



# 2020 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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# CHAIR'S MESSAGE

The year 2020 is the year that COVID-19 hit. It hit our population, our societies and our maritime basis. To put in mildly, it was a year full of challenges, and COVID-19 is still among us. Therefore, I was pleasantly surprised by IC-ENC's annual performance. Within this adverse context, IC-ENC has had an excellent year:



- IC-ENC's mature Cloud-technology enabled IC-ENC to remain open for business.
- IC-ENC kept the core services running whilst firmly meeting our KPIs and maintaining its low cost.
- IC-ENC continued to set the groundwork for the decade of S-100 implementation, resulting in a phased plan and budget.
- IC-ENC steadily developed a new and promising sales auditing tool.
- IC-ENC is "getting to grips" with the new non-ECDIS navigation service.
- IC-ENC has adjusted its financial structure to a budgeted 3 year planning horizon and Work Plan, allowing for better prioritisation and decision-making.
- IC-ENC has moved forward with a Learning Management System which improves the access to knowledge and shared experience to all Members.
- IC-ENC now has a special budget line available to fund activities for the "greater good".

All these achievements align with important decisions made at the second session of the IHO Assembly. Most notably, the Assembly endorsed the draft WEND-100 Principles and the proposed path forward in their subsequent development, as a consequence of the expanding range of hydrographic data products address in the IHO (S-100) Implementation strategy. In the WEND-100 Principles an important role is envisioned for the RENCs: "Member States are encouraged to build on the existing RENC structure in order to share common experience, reduce expenditure, and to ensure the greatest possible standardization, consistency, reliability and availability of S-1XX products." IC-ENC is doing just that.

So, after a period of consolidation IC-ENC is now in a great position to navigate successfully the challenges ahead in order to meet its Members needs in the combined S57 & S-1XX era.

In conclusion, I wish to express my gratitude to all at IC-ENC, at HQ and the regional offices, who made 2020 yet another excellent year for its Members and mariners.

A handwritten signature in black ink, reading "M.C.J. van der Donck". The signature is stylized and includes a large flourish at the end.

**Captain RNLN M.C.J. (Marc) van der Donck**  
IC-ENC Chair  
Director Netherlands Hydrographic Office  
Hydrographer of the Royal Netherlands Navy

# GENERAL MANAGER'S INTRODUCTION

## Welcome to IC-ENC's 2020 Annual Report

IC-ENC Members continue to produce, maintain and distribute nearly 9000 ENC's, which is about half of the world folio! It has been another busy and productive year for IC-ENC – here in the United Kingdom and at our regional office sites in Australia, Brazil and United States – despite the challenges all of us have faced with the Covid-19 global pandemic.

The main body of the report provides a summary of our performance, and in terms of a brief introduction, our highlights include:

### Production Support

Without the ability to travel internationally this year, our Production Support service focus was to develop a new online Learning Management System (LMS). The IC-ENC LMS will host much useful material, e-learning courses, and has the ability to monitor and report progress with learning. A few of our member HOs have had early access to test, with great feedback. This promises to be a key platform in the future to structure IC-ENC's help and support to the membership. The fifth Technical Conference was well attended (online) and provided a forum for the members to set IC-ENC technical policies and new service developments.

### Validation

A significant number of validations has been conducted in 2020, with over 15,493 ENC files being processed. The timeliness performance of the international team has been excellent, with several months achieving 100% of jobs in the allocated duration. Over 1,663 validation reports contained recommended improvement activity the Producer can take to improve the ENC, from the perspective of the ECDIS navigator.

### Distribution & Revenue Management

Nearly \$50M (USD) in ENC revenue has been processed by the Real Time Reporting sales system, and returned to IC-ENC members through the ENC Revenue Management service. Good progress has been made on a new tool which will audit these sales reports, providing additional assurance to the IC-ENC members. The new Distribution Service from IC-ENC – providing ENC data to non-ECDIS users – has developed over 2020, with a launch in Quarter 1 2021.

### Governance

The IC-ENC Chair, supported by the Steering Committee, agreed to extend his term for another period. As a result of Covid-19, the Steering Committee did not formally meet over 2020, but business was conducted on-line. The key outcome has been an agreement on the type, priority and funding of new IC-ENC services to support our members in the S-100 era.

### Finances

With a historically low fixed fee of \$0.50, IC-ENC's financial performance continues to be sound. The Steering Committee has agreed to inwardly invest the IC-ENC operating balance to fund the new S-100 service developments.

### The year ahead

For the first time, we've set a three year Work Plan & Budget. This sets out a plan to deliver the new S-100 services in the most effective way.

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



# STRATEGIC SUMMARY

## IC-ENC's Vision & Mission

For some years, IC-ENC's strategic material has referred to the vision as "To be recognised as the leading supplier of services for validation, harmonisation and global distribution of ENC's". Our Mission Statement reflected the Vision. The Steering Committee has now begun the discussion to evolve these to better reflect the plans for S-100 era services, when IC-ENC will be processing more than just ENC's.

## IC-ENC's Service structure

1. Production Support
2. Validation
3. Distribution – ECDIS & Non-ECDIS
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.

## IC-ENC's Work Streams

Ref	Theme	Aim/Objective
1	Production Support	Part A: More, and better, products are available. Part B: Support IC-ENC Members via investing the \$450k funding for their mutual benefit.
2	S57 ENC Validation Service	Ensure the quality of every ENC entering the IC-ENC folio
3	Distribution Services	IC-ENC folio is available to users; ECDIS & non-ECDIS
4	Revenue Management	Use of members' products is correctly reported, paid for and revenue returned to IC-ENC members
5	Governance, finance and business functions	IC-ENC's governance, finance and business functions remain fit for purpose
6	Infrastructure - maintain and develop	IC-ENC has the technology required to deliver its services at the required levels of security, resilience and efficiency
7	Membership, IHO community and international groups	IC-ENC members are supported as required, and the wider IHO community/international groups are supported as required and aligned with where advantageous
8	IC-ENC Structure and the team	To have an effective IC-ENC organisational structure (regional offices) and right sized, high performing team
9	S-102 service	Establish an end to end S-102 service, data ingest, assessment, and data output
10	S-122 service	Demonstrate capability to ingest, assess, and output S-122 data, as an end to end service
11	S-101 and Conversion Support services	Develop Data Harmonisation service
	Years 2 & 3	Establish S-111, Conversion Support and Data Harmonisation services, and develop S-101 service. Establish S-104 service and S-101 trial service, further iteration of Conversion Support and Data Harmonisation services.

