



# 2018 ANNUAL REPORT

*International Centre for Electronic Navigational Charts*

***Our mission:***

**To provide services, at a low cost, to ENC Producers, that ensure their ENCs are:**

- compliant to the international standards;**
- consistent across the global dataset;**
- readily available for use.**

**This is so shipping can navigate safely, efficiently and confidently, whilst ensuring other maritime users are using the same approved data.**



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# CHAIRMAN'S MESSAGE

I am honoured to present the annual IC-ENC report. It provides a fair and factual insight into IC-ENC's activities and achievements during 2018 with the right balance between highlights and details. It will be worth your time to read it.

Last year, 2017, had been a year of consolidation. The year 2018 turned out to be the upbeat to a period of change. A period that will be characterized by a new governance structure, a more focused cost recovery model and a re-cast of the scope of services, most notably the use of ENC's beyond ECDIS.

Even so, you will see in this report that IC-ENC has made progress in all of its four core functions:

- Concerning production support, a number of successful events were undertaken. The Technical Conference in Bristol resulted in improvements in the IC-ENC change register. The IC-ENC Validation Training Course in Niteroi proved very beneficial for the Latin-American IC-ENC community.
- Concerning ENC validation, all the Key Performance Indicators are now met solidly.
- Concerning distribution, the assessment of the VARs has regained priority as requested by Steering Committee.
- Concerning revenue management, the revenue for the individual members has increased because the fees to cover IC-ENCs cost have gone down.

Besides all this, IC-ENC has improved its base. Staff vacancies are still a problem, but there is now more resilience available through UKHO. The Data Management Database has become more robust, through technical improvement, ownership of the intellectual property, and embedding within the validation and distribution processes.

IC-ENC has had a strategically challenging year, as well as an operationally successful year. I feel that many opportunities will present themselves there for the taking, so that "shipping can navigate safely, efficiently and confidently, whilst ensuring other maritime users are using the same approved data". It is a matter of mutual ambition and thrust.

In conclusion, I wish to express my gratitude to all at IC-ENC, at HQ and the regional offices, who have made 2018 another excellent year for its Member States.



A handwritten signature in blue ink, appearing to read 'M.C.J. Van Der Donck'.

**Captain RNLN M.C.J. (Marc) Van Der Donck**  
IC-ENC Steering Committee Chairman  
Director Netherlands Hydrographic Office  
Hydrographer of the Royal Netherlands Navy

# GENERAL MANAGER'S INTRODUCTION

Welcome to IC-ENC's 2018 Annual Report.

IC-ENC members continue to produce and maintain about half of the world's ENC's, and so it has been a busy, yet successful, year for IC-ENC.

## **Production Support:**

Two Validation Training courses were delivered (in UK and Brazil), and the third Technical Conference was attended by over 40 delegates which examined IC-ENC services and outputs, and ENC best practice. New releases of the Errors Database were provided to members and the international IC-ENC validation team.



## **Validation:**

Overall, a similar number of validations have been conducted in 2018 as in 2017, with over 14,000 being conducted. The timeliness performance of the international team has been excellent, with several months achieving 100% of jobs in the allocated duration. Over 2000 validation reports contained recommended improvement activity the Producer can take to improve the ENC, from the perspective of the ECDIS navigator.

## **Distribution & Revenue Management:**

Over \$35.5m has been returned to IC-ENC members through the ENC Revenue Management service, and through IC-ENC supporting the Value Added Resellers with their services including maintaining the Real Time Reporting sales system.

## **Governance:**

The Steering Committee met for the 20th time in July, with a focus on the IC-ENC Cooperation Arrangement and the role of UKHO as Operator of IC-ENC.

## **Finances:**

IC-ENC's financial performance has resulted in the fixed fee reducing from \$1.00 to \$0.50, and an Extraordinary Settlement of over \$1.1m being returned to members for the 2018 period.

## **The year ahead:**

The 2019 Work Plan describes how IC-ENC will continue to provide its services to members and incrementally improve them. There are also work streams which mean the Steering Committee will be able to assess opportunities for potential new services delivered through the cost effective, central, RENC system.



**Mr James Harper**  
IC-ENC General Manager  
Taunton, United Kingdom

# STRATEGIC REPORT

## IC-ENC's Vision

To be recognised as the leading supplier of services for validation, harmonisation and global distribution of ENC's.

## IC-ENC's Mission

To provide services, at a low cost, to national Hydrographic Offices that ensure their ENC's are:

- compliant to the international standards;
- consistent across the global dataset;
- readily available for use.

This is so shipping can navigate safely, efficiently and confidently whilst ensuring other maritime users are using the same approved data.

## IC-ENC's Core Services

1. ENC Production Support
2. Independent ENC Validation
3. Distribution
4. Revenue Management

## IC-ENC's Global Operating Structure

IC-ENC has a Headquarters Office and IC-ENC Regional Offices report to it. Production Support and Validation Services are carried out at each IC-ENC office to benefit from regional expertise, knowledge, time-zone operation and language. Distribution and Revenue Management Services are concentrated centrally at HQ.

Each IC-ENC office is located at a national Hydrographic Office, offering economies of scale, staffing and technology advantages, meaning IC-ENC remains a low cost operation.

## IC-ENC's Work Streams

Section	Ref	Strategic Objective
Services	1	Production Support core service
	2	ENC Validation core service
	3	ENC Distribution core service
	4	Revenue Management core service
Enablers	5	Governance and business functions
	6	Finances
	7	Membership and ENC coverage
	8	IC-ENC Global Operating Structure, including the team
	9	Working relationships with other organisations
	10	Information Technology
Developments	11	Leverage UKHO systems
	12	Wider use of ENC's
	13	Future ENC Standard S-101
	14	Future support and services



# STEERING COMMITTEE

IC-ENC held the Steering Committee 20 meeting in July 2018. 35 delegates attended, representing 28 of the IC-ENC members, and the IHO-Secretariat as an Observer.

