



2019 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'm more than pleased to present this year's annual IC-ENC report.

It has been an excellent year for IC-ENC and its members. As a not-for profit organisation, IC-ENC has become more effective and more efficient.

IC-ENC had become more effective as the quality of our four core services has improved, most notably in the way we are able to meet our KPIs, but also in the supporting activities such as VAR auditing and risk management. IC-ENC has become more effective as the costs have gone down again. All this has not gone unnoticed. In 2019, IC-ENC welcomed two new members, the Kingdom of Saudi Arabia and Nigeria, and is now 45 members strong.



Another important milestone last year was the endorsement of IC-ENC's updated governance arrangements. Our Cooperation Arrangement now balances the needs of the members for coordinating and harmonizing the production and distribution of their ENC's with the business imperatives of providing a service. This updated arrangement provides also the baseline to meet the challenges of the next decade; the decade of S-100 implementation.

In this spirit IC-ENC has rounded a corner regarding its future ambitions. A new Non-ECDIS Navigation service is being developed. Also, the groundwork for S1XX has started with members participating in working groups on a voluntary basis. This, together with a dedicated funding mechanism for the new service puts IC-ENC in a good position so that shipping can navigate safely, efficiently and confidently, whilst ensuring other maritime users are using the same approved data in our Hydro-spatial future.

In conclusion, I wish to express my gratitude to all at IC-ENC, at HQ and the regional Offices, who made 2019 another excellent year for its members and mariners.

A handwritten signature in black ink, appearing to read 'M.C.J. van der Donck'. The signature is stylized and written over a light blue horizontal line.

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

GENERAL MANAGER'S INTRODUCTION

Welcome to IC-ENC's 2019 Annual Report

IC-ENC members continue to produce and maintain about half of the world's ENC's, and so it has been another busy and successful year for IC-ENC – here in the United Kingdom and at our regional office sites in Australia, Brazil and the United States.

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

Production Support

Validation training courses have been delivered, firstly in Italy and then in Egypt. Delivering our first course in Africa means that IC-ENC training courses have now been delivered on 5 continents and to 127 delegates in total. The fourth Technical Conference, held in Panama, was well attended and provided a forum to coordinate best practice, in subjects such as High Density ENC's and ENC re-scheming, as well as a look ahead to the new S-100 standards. New releases of the Errors Database continue to be provided and new versions of ENC validation software have been tested which support the IHO's new S-58 standard.

Validation

Overall, a similar number of validations has been conducted this year, totalling nearly 15,000. The timeliness performance of the international team has been excellent, with several months achieving 100% of jobs in the allocated duration. For base cell validations, the majority of reports contained recommended improvement actions, and over 300 validations identified issues deemed critical to safe navigation.

Distribution & Revenue Management

Over \$44m 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 21st time in July, and finalised the revision of the IC-ENC Cooperation Arrangement. It made a number of decisions to allow the development of S-100 era services to begin and a number of members indicated their intent to support the new non-ECDIS Navigation service.

Finances

The financial year showed IC-ENC costs to be below forecast, and revenue ahead of budget. This combination means IC-ENC carries forward a significant operating balance to the next financial year.

The year ahead

The 2020 Work Plan describes how IC-ENC will continue to provide its core 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 SUMMARY

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 | 3. Distribution |
| 2. Independent ENC Validation | 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

Ref	Theme	Aim/Objective
1	S57 ENC Production Support	More, and better, ENC's are available to ECDIS navigators.
2	S57 ENC Validation Service	Ensure the quality of every ENC entering the IC-ENC folio.
3	S57 ENC Distribution Services (ECDIS)	IC-ENC folio is available to ECDIS vessels
4	Revenue Management	Use of members ENC's is correctly reported, paid by VARs and returned to IC-ENC members
5	Governance, finance and business functions	IC-ENC's governance, finance and business functions remain fit for purpose
6	Membership, and IHO community	Support the members and the rest of the IHO community
7	IC-ENC Structure and the team	To have an effective organisational structure (regional offices) and team
8	Non-ECDIS navigation management service	For non-ECDIS vessels to have access to same information as ECDIS vessels
9	S101 ENC services	Develop service principles for S101 ENC's, including conversion.
10	S102 Gridded Bathymetry	IC-ENC S102 service proof of concept to be demonstrated.
11	S104 Water Level & S111 Surface Currents	Develop proposals for RENC service options (under WENS).
12	S129 Under Keel Clearance	
13	S122 Marine Protected Areas	
14	S411 Sea Ice & S412 Weather	
15	S100-era distribution model	To develop a user friendly RENC S100-era licensing and distribution model(s)

STEERING COMMITTEE

IC-ENC held the 21st Steering Committee meeting in July 2019. 44 delegates attended, representing 34 (of the 45) IC-ENC members, and the IHO-Secretariat as an Observer. This was a record level of attendance, and the excellent support from the South African HO team, as hosts, was appreciated.

The Steering Committee reviewed the operation performance and progress of IC-ENC, noting its satisfaction at the level of service delivery under the four core service themes, including the value of the Technical Conference which is now proving itself. Proposed changes to the Cooperation Arrangement were discussed and endorsed.

IC-ENC's finances were analysed, concluding that the fixed fee of \$0.50 remains cost effective for HO members and provides sufficient funding for IC-ENC operations. A new financial model was approved, termed 'holistic funding' which will give IC-ENC and the members greater flexibility for new service developments as we enter the S100 age.