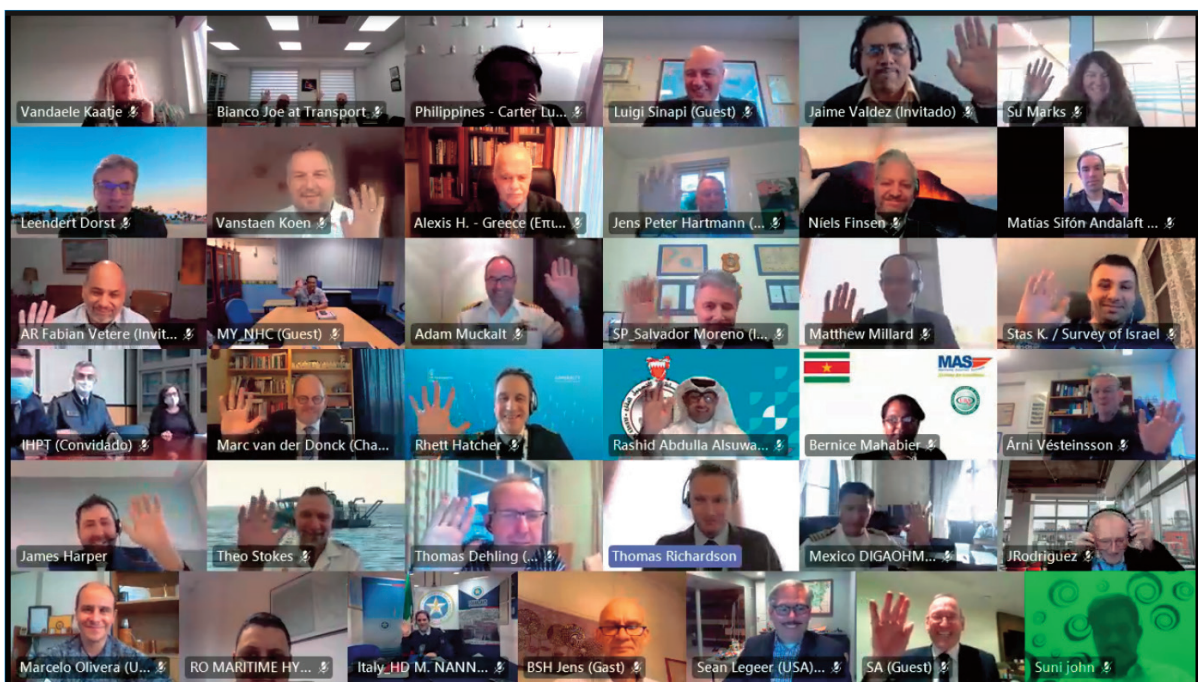
# STEERING COMMITTEE

The IC-ENC Work Plan & Budget (WP&B) is based on engagement with the IC-ENC Members through the Steering Committee, specifically with respect to the S-100 Options Paper in July-September, the Technical Conference 05 in October, and the SC Online Sessions in November. This engagement has confirmed the Steering Committee's desire to establish IC-ENC as an organisation which processes more than ENC's, in order to support the IC-ENC Members in the S-100 era.

Given that this is a significant evolution for IC-ENC, the WP&B considers a three-year period, with greatest detail for year 1. This will allow efficiencies to be found within work items (which are likely to span financial years), and allow for greater flex with the timing. It also shows a high/medium/low ranking of priority for Year 1.

The Steering Committee has endorsed a programme of work which:

- Maintains IC-ENC's core service(s) outputs regarding S-57 ENC's (support to HO's, validation, distribution and revenue management).
- Develops and improves our core infrastructure and international team to improve speed, resilience and new services to members and VAR's.
- Maintains and develops our governance and finance regimes and highlights the international collaboration with other bodies/groups/RENC's.
- Identifies where we will make best use of online collaboration tools, and also where we plan to convene face-to-face (noting that the decision regarding face-to-face or virtual events will be made during the annual budget review process).
- Shows how IC-ENC will be develop "centrally", in other words as core activity, available for all IC-ENC members, and funded by utilising the existing operating surplus and retaining the fixed fee at \$0.50. A cumulative operating balance of approx. \$0.5M is forecast to be retained at end of third year.



# PRODUCTION SUPPORT

## Virtual Technical Conference 05

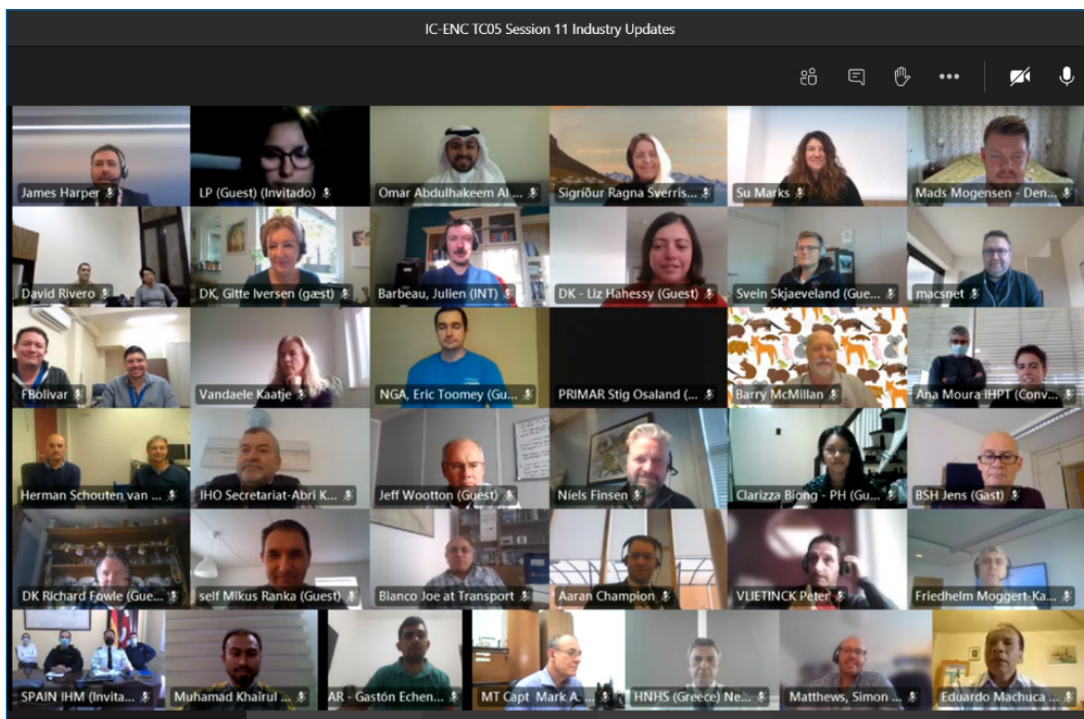
IC-ENC held its fifth Technical Conference in October 2020. This event was delivered virtually using Microsoft Teams. Although this format limited the highly beneficial side discussions and breakout groups it did allow greater attendance and feedback was positive. Sessions were recorded and made available to IC-ENC members via the member area of the IC-ENC website.

Focussed sessions included a demonstration of the new Learning Management System along with Production Support updates and specific S-57 encoding topics.

A number of industry sessions provided updates on new software tools especially focused on support for S-10x production. Sessions covered priority S-10x product specifications and allowed the TC to discuss and achieve consensus on the services that IC-ENC will need to develop for its members. There was strong discussion on the subject of an S-101 Conversion Support Service which was supported and will now be further developed.

IC-ENC has reviewed this event to identify improvements to be adopted at future events. These include the use of breakout rooms, conducting polls during the meeting and using the new Learning Management System for more streamlined registration and feedback.

Recognising the benefits of both remote and face to face events it is envisaged to continue a mix of both.





# PRODUCTION SUPPORT - TRAINING

IC-ENC had planned to continue its Validation Training courses during 2020 with face-to-face training in Brazil, Malaysia and Spain. Unfortunately, due to the COVID-19 pandemic these events had to be postponed.

A work item had already been included in the IC-ENC Work Plan to introduce an eLearning system (1b). This took higher priority and IC-ENC worked with UKHO colleagues within a project team to develop requirements and identify a supplier. During the second half of the year the system was implemented, staff trained and testing conducted.

The system has now been delivered and provides a flexible platform on which we can deliver eLearning but also blended learning. There is also wider potential with discussion forums and reporting allowing members to track learning across their own team. Sample images below give a feel for the system which is built on the Totara "Moodle".