The Steering Committee reviewed the operational performance and progress of IC-ENC, noting its satisfaction at the improvements to key services following a period of internal consolidation. Reports were considered regarding the Value Added Reseller network (Distribution), the Validation service performed by IC-ENC and the technical/support provided to members.



ic-enc

SC20 meeting, Bristol, 17. - 18. July 2018

The most significant agenda item was regarding IC-ENC governance and changes to the IC-ENC Co-operation Arrangement, and the technology changes expected as a result of closer alignment with UKHO systems.

There were many different points of view raised during the meeting, which have since culminated in a series of iterative draft versions of the Co-operation Arrangement, which have been available for detailed scrutiny and comment by the members. The latest version will be produced during February 2019 for consideration by each member with a final discussion expected at the next meeting.

The South African HO has kindly agreed to host the next Steering Committee meeting, and so SC21 will be held in Cape Town in July 2019.

# CORE SERVICES

## ENC VALIDATION

### Staff Changes in IC-ENC Validation Team

During 2018, IC-ENC said a farewell to Mike Hawes as Data Manager when he retired after 42 years with both IC-ENC and UKHO. He was known to many through his role as international trainer, and we wish Mike a very happy retirement. Mike was replaced by Graham Reeks; welcome Graham!

### IC-ENC Validation

The IC-ENC Validation Team conducted 14,614 validations during 2018. This was broadly similar to the volume conducted in 2017. Importantly, there is a significant and sustained improvement in the timeliness of validations, as detailed on page 8.

The number of ENCs requiring improvement action before release is presented here:

	Updates	New Editions	New Cells	Total
Number of Validations	10590	3503	521	<b>14614</b>
Returned for Improvement Action Before Release	182	124	86	<b>392</b>
Percentage % of Validations (2017 figures in brackets)	1.7 (1.8)	3.5 (2.8)	16.5 (19.31)	<b>2.7 (2.9)</b>

### New Data Releases

During 2018, Bangladesh and Saudi Arabia joined IC-ENC bringing the number of IC-ENC members to 44. Their first datasets are expected to be issued during 2019, along with Oman. New ENC data was released for the first time by Israel, and at the end of 2018 over 8000 ENCs are included in the IC-ENC folio. Further details about the make up of the ENC Folio are provided on page 19.

### Weekly files

The average number of ENC files included in IC-ENC's weekly releases to the Value Added Resellers was 273 files. This is very similar to the 2017 figure, and continues the higher volumes when compared to previous years. There has been an increase in Updates and a corresponding decrease in New Editions:

	Minimum	Maximum	2018 Average	2017 Average	2016 Average	2015 Average
Updates	142	281	<b>200</b>	182	149	152
New Editions	32	113	<b>64</b>	86	61	29
New Cells	0	27	<b>8</b>	9	11	18
Combined	174	376	<b>273</b>	279	221	199

