

INTERNATIONAL CENTRE FOR ELECTRONIC NAVIGATIONAL CHARTS (IC-ENC): GLOBAL COLLABORATION, REGIONAL FOCUS

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The International Centre for Electronic Navigational Charts - IC-ENC, has an important role in electronic navigation. It supports an ever increasing number of ENC Producers with quality assurance and availability services. During 2016, IC-ENC has launched two more regional offices: one in the United States for North America and another one in Brazil for Latin America, both hosted by the respective national hydrographic offices.

In late 2015, digital navigation reached a significant milestone: the majority of all vessels on international trade routes now sail with ECDIS. This event is a milestone in a long journey. At the end of the 1990s, the first ECDIS achieved legal type approval, generating real euphoria amongst those involved with this breakthrough. But the onboard device is just one side of the coin... the sense of euphoria soon turned to disillusionment when it became clear the required folio of digital sea charts did not exist!

1. Move to Digital Workflows

To achieve the folio that is needed, national Hydrographic Offices have had to move from the traditional methods of nautical cartography into new digital workflows, processes and products. Although this transition is still continuing, today nearly 100% of the main shipping routes, 91% of all coastal areas and 800 major ports of the world are covered by digital cartographic products named Electronic Navigational Charts (ENCs).

Key to this progress has been the International Hydrographic Organization's (IHO) concept of the Worldwide Electronic Navigation Database (WEND), which obligates each national authority to produce electronic charts of its respective national waters.

The WEND concept consists of the basic principles of national competencies for ENC production and references to the relevant technical standards. A crucial element of WEND is the idea of Regional Centres for ENCs – RENCs. These centres provide a focal point for a range of national ENCs within a particular region. In 2002, the hydro-

graphic offices of the UK, the Netherlands, Spain, Portugal and Germany founded the International Centre for ENC (IC-ENC). At this stage, the rapid progress of digital technology and data exchange seemed to make the initial idea of regional ENC focal points obsolete. This remained true for the first few years of IC-ENC operation as hydrographic offices from South America, Africa and Middle East joined IC-ENC.

2. The Organisation

IC-ENC is situated in Taunton, UK. A total of 11 people work here for IC-ENC. They include a general manager, and a team of cartographers, geographic information officers and other specialists. The constitution of IC-ENC is defined by the 'IC-ENC Cooperation Arrangement', which describes the operational structure of IC-ENC and the "not-for-profit" status of the organisation. This arrangement regulates the nature of the core services which IC-ENC provides for its members, namely:

- ENC Production Support (including capacity building activities)
- ENC Validation
- ENC Distribution
- Revenue Management

The Steering Committee is the governing board of IC-ENC. It comprises all hydrographic office members and its purpose is to oversee the operation of IC-ENC and provide strategic direction. It meets annually and elects its Chair from among the participants for a two-year term. The Chair supervises the general manager's activities on behalf of the Steering Committee, and is called upon to represent IC-ENC internationally.

Although today's digital cloud based technology is common-place, experience has shown IC-ENC that instigating a regional approach (the original RENC concept) offers many advantages. Multi time-zone operation, local language, regional knowledge and local support improve performance and cooperation. For these reasons, IC-ENC has maintained a regional office in Australia since 2005, and during 2016 established a further two offices, one in Niteroi in Brazil, and one in Washington, USA. The validators of these two new offices completed their training at the IC-ENC UK office.



Figure 1: The IC-ENC Validation team members from Brazil, UK and US

3. Quality Assurance

Whichever IC-ENC office serves a particular hydrographic office member, the quality assurance process is harmonised through the IC-ENC global operating framework – making best use of the opportunities ‘cloud technology’ brings. IC-ENC’s quality assurance process is not fully automated, nor should it be. Key elements benefit hugely from the ‘human touch’ from the expert IC-ENC validators. ENC’s are uploaded to real ECDIS machines; inconsistencies are meticulously recorded and assessed by the trained international team. All judgements made by the validators are based on the impact the issue will have on the navigator. This will vary according to the primary purpose of the ENC, the location of the issue, and other chart-specific and navigation factors. The resulting validation reports, including suggested improvement action, are provided to the producer as part of an iterative process for quality improvement. Only when the ENC is as good as it can be, will it be released by the hydrographic office for onward distribution.

IC-ENC continues to attract a growing number of ENC producers into the organisation. Within the last two years, the number of members has grown by eleven to now stand at 39 – almost two thirds of the ENC producers worldwide. With the launch of the IC-ENC North America office, and inclusion of over 1100 US ENC’s, the IC-ENC folio exceeds 7000..... about half of the world’s ENC’s. IC-ENC supplies this folio to its distribution partners, the Value Added Reseller (VARs), who have developed end user ENC distribution services, including full customer support processes.



Figure 2: IC-ENC's 40 Hydrographic Office members

One of the key fundamental principles of IC-ENC’s operation is to be cost efficient. Each member sets its wholesale price for its ENC’s, and the Steering Committee sets the amount that IC-ENC will retain to cover its operating costs. This figure has been set to USD1.00. All other ENC revenue is returned to the appropriate ENC producer, through approved and audited IC-ENC financial processes.

IC-ENC continues to work to improve its services to members. Over the last year, IC-ENC delivered three specialist training courses to over 40 attendees from all over the globe. The courses were completely financed from the approved IC-ENC budget and should be understood to be a proactive contribution to the capacity building strategy of IHO. IC-ENC held its first Technical Conference for members in order to develop IC-ENC's roadmap for the future ENC technical standard, S-101. These will be repeated to new delegates during 2016. IC-ENC will also hold a technical conference for members in order to develop IC-ENC's roadmap for the future ENC technical standard, S-101. Further opportunities are ahead within the industry resulting from IHO's new standards and the series of S-100 compatible products. It is up to IC-ENC member states to decide the direction IC-ENC will go on their behalf, but whatever the answer will be, IC-ENC's motto will prevail: 'Global ENC collaboration, with a regional focus'.



Figure 3: The IC-ENC Steering Committee as convened in 2015