This is an exciting development for IC-ENC and 2021 will see content be developed to support initial training courses using a blended approach. IC-ENC will also liaise with the wider hydrographic community to ensure developments are appropriately aligned with activities within the International Hydrographic Organization.

The screenshot shows the Moodle dashboard for user Thomas Richardson. The header includes the IC-ENC logo and navigation links for 'My learning' and 'Find learning'. The main content area features a welcome message 'Hello Thomas' and 'Welcome to the new home of IC-ENC learning.' Below this are several widgets: 'Find learning' with a 'View' button, 'Forums' with a 'View' button, 'COURSE SEARCH' with a search bar and 'Go' button, 'LATEST ANNOUNCEMENTS' (no announcements), and 'QUICK LINKS' with links to the IC-ENC Website, Graphical Catalogue, Sharepoint Area, and Knowledgebase. A 'MY CURRENT LEARNING' section indicates no current learning.

The screenshot shows the course page for 'Reference Information for ENC Validation'. The header includes the IC-ENC logo and navigation links for 'My learning' and 'Find learning'. The main content area features a 'Course summary' section with the text 'Introduction to reference information relevant to ENC validation including IHO standards and the IC-ENC Errors Database.' Below this are four action cards: 'eLearning' (Play module), 'Reference Information Quiz' (Take Quiz), 'Certificate' (View), and 'Feedback' (Give feedback).

# IC-ENC VALIDATOR TRAINING, by Martha Bakry



“ I was invited to join the IC-ENC North American office in early 2020 just before the COVID-19 virus impacted our workplaces. In the first two weeks of March, I had been preparing to travel to Taunton for my initial training, but then suddenly all travel was suspended, and we all found ourselves working from home for an unknown duration.

Despite this unusual turn of events, the quarantine did not interfere with my validator training. I immediately began working online with North American validators Jenny Thacker and Rob Ciepiela. Since all their day-to-day validation work is carried out remotely using a virtual desktop environment, it felt normal conducting my training within that environment. Once I was

granted access to the virtual desktop, I was able to leverage the Working Practices and all validation software resources. Jenny acted as my primary trainer, conducting training sessions via Google Hangouts. I received plenty of learning support from Rob, as well as colleagues at IC-ENC in Taunton. Thanks to my previous experience compiling and reviewing ENC products I learned the validation procedures quickly, but I had many questions. Data Manager Aaran Champion and Senior Validator Dan Garrett answered my questions patiently, politely, and with good humour, and provided work reviews to ensure that I was on the right track with my data assessments.

Over the past nine months my development as a validator has progressed well, and I am now able to work independently. I have had experience with all different levels of validation, from Updates to New Editions, and I have had the privilege of assisting other IC-ENC member States with their data quality checks. I could not have accomplished what I have up to this point without the support of such a great team, and I will add that both the people and the shared sense of purpose has made being in lockdown so much less of a burden. ”

**Martha Bakry**

# CORE SERVICES

## Staff Changes in IC-ENC Validation Team

The validation team has undergone several staff changes through 2020, IC-ENC said a farewell to Graham Reeks as Data Manager when he retired from IC-ENC and UKHO, we wish Graham a happy retirement. The Data Manager post has now been filled by Aaran Champion from within the validation team. In March, Martha Bakry joined the IC-ENC North America Validation Team.

## IC-ENC Validation

The IC-ENC Validation Team conducted 15,493 validations during 2020. This represents an increase of 800 validation over the 2019 total and IC-ENCs highest annual validation output. The number of Update validations has remained consistent with 2019 figures with New Editions showing a steady increase; New Cells, however, have shown a significant increase in validations during 2020. The rise in New Cells have been the result of re-scheme programs running through the year which has required coordination of New Cells, Cancellations and clipped New Editions. IC-ENC has continued to sustain improvements in the timeliness of validation within 2020, with many months achieving 100% of target. The number of ENC's requiring improvement action before release is presented here:

	Updates	New Editions	New Cells	Total
Number of Validations	11,986	2,539	968	<b>15,493</b>
Number of validations returned for Improvement Action Before Release	244	97	71	<b>412</b>
Percentage (%) of Validations (2018 figures in brackets)	2.0 (1.8)	3.8 (3.5)	7.3 (6.4)	<b>2.7 (2.2)</b>

## New Data Releases

In 2020 IC-ENC released the first ENC on behalf of Nigeria with further coverage to be released in early 2021. At the end of 2020, the IC-ENC folio included nearly 8800 ENC's. Further details about the make up of the ENC Folio are provided in the table at the end of this report.

## Weekly files

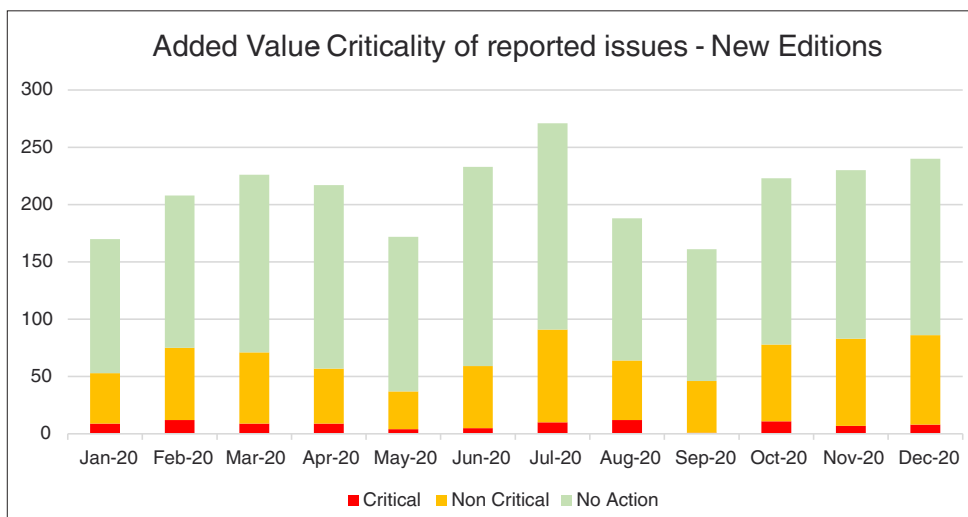
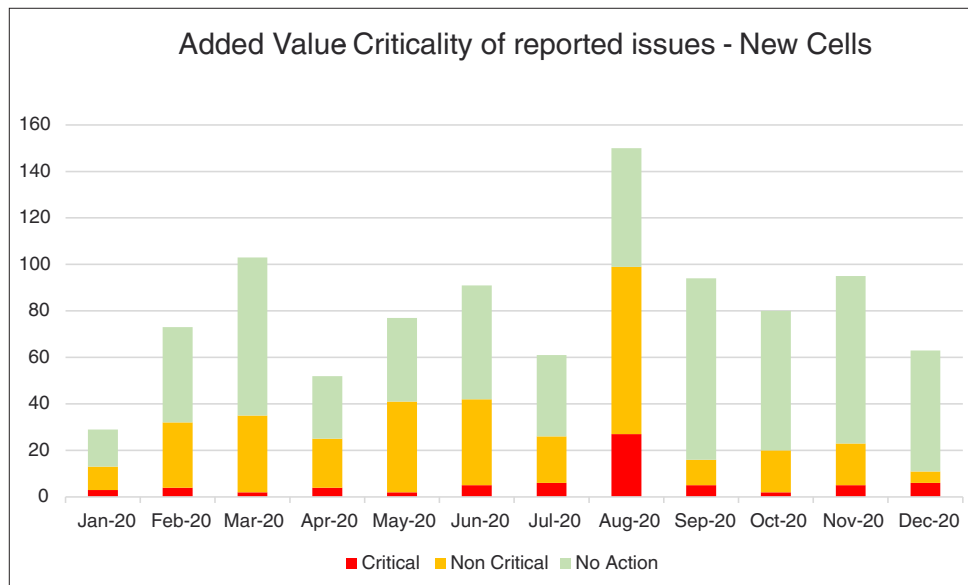
The average number of ENC files included in IC-ENC's weekly releases to the Value Added Resellers was 288, this is a slight increase on the 2019 average. In week 45, IC-ENC released its largest weekly total with 434 files being released.