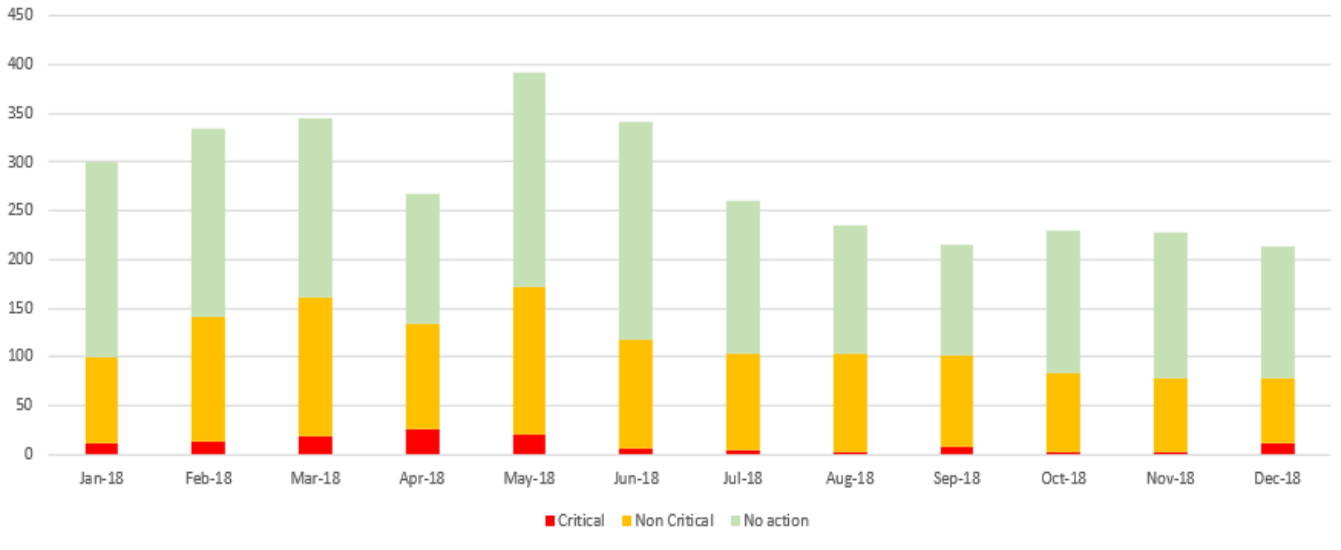


## ENC Validation feedback

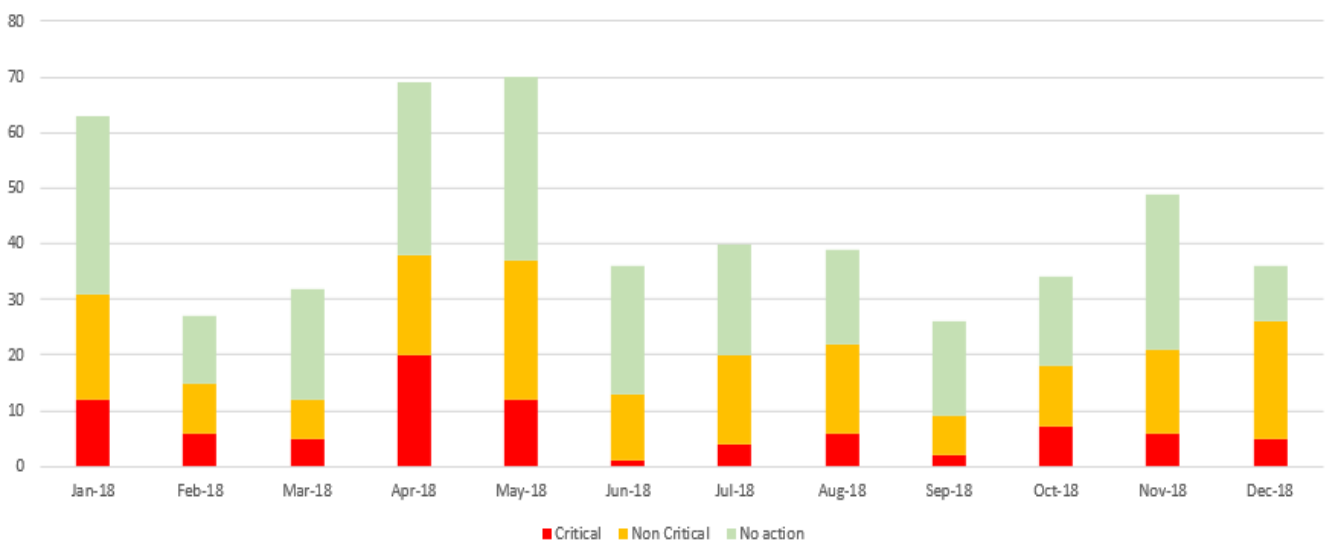
IC-ENC continues to monitor the types of feedback comment made in the validation reports. IN 2018, over 2000 ENC's received feedback designed to improve their content. This is separated into critical (potentially dangerous to navigation) and non-critical (designed to improve to product) feedback.

The validation feedback results for New Editions and New Cells during 2018 are:

Added value - Criticality of reported issues - New Editions



Added value - Criticality of reported issues - New Cells

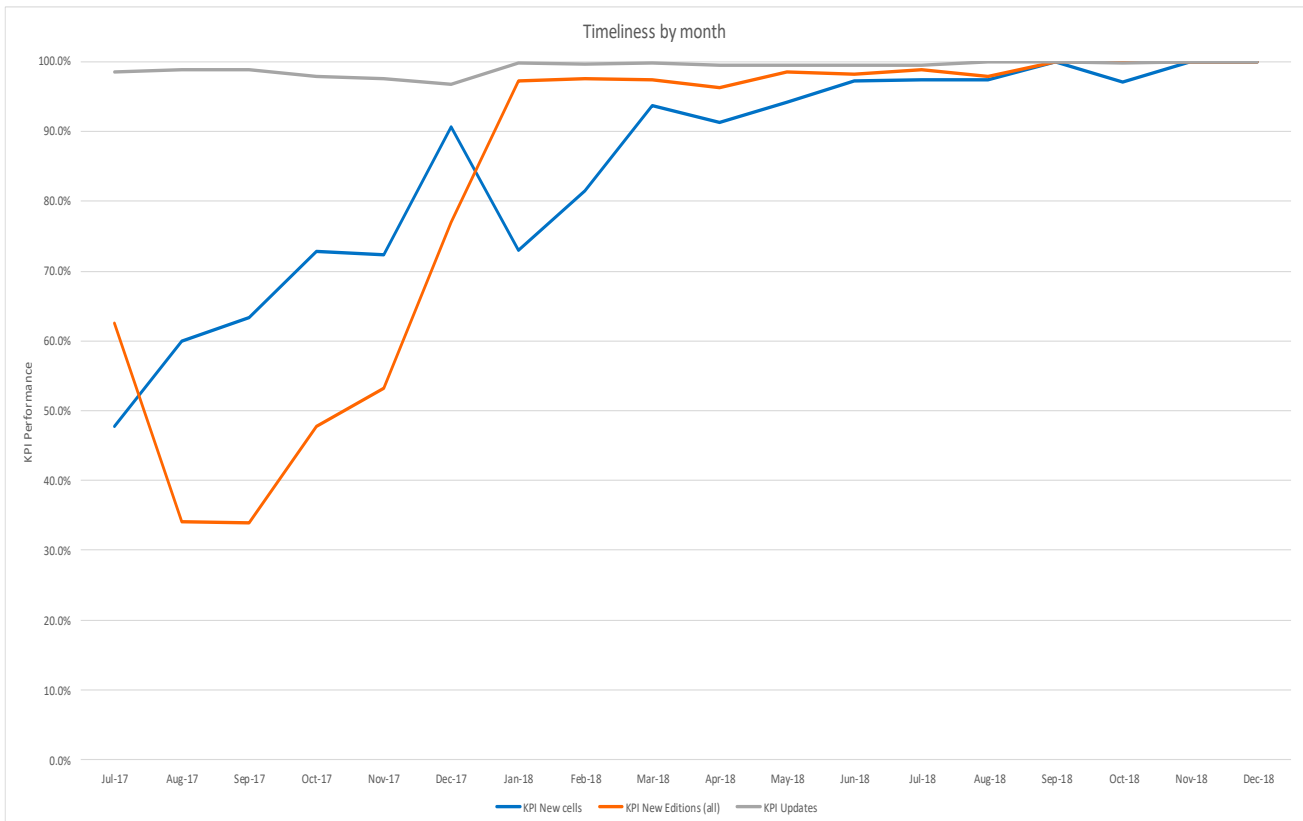


## 2018 Key Performance Indicator Results

IC-ENC reports validation completion time performance to the Steering Committee, with a target to complete 95% of each of the three job types within the timescales below:

<b>Update</b>	3 days	<i>These Key Performance Indicator targets have been set to recognise that it is more important for the safety of navigation to release ENC <b>change</b> information (Update or New Editions) than brand new ENCs.</i>
<b>New Edition</b>	5 days	
<b>New Cell</b>	10 days	

The monthly results, beginning from July 2017, are:



As can be seen, internal consolidation effort from the IC-ENC team has resulted in a sustained improvement in the timeliness of validation performance. This has been achieved without reducing the quality, value or content of the validation service.

