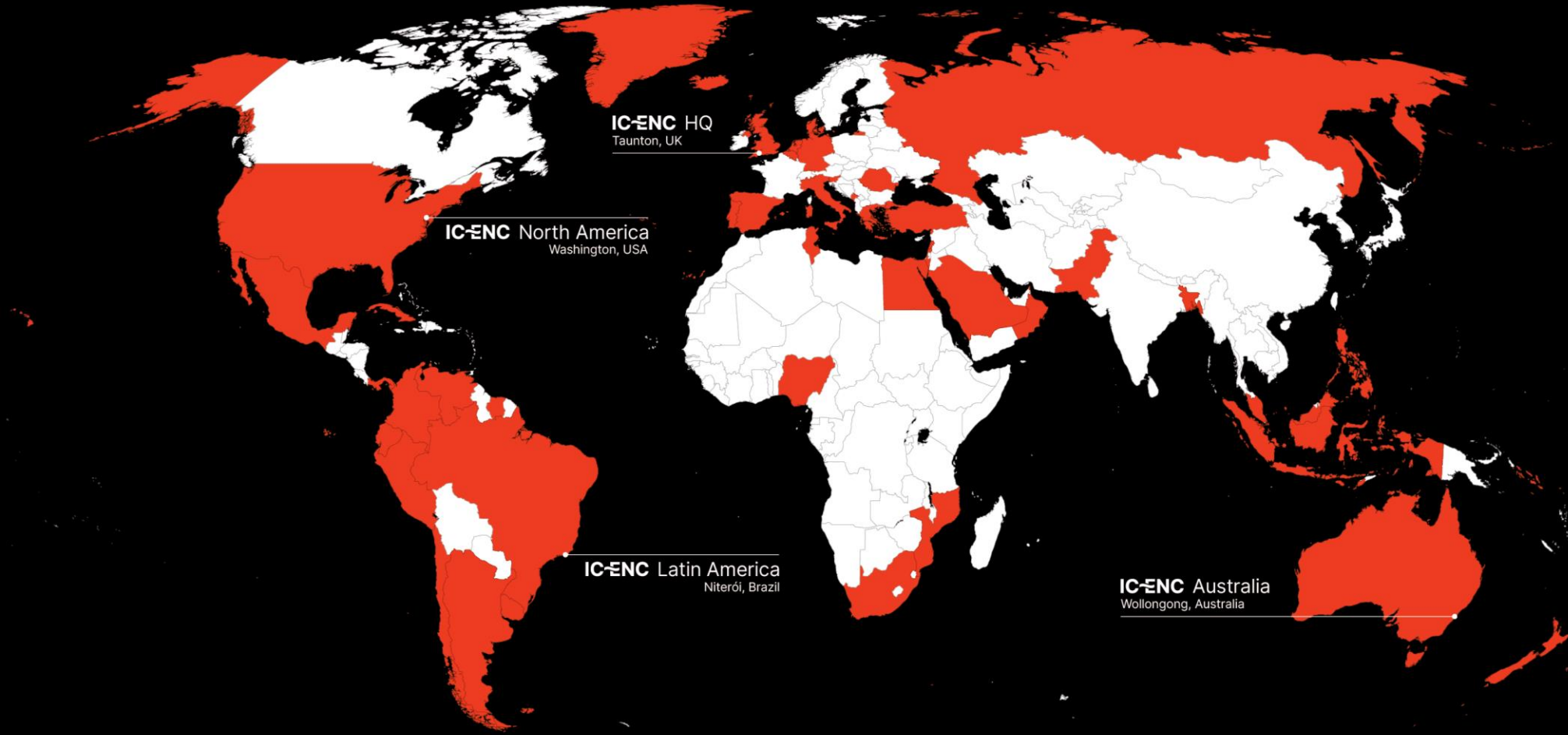
Working together to
assure navigational safety



IC-ENC Working together to assure navigational safety

Help and Support to (new) Members

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The IC-ENC community

Becoming a Member of IC-ENC brings you into a **community of other likeminded HOs**.

As a new Member, we can facilitate the sharing of good practice from other HOs to help build your own office's knowledge and skills.

We do this in a variety of ways…

- Face to Face
- Online
- Courses
- Bespoke support
- Learning from other IC-ENC Members
- Supply of ECDIS software with training
- And so on…

Face to face training

We offer face to face training in various locations around the world

- ENC Quality Assurance / Validation
- ENC Conversion

We also offer bespoke training

- At an HO office
- At one of the IC-ENC offices
  - Specific “buddy” appointed as a main point of contact

S-57 to S-101 ENC Conversion Workshop held in Muscat, Oman in May 2024

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ENC Conversion Training

- IC-ENC, in collaboration with IIC Technologies, have been delivering conversion workshops during 2024
- Two have already taken place in Oman (May) and Amsterdam (July)
- Two more will be held in Australia (October) and Panama (December)

“Converting S-57 to S-101 initially seemed daunting, but with the support of IC-ENC, I not only enjoyed the process but also gained valuable insights into the conversion mechanism”

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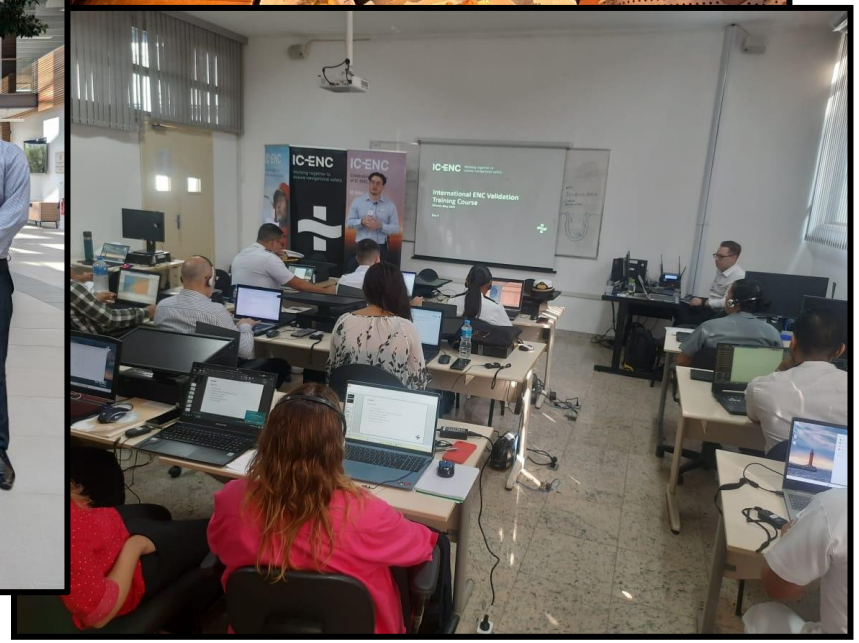
S-57 Validation Training