The Steering Committee discussed IC-ENC's distribution policies, requesting that IC-ENC considers how to introduce a proactive auditing regime, to give increased assurances of operations and finances.

The meeting considered the proposal for IC-ENC to develop a new, non-core, service aimed at supporting safe navigation of vessels not using ECDIS. There was a good level of support from the HOs on this development, and post meeting more than half of the IC-ENC members committed to participating in this.

A good portion of the meeting was devoted to the S100 era. There were many different views raised by the large group of HOs, with different opinions regarding the requirements being put onto HOs, the timeline for change, the role and purpose of their quality assurance and distribution services. It was clear that some HOs amongst the group are close to (or already) producing some S100 data sets, and so now IC-ENC needs to develop options for support services, for Steering Committee review/decisions.

The next meeting, SC22 will be held in Bristol, UK, in July 2020.



PRODUCTION SUPPORT

Technical Conference 04



IC-ENC held its third Technical Conference (TC04) from the 22nd to 24th of October 2019 in Panama City, Panama. The event continued to focus on the harmonisation of ENC production practices and allowing members to shape the current and future services of IC-ENC. Representation continued to be strong with 38 delegates from 30 ENC producers. Two industry representatives also attended for part of the conference. The event benefited from the excellent facilities provided by the Panama Canal Authority including a visit to the Cocoli Locks. Key areas of discussion and progress were as follows;

- High density bathymetry ENC's / Overlays – sharing of experiences
- Inland ENC's – Belgium presented on their Inland ENC production
- The S100-era future e-navigation products/services
- ENC production including S-101 and gridded schemes

PRODUCTION SUPPORT - TRAINING

Two Bronze level Validation Training courses were delivered during 2019 to 22 delegates from 12 IC-ENC members this included 2 new members. Feedback on the refreshed content introduced in 2018 remains positive and this has been further extended with additional exercises using dedicated training datasets. The S-100 module included conversion from S-57 ENC to S-101 and in the opposite direction.



Attendees at Training Course 19_1 – Genoa, Italy



Attendees at Training Course 19_2 Alexandria, Egypt

Planning is now underway to deliver 3 courses during 2020, work will also seek to make existing content available to members via an eLearning portal so that enhanced and updated modules can be used for refresher training.

VALIDATOR EXCHANGE

In July 2019 IC-ENC organised a Validator Exchange between IC-ENC HQ and IC-ENC Latin America with the aim to share knowledge and build on the strong working relationship between the two offices; Aaran Champion from IC-ENC HQ spent two weeks working alongside the IC-ENC Latin America staff. Through the two-week exchange Aaran was able to provide training and support to the IC-ENC Latin America Staff, particularly in the validation of re-schemes and refresher training for the staff members who had recently returned to the office. In addition, the exchange provided opportunities for collaborative working and knowledge sharing between the validation teams not just for the Latin America but also for the HQ visitor in gaining regional specific familiarisation. The exchange demonstrated the benefits of the cloud based working environment for IC-ENC enabling staff to maintain IC-ENC services from any of the IC-ENC Offices.



Aaran said:

“The exchange provided a great opportunity to share knowledge between our offices, providing an opportunity for face-to-face discussion, knowledge sharing and providing an opportunity to understand the challenges faced by the regional office”

Isaias (IC-ENC LA) commented:

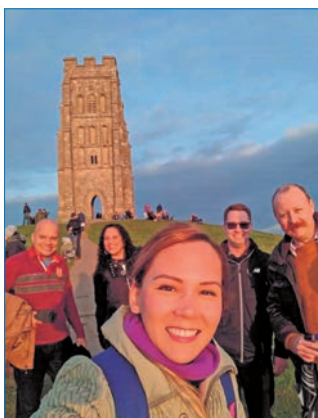
“The presence of Aaran with us was very beneficial to IC-ENC LA; we were able to exchange experiences and increase our knowledge about ENC’s validation.”

The success of the validator exchange demonstrates the positive impact on the validation team as they work together to support the IC-ENC Core Validation Service, IC-ENC intends to replicate the exchange process in 2020, providing this opportunity to other IC-ENC Regional Offices.

Validator Visit to IC-ENC HQ

Ongoing training is being provided to the IC-ENC Validation team to ensure all members are certified to competent validator status, during 2019 two trainee validators progressed to competent validator status, with a third progressing to the final stages of validation training.

In November 2019 the IC-ENC Validators from each office visited IC-ENC HQ for two weeks to promote collaborative working and knowledge sharing. In addition, whilst the validation staff were in IC-ENC HQ training was provided on new validation tools and processes to enhance the capabilities of the validation team. The IC-ENC validators were introduced to the S-100 standards as a familiarisation before IC-ENC explores S-100 services through 2020. This visit provided an opportunity for the new IC-ENC management to meet all validation staff.



Bruna said:

“It was good to be back in Taunton and working with the whole IC-ENC team, and to learn new tips and validation software”

Ana said:

“The November training with all validators was extremely important because we could share experience about validations, tips for the validation tools and learn from the other validators. It was good to get the expert knowledge from the HQ staff”

Adele said:

“It was really good to finally meet our colleagues from the ROs and to be able to get to know them, share thoughts and ideas and understand how each RO validates”

CORE SERVICES

Staff Changes in IC-ENC Validation Team

During 2019, the IC-ENC HQ validation team moved into the UKHO new building. We are able to work much closer to our UKHO colleagues.