## ECDIS systems

IC-ENC continues to use 3 separate ECDIS systems to load and view ENCs as part of the validation process. These offer a means to test that the data loads correctly, and to view the data as the mariner would see it, so helping with validation judgement and decisions.

The systems we use are manufactured by:



## IC-ENC ERRORS DATABASE

The IC-ENC Errors Database (EDB) provides information on all validation error messages identified by IC-ENC. It supports the IC-ENC validation service and is provided to IC-ENC members to support their ENC production.

Over 1800 errors are described and this includes ECDIS systems as well as the validation tools used within IC-ENC. Errors are related to the corresponding S-58 check where relevant, but given a detailed classification based on an assessment of impact by IC-ENC.

<b><u>SOFTWARE</u></b>	dKart Inspector (V6.3)
<b><u>ERROR</u></b>	<b>LG0147: (T1565)</b>
<b><u>EXAMPLE</u></b>	ERROR LG0147: (T1565) LNDARE [FE-002512] object not enclosed by appropriate object
<b><u>EXPLANATION</u></b>	Edge of area LNDARE does not share its geometry with another expected object.
<b><u>USER IMPACT</u></b>	A definite line that defines the coastline (COALNE, SLCONS etc) is useful for the mariner because it displays, unambiguously, the location of the coastline. This is important if the radar is overlaid on the ECDIS display.
<b><u>DESCRIPTION</u></b>	<p><b>HO TO CORRECT:</b> If encoding a linear object along the section of coast would benefit the mariner.</p> <p><b>ACCEPT:</b> If encoding a linear object would give no practical benefit to the user, e.g. it might be a very small section that is missing, or be in a location that is outside of navigable water. A valid example of this is a LNDARE with CONDTN under reclamation with SORDAT populated.</p>
<b><u>REQ ACTION</u></b>	A linear object (e.g. COALNE / SLCONS) should be captured between the land area and depth area. If the scenario of Under Reclamation, check original COALNE behind the Reclamation is retained.
<b><u>S57 REFERENCE</u></b>	S57 Appendix B.1 Annex A (Use of <b><u>S58 CHECK</u></b> 1565 E
<b><u>CROSS REF</u></b>	VS57_ERR_EDGE_BORDERVS57_ERR_EDGE_BORDER1

Figure above: An example entry from the IC-ENC Errors Database

Building on the streamlined updating process introduced in 2017, 7 releases of the Errors Database have taken place during 2018. This has increased the number of checks by around 100.

Release Date	Software Change
20180112	-
20180126	dKart Inspector 6.3
20180309	-
20180522	-
20180727	-
20180907	-
20181116	-

Following discussions at the 3rd Technical Conference, Actions were set to improve the EDB:

- Improve the searchable web based version of the Errors Database for members use.
- Add CARIS and Esri validation error messages to the Errors Database.

# PRODUCTION SUPPORT

## TECHNICAL CONFERENCE

IC-ENC held its third Technical Conference (TC03) in October 2018 in Bristol, United Kingdom. Now defined in the Production Support core service, this event is proving to be valuable in harmonizing ENC best practice and as an opportunity for IC-ENC members to set the technical services they receive. A significant portion of members were represented; 40 delegates from 29 ENC Production Offices, two Observer organisations attended, including PRIMAR RENC under the RENC Co-operation programme.



ic-enc

*TC03 meeting, Bristol, 23. - 25. October 2018*

ic-enc

TC03 was a successful event, thanks to the active participation of the delegates and the IC-ENC technical staff charged with delivering the event. Updates from members included Denmark's amended policy on Magnetic Variation presented by Gitte Iversen. Additionally, Lt. Cmdr Daniel Rojas Contreras (Venezuela) presented on the new ENC scheme for the Orinoco River.

Briefings were provided on developments within IC-ENC including Data Management Database (DMD), Errors Database, the use of ECDIS and e-Globe support, ENC production issues such as Tolerance Values for ENC Validation, too many references and T&P Best Practice for ENCs. A discussion was held about S-58 6.1.0 and the implementation of the minimum check standard planned during 2019. Group sessions were held at TC03 and covered the following topics:

**Sharing experience of database layers**  
**Gridded schemes and high-density bathymetry ENCs**  
**S-100 and S-101**  
**ENC Production Support**

These sessions proved to be very successful as delegates benefited from the informal smaller groups and were able to learn from other members with similar problems/concerns. The Conference built on TC02, and resulted in direct member input into the IC-ENC 2019 Work Plan.

# IC-ENC International Training Courses

The content of the IC-ENC Validation Training course was refreshed during 2018 and consists of 10 modules. The delivery of the course seeks to reinforce learning through exercises which cover different aspects of ENC validation.

Exercises using ECDIS give attendees a better understanding of ECDIS and how different ENC encoding affects the ECDIS user experience. A new S-100 module includes the conversion of S-57 ENC data to S-101 using the latest conversion tools available.

	Day	Description of Content
-1. Pre-learning	-	A suggested reading list cover many of the relevant documents and accident reports which provide context around the use of ECDIS.
Administration	1	Joining instructions, Introductions, Course Overview
ECDIS	1	An introduction to ECDIS from the mariner's perspective
IC-ENC Introduction	1	Roles, purpose and responsibilities of ENC production and IC-ENC Steering Committee
Reference Material	2	IHO specifications and standards, IC-ENC website, policies and Errors Database
Supply of Data	2-3	The Exchange Set, RENC data flow, data registration and checks
Data Validation	3-6	Validation tools, the validation process and reviewing Errors. Consistency checks and the ECDIS check.
Data Distribution	7	Weekly exchange set process, distribution chain, S-63
Future Developments	7	New standards such as S-100 and associated product specifications, conversion of ENC data to S-101
Summary	8	Review of course aims and progress

