

3<sup>rd</sup> Meeting of Hydrographic Services and Standards Committee (HSSC)  
IHB Monaco, 8-10 November 2010

**Status Report on Inland ENC Development and Standardization**

<b>Submitted by:</b>	International Inland ENC Harmonization Group (IEHG)
<b>Executive Summary:</b>	This paper describes the activities of the IEHG as it relates to Inland ENC development/implementation in Europe, North and South America, Russia and Asia. In addition to describing the legal authority, structure, organization, and procedures, an explanation is provided about the activities of IEHG in regard to the S-100 GII Registry, S-99 and IHO Working Groups.
<b>Related Documents:</b>	IHO S-57 Edition 3.1 → IHO S-99 → IHO S-100 → S-101 → [S-10x]
<b>Related Projects:</b>	Nil

**Objective of IEHG**

To develop and to maintain harmonized standards for Inland Electronic Navigational Charts (IENC) suitable for inland navigation that are based on the standards of the International Hydrographic Organisation (IHO) for 'maritime' Electronic Navigational Charts (ENC).

**Guiding Principles**

- a. To agree upon specifications for Inland ENCs that are suitable for all known inland ENC data requirements for safe and efficient navigation worldwide, including Europe, North and South America, Russian Federation, and East Asia inland waterways.
- b. The framework for Inland ENC standards includes:
  1. Use of **IHO S-57** (Edition 3.1), including:
    - 'Maritime' ENC Product Specification (Appendix B1)
    - Object Catalogue (Appendix A)
    - Use of Object Catalogue (Appendix B.1, Annex A)
  2. A minimum **Inland ENC Product Specification** that includes mandatory requirements for safety-of-navigation on inland waterways, worldwide.
  3. An **Inland ENC Encoding Guide** that provides guidance on recommended object classes, attributes, and attribute values for encoding IENC data.
  4. Inland ENC **Feature Catalogue**.
  5. An **Inland ENC Domain** on the Supplementary Feature Concept Dictionary (FCD) Register for additional IENC features, attributes, and enumerations that are not already contained in the Main FCD Register of the S-100 Registry.
  6. Use of a e-mail based **Inland ENC Discussion Forum** as a means of communication.

Inland Electronic Navigational Chart (IENC) is formally defined as:

*the database, standardized as to content, structure and format, for use with inland electronic chart display and / or information systems operated onboard of vessels transiting inland waterways. An IENC is issued by or on the authority of a competent government agency, and conforms to standards initially developed by the International Hydrographic Organization (IHO) and refined by the Inland ENC Harmonization Group. An IENC contains all the chart information necessary for safe navigation on inland waterways and may contain supplementary information in addition to that contained in the paper chart (e.g., sailing directions, machine-readable operating schedules, etc.) which may be considered necessary for safe navigation and voyage planning.*

[IENC Encoding Guide, Edition 2.2, Feb 2010]

## Recognition

As the competent international technical group on Inland ENC technical standards development, implementation and maintenance, IEHG is recognized by:

Europe - European Union, Central Commission for Navigation on the Rhine, UNECE, and the Danube Commission.

North America – US Army Corps of Engineers

Russian Federation - Russian Ministry of Transport

South America – Directorate of Hydrography and Navigation of the Brazilian Navy (DHN), Hydrographic Service for Navigation on the Amazon River (SEHINAV) of Peru.

East Asia - The Waterborne Transport Research Institute of the Ministry of Transport of the Peoples Republic of China, and the Republic of Korea Hydrographic and Oceanographic Administration (KHOA)

On 14 April 2009, IEHG became recognized as a Non-governmental International Organization (NGIO) of IHO. IEHG supports, advises and provides input to IHO regarding Inland ENC matters. Specifically, IEHG attends:

- Hydrographic Services and Standards Committee (HSSC)
- Transfer Standard Maintenance and Application Development (TSMAD) WG

## Composition, Organization, and Membership

a. Composition - IEHG is a combined government/non-government technical group that works towards the development of international standards meant to facilitate the implementation of inland electronic charting and navigation, worldwide.

b. Regions – IEHG regions are comprised of countries within a continent (e.g., South America) or a recognized social-economic region (e.g., Europe, Russian Federation, East Asia).

c. Organization – By simple majority vote, chairpersons, vice-chairs and technical coordinators are elected.

1) Chair – Two persons (co-chairs) each from a different region. Only representatives of waterway authorities can become chairpersons.

2) One vice-chair from each region which is not already a chair.

3) Technical Coordinators - One technical coordinator for each region.

4) Core Group – The two Co-Chairs, the Vice-Chairs and Technical Coordinators.

d. Membership

All the members of IEHG should have current expertise in the field of Inland ENCs.