2019 has been a year of temporary departures with Adele Brewster leaving for a UKHO post at the end of May, however returning as an IC-ENC data validator in October and Bruna Pinheiro completing her DHN Sergeant course during January and June returning to IC-ENC after completion.

IC-ENC Validation

The IC-ENC Validation Team conducted 14,687 validations during 2019. This was broadly similar to the volume conducted in 2018 and 2017. Although the totals are the same there has been a significant change from the volume of New Editions received decreasing as Update validations have increased. There have been also several re-scheme programs running through this year which has required coordination of New cells, Cancellation updates and clipped New editions.

The sustained improvement in the timeliness of validations from 2018 continued through 2019, 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	11,775	2,400	512	14,687
Number of validations returned for Improvement Action Before Release	216	81	33	330
Percentage (%) of Validations (2018 figures in brackets)	1.8 (1.7)	3.4 (3.5)	6.4 (16.5)	2.2 (2.7)

New Data Releases

During 2019, Nigeria and the Kingdom of Saudi Arabia joined IC-ENC bringing the number of IC-ENC members to 45. New ENC data was released for the first time by Bangladesh and Oman, and at the end of 2019 nearly 8270 ENC's are included in the IC-ENC folio. Further details about the make up of the ENC Folio are provided in the table at the end of this report.

Weekly files

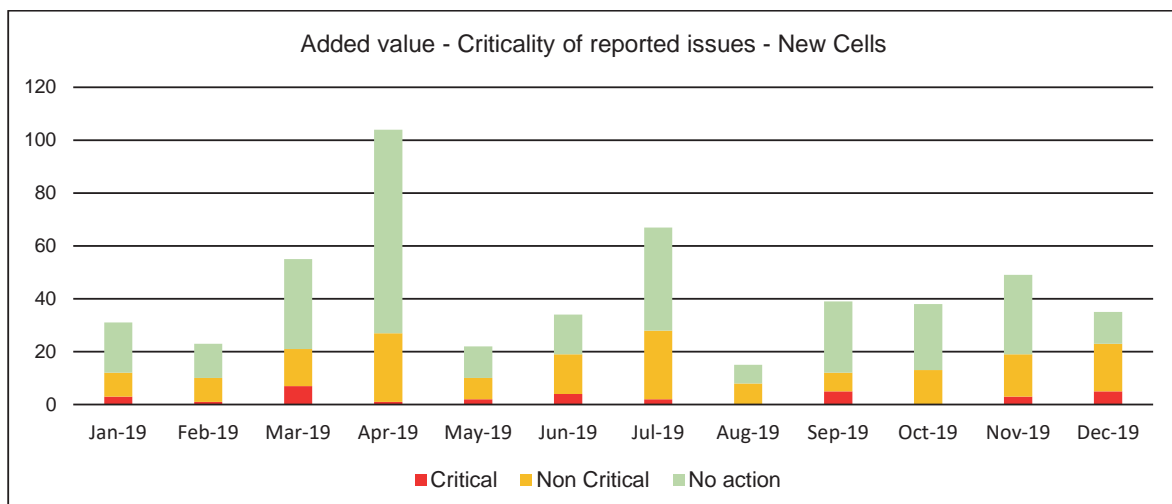
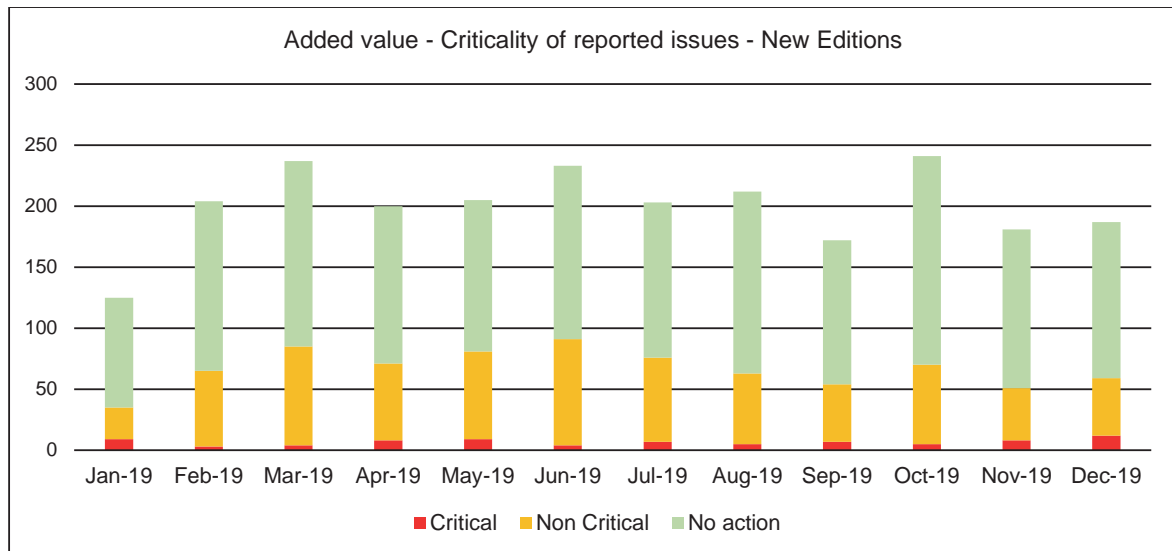
The average number of ENC files included in IC-ENC's weekly releases to the Value Added Resellers was 277 files. This is very similar to the 2017 and 2018 figures. There has been an increase in Updates and a corresponding decrease in New Editions:

	Minimum	Maximum	2019 Average	2018 Average	2017 Average	2016 Average	2015 Average
Updates	150	320	223	201	184	137	122
New Editions	22	64	45	64	86	39	30
New Cells	0	67	9	8	9	6	8
Combined		277	273	279	182	160	

ENC Validation feedback

IC-ENC continues to monitor the types of feedback comment made in the validation reports. In 2019, over 4700 individual ENCs have been updated. IC-ENC have reported feedback on 801 occasions in 2019. 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 2019 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.