- Two S-57 Validation Training workshops have taken place already in 2024
- Brazil – at the IC-ENC Regional Office in Niteroi, Brazil
- UK – at IC-ENC HQ in Taunton

“It was an excellent experience; I enjoyed all parts of the course”

“Enjoy sharing experiences and common problems with other members”



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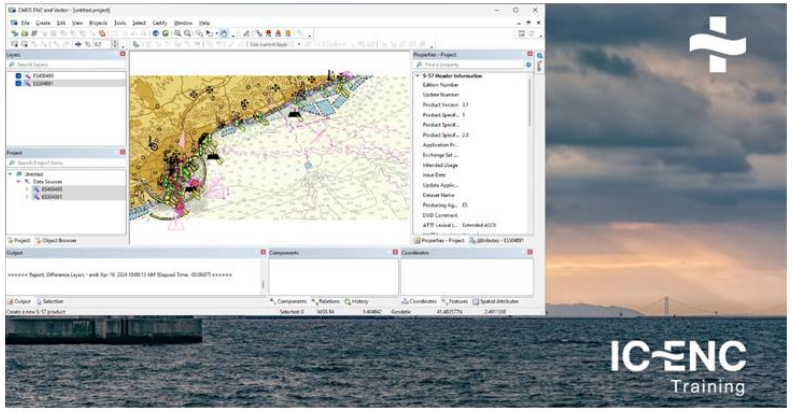
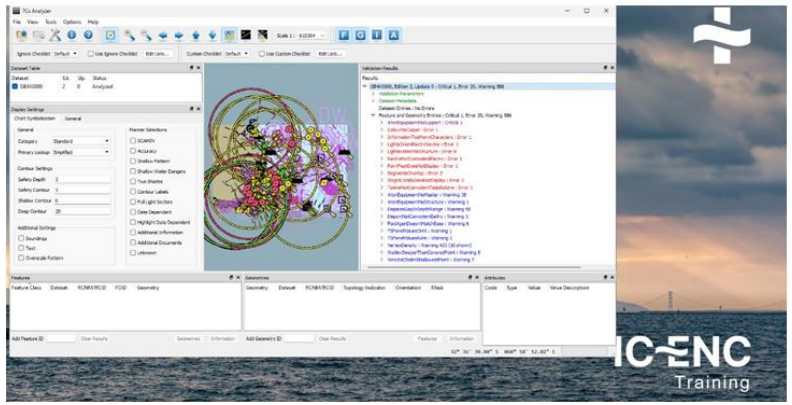
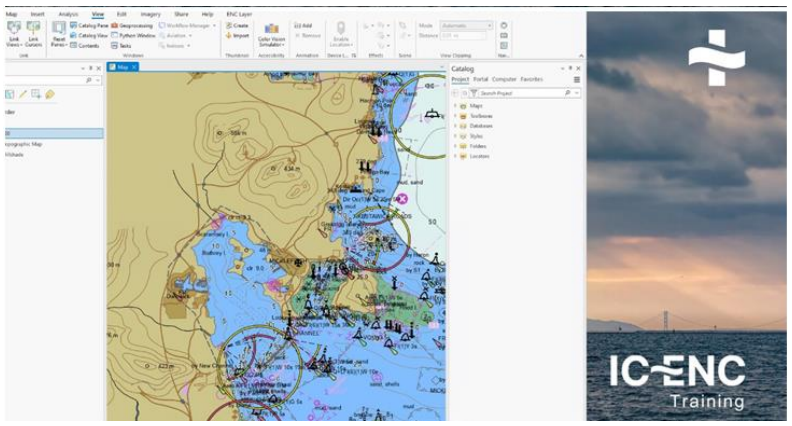
IC-ENC Learning Cloud Environment

Online environment to support face-to-face training and online learning.

Contains software to allow learns to **gain practical experience**, not just theory







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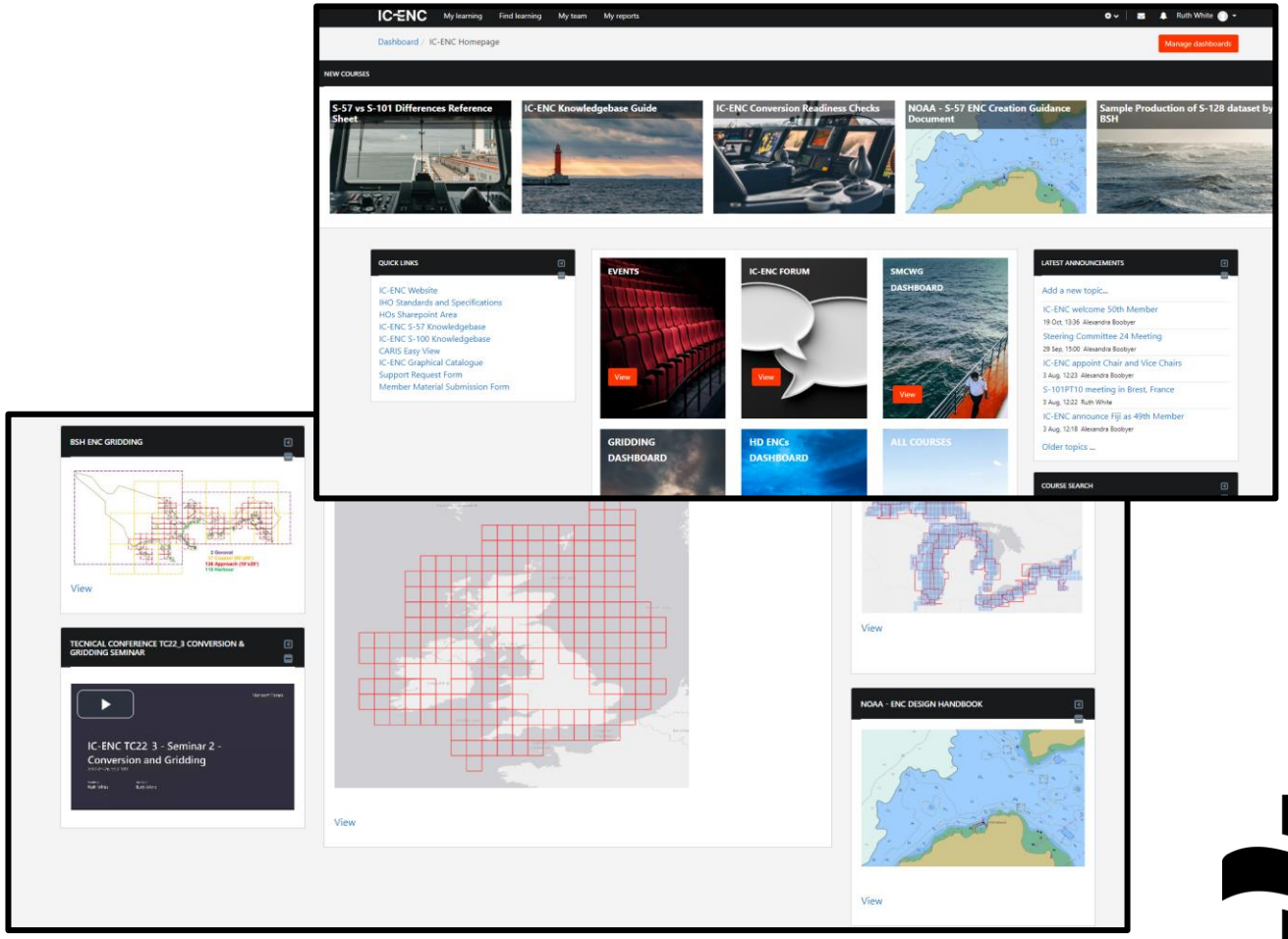
Learning Management System (LMS)