## Software used in the training course

### ECDIS:

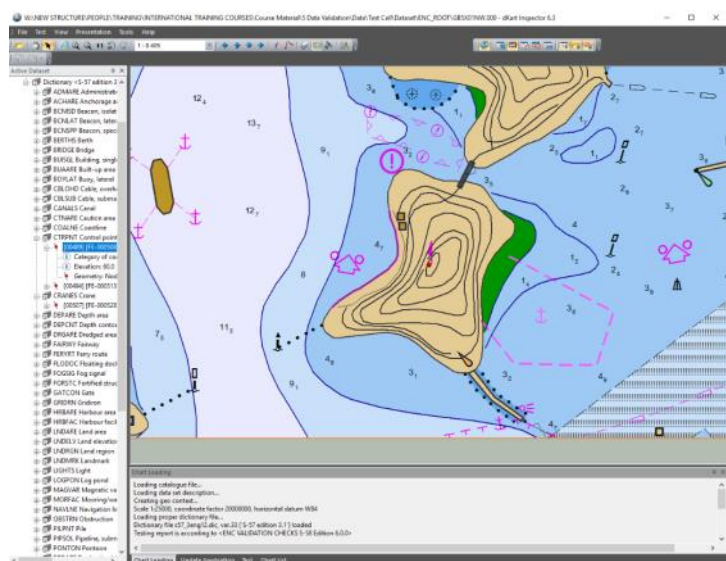
SevenCS eGlobe G2

### ENC Validation:

C-Map dKart Inspector  
SevenCs ENC Analyzer

### ENC Production:

CARIS S-57 Composer  
SevenCs ENC Designer  
Esri S-57 to S-101 Converter



## Next developments

Further courses are planned on a regional basis for 2019. The 2019 IC-ENC Work Plans also includes developing the material into further practical exercises and translating some modules into self-paced learning (i.e. remote). This will increase the availability of the training material.



# IC-ENC International Training Courses

IC-ENC held two Validation Training courses in 2018. The first of these was held in August at the UKHO in Taunton and was attended by 10 delegates from 8 member HOs. The second course was held in December at the Directorate of Hydrography and Navigation (Brasil) with support from the IC-ENC Latin America regional office in Niteroi. 12 delegates from 9 member HOs participated.

## IC-ENC International Training Courses



### Comments from Chris Williams, Danish Geodata Agency, on the training course:

“With relatively little experience in the realm of ENC validation, I found the ENC validation course provided by IC-ENC to be hugely educational and insightful. The training was well structured, starting with an end user perspective in terms of ECDIS training, through to an overview of IC-ENC as well as data supply, validation and distribution. We also had a little look into the future by discussing the limitations of S57 and exploring how S101 differs. Aside from this, training courses are a valuable opportunity to meet and interact with members of other nations; to discuss work related topics and practices.

Upon returning to my office, I have confidently been able undertake ENC validation, particularly while reading source data for our chart production. I have been able to demonstrate efficient work methods to my colleagues, share relevant documentation, as well as assisting with any issues that may arise within the team. Prior to this training course, I would not have been in a position to undertake ENC validation to the level in which I do now. A big thanks to Tom and Max at IC-ENC (UK) and I look forward to participating in further training courses and working groups in the future.”



# IC-ENC Validator Training, by Isaias Brito

Isais is our newest Validator, based at the IC-ENC Latin America regional office.

“I joined the IC-ENC Regional Office for Latin America at the beginning of 2018, for familiarisation training. Later in the year, I went to the IC-ENC (UK) office to carry out my main training as a validator in ENCs. Whilst there I learned about the policies and procedures required for validation of ENCs. Aaran Champion and Dan Garratt were responsible for overseeing my training, I also had the opportunity to work with the other members of the UK Team and I was able to gain some of their knowledge and experience in validation. During my time here I also had the chance to meet and work with the two validators from the IC-ENC North America office, Jenny Thacker and Rob Ciepiela.

Part of my training enabled me to validate cells from other IC-ENC countries other than Latin America, this gave me the chance to see different types of validation issues that I was not completely familiar with. During my time with IC-ENC (UK) I was able to validate 10 New Cells, 22 New Editions and 108 Updates, all of these were reviewed and approved by my trainer prior to being released.



I was also given the opportunity to suggest some possible changes in practices adopted for the training of validators which, if accepted, I hope will benefit the training of new members.

With all the experience and assistance that I received, I have honed the skills required to become a Validator for the IC-ENC validation service and found this to be a very helpful experience.”



## DISTRIBUTION

### ENC Sales

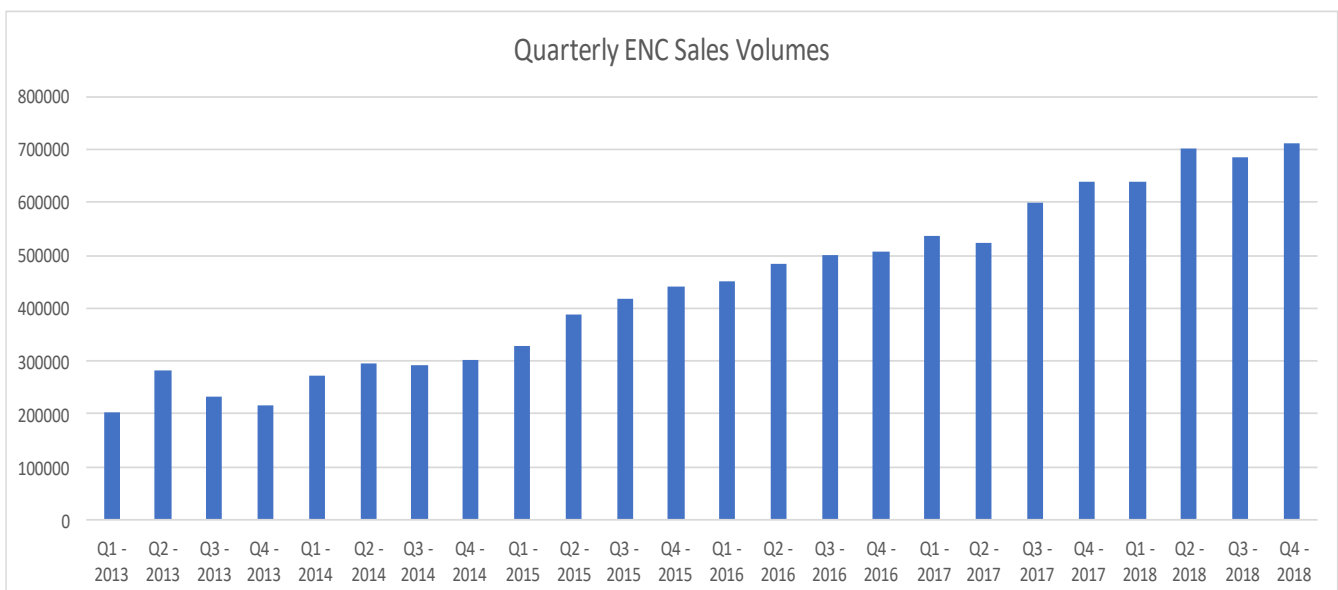
IC-ENC distributes its members' ENC's through companies known as Value Added Resellers (VARs), who are able to offer comprehensive maritime end-use services that bring together various navigational products into one package.