In addition to validation tools, Errors reported in ECDIS software are included. In the future IC-ENC hopes to expand the Errors Database further to cover errors reported in CARIS and Esri validation tools.

<u>SOFTWARE</u>	7Cs Analyzer (V4.0.0)		
<u>ERROR</u>	AllCurvesMasked]		
<u>EXAMPLE</u>	AllCurvesMasked : Warning 1		
<u>EXPLANATION</u>	All of the edges around an area object are masked.		
<u>USER IMPACT</u>	The boundary of the object will not be visible in an ECDIS.		
<u>DESCRIPTION</u>	HO TO CORRECT:If the boundaries of an object, whose limits are contained within the limits of the cell, should be displayed. ACCEPT:If it is not necessary to show the boundaries of an object, or the boundaries of an object are relatively arbitrary an		
<u>REQ ACTION</u>	If it is necessary to show the edge of object, the mask of that edge should be removed.		
<u>S57 REFERENCE</u>	Logical Consistency	<u>S58 CHECK</u>	71a W:E
<u>CROSS REF</u>	LG0015: (T0071)		

An example entry from the IC-ENC Errors Database.

Regular releases of the Errors Database have continued during 2019 including a large number of new errors to reflect changes in the latest version of 7Cs Analyzer. The new 7Cs Analyzer software has renamed all errors so corresponding new errors have been added to the Errors Database. Notably this release also has initial S-101 support and the major changes mean that the tool will be extended to support the validation of other S-100 datasets. IC-ENC intends to implement this new tool early in 2020.

Release Date	Software Change
20190104	-
20190215	Analyzer 3.6.1
20190531	-
20191129	dKart Inspector 6.4.0

DISTRIBUTION

ENC Sales

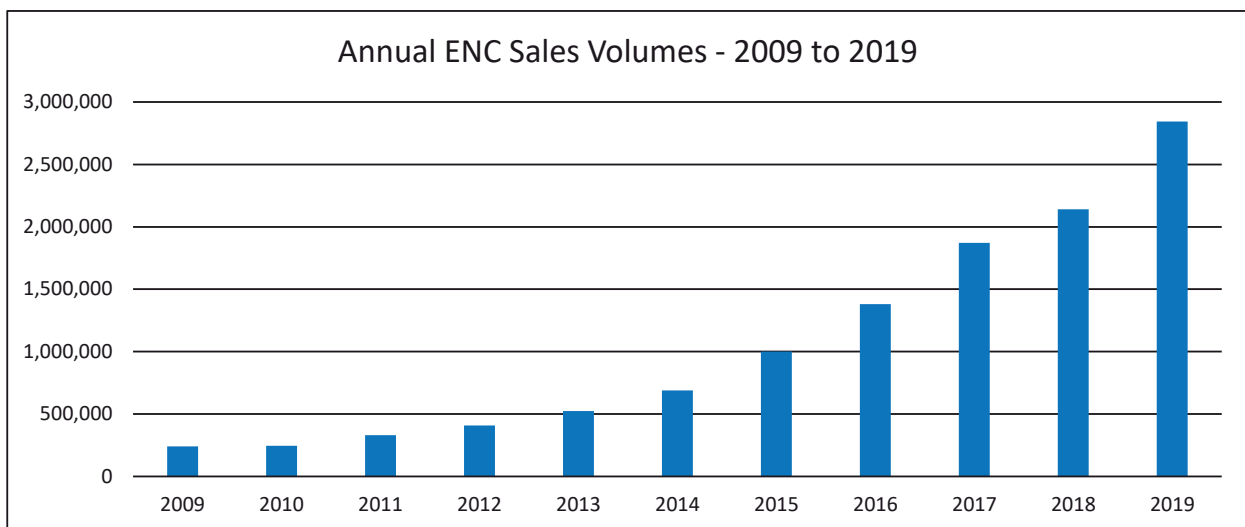
IC-ENC distributes its combined Members' ENC database through companies known as Value Added Resellers (VARs), who are able to offer comprehensive maritime end-user services that bring together various navigational products into one package.

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, with 2019 showing an increase of 33% over 2018.