IC-ENC established a Learning Management System (LMS) in 2021.

The LMS provides Members with a rich resource of learning and an opportunity to correspond with each other via the IC-ENC forum.

Immediate access to new Members, and the community of over 500 users.



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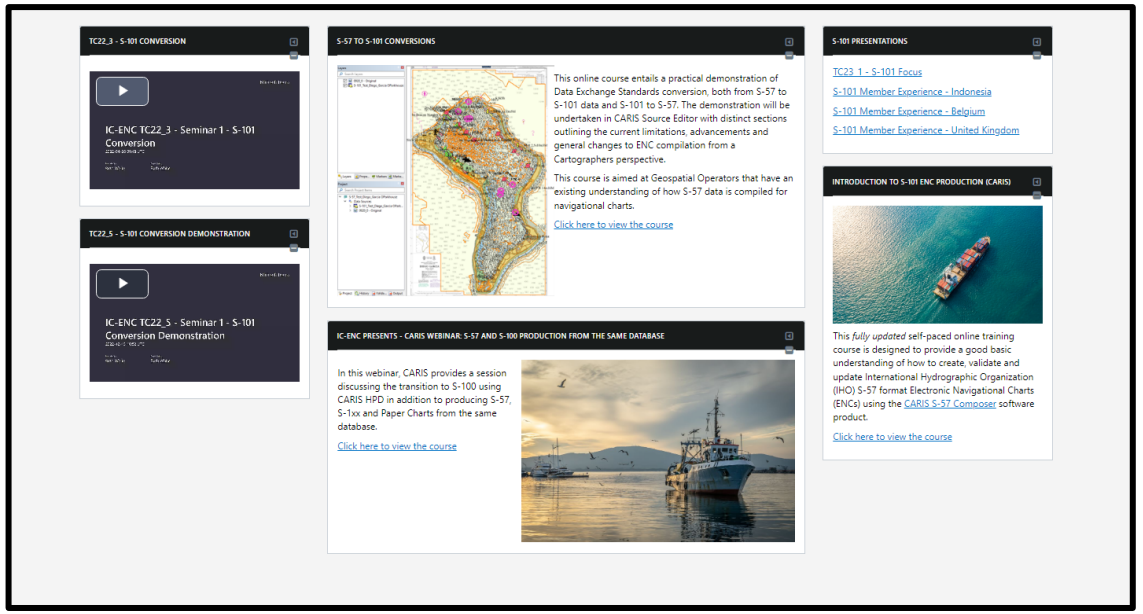
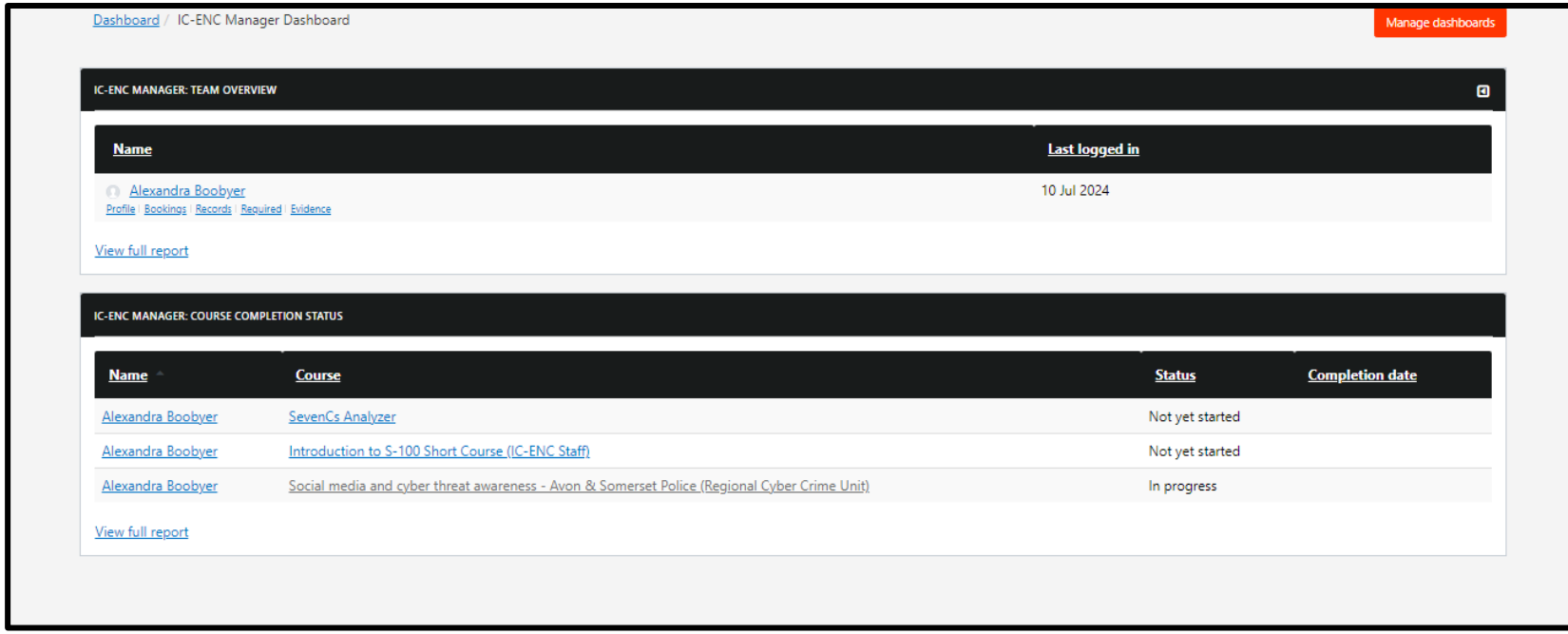
Dashboards

As well as HD ENC and Gridding dashboards, IC-ENC are developing dashboards on other topics with S-101 being the focus of one of these dashboards.