By working closely with our VARs, the mariner has a choice of services, each incorporating a wide range of ENC's, which are available through a variety of well-known international distribution outlets.

Our VAR partners:



The analysis below shows Sales Volume and Distribution growth over the last six years, with 2018 showing an annual increase of about 20%.



**ENC Subscriptions**

ENCs used by ECDIS equipped vessels are enabled through subscriptions. There are various subscription options:

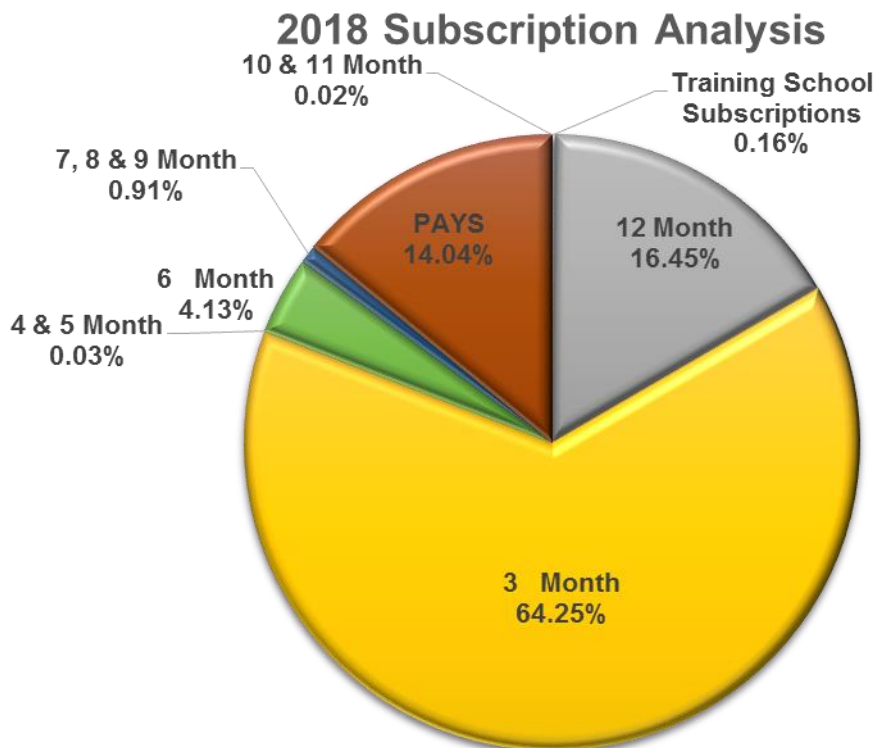
“Standard” (or pre-paid) Subscription

- *Defined subscription period (3 – 12 months)*
- *Purchased prior to voyage or planning*

“Pay As You Sail” (PAYS) Subscription

- *A vessel registers for a PAYS service*
- *All ENCs are available for planning purposes (a planning fee is charged)*
- *The PAYS system tracks and records the vessels movements*
- *3 month PAYS subscription is recorded for all cells intersected by the vessels track*

The Real Time Reporting (RTR) system allows IC-ENC to analyse the ENC sales subscriptions. The Subscription Analysis chart shows the popularity of shorter term subscription periods:



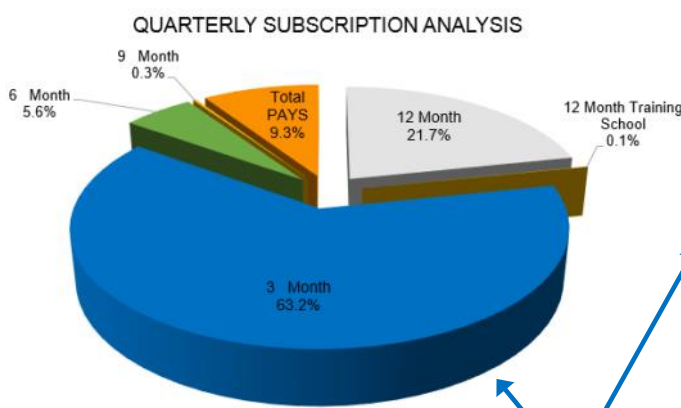
The 2018 period shows a continuing increase in the popularity of PAYS subscriptions (up from 10% in 2017). In addition to this, 2018 has seen 3 month standard subscriptions remaining by far the most popular, with their increase in 2018 coming as a result of a decrease in 12 month standard subscriptions.