	Minimum	Maximum	2020 Average	2019 Average	2018 Average	2017 Average	2016 Average
Updates	107	360	225	223	201	184	137
New Editions	25	70	45	45	64	86	39
New Cells	0	51	16	9	8	9	6
Combined		434	288	273	279	182	160

## ENC Validation feedback

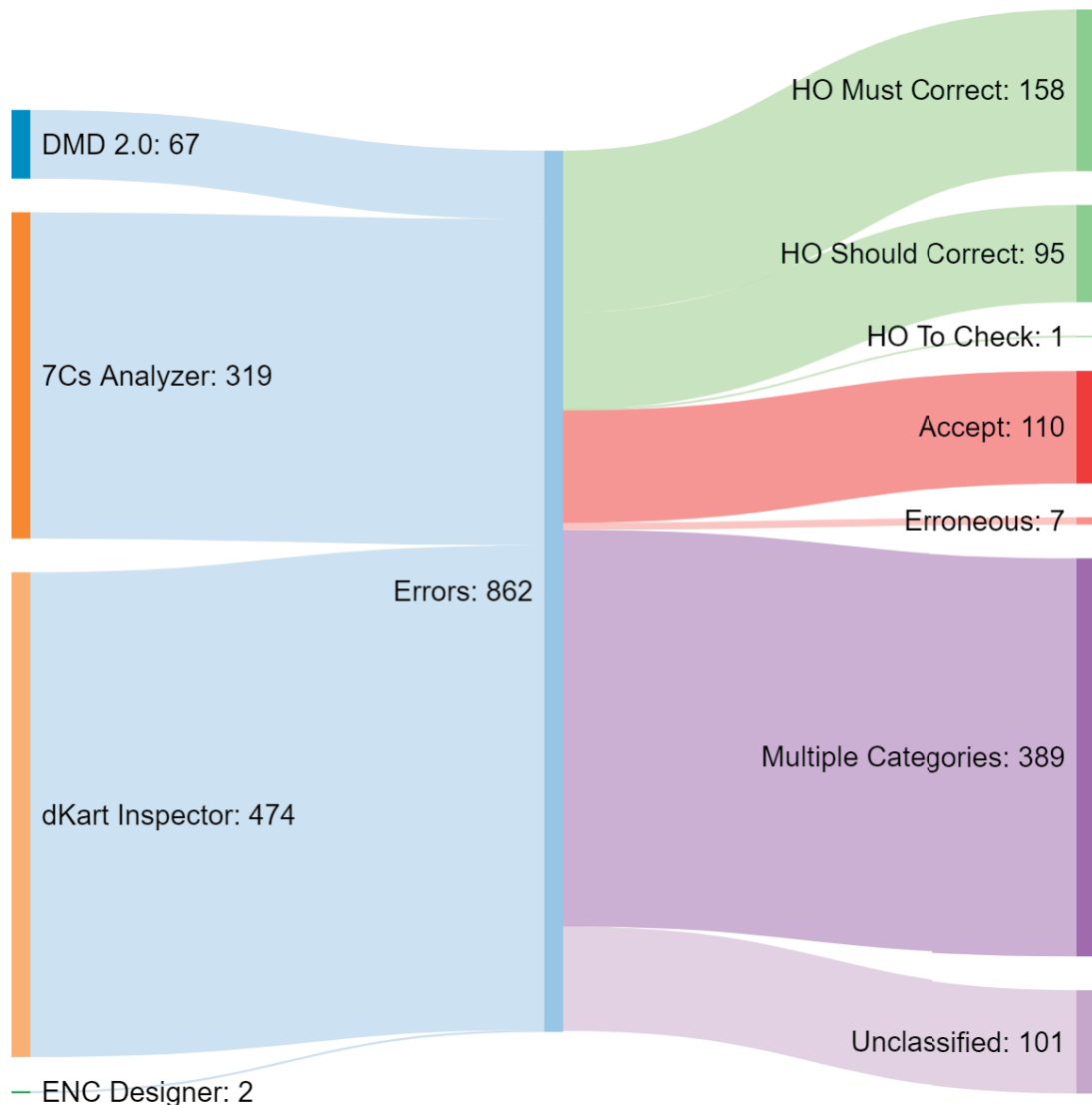
IC-ENC continues to monitor the types of feedback comments made in the validation reports. In 2020, nearly 4800 individual ENCs have been updated and nearly 900 New Cells validated. IC-ENC have reported feedback on 1663 occasions in 2020. This is separated into critical (potentially dangerous to navigation) and non-critical (designed to improve the product) feedback.

The validation feedback results for New Editions and New Cells during 2020 are:



## Production Support - 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 2,100 errors are present, 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. The breakdown of Errors reported by current versions of the tools used by IC-ENC is shown below. The left side showing the tool and the right showing the errors by type.



During 2020 based on member feedback a web based searchable version of the Errors Database the IC-ENC Knowledge base was made available. This makes it much easier to search and filter compared with the previous versions. It also allows for extension to include more information such as hyperlinks and graphics in the future.

Office 365

IC-ENC Knowledgebase S-100 Production Software

## Hydrographic Offices

dataorder | Share | Export to Excel | Power Apps | Automate

**DataOrder]**  
 Thomas Richardson (ICENC Knowledgebase) 27 days ago  
 "DataOrder The data record is not encoded in the... Either a meta feature exists after a geo feature or..."

**V557\_ERR\_DATAORDER]**  
 Thomas Richardson (ICENC Knowledgebase) 27 days ago  
 "V557\_ERR\_DATAORDER Invalid data order a master... Either a meta feature exists after a geo feature or..."

**LL0502 (T0555)**  
 Thomas Richardson (ICENC Knowledgebase) 27 days ago  
 "RU4MQW00.006 CRITICAL.LL0502 (T0555) Meta feature record <IQC\00> is... V557\_ERR\_DATAORDER];DataOrder..."