ENC Subscriptions

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

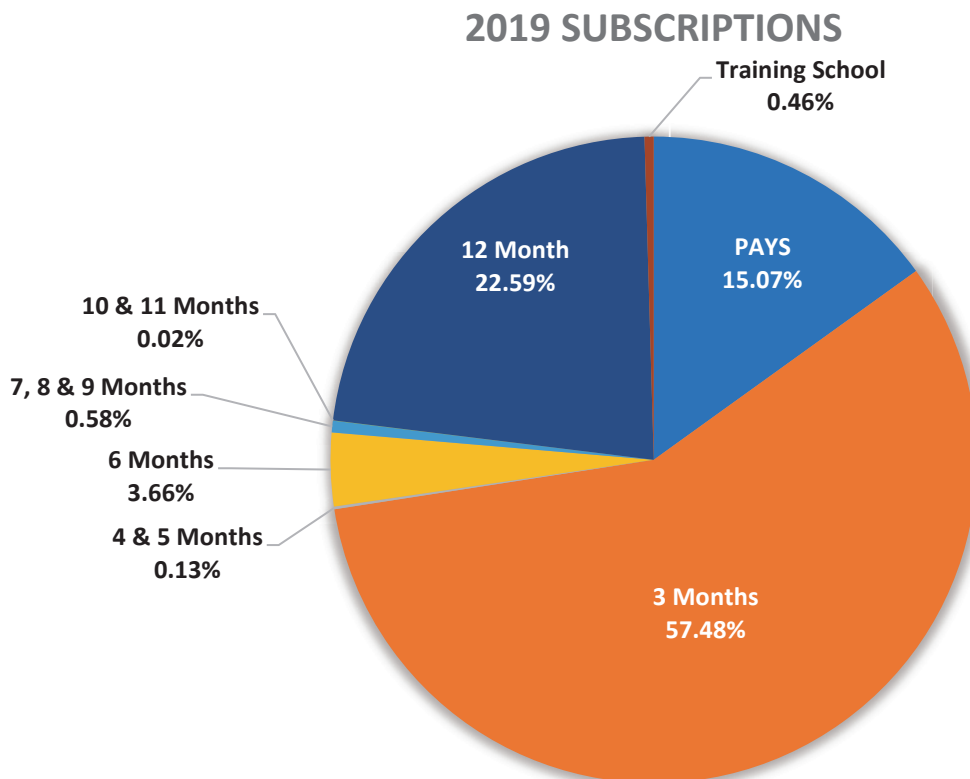
“Standard” (or pre-paid) Subscription

- 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 2019:



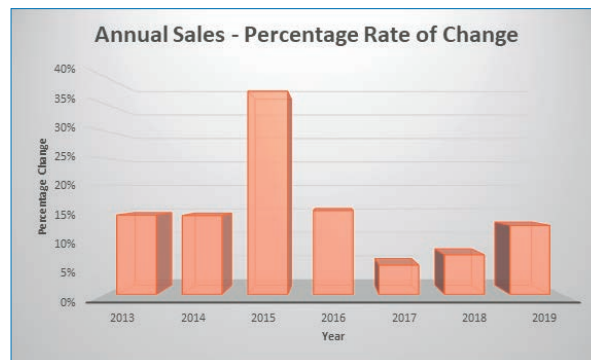
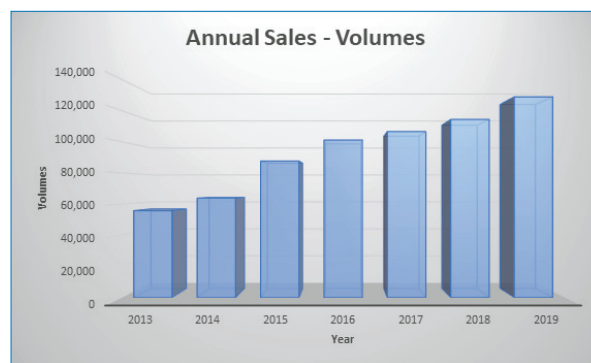
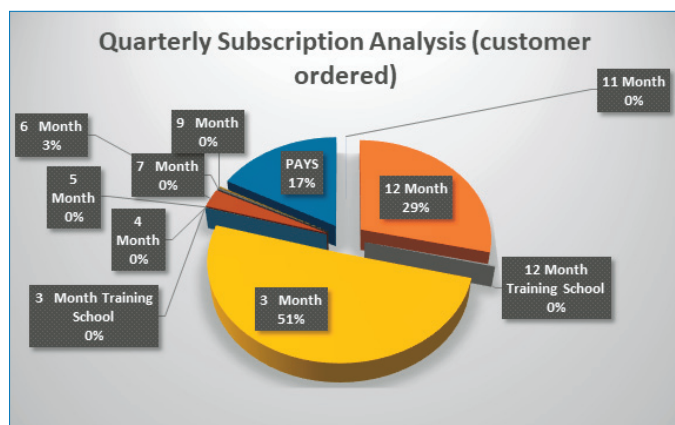
The 2019 period shows a continuing increase in the popularity of PAYS usage (up from 14% in 2018). 3-month standard subscriptions remain by far the most popular, although 12-month subscriptions have seen a 6% increase on 2018 as shipping companies and vessels take advantage of the discount that comes with having the longest subscription period.

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.