A dashboard has also been created where team leaders can view their teams learning on the IC-ENC LMS.



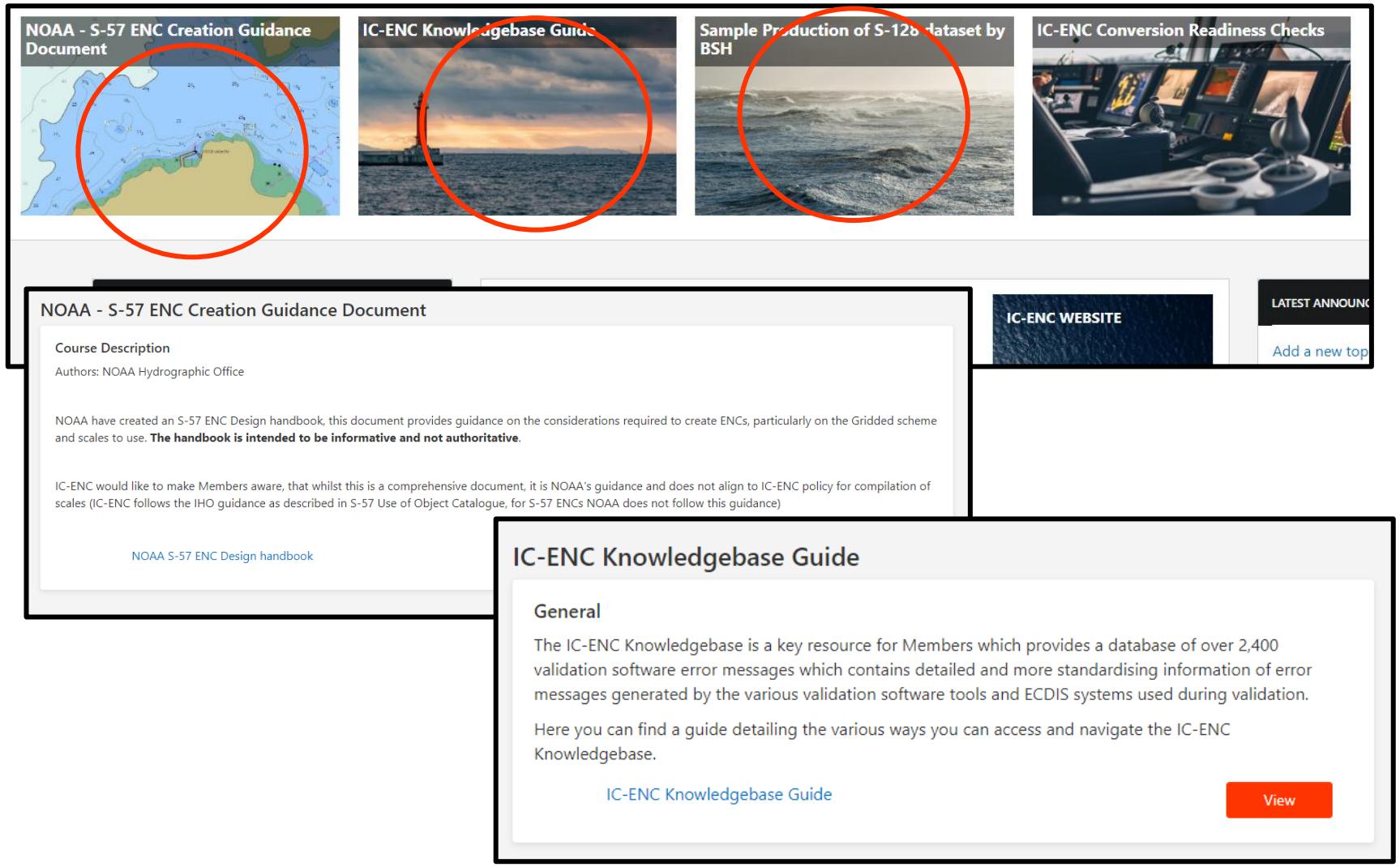


Member Material on the LMS

As part of Member collaboration and information sharing, Members can submit material to the LMS.

Examples of Submissions are:

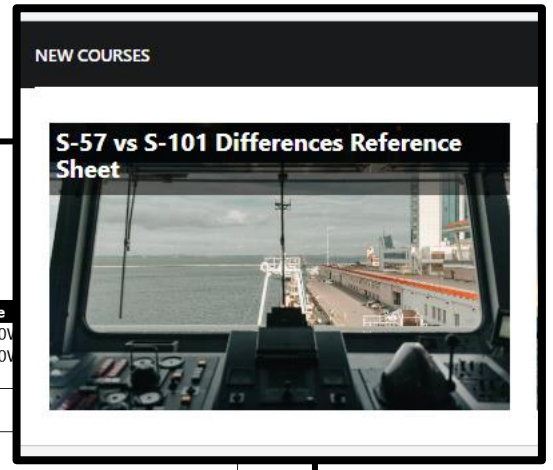
- An **S-57 ENC Creation Guidance** document from NOAA
- A Sample Production of S-128 Datasets from BSH
- IC-ENC Knowledgebase Guide



Member Material on the LMS

As direct feedback from a Member a S-57 Vs S-101 Difference Reference Sheet was created by our S-100 Support Officer, Laura Tyzack.

This is an easy glance document that will help Members navigate the differences.