[See more results](#)

Software	Example	Explanation	Description
IC-ENC DMD (V2.0)	The directory [0] has an invalid name and cannot be processed	ENC data folder name, when "." replaced with a ";", is not a valid cell name	HO TO CORRECT: The exchange set folder is in the incorrect format
IC-ENC DMD (V2.0)	The directory [0] has an invalid usage band character	Folder name has an invalid usage band character	HO TO CORRECT: The exchange set folder is in the incorrect format, the third character of the folder

Hydrograph... > Knowledge... > **DataOrder]**

**Error Name**  
DataOrder]

**Software**  
7Cs Analyzer (V4.0.1)

**Example**  
 DataOrder  
 The data record is not encoded in the correct order: an isolated node (3D) appears in the dataset after an isolated node (2D).</Message>  
 S57 Reference: S-58, Ed. 6.1.0, check 555</Reference>  
 S57 Reference: S-57 ENC Product Specification, Ed. 2.0, Å§ 6.1.1</Reference>...  
[See more](#)

**Explanation**  
 Either a meta feature exists after a geo feature or a master appears before its referenced slave.

# DISTRIBUTION

## ENC Sales

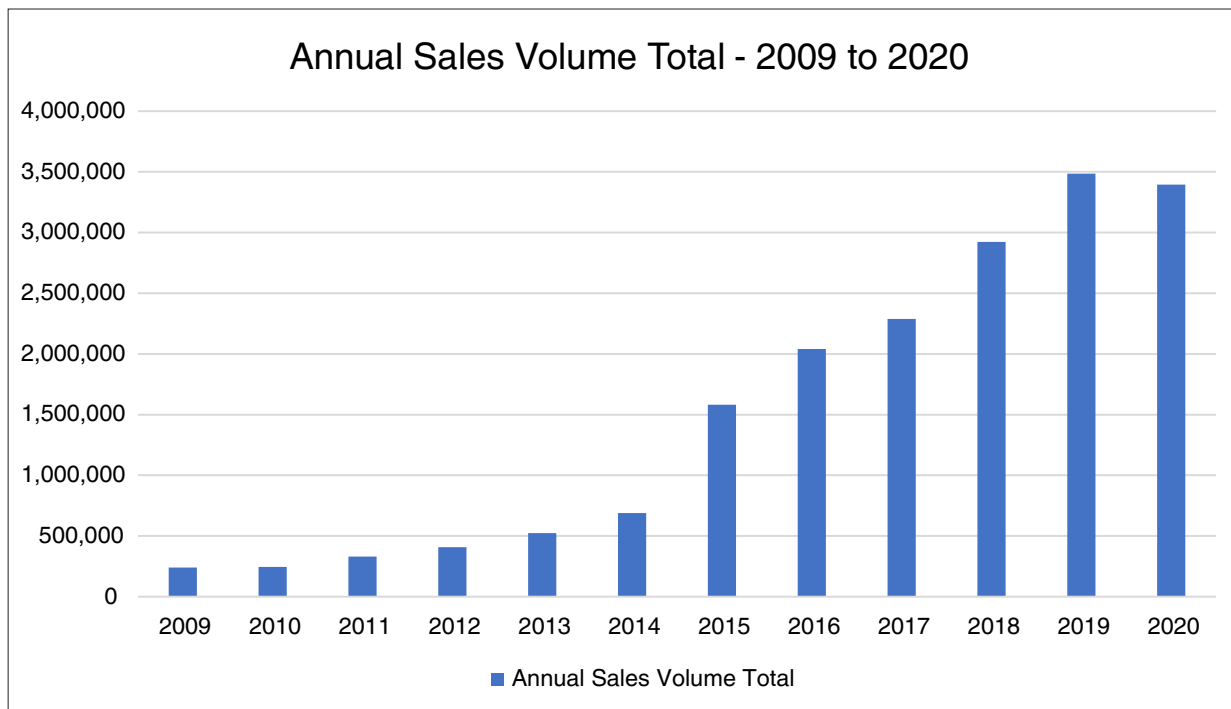
IC-ENC distributes its combined Members' ENC database through companies known as Value Added Resellers (VARs), who are able to offer comprehensive maritime end-use services that bring together various navigational products into one package.

By working closely with our VARs we are able to offer the mariner a choice of services, each incorporating a wide range of ENCs, which are available through a variety of well-known international distribution outlets.

Our current VAR partners:



The graph below shows Sales Volume and Distribution growth of our Members ENCs since 2009. 2020 shows a decline in the sales volumes by 3% when compared to 2019. This represents the first small decrease in our distribution growth for a number of years as vessels continue to meet the challenges of the global pandemic in 2020.



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## ENC Subscriptions

ENCs used by SOLAS vessels for navigation are enabled through subscriptions. There are various subscription options:

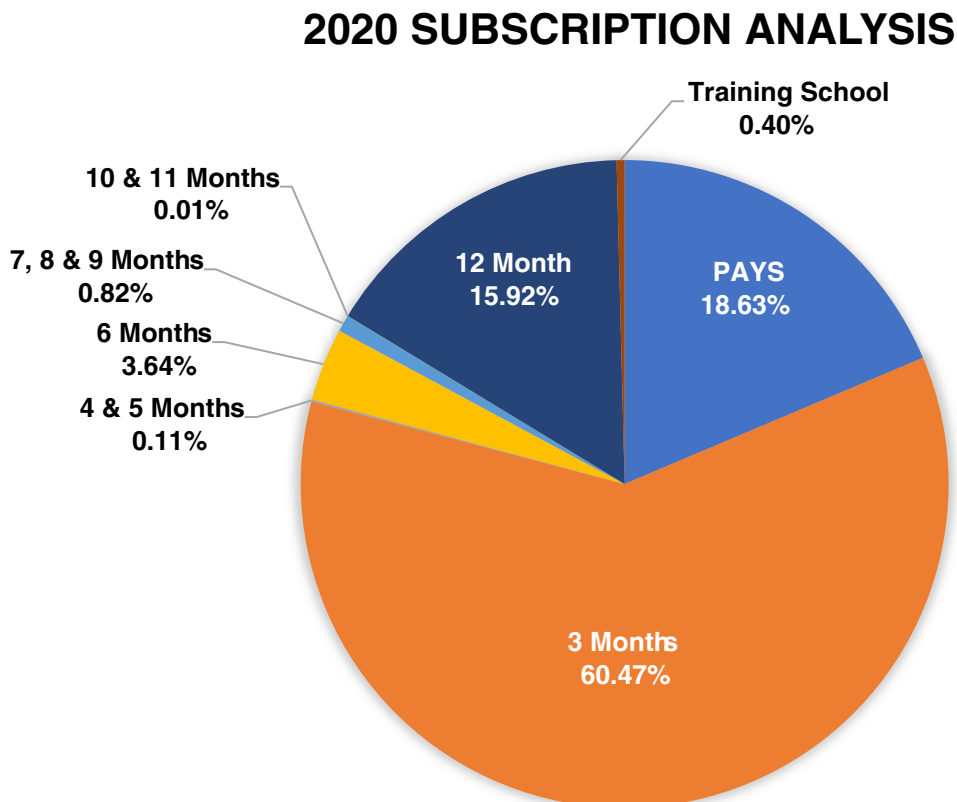
### “Standard” (or pre-paid) Subscription

- 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
- A 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 ENC sales subscriptions. The Subscription Analysis pie chart shows the popularity of shorter-term subscription periods, with PAYS and standard 3-month subscriptions accounting for almost three quarters of all ENC sales during 2020:



2020 shows a continuing increase in the popularity of PAYS usage (up from 15% in 2019) and 3-month standard subscriptions remain by far the most popular. 12-month subscriptions have seen a 7% decrease in 2019, a significant swing from the growth of longer subscription periods seen in 2019 as shipping companies and vessels take advantage of the shorter subscription periods during last year.