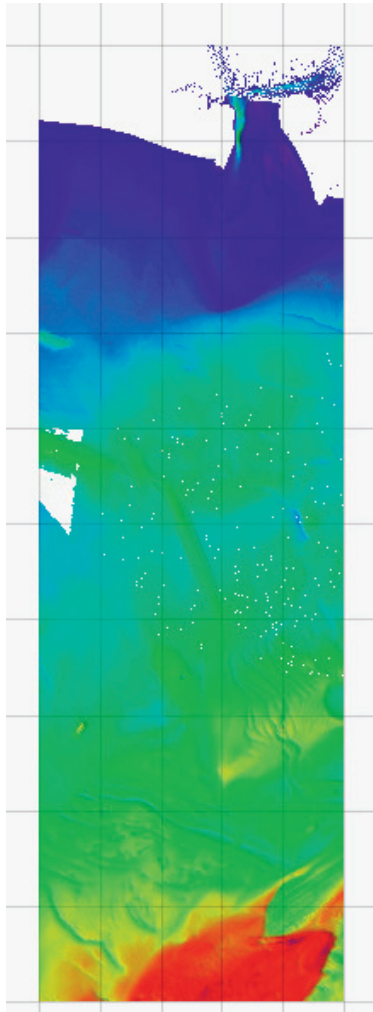
IC-ENC Financial Model

Throughout 2019 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 / 2020 WP



The 2020 Work Plan 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 delivery of training courses, the 5th Technical Conference, ECDIS supply and support, Errors Database and validation service.

IC-ENC will continue to operate its existing governance and finance regimes, based around the Steering Committee and defined within the Cooperation Arrangement.

Looking to the future, scoping work at the start of 2020 will develop costed proposals to the Steering Committee in July. These will consider the S100-era future services. The IHO/HO/RENC environment is changing. We are entering the IHO's S100 implementation decade. It can be expected that HOs will need to produce new S100-era datasets, and RENCs will be expected to process and distribute S100-era datasets.

IC-ENC's members are at varying states of progress with S100-era data production, as identified via CL2019/17. IC-ENC has developed small Working Groups containing those 'near term' producers, see IC-ENC CL2019/23. These WGs will be used to develop RENC service concepts, and IC-ENC will then develop proposals for consideration at IC-ENC Steering Committee 22.

RENC service concepts and proposals to be developed are:

S101 ENCs	Develop service principles for S101 ENCs
ENC Conversion	Understand the feasibility and desirability of an IC-ENC ENC conversion service
S102 Gridded Bathymetry	RENC S102 proof of service concept demonstrated at IHO Assembly (April 2020), present service plan to SC22 (June 2020)
S104 Water Level, S111 Surface Currents, S129 Under Keel Clearance, S411 Sea Ice, S412 Weather.	Develop proposals for RENC service options (these are the WENS product specifications, along with S101 and S102). This has the potential to increase the number/types of organisations IC-ENC engages with.
S100-era distribution	A new S100-era distribution/licensing model will be developed. It will consider ECDIS navigation, non-ECDIS navigation, shore-based navigation and non-navigation users.

NEW NON-ECDIS NAVIGATION MANAGEMENT SERVICE

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.
- Use existing IC-ENC principles, processes and systems as far as possible (build on continued success of the core service).
- Supply up to date ENC data on a regular basis.
- Use a new distribution chain that includes a transparent appointment process.

So far, over half of the IC-ENC members have confirmed their participation in this new service.

Our efforts to develop the new service will continue in earnest in 2020, and have started with the appointment of a Service Manager.



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.

Matt has held a variety of roles within UKHO since 2007. Most recently, over the last 6 years Matt has operated as an Account Manager within the Intellectual Property team and provided a licensing service to the users of digital and analogue material in commercial products and services. Matt has managed in excess of 100 commercial licensees during this 6-year period, building strong relationships with those organisations across Europe and the rest of the world and has an excellent understanding of the licensing of data to navigational and non-navigational markets.

Matt says:

"I am very excited by the prospect of 'owning' this new IC-ENC service and working internationally with you all, the membership. This is a very exciting opportunity for IC-ENC to support safe navigation in new markets. I look forward to developing and launching this new service in the future."

Matt can be contacted directly by emailing:

matthew.millard@ic-enc.org

2019 FINANCIAL ACCOUNTS

Work stream	Approved Budget	Mid-year reforecast	Actual	Comments
Exchange Rate GBP to USD	1.4	1.35	1.27	Actual average significantly lower than budget forecast. This accounts for total budget variance of \$108,000 (underspend).
1. Production Support core service	-253,000	-214,000	-160,494	2 training courses delivered not 3. Travel and accommodation for these courses, and for Technical Conference 04 was less than forecast. ECDIS supply to members \$40k cost against budget of \$60k.
2. ENC Validation core service	-104,000	-97,000	-57,923	Actual costs are predominantly for the COTS validation software licenses. The work that has been accomplished has primarily been achieved with internal/existing IC-ENC resource, not incurring additional third party cost.
3. ENC Distribution core service	-32,000	-32,000	-3,000	The underspend is a result of no third party activity regarding VAR auditing in 2019, effort was made under internal resources with 2020 Work Plan lines to engage a third party to support this work and other VAR assurance activity.
4. Revenue Management core service	0	-10,000	-17,857	New cost added at midyear forecast to scope options for new VAR sales Business to Business system. The overspend on this budget line is a result of the unforecast SAP work to implement the holistic funding principle approved by SC after SC21.
5. Governance and business functions	-217,320	-224,000	-217,352	The SC21 event costs were higher than forecast (predominantly as a result of cost of air travel) however this was countered by reduced costs in other work lines.
6. Finances	100,000	100,000	283,881	This is the net balance of banking costs and interest earned, +\$283k is a very significant cost recovery contribution towards the IC-ENC budget.
7. Membership and ENC coverage	-16,000	-9,500	-4,258	Reduced number of outbound member visits conducted.
8. IC-ENC Global Operating Structure, including the Team	-798,685	-691,000	-636,321	UK office staff cost forecast reduced (gapped posts), forecasted use of overtime reduced. Reduced non-validation training forecast.
9. Working rels with other orgs	-9,000	-8,000	-7,069	Costs in line with forecast.
10. Information Technology	-229,600	-165,000	-152,619	\$56k was removed at the mid year reforecast for Validation software (now only included in the Validation costs line).
11. Leverage UKHO systems	0	0	0	No cost to the IC-ENC budget.
12. Wider use of ENCs	-10,000	-9,713	-9,713	Business Analyst and other UKHO SME costs to contribute to new service concept paper as presented at SC21.
13. Future ENC Standard S101	-10,000	-10,000	0	Preparatory work has begun for S101 service exploration but under internal resource (IC-ENC staff time) in 2019.
14. Future support and services	-30,000	-30,000	-3,823	Preparatory work has begun for S10x service exploration but under internal resource (IC-ENC staff time) in 2019.
UKHO +3% on certain IC-ENC costs		-15,614	-14,308	Following clarification from the UK government MOD Policy team regarding this charge.
TOTAL COSTS	-1,609,605	-1,415,827	-1,000,857	
IC-ENC Revenue				
Revenue: Fixed fee revenue, plus PAYS Planning fee	1,585,853	1,576,152	1,712,108	Fixed fee remained \$0.50 for all of 2019 for 12 month subscriptions, reduced pro rata e.g. \$0.15 for three month subscriptions.
IC-ENC Cumulative Balance (at start 2019)	746,129	746,129	746,129	
IC-ENC Financial Position				
2019 Annual Balance	-23,752	160,325	711,251	Annual Revenue minus Annual costs
IC-ENC Cumulative Balance (at end 2019)	722,377	906,454	1,457,380	