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S-57 vs S-101 Differences Reference Sheet

	S-57	Example	S-101	Example
File naming convention	CCU12345.EXT U = usage band	NL3NZ100.000 NL3NZ100.001	101CCCCØØØØØØØØØØØØ.EXT Ø = optional characters for unique file name	101NL00V 101NL00V
File size	Base cells (.000) – max. 5mb Updates (.001 etc) – max. 100kb		Base cells (.000) – max. 10mb Updates (.001 etc) – max. 200kb	
Usage band	1 Overview 2 General 3 Coastal 4 Approach 5 Harbour 6 Berthing		Now called Navigation Purpose with three allowable values: 1 Overview 2 Transit 3 Port Entry	
Feature/attribute naming	Uses 6-character acronyms for features and a	BCNCAR	Uses camelCase	BeaconCardinal
Feature geometry	Point Line Area Soundings			
Attribute types	Uses simple at			
Data Coverage	Coverage feat			

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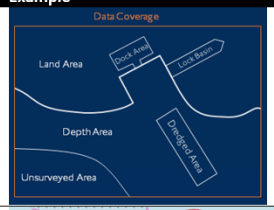
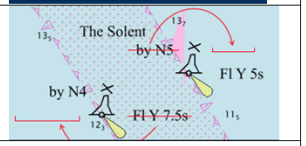
	S-57	Example	S-101	Example
Skin of the Earth	DEPARE DRGARE LNDARE UNSARE FLODOC PONTON HULKES		DepthArea DredgedArea LandArea UnsurveyedArea DockArea* LockBasin* *if non-navigable at maximumDisplayScale	
Text Placement	Not supported in S-57		TextPlacement features can be used to manually place cartographic text to improve ECDIS display and reduce clutter	
Sectored Lights	Each sector is represented by a separate LIGHTS feature		Mutiple light sectors are encoded using one LightSectored feature, and complex attribute sectorCharacteristics defines each section	

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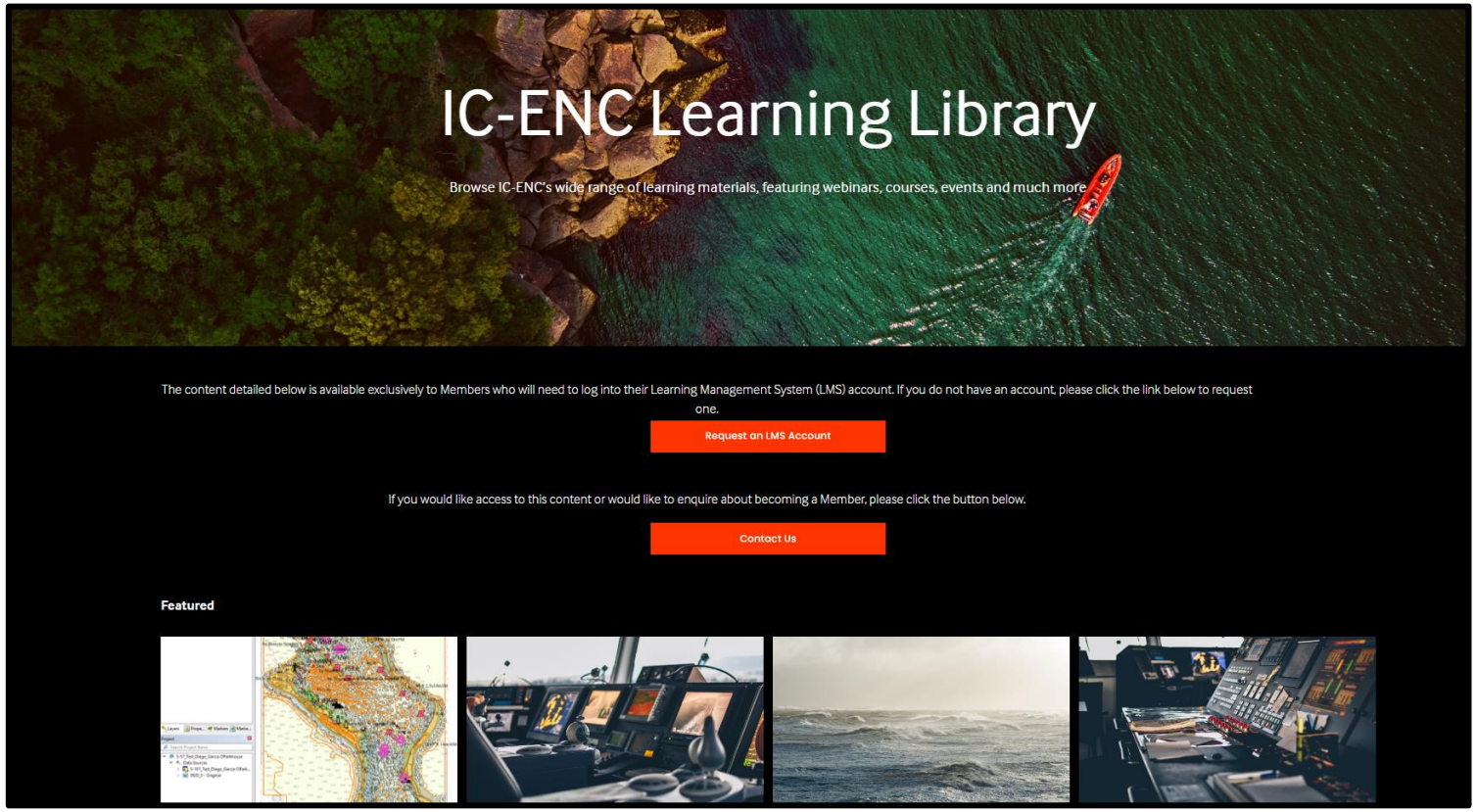
LMS Library Content