## REVENUE MANAGEMENT

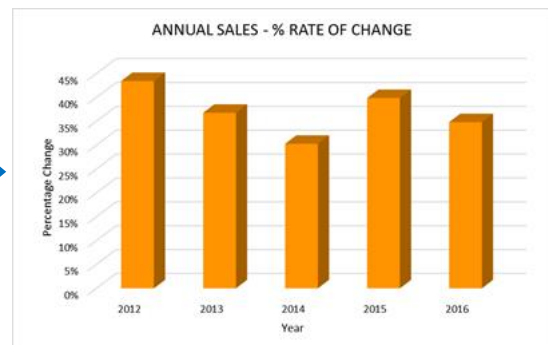
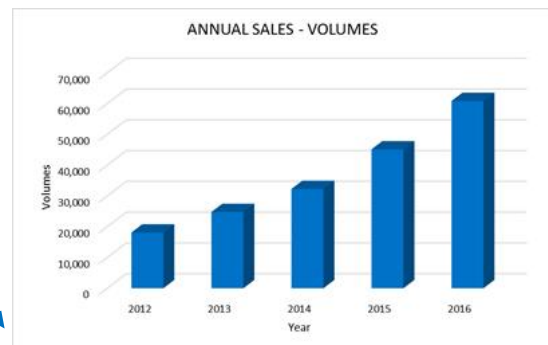
### Reporting of VAR Sales

IC-ENC's Real Time Reporting (RTR) business system enables IC-ENC to be more responsive to its members' reporting needs and to enable fast and detailed auditing of VAR sales. One of the prime functions of RTR is to automatically manage the ENC sales rules and procedures, and to highlight any aspects that require more thorough investigation and analysis by the team.

IC-ENC UK (HQ) manages all aspects of the VARs sales reporting, auditing, invoicing and the revenue collection process. An itemised sales report is produced on a quarterly basis for each IC-ENC member. The revenue generated from these sales is then paid accordingly to each member by IC-ENC. The reporting process is under review and the team are looking to continuously improve the reports sent to members to add value for all.



Sample information from a Quarterly ENC Sales Report provided to each IC-ENC member



### IC-ENC Financial Model

With effect from 1st October 2018, and following discussion at the Steering Committee meeting, IC-ENC has reduced the fixed fee to \$0.50 (from \$1.00). Shorter subscription periods attract a lower pro rata fixed fee.

This table (reflecting the new lower fixed fee) demonstrates the financial model. It is based upon a fictitious IC-ENC member choosing \$15.00 for its wholesale price:

	Subscription Type / Period													
	3 Month	4 Month	5 Month	6 Month	7 Month	8 Month	9 Month	10 Month	11 Month	12 Month	PAYS (3 Month)	Training (3 Month)	Training (6 Month)	Training (12 Month)
<b>Volume</b>	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.00	1.00	0.30	0.15	0.3	0.50
<b>Member revenue</b>	\$4.35	\$5.80	\$7.25	\$8.70	\$10.15	\$11.60	\$13.05	\$14.50	\$14.50	\$14.50	\$4.35	\$2.17	\$4.35	\$7.25
<b>IC-ENC Fee</b>	\$0.15	\$0.20	\$0.25	\$0.30	\$0.35	\$0.40	\$0.45	\$0.50	\$0.50	\$0.50	\$0.15	\$0.08	\$0.15	\$0.25
<b>Wholesale Price to VARs</b>	<b>\$4.50</b>	<b>\$6.00</b>	<b>\$7.50</b>	<b>\$9.00</b>	<b>\$10.50</b>	<b>\$12.00</b>	<b>\$13.50</b>	<b>\$15.00</b>	<b>\$15.00</b>	<b>\$15.00</b>	<b>\$4.50</b>	<b>\$2.25</b>	<b>\$4.50</b>	<b>\$7.50</b>

# 2018 FINANCIAL ACCOUNTS

TYPE	2018 Forecast, \$	Mid-year revised Forecast, \$	2018 Actual, \$	COMMENTS
<b>Costs</b>				
Staff	-724,000	-692,783	-602,721	Gapped posts (example IC-ENC Distribution Manager), use of temporary agency staff, and very little use of Overtime budget result in staff costs below forecast. Continues to be no financial charge to IC-ENC for US and Brazil office staff (as forecast).
Work Plan Activities, known	-498,000	-410,331	-268,689	Cost effective options used for events & travel (SC meeting & Technical Conference). Certain Work Plan items delayed until 2019 (e.g. CRM, VAR audits), therefore costs not incurred. Some budgeted technology changes superseded by Transition to UKHO Systems activity, meaning these costs not incurred (Transitions costs are excluded from the IC-ENC budget). SAP business warehouse costs included, for delivery of system in early 2019.
Work Plan Activities, contingency.	-100,000	-67,000	0	2 validation training courses delivered, not 3 (August, UK; December, Brazil), costs included in known Work Plan activities above.
Information Technology	-236,000	-226,423	-201,883	Costs broadly in line with forecast
Accommodation and Support	-117,000	-116,907	-111,071	Costs broadly in line with forecast
UKHO Gvt +3%	-23,000	-22,479	-19,450	SC17 Finance Report refers.
Financials	17,000	17,557	204,883	Significantly higher than forecast bank interest received, and lower banking costs than forecast, resulting in a significant positive 'revenue' in this line contributing towards the IC-ENC budget. In 2019, IC-ENC will encourage more members to move to a quarterly settlement period (rather than annually, which will reduce the money held in the IC-ENC bank account).
<b>TOTAL COSTS</b>	<b>-1,681,000</b>	<b>-1,518,366</b>	<b>-998,932</b>	
<b>IC-ENC Revenue</b>				
IC-ENC Fixed Fee value	\$1	Q1-Q3: \$1 Q4: \$0.50	Q1-Q3: \$1 Q4: \$0.50	Fixed fee reduced to \$0.50 from 1st October 2018. See Decision SC20/3
2018 IC-ENC Revenue	2,234,000	2,130,470	2,160,822	Includes PAYS planning fee and contribution from any individual member capped at 20% of costs.
<b>IC-ENC Financial Position</b>				
2018 Annual Balance	553,000	612,104	1,161,890	Positive in year balance, 2018 IC-ENC Revenue minus 2018 Total costs.
2018 EOS		612,104	1,161,890	This payment means 2018 is a cost/revenue neutral period for IC-ENC. See Decision SC20/4.
IC-ENC Operating Balance		746,129	746,129	At end of 2018.