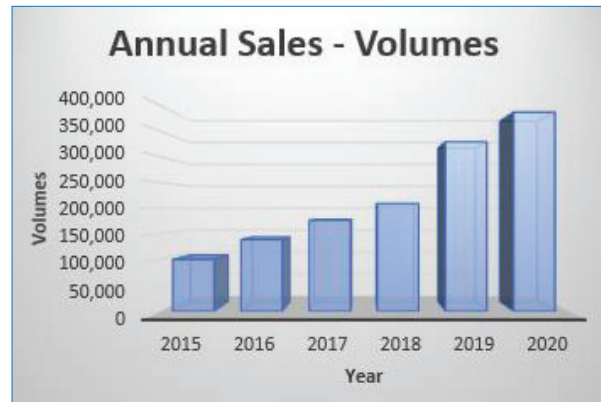
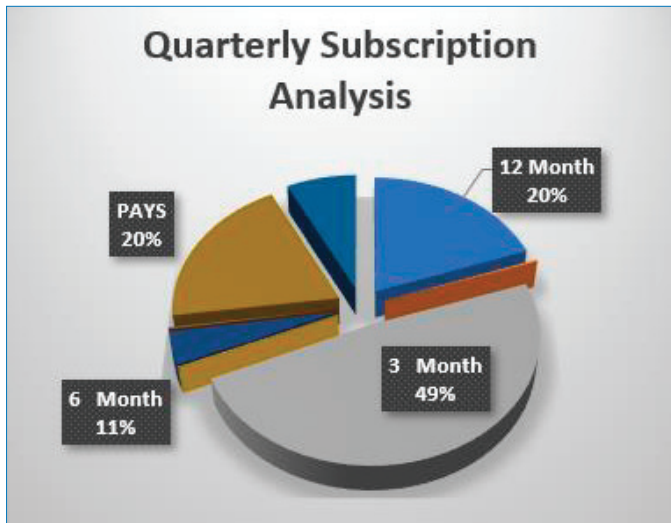


# REVENUE MANAGEMENT

## 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 constantly under review and the team are looking to continuously improve the reports sent to members to add value for all.



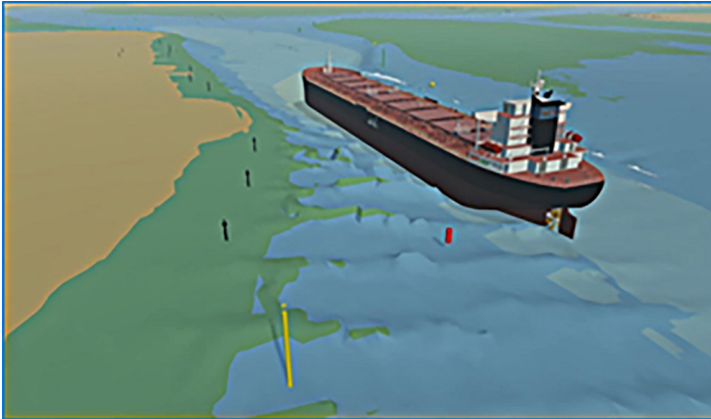
### IC-ENC Financial Model

Throughout 2020 the IC-ENC fixed fee remained at \$0.50 per ENC per 12-month subscription. Shorter subscription periods attract a lower pro-rata fixed fee.

The table below demonstrates the current financial model. It is based upon a fictitious IC-ENC member choosing \$15.00 for its wholesale price. Note that a subscription for 10, 11 and 12 months is the same, which effectively gives a discount for 11 and 12-month subscription periods:

	Subscription Type / Periods														
	3 Month	4 Month	5 Month	6 Month	7 Month	8 Month	9 Month	10 Month	11 Month	12 Month	PAYS Month	Training (3 Month)	Training (6 Month)	Training (12 Month)	
Volume / Factor	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	1	1	0.3	0.15	0.3	0.5	
Member revenue	\$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	
IC-ENC Fee	\$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	
Wholesale Price to VARs	\$4.50	\$6.00	\$7.50	\$9.00	\$10.50	\$12.00	\$13.50	\$15.00	\$15.00	\$15.00	\$4.50	\$2.25	\$4.50	\$7.50	

# S-100 ERA PLANS / 2021-23 WP



BMT Rembrandt Simulation Software

The 2021-23 Work Plan, see IC-ENC CL2020/34, considers a three-year period, and continues IC-ENC's consolidation and efficiency gains from new processes and technology, as well as developing improvements to IC-ENC's existing core services. This includes the establishment of an eLearning Platform for implementation in 2021, ECDIS supply and support, searchable Errors Database, validation service, 6th Technical Conference and

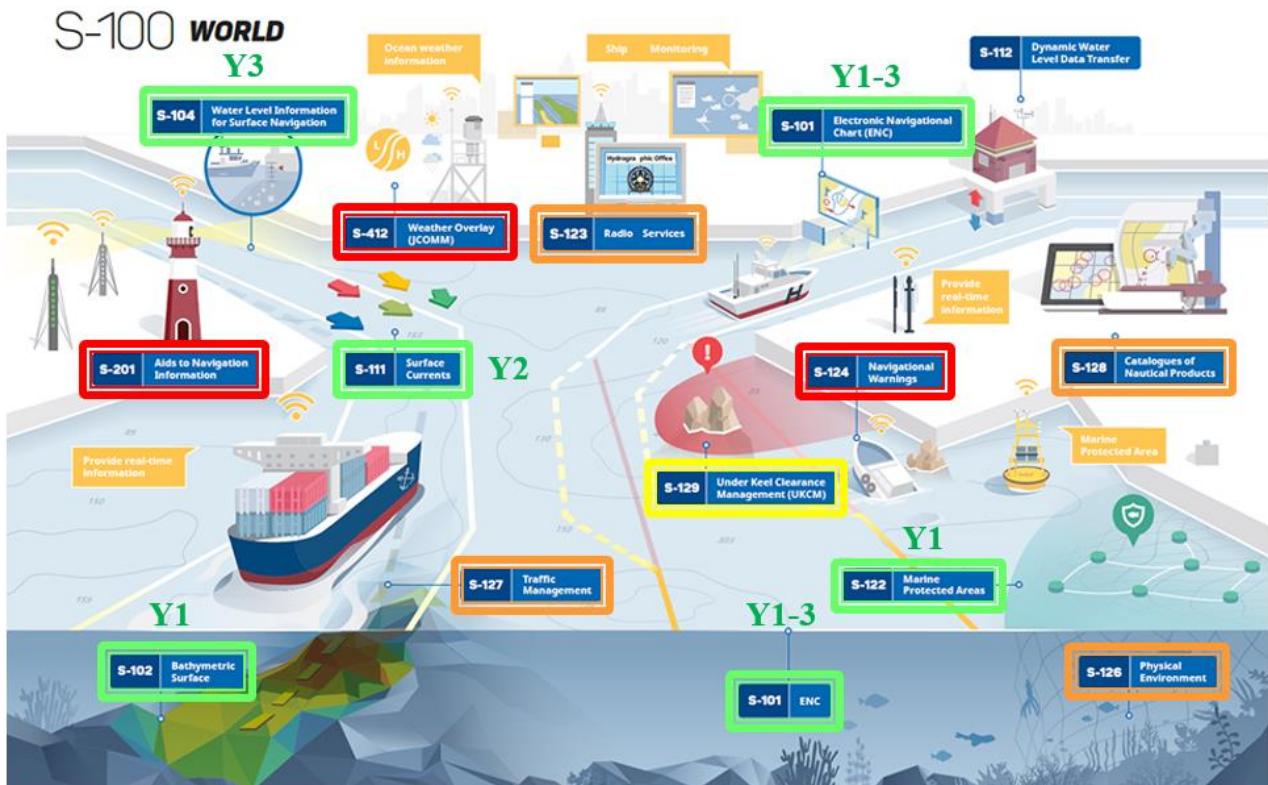
regular focussed virtual events. Fundamentally, this workplan recognises the significant evolution to establish IC-ENC as an organisation which processes more than ENCs, to support the IC-ENC Members in the S-100 era.