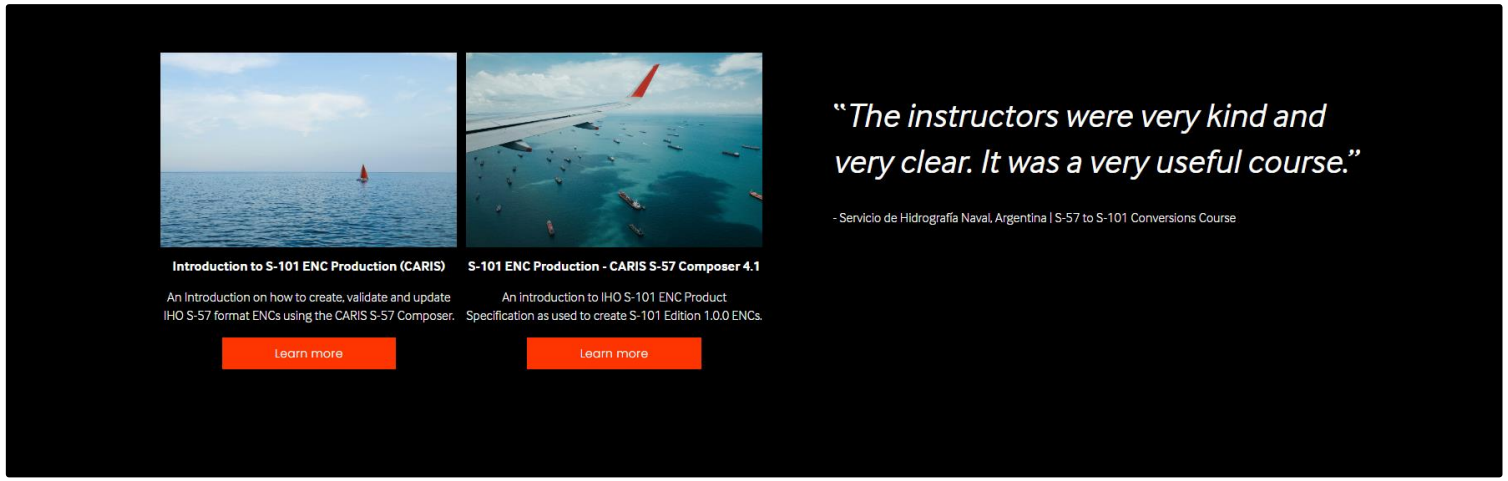
Our full LMS Library content can be viewed on our IC-ENC website via the following link LMS Courses — IC-ENC

www.ic-enc.org/lmscourses

Current content includes:

- IC-ENC Conversion Readiness Checks
- Sample Production of S-128 Datasets
- S-57 ENC Creation Guidance Booklet
- S-57 to S-101 Conversion (training recordings)
- Introduction to S-100 (training recordings)
- Industry Webinar (recordings)
- Technical Conference discussion recordings





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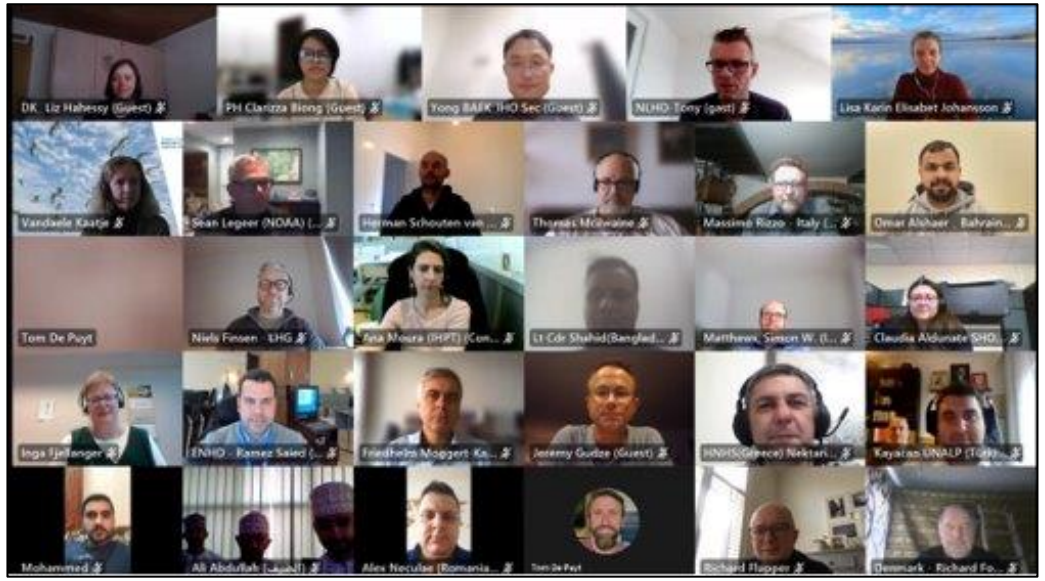
Technical Conference

- Annual event (face to face conference, hybrid), with online sessions throughout the year.
- Community ethos
- Opportunity for IC-ENC to update members on Work Plan progress
- Opportunity for members to share their own S-57 or S-1XX production experiences to help others
- Updates from Industry – ENC conversion, S-1XX production and validation tool developments



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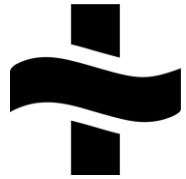
ENC Validation Service

- **Once your office is "up and running"**…IC-ENC conducts independent validations on data it receives
- Ensure conformance to S-57 and S-58 standards and IC-ENC Policy
- Provide guidance on improving the quality of the Global ENC Folio
- ECDIS Usability
- Validation Checks conducted by a range of validation tools
  - dKart Inspector
  - 7Cs ENC Analyzer
  - IC-ENC DMD
- IC-ENC Knowledgebase
- Bespoke feedback report produced for each ENC file



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Validation Checks

Coverage Checks

- For new editions and new cells IC-ENC checks for gaps and overlap
  - Ensure **seamless non overlapping ENC coverage in line with WEND principles**
- Gaps and Overlaps are recorded and reported to the producer
- Reports are also provided to Regional Hydrographic Commissions and IHO Working Groups

Consistency Checks

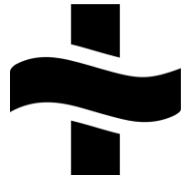
- Consistency checks cover the following;
  - Horizontal Consistency
  - Vertical Consistency
- Ensuring consistent data capture on adjoining and overlapping ENCS to ensure mariner always has a safe display
- Consideration of generalisation and the application of SCAMIN

ECDIS Check

- As part of ENC validation an ECDIS check is included for New Editions and New Cells
- Separately all ENC data is loaded into 3 ECDIS systems to confirm it loads as expected
- This involves visual review of the cell in ECDIS
- Considerations include;
  - SCAMIN
  - Display
  - General usability

S-57 – S-101 Conversion Readiness Checks

- As part of ENC validation IC-ENC performs S-101 Conversion Readiness Checks on all base cells
- There are currently 20 Checks identified and implemented by IC-ENC
- Checks highlight recommendations for S-57 encoding that can be amended to aid in the automated conversion to S-101 products