IC-ENC 2020 CORE SERVICES BUDGET

Theme CORE	USD	2020 Budget Summary Comments
S57 ENC Production Support	-201,000	Achieved through training and technical support. 3 x Validation training courses (Brazil, Malaysia, Spain), greater use of e-learning. 5th Technical Conference. Errors Database maintenance and access by members. ECDIS Software supply/support to members. Inbound/outbound support visits. Responsive remote support (online, phone).
S57 ENC Validation Service	-163,800	Achieved by validating every ENC file received, recommending improvements based on user impact. Swifter validation times per ENC and improved frequency of release of data.
S57 ENC Distribution Services (ECDIS)	-131,550	Proactive VAR Assurance procedures and tools. Auditing of VAR activity. Maintenance of VAR Contract, distribution rules, specifications
Revenue Management	-10,000	Quarterly sales processing and reporting, introduce SAP business warehouse, distribute reports to members quicker
Governance, finance and business functions	-134,540	2020 Steering Committee meeting and Circular Letter system. Management and Financial Reporting and other governance aspects. ISO9001 quality management certification. Continue RENC-RENC co-operation with PRIMAR, and incorporate EAHC RENC. Maintain fit for purpose technology.
Membership and IHO community	-62,575	Responsive support to members, potential members. IHO Assembly attendance and exhibition stand. Attend relevant IHO WGs etc – WEND, IRCC, S100WGs, ENC WG. S10x project team contributions
IC-ENC Structure and the team	-719,950	Maintain a suitably sized and skilled international team. Exchanges, training, succession planning. Regional Office support: structure/governance and other support (training, guidance, auditing).
Non-ECDIS nav mgmt service (NON-CORE)	0	Considered under separate budget as it is a non-core service.
S101 ENC services	-16,200	Develop service principles for S101 ENCs. Scope the benefits and disadvantages of a RENC conversion service (S57 to S101, and/or S101 to S57), and associate technology/resource etc.
S102 Gridded Bathymetry	-23,100	Through informal Working Group, other partners/trials and Business Analysis effort to develop service proposal for SC consideration.
S104 Water Level & S111 Surface Currents	-10,000	Through informal Working Group and Business Analysis effort to develop service proposal for SC consideration.
12. S129 Under keel clearance	0	This is a placeholder for a future work line potential during 2020. No budget attached at this stage.
S122 Marine Protected Areas	-10,000	Through informal Working Group and Business Analysis effort to develop service proposal for SC consideration.
S411 Sea Ice & S412 Weather	-10,000	Possible travel requirement, exploratory activities such as first stage business analysis etc
S100-era distribution model	-50,000	Third party expertise to conduct a broad market research/ user needs analysis to give us the firm foundation to develop proposals.
UKHO cost of capital	-23,104	
TOTAL COSTS (core)	-1,565,819	Assumes an exchange rate of GBP1=USD1.35
TOTAL COST RECOVERY REVENUE	1,637,000	Assumes fixed fee remains \$0.50 for duration of 2020 and PAYS planning fee concept remains unchanged.
2020 IC-ENC OPERATING BALANCE	71,181	

2020 KEY EVENTS CALENDAR

Bold text indicates planned IC-ENC attendance. Dates shown where confirmed.