Prioritisation of the first generation and next generation IC-ENC S-10x services, has been shaped by Members feedback through User Research with HOs and VARs, and the S-100 Era Services Options paper, and 5th Technical Conference approvals, ensuring that IC-ENC services continue to meet the current and future needs of the Membership.

The first generation IC-ENC S-100 era services to be developed in the 3-year Work Plan are:

<b>Year 1 - 2021</b>	<b>S-102</b>	→	Develop end to end service, data ingest, quality assurance, date output
	<b>S-122</b>	→	Develop end to end service, data ingest, quality assurance, date output
	<b>Conversation Support</b>	→	Define Service Description through TC process and pilot with 2 members
	<b>Data Harmonisation</b>	→	Define Service Description through TC process to develop service
<b>Year 2 - 2022</b>	<b>S-101</b>	→	Discovery and Proof of Concept, modelled on existing ENC principles
	<b>S-111</b>	→	Develop end to end service, data ingest, data assessment, date output
	<b>Conversation Support</b>	→	Further iteration (as S-101 matures) and implementation of service
	<b>Data Harmonisation</b>	→	Further iteration and implementation of service based on HO S-10x production plans
<b>Year 3 - 2023</b>	<b>S-101</b>	→	Trial Service, modelled on existing ENC principles
	<b>S-104</b>	→	Develop end to end service, data ingest, data assessment, date output
	<b>Conversation Support</b>	→	Further iteration (as S-101 matures)
	<b>Data Harmonisation</b>	→	Further iteration of service to include growing number of S-10x services

Looking at the bigger picture with the IHO S-100 World diagram, the diagram below shows both the first generation (in green) and next generation (in orange) IC-ENC S-10x services, established from the Members feedback, with S-129 (in yellow) between first generation and next generation.



Building on the exploratory work in 2020 and the 5th Technical Conference and Steering Committee approved Service concepts, the focus for Year 1 of the 2021-23 Work Plan and Budget is:

- S-102,
- S-122,
- S-101 and Conversion Support,
- Data Harmonisation.

IC-ENC recognises that its members are at different stages of the S-100 journey and this is reflected in the Work Plan. Building on the trusted IC-ENC S-57 ENC service, IC-ENC is committed to making the first generation of S-100 services a success over the next three years for the benefit to our members and the end users.

With the required infrastructure changes during 2021, it is important to note the step change from the existing weekly S-57 ENC service to a more automated throughput of data with improved efficiencies and increased frequency of data release for all IC-ENC services.

IC-ENC will continue to operate its existing governance and finance regimes, based around the Steering Committee, and defined within the Co-operation Arrangement. The COA will evolve during 2021 to incorporate processing of more than ENCs.

Finally, in 2021, IC-ENC will establish an interim S-100 licensing approach, modelled on the existing S-57 ENC principles.

# NON-ECDIS NAVIGATION SERVICE

## Concept

For many years IC-ENC's success has been built on ENC supply to the ECDIS user. However, more recently the IC-ENC membership has recognised the need for a new service from IC-ENC which would make their quality assured navigation data available to new users – those not using ECDIS to navigate. This new service was primarily motivated by IC-ENC membership to support safe navigation in their waters by non-ECDIS craft.

This new Non-ECDIS Navigation Management Service will:

- Make available quality assured navigation data to non-ECDIS craft through a managed service on a weekly basis.
- Use existing IC-ENC principles, processes, and systems as far as possible (build on continued success of the core Distribution service).
- Supply up to date ENC data on a regular basis.
- Use a new distribution chain that includes a transparent appointment process.
- Provide a single source of accessing ENC data in the non-ECDIS market segment, managed by a simple Contract.

## 2020 Service Developments

In January 2020, Mr Matthew (Matt) Millard joined the IC-ENC UK based team to take up the position of Non-ECDIS Navigation Service Manager. Developments have been slower than anticipated due to the impact of Coronavirus on resource within the IC-ENC team, however we are pleased to report that during 2020 we have developed:

- The technical infrastructure to support our members data within the service.
- The technical infrastructure to deliver our members ENC data to appointed companies.
- The technical capability to report service sales through a Business to Business interface and return revenue through the existing revenue management service.
- A series of working practices and policies to support the non-ECDIS Navigation Service post launch.
- A simple service Contract and application process for interested companies.
- Relationships with several companies to gain valuable feedback on the service concepts.

## What does 2021 bring?

This year IC-ENC will be making their first appointments into the service. Interested companies will be offered the opportunity to become part of this exciting new service through an appointment process enabling them to provide innovative products to the non-ECDIS market segment, enhancing safety in our members waters. Although 2020 was a difficult year for many, there is a real drive to build upon the successful service developments from 2020 and provide this exciting service to the market.

# NEW DISTRIBUTION TEAM MEMBER

In January 2021, Mr Thomas (Tom) Mcilwaine joined the IC-ENC UK based team to take up the position of Assistant Distribution Manager.

As part of that role, he will take over responsibility for the Non-ECDIS Navigation Service with a primary focus on maintaining and developing the service through 2021.

Tom has held a variety of roles over his 30-year career with the majority spent at the UK Meteorological Office. Initially working as a weather observer and then weather forecaster, his final role was managing the Data Wholesaling function and overseeing the licensing and provisioning of Met Office data globally. Most recently, over the last 2.5 years Tom worked as a Client Manager for a commercial private weather company and provided SaaS (in the form of an industrial weather API) to a variety of users globally and across multiple market sectors.

Tom has also been the UK Licensing Agent for the European Centre for Medium Range Weather Forecasting (ECMWF) as well as EUMETSAT (European Organisation for the Exploitation of Meteorological Satellites) and managed in excess of 120 commercial licensees during his tenure, building strong relationships with those organisations across Europe and the rest of the world and has an excellent understanding of the sale, licensing and electronic distribution of environmental data into different markets.

## Tom says:

“ I am super excited about joining the IC-ENC Distribution team, particularly at this time, and I look forward to working with you all in the coming months and years. ”

Tom can be contacted directly by emailing:

[thomas.mcilwaine@ic-enc.org](mailto:thomas.mcilwaine@ic-enc.org)



# 2020 FINANCIAL REPORT

Detailed Financial Reports have been provided to IC-ENC Steering Committee throughout the 2020 Financial Year, via Circular Letter. In summary:

2020 (USD)	Approved Budget	Mid Year Re-forecast	Q3 Financial Report to SC	2020 Actual
Total costs	-1,565,819	-1,433,000	-1,125,000	-1,163,442
Total revenue	1,637,000	1,505,000	1,525,000	1,525,684
Extraordinary Settlement	0	0	0	0
IC-ENC Operating Balance (Annual)	71,181	72,000	400,000	362,242
Cumulative Operating Balance	-	-	-	1,819,622
(One off) Production Support fund	-	-	-	450,008

## Costs

There has been a general reduction of activities over 2020 (as a result of Covid and other de-prioritisation of activities as described in the quarterly management reports to SC). Costs are reduced across many lines noting the Covid-19 travel restrictions.