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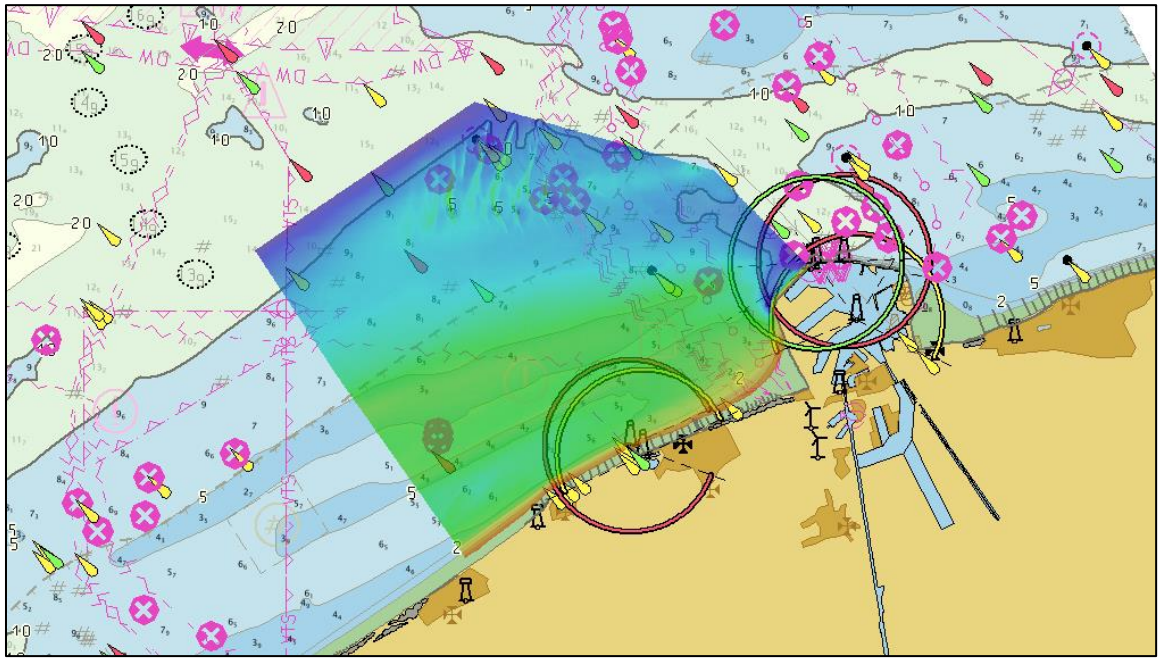
A word about S-100….

- We are developing our first-generation S-100 services…
  - S-101, S-102, S-104, S-111, S-122, and S-128
  - Conversion Readiness Service (helping Members prepare S-57 data for conversion to S-101)
- …with four key goals in mind:
  1. Member engagement, ensuring IC-ENC supports its Members with their S-100 prioritisations
  2. Community ethos in sharing production experience, recognising that across the IC-ENC Membership, Members are at differerent stages of their transition to S-100, and no-one is left behind
  3. Close alignment with the IHO Phase 1/Route Monitoring prioritised product types
  4. Increasing automation whilst continuing to provide value add to Members
- We will identify/develop the next generation of S-100 services through further Member engagement



An S-101 ENC overlaid with S-102 data

The S-100 landscape/Challenges:

- S-1XX Product Specifications are still at different levels of maturity
- No published S-100 Validation checks yet which limits validation software tool development
- More test datasets are key to support development and testing phase

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Revenue Management – “Opt In” fund

- IC-ENC Members are supporting an ‘opt in’ fund, whereby a portion of their national ENC revenue is set aside for other projects.
- A growing number of Members have ‘opted in’ to this new scheme
- USD 450,000 generated for projects for 2024
- Projects supported are for a range of activities including Standards development and **Capacity Building**

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Revenue Management – "Opt In" fund

Ref	From	Role	Member sponsor	Title of proposal	Amount, USD	Benefit areas	Recommendation	Conclusion	Conclusion	Conclusion	Conclusion	STATUS 8/1/23
2023-01	Julia Powell	S100 WG Chair	US	Development and finalization of S-98	- 50,000	3	Support	Support	Support	Support	Support	Proceeding under the "Unanimous Support" conclusion. Tender is live for suppliers to respond, closing date 15th January.
2023-02	Julia Powell	S100 WG Chair	US	S-164 – Test Data Sets for S100 ECDIS	- 40,000	3	Support	Support	Support	Support	Support	Proceeding under the "Unanimous Support" conclusion. Tender is live for suppliers to respond, closing date 15th January.
2023-03	John Nyberg	IHO Director	TBC	IHO Operational S-100 Infrastructure Study	- 20,000		Pause	Pause	Pause	Pause	Pause	Unanimous agreement to PAUSE, further investigation to continue under Work Plan.
2023-04	John Nyberg	IHO Director	DE	S-122 Marine Protected Area Product Specification Update	- 20,000	3	Support	Pause	Support – but it is not a priority	Support with reservations	Support	Proceeding under the majority view, and noted it is a lower priority than S100 Phase 1 items.
2023-05	Michael Andrew	S100 Security Scheme PT	AU	S100 Security Scheme - legal advice and contract drafting	- 50,000	3	Support	Support	Support	Support	Support	Proceeding under the Unanimous Support conclusion. Awaiting further response from S100 Security Scheme PT Chair.
2023-06	Tom Richardson	UKHO	UK	Development of S-101 2.0.0 Test Datasets	- 25,000	3, 4	Support	Pause	Support	Support	Support	Proceeding under the majority view conclusion. Supplier to be identified.
2023-07	Burak Inan	SHODB	TR	Bespoke two-stage ENC conversion training (4 cohorts, regionally)	- 1[illegible],000	1, 2, 5	Support	Support	Support	Support	Support	Proceeding under the Unanimous Support conclusion. 4 regional workshops to be held in 2024. Calling notice for Member participation to be issued by end of January.
2023-08	Burak Inan	MBSHC CBC	T[illegible]	MBSHC ENC QA and conversion workshop	- [illegible],000	1, 2, 5	Support, with notes	Support	Support	Support agree comment/notes	Support	Proceeding under the Unanimous Support conclusion. Course to be delivered in Istanbul w/c 20th May 2024. Calling notice for Member/MBSHC MS participation to be issued by end of January.
2023-09	Burak Inan/IC-ENC	SHODB/IC-ENC	T[illegible]	S102 and S104 training	- 2[illegible],000	1, 2, 5	Support, with notes	Support	Support, with notes	Support	Support	Proceeding under the Unanimous Support conclusion. Statement of Requirement is being finalised in order to identify supplier.

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ENC Quality & Conversion Workshop

As part of the IC-ENC ‘Opt In’ Fund initiative, an ENC Quality and Conversion workshop took place in Istanbul for the Mediterranean Black Sea Hydrographic Commission (MBSHC) in May 2024.