# IC-ENC 2019 BUDGET

TYPE	FORECAST, \$	COMMENTS (exchange rate assumption: £1=\$1.40)
<b>Costs</b>		
Production Support core service	-253,000	Including 3 Validation Training courses, Technical Conference, Re-supply of ECDIS software to members, improvements to the Errors Database.
ENC Validation core service	104,000	Predominantly third party license costs, internal improvements.
ENC Distribution core service	-32,000	VAR application, assessment and auditing functions.
Revenue Management core service	0	No new costs.
Governance and Business functions	-217,320	Primarily Steering Committee, new CRM tool, UKHO multiple lines of support, ISO9001 certification.
Finances	100,000	Bank interest minus banking costs, positive number—in effect 'revenue'.
Membership and ENC coverage	-16,000	Predominantly membership visits and attendance at RHCs etc.
IC-ENC Global Operating Structure, including the Team	-798,685	Predominantly staff costs UK (headcount of 10) and Aus (1 office staff) - continues to be no cost of Brazil or US staff to IC-ENC. Training (Validation and non-validation), regional office support and liaison visits, UK office accommodation costs.
Working relations with other organisations	-9,000	Visits and meeting costs.
Information Technology	-229,600	Infrastructure, Azure, licences, support (including Data Management Database).
Leverage UKHO systems	0	Costs of transitioning to UKHO systems are to be met by UKHO (i.e. not part of IC-ENC budget).
Wider use of ENCs	-10,000	Exploration costs - business cases to be presented to Steering Committee for any future investment.
Future ENC Standard S101	-10,000	
Future support and services	-30,000	
<b>TOTAL COSTS</b>	<b>-1,609,605</b>	
<b>IC-ENC Revenue &amp; Financial position</b>		
2019 IC-ENC Revenue	1,585,853	Fixed fee revenue, plus PAYS Planning fee. Assumptions: fixed fee remains \$0.50 for all of 2019. Stable members—i.e. no new members join, no members leave. Small, incremental, ENC folio growth by members.
IC-ENC Balance (at start 2019)	746,129	See Decision SC20/4
2019 Annual Balance	-23,752	Annual Revenue minus Annual costs
IC-ENC Balance (at end 2019)	722,377	



## IC-ENC MEMBERSHIP AND FOLIO STATUS: Week 01/19

COUNTRY	Member since	CODE	Wk1 2015	Wk1 2016	Wk1 2017	Wk1 2018	Wk1 2019	2018 Net Change	2018 % Change	2018 NEs issued	2018 Updates issued
Argentina	2005	AR	66	70	72	75	78	3	4.0	18	94
Australia	2005	AU	841	843	843	849	849	0	0.0	222	1252
Belgium	2002	BE	7	7	7	7	7	0	0.0	11	41
Bahrain	2002	BH	4	8	8	8	8	0	0.0	2	0
Brazil	2008	BR	136	137	145	153	156	3	2.0	63	154
Chile	2004	CL	197	220	253	269	277	8	3.0	5	61
Colombia	2010	CO	36	56	61	61	61	0	0.0	8	116
Cuba	2013	CU	15	21	23	36	44	8	22.2	2	15
Germany	2002	DE	155	159	160	164	179	15	9.2	63	456
Denmark	2013	DK	149	219	254	276	345	69	25.00	109	398
Ecuador	2008	EC	0	14	24	40	71	31	7.5	16	10
Egypt	2014	EG	0	17	21	23	27	4	17.39	10	20
Spain	2002	ES	228	248	269	279	295	16	5.7	42	393
United Kingdom	2002	GB	1558	1566	1578	1665	1675	10	0.6	840	1924
Greece	2003	GR	287	291	300	301	301	0	0.0	8	177
Israel	2015	IL	0	0	0	0	4	4	First ENC's issued Apr 2018		
Iceland	2005	IS	70	71	71	72	72	0	0.0	29	25
Italy	2014	IT	253	255	259	262	263	1	0.3	46	807
Malta	2016	MT	0	0	5	5	5	0	0.0	0	3
Mexico	2005	MX	116	128	131	135	146	11	8.1	7	42
Malaysia	2014	MY	0	0	85	88	93	5	5.6	12	131
Mozambique	2004	MZ	0	0	0	0	0	0	0.0	0	0
Netherlands	2002	NL	85	139	139	162	175	13	8.0	61	425
New Zealand	2008	NZ	230	241	273	300	305	5	1.6	74	166
Oman	2015	OM	0	0	0	0	0	First ENC release expected 2019			
Pan - Canal	2015	PA	0	0	7	7	7	0	0.0	8	15
Pan - Maritime	2015	PA	0	10	9	10	10	0	0.0	1	2
Peru	2006	PE	122	124	125	125	128	3	2.4	2	70
Philippines	2014	PH	0	17	17	19	24	5	26.3	19	3
Pakistan	2005	PK	6	6	7	7	7	0	0.0	0	0
Portugal	2002	PT	89	91	90	94	96	2	2.1	7	113
Romania	2013	RO	3	6	6	8	13	5	62.5	0	8
Russian Fed	2005	RU	443	477	488	520	558	38	7.4	52	127
Solomon Is	2017	SB	0	0	0	41	41	0	0.0	16	45
Slovenia	2014	SI	0	1	1	1	1	0	0.0	0	0
Suriname	2014	SR	4	4	4	7	7	0	0.0	3	12
Tunisia	2016	TN	0	0	6	8	11	3	37.5	0	27
Turkey	2004	TR	259	266	268	270	271	1	0.4	63	296
United States	2016	US	0	0	1196	1231	1257	26	2.2	1491	2904
Uruguay	2011	UY	26	27	27	27	30	3	11.11	9	20
Venezuela	2006	VE	18	18	41	59	88	29	49.15	3	10
South Africa	2002	ZA	57	57	57	57	57	0	0.0	1	52
<b>TOTAL</b>			5460	5814	7330	7721	8042	317		3323	10414

*“Global ENC collaboration, with a regional focus”*

ic-enc

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