Month	Event	Location
January	Non-ECDIS Service Visit	Italy
February	DQWG 15 4th – 7th	Monaco
March	S-100WG 5 2nd-6th	Taunton, UK
	IC-ENC Training Course 20_1	Niteroi, Brazil
April	RENC-RENC Cooperation Meeting 6th	Monaco
	WENDWG10 6th-8th	Monaco
	2nd IHO Assembly (A-2) 21st-24th	Monaco
May	HSSC 12	Bristol, UK
	TWCWG 5 26th – 29th	Stavanger Norway
June	ENCWG 5	Wellington, New Zealand
	IC-ENC Training Course 20_2	Malaysia
July	IC-ENC Steering Committee 22 7th–8th	Bristol, UK
August	-	-
September	NIPWG 8 21st-25th	Brest, France
October	Council 4 Monaco 20th-22nd	Monaco
	IC-ENC Technical Conference 05	TBD
November	NCWG 6	Cadiz, Spain
	S-100 Test Strategy Meeting 8 3rd-5th	Monaco
	IC-ENC Training Course 20_3	Cadiz, Spain
December	-	-

RENC-RENC

The annual meeting for IC-ENC and PRIMAR to discuss progress on items of cooperation, such as the Joint RENC ENC licensing model.

WENDWG10

This meeting will consider the emerging “WENS Principles”

IHO Assembly

IC-ENC will have an exhibition stand on the first floor, we look forward to using this to meet as many of our members as possible during the Assembly week.

Steering Committee

The annual governing board meeting, with a strong focus this year to be on S100-era service options

Technical Conference

The fifth time the TC will convene, with the aim of agreeing and promoting best practice internationally across the IC-ENC membership.

IC-ENC MEMBERSHIP AND FOLIO STATUS: Week 01/20

MEMBER	Joined	Code	Wk1 2016	Wk1 2017	Wk1 2018	Wk1 2019	Wk1 2020	2019		2019 Issued		
								Net Change	% Change	New cells	New Editions	Update
Argentina	2005	AR	70	72	75	78	80	2	2.6	3	16	46
Australia	2005	AU	843	843	849	849	848	-1	-0.1	2	123	1546
Bangladesh	2018	BD	0	0	0	0	11	11	n/a	11	0	10
Belgium	2002	BE	7	7	7	7	7	0	0.0	0	3	49
Bahrain	2002	BH	8	8	8	8	8	0	0.0	0	6	6
Brazil	2008	BR	137	145	153	156	157	1	0.6	17	49	218
Chile	2004	CL	220	253	269	277	293	16	5.8	17	4	70
Colombia	2010	CO	56	61	61	61	64	3	4.9	3	17	95
Cuba	2013	CU	21	23	36	44	45	1	2.3	1	1	0
Germany	2002	DE	159	160	164	179	232	53	29.6	89	62	545
Denmark	2013	DK	219	254	276	345	369	24	7.0	26	77	398
Ecuador	2008	EC	14	24	40	71	78	7	9.9	7	7	4
Egypt	2014	EG	17	21	23	27	32	5	18.5	5	6	38
Spain	2002	ES	248	269	279	295	305	10	3.4	10	26	365
United Kingdom	2002	GB	1566	1578	1665	1675	1659	-16	-1.0	25	472	1948
Greece	2003	GR	291	300	301	301	302	1	0.3	1	7	101
Israel	2015	II	0	0	0	4	8	4	100.0	4	3	3
Iceland	2005	IS	71	71	72	72	73	1	1.4	1	3	12
Italy	2014	IT	255	259	262	263	263	0	0.0	2	133	617
Malta	2016	MT	0	5	5	5	6	1	20.0	1	1	2
Mexico	2005	MX	128	131	135	146	148	2	1.4	9	2	12
Malaysia	2014	MY	0	85	88	93	98	5	5.4	5	40	112
Mozambique	2004	MZ	0	0	0	0	0	0	0.0	0	0	0
Nigeria	2019	NG	0	0	0	0	0	First ENC release expected 2020				
Netherlands	2002	NL	139	139	162	175	172	-3	-1.7	76	13	395
New Zealand	2008	NZ	241	273	300	305	305	0	0.0	4	47	120
Oman	2015	OM	0	0	0	0	16	0	n/a	16	0	20
Pan - Canal	2015	PA	0	7	7	7	7	0	0.0	0	6	4
Pan - Maritime	2015	PA	10	9	10	10	10	0	0.0	0	2	6
Peru	2006	PE	124	125	125	128	129	1	0.8	1	2	107
Philippines	2014	PH	17	17	19	24	28	4	16.7	5	0	4
Pakistan	2005	PK	6	7	7	7	7	0	0.0	0	1	17
Portugal	2002	PT	91	90	94	96	97	1	1.0	1	3	98
Romania	2013	RO	6	6	8	13	16	3	23.1	3	2	15
Russian Fed	2005	RU	477	488	520	558	570	12	2.2	28	45	342
Saudi Arabia	2019	SI						First ENC release expected 2020				
Solomon Is	2019	SB	0	0	41	41	41	0	0.0	0	8	36
Slovenia	2014	SI	1	1	1	1	1	0	0.0	0	1	0
Suriname	2014	SR	4	4	7	7	7	0	0.0	0	1	5
Tunisia	2016	TN	0	6	8	11	13	2	18.2	2	1	14
Turkey	2004	TR	266	268	270	271	274	3	1.1	3	33	293
United States	2016	US	0	1196	1231	1257	1307	50	4.0	52	417	2808
Uruguay	2011	UY	27	27	27	30	38	8	26.7	8	13	53
Venezuela	2006	VE	18	41	59	88	89	1	1.1	1	0	44
South Africa	2002	ZA	57	57	57	57	57	0	0.0	0	21	48
TOTAL			5814	7330	7721	8042	8270	228	2.9	439	1674	10626

“Global ENC collaboration, with a regional focus”



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