Interest rate on IC-ENC bank account has reduced in year, it now provides a negligible amount of revenue for IC-ENC.

Most of the available budget for S100 developments was used to develop the material for the S100 options paper (published to the SC in July 2020). A new line was introduced at the mid year stage (\$100K) for further S100 planning activity.

A budget line for the ENC Auditing tool of \$130k has been retained in the 2020 budget as a cost to IC-ENC. Although the building of this tool will continue into 2021, we are using an “accrued costs” mechanism, which will be released in stages.

Some previously undeclared cost from 2019 travel were identified and carried forwards to the relevant subject area in the 2020 Budget.

## Revenue

The impact of Covid-19 has been felt in ENC sales volumes. Overall sales volumes when compared to 2019 are minus 5% which sees the steady growth experienced in previous years reversed. The end of year sales growth represents a slightly better than expected performance when compared to the minus 8% forecasted figure at the mid-year review point, but still highlights the unpredictable nature of the market currently.

## Financial position (at end 2020)

The net effect of 2020’s costs and revenue means IC-ENC has a cumulative operating balance of USD 1,819,622 as at end of 2020.

# 2021 - 2023 BUDGET

IC-ENC Steering Committee has approved the 2021 Budget by vote, and approved in principle the 2022-2023 Budget. IC-ENC will continue with the formal annual financial approval process:

Core Services				
	2021	2022	2023	Comments
Total costs	-2,081,000	-1,985,000	-2,022,000	Costs to maintain and enhance IC-ENC's existing core services (S57 ENC's) and develop new services for S-100 era products
Total IC-ENC revenue (fixed fee \$0.50)	1,530,000	1,590,000	1,660,000	Prudent revenue forecast, assumes slow Covid-19 recovery. ENC fixed fee \$0.50.
Annual Balance	-551,000	-395,000	-362,000	
<b>Cumulative Balance</b>	<b>1,268,622</b>	<b>873,622</b>	<b>511,622</b>	Start point of USD 1,819,662 at end 2020

Production Support Part B				
	2021	2022	2023	Comments
One off funding line	0	0	0	The new funding that is available for IC-ENC's Production Support activities was discussed at the SC online sessions. IC-ENC's Production Support service will be supplemented by activities funded from the new budget line of USD450k. Further analysis on this continues, with communication to follow to the Steering Committee in Q1/2021.
<b>Balance</b>	<b>450,000</b>	<b>450,000</b>	<b>450,000</b>	

Non-ECDIS navigation				
	2021	2022	2023	Comments
<b>Total costs</b>	-88,842	-126,842	-131,842	
<b>IC-ENC cost recovery Revenue</b>	163,000	105,000	100,000	With the 'holistic funding' contribution reducing to zero over the period
<b>Annual Balance</b>	74,158	-21,842	-31,842	With further years predicted to return a positive annual balance
<b>Cumulative Balance</b>	<b>154,784</b>	<b>132,942</b>	<b>101,100</b>	Start point of USD 80,626 at end 2020

# IC-ENC MEMBERSHIP AND FOLIO STATUS: Week 01/21

MEMBER	Joined	Wk1 2017	Wk1 2018	Wk1 2019	Wk1 2020	Wk1 2021	2020		2020 Issued			
							Net Change	% Change	New cell	New Edition	Update	Canc. Update
Argentina	2005	72	75	78	80	80	0	0	0	11	72	0
Australia	2005	843	849	849	848	852	4	0.5	161	113	1064	157
Bangladesh	2018	-	-	0	11	11	0	0	0	0	14	0
Belgium	2002	7	7	7	7	7	0	0	0	12	46	0
Bahrain	2002	8	8	8	8	8	0	0	0	0	4	0
Brazil	2008	145	153	156	157	158	1	+0.6	2	49	128	1
Chile	2004	253	269	277	293	303	10	+3.4	10	14	89	0
Colombia	2010	61	61	61	64	66	2	+3.1	2	11	126	0
Cuba	2013	23	36	44	45	51	6	+13.3	4	5	3	0
Germany	2002	160	164	179	232	250	18	+7.8	69	125	659	51
Denmark	2013	254	276	345	369	417	48	+13.0	52	289	656	3
Ecuador	2008	24	40	71	78	80	2	+2.5	7	15	2	5
Egypt	2014	21	23	27	32	38	6	+18.8	6	3	36	0
Spain	2002	269	279	295	305	311	6	+2.0	6	34	404	0
United Kingdom	2002	1578	1665	1675	1659	1656	-3	-0.2	14	628	2510	17
Greece	2003	300	301	301	302	304	2	+0.7	2	8	135	0
Israel	2015	0	0	4	8	19	11	+137.5	11	2	3	0
Iceland	2005	71	72	72	73	73	0	0	0	9	12	0
Italy	2014	259	262	263	263	263	0	0	0	76	683	0
Malta	2016	5	5	5	6	7	1	+16.7	1	1	10	0
Mexico	2005	131	135	146	148	147	-1	-0.7	13	2	26	13
Malaysia	2014	85	88	93	98	102	4	+4.1	5	27	78	3
Mozambique	2004	0	0	0	0	0	0	0	0	0	0	0
Nigeria	2019	-	-	-	0	3	3	n/a	0	1	1	0
Netherlands	2002	139	162	175	171	167	-5	-2.9	19	54	374	23
New Zealand	2008	273	300	305	306	311	5	1.6	10	45	117	5
Oman	2015	0	0	0	16	17	1	+6.3	1	0	20	0
Panama - PCA	2015	7	7	7	7	10	3	+42.9	3	3	7	0
Panama - PMA	2015	9	10	10	10	10	0	0	0	5	7	0
Peru	2006	125	125	128	129	129	0	0	1	6	74	1
Philippines	2014	17	19	24	28	37	9	+32.1	9	1	0	0
Pakistan	2005	7	7	7	7	7	0	0	0	0	14	0
Portugal	2002	90	94	96	97	97	0	0	0	7	113	0
Romania	2013	6	8	13	16	19	3	+18.8	3	9	27	0
Russian Fed	2005	488	520	558	570	585	15	+2.6	19	57	284	4
Saudi Arabia	2018								First ENC release expected 2021			
Solomon Is	2017	0	41	41	41	41	0	0	0	0	24	0
Slovenia	2014	1	1	1	1	1	0	0	0	2	4	0
Suriname	2014	4	7	7	7	7	0	0	0	1	23	0
Tunisia	2016	6	8	11	13	15	2	+15.4	2	2	17	0
Turkey	2004	268	270	271	274	277	3	+1.1	3	48	198	0
United States	2016	1196	1231	1257	1307	1655	348	+26.6	406	762	3415	62
Uruguay	2011	27	27	30	38	40	2	+5.3	3	9	26	1
Venezuela	2006	41	59	88	89	94	5	+5.6	5	6	2	0
South Africa	2002	57	57	57	57	57	0	0	0	36	57	0
<b>TOTAL</b>		<b>7330</b>	<b>7721</b>	<b>8042</b>	<b>8270</b>	<b>8782</b>	<b>512</b>	<b>+6.2</b>	<b>850</b>	<b>2488</b>	<b>11563</b>	<b>345</b>

\*Niue and Tonga coded cells are produced by LINZ \*Papua New Guinea coded cells are produced by AHS

Please note that there is difference between the value of the Net change and the net of the 2020 New cells and cancellation updates due to new cells and cancellations being released within Week 01 of 2020 and 2021.





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

ic-enc

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