1) Participants – Anyone who is involved in the production of Inland ENCs or the production of Inland ENC applications, and representatives of user groups can participate in IEHG, make proposals and take part in the discussions.

2) Members - Representatives of competent authorities involved in the provision of Inland ENCs are entitled to become members. If proposed by a competent authority, membership can also include expert contributors, such as representatives of:

- International governmental organizations involved in the area of inland navigation, and members of the working groups of these organizations that are dealing with Inland ENCs.

- Inland navigation user groups.

- Private companies that are producing Inland ENCs or applications for Inland ENCs.

As of September 2011, membership and/or participation in the work of IEHG includes:

- government authorities from 23 countries

- over 50 Participants

- nine International Organizations

Efforts continue to encourage more governments from South America and East Asia to participate.

## Current Activities and New Procedures

### 2011 Annual Meeting

The 9<sup>th</sup> Meeting of IEHG was hosted in Chongqing, China on 18-20 October 2011 by the Chongqing Shipping Exchange and the Waterborne Transport Research Institute of the Peoples Republic of China. 17 persons attended including representatives from Europe, North and South America and Asia. Key topics for discussion included updates on IENC activities in the various regions, review/acceptance of change requests, discussion of

IENC quality standards, status of IHO S-100, S-99 and S-101 development, and IEHG participation in S-100 Registry.

#### Alignment with IHO S-99, S-100 and S-101

In accordance with S-99 the IEHG maintains the Inland ENC domain within the S-100 GII Supplementary Register. IEHG continues to follow the development of S-101, and intends to align the Product Specification for Inland ENCs with the new Product Specification for 'maritime' ENCs (S-101) when it becomes affective. IEHG requests that IHO assigns a S-100 related number for this future Inland ENC Product Specification. IEHG will also follow the developments of the Portrayal Register, and intends to establish an Inland ENC Portrayal domain once the final specifications become established.

#### Change Requests

At IEHG9, eight Change Requests were reviewed, most of which were adopted. The adopted changes will be included in the next version of the Product Specification for Inland ENCs.

#### Effective Dates of IENC Standards

The following table provides a summary of editions and version numbers and effective dates of the various IENC standards.

<b>Feature Catalogue &amp; Product Spec</b>	<b>Date effective</b>	<b>Encoding Guide</b>	<b>Date effective</b>	<b>IENC Validation Checks</b>	<b>Date effective</b>
2.0		1.0	Oct 2005		
	---	1.1	Oct 2006		
	---	1.2	Dec 2006		
2.1		1.3	Feb 2008		
	---	1.3.1	May 2008	2.1	June 2010
2.2	Feb 2010	2.2.0	Feb 2010		
2.3	Jun 2011	2.3.4	Jun 2011	2.3	Jun 2011
3.0 (to be aligned with S-100 and S-101)	[2013+]				

#### Quality Standards

IEHG9 decided to update version 2.1 of the Recommended Validation Checks for Inland ENCs to an edition 2.3. IEHG continues to work on:

- Guidance on determining what constitutes "minimum content" (to be included in the IENC Encoding Guide)
- Minimum accuracy requirements
- Accuracy information content
- Verification of completeness

Germany informed about the current data quality management (aQua) for depth data in their IENCs.

#### Standardized data exchange format for water level information

A standardized XML-data exchange format for the provision of detailed water level information (derived from water level models) for on-board applications has been adopted after positive testing in seven countries.

#### **Inland ENC Website**

All Inland ENC publications and functions are hosted at a consolidated Inland ENC site:

[<http://ienc.openecdis.org>].

Key publications include:

- Inland ECDIS Standard, Ed. 2.0/2.1/2.3 (May 2011)
- IENC Product Specification, Ed. 2.1/2.2/2.3 (May 2011)
- Feature Catalogue, Ed. 2.1/2.2/2.3 (May 2011)
- IENC Encoding Guide, Ed. 1.3.1/2.2/2.3.4 (June 2011)
- IENC Presentation Library, Ed. 2.1/2.2/2.3
- Recommended Validation Checks for Inland ENCs, Ed. 2.1 (June 2010)

The site also contains:

- Information about the work of the IEHG (Terms of Reference, Annual Meeting Minutes, presentations, etc.)
- A link to the Discussion Forum on Inland ENC's.
- Papers related to Inland ENC matters and links to authorities who are producing Inland ENC's and companies who are providing Inland ENC applications.

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**Actions Required of HSSC**

HSSC3 is invited to:

- Note the activities related to Inland ENC standards development and implementation
  - Assign a S-100 related number for an Inland ENC Product Specification that will be aligned with S-101.
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