“ this training helped me to better understand how ENCs are evaluated and what to look for before and after conversion”

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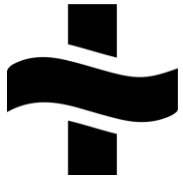
Further Training

A training procurement framework has been established to enable IC-ENC to have the future **option** of rapidly appointing third party supplies to deliver training, in the following topics (this list remains flexible):

- S-101 Production
- S-57 to S-101 (S-101 – S-57) Conversion Workshop
- S-102 workshops, S-104 & S-111 workshops
- ENC Quality and Conversion
- S-100 Database creation, implementation, and maintenance
- ENC Gridding
- Dual Fuel Management
- S-57 – S-101 Harmonisation
- Marine Spatial Data Infrastructure (MSDI) workshop
- Seminars on Raising Awareness in Hydrography
- Hydrographic Survey with Unmanned survey Vessel (USV) training

Note, this list is based on IHO Capacity Building stated activities



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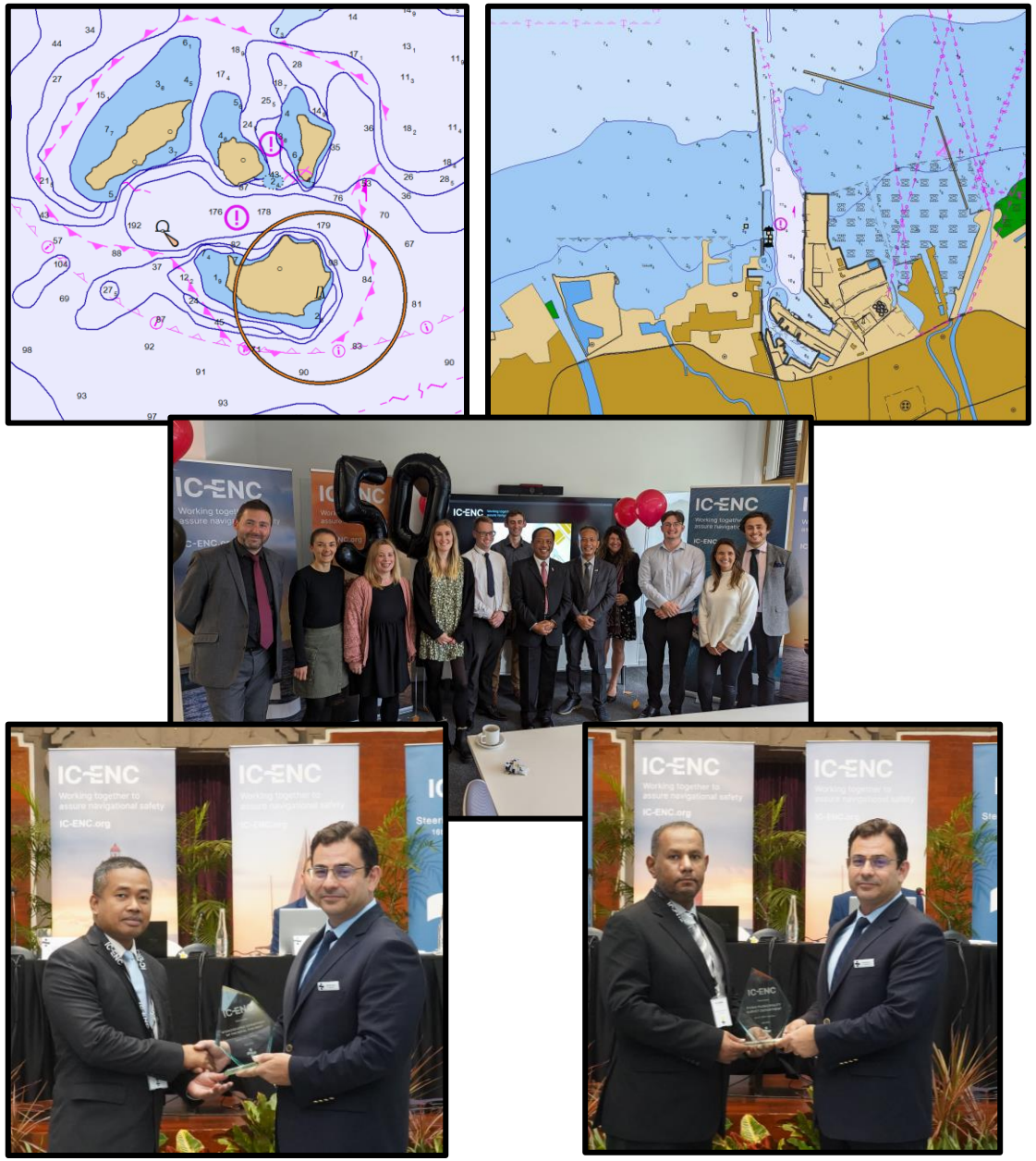
IC-ENC ENC Highlights

- Over 14,000 files released, including:
  - 1,460 New Cells, 3,600 New Editions and 8,500 updates
- IC-ENC Folio reached approx. 13,000 ENCs
- New Members Data Released
  - Lebanon and Saudi Arabia
- 3 New Members joined
  - Dubai, Indonesia, Thailand



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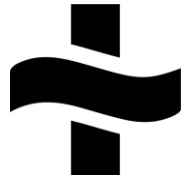
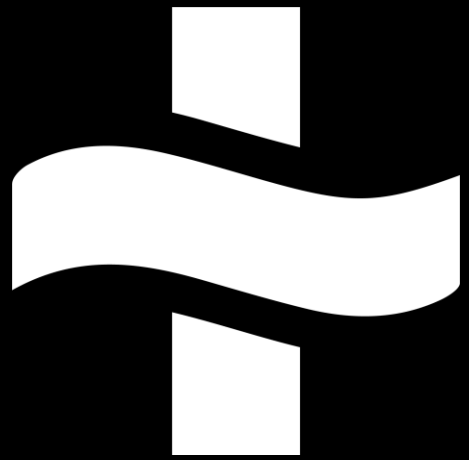
Summary

IC-ENC is supporting its:

- **52 Members**,
- 4 Value Added Resellers and 4 Distribution Partners

With their existing ENC requirements and their S-100 transition and future needs

We are a **community** and work together. Others are experiencing the same challenges as your office!

We regularly welcome **new Members** into IC-ENC. All services are available immediately upon joining (i.e. no additional costs etc)

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