COMPETITIVE AND SUSTAINABLE GROWTH

(GROWTH)

PROGRAMME

COMPRIS

Consortium Operational Management Platform
River Information Services

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Summary

Although there are differences between the North American and European inland waterways, there are also a great number of similarities. In 2003 a very successful North American – European RIS conference was organised in Nijmegen, the Netherlands. At this conference North American and European experiences with River Information Services were exchanged. Following the conference there was a three days workshop where a limited number of experts worked to integrate the North American and European Inland ECDIS experiences. Final goal of conference and workshop was to set the road map for the integration of inland waterway needs into a next version of the IHO ECDIS Standard.

During this Nijmegen workshop it was agreed that while most of the intermediate work would be done using e-mail, there would be a yearly workshop to consolidate the year's progress and to discuss further developments. The international group of experts involved in the harmonisation work would be further known as the Inland ENC Harmonisation Group (IEHG). The second IEHG workshop was held in St. Louis, MO, U.S.A. September 22 – 24.

Also the 2004 workshop was very productive. The participants unanimously agreed on actually taken a step further than agreed during the first workshop in Nijmegen where the development of a Core Inland ENC Product Specification only including shared object and attributes was agreed. The St. Louis workshop agreed to draft an "all inclusive" International Inland ENC Product/ Content Specification integrating the North American and European Inland ENC developments The workshop also agreed on a detailed work plan to reach this goal.

References

[1] Report North-American - European RIS conference, COMPRIS WP 3, August 2003

1 Introduction

COMPRIS deals with a further elaboration and the implementation of so-called River Information Services (RIS) of which the Inland ECDIS Standard (Electronic Chart Display and Information System) is one of the vital components. Following the findings of the European transport research and development project INDRIS (Inland Navigation Demonstrator for River Information Services) and the German project ARGO in 2001 both the Danube and the Rhine Commission accepted the so-called Inland ECDIS Standard as the standard for electronic charts on the Rhine and the Danube. In 2002 the Economic Commission for Europe (UN ECE) of the United Nations adopted the Inland ECDIS Standard as a recommendation for the European inland waterways. In the mean time Electronic Nautical Charts (ENCs) according to the Inland ECDIS standard have been produced for the German river Rhine, Main and Danube as well as the Austrian (www.doris.bmvit.gv.at), Croatian (www.crup.hr) and Serbian (www.dpc-belgrade.co.yu) Danube and the Dutch connection between Rotterdam and the German border as well as the Scheldt Rivers. Private parties are co-operating in drafting a first, global coverage of the remaining European waterways and ECDIS application suppliers that are active on the European inland waterways have converted their applications to read Inland ECDIS ENCs.

In the USA after a 1999 Congress decision the U.S. Army Corps of Engineers (USACE) experiments with so-called River ENCs of amongst others the Lower Mississippi. Both ECDIS activities are based on the S-57 and S-52 ECDIS Standard of the International Hydrographic Organisation (IHO) for the maritime world. In the mean time national Hydrographic Offices are experiencing imperfections in the IHO standard when coding harbour areas. The European Inland ECDIS standard was based on IHO S-57 version 3.0. With the present IHO S-57 standard version 3.1 some incompatibilities were introduced, showing the need for tighter harmonisation of the standards.

Although there are differences between the North American and European inland waterways, there are also a great number of similarities. Thus it seemed worthwhile to first of all investigate the possibilities of joining efforts and using respective experiences and in the end to seek for a global Inland ENC approach. This was the reason for the COMPRIS management to decide it worthwhile to facilitate the organisation of a North American – European RIS conference in Nijmegen, the Netherlands, in 2003. At this conference North American and European experiences with River Information Services were exchanged. Following the conference there was a three-day workshop where a limited number of experts worked to integrate the North American and European Inland ECDIS experiences.

During this Nijmegen workshop it was agreed that while most of the intermediate work would be done using e-mail, there would be a yearly workshop to consolidate the year's progress and to discuss further developments [1]. The international group of expert that would be involved in the harmonisation work would be further known as the Inland ENC Harmonisation Group (IEHG). The second IEHG workshop was held in St. Louis, MO, U.S.A. September 22 – 24. Following is a report of the latter workshop.

2 Workshop IEHG St. Louis, USA, 2004

2.1 Achievements past year

An important and very worthwhile achievement of the past year was the production of the USACE Inland Electronic Navigational Chart Chart No. 1 and Encoding Guide document. This Encoding Guide is now being used by the US Army Corps of Engineers with the encoding of the US Inland ENCs. The Encoding Guide is especially useful for ENC production as contrary to other publications it takes real worlds features as a starting point guiding the user, which S-57 objects and attributes to use when drafting an Inland ENC.

The Encoding Guide also proved to be extremely valuable in the discussions on harmonising the European and North American Inland ENC approach providing a good insight in both the real world of the American inland waterways and the North American approach to code the real world into Inland ENCs and the comparison with the European approach.

Also during last year constructive comments were received from the North American IEHG partners in the COMPRIS swp 3.2 discussions on the compris.wp3@openecdis.org discussion forum. Finally the first draft COMPRIS swp 3.2 report was distributed among the participants,

2.2 Workshop discussions

2.2.1 Outcome

It appeared that the wording Core Product Specification causes confusion. Within the USA the word “Core” is pronounced the same as the term “Corps”. Therefore it was suggested to change “Core” to either “Base” or “International”. In relation to the proposed name change, however, it became apparent that there was a underlying difference in the appreciation of the extent to which the North American and the European Inland ENC approaches were to be harmonised. Where the Europeans had taken the step to extent the IHO features, the North Americans so far have refrained from extending on the IHO features, but have produced a regional use of the object catalogue and encoding guide. The discussion revealed that there was still some hesitation on the American side to extent the IHO features. Thus the common denominator of the present status in Europe and North America seemed to be limited to the existing IHO objects and attributes only and a Use of the Object Catalogue and Encoding Guide that were adapted to the use on inland waterways.

After further discussions, it was eventually decided that the somewhat limited “core” (now base) product specification should be expanded to accommodate all known requirements of both Europe and North America. It was also agreed that the International Inland ENC Specification should include those IHO features that are relevant for Inland ENCs, as well as the real-world features that are needed for Inland ENCs (i.e., not contained in the “maritime” ENC Product Specification).

2.2.2 Framework for International Inland ENC Specifications

The framework comprises the following elements:

a) IHO S-57 edition 3.1 where applicable.
b) A central registry for IHO/ non-IHO S-57 object classes, attributes and attribute values.
c) A Base Product specification integrating all known Inland ENC specifications.
d) Regional product specifications containing items from local water networks that cannot be fitted in the Base Product Specification.
e) Use of the Open ECDIS Forum as a means for communication and publication.
f) Align with the future edition of IHO S-57 (Edition 4)

2.2.3 Inland ENC Content Specification

An initial IENC Content Outline was compiled and discussed. This IENC Content Outline will become the basic framework for the overall Inland ENC Product/Content Specification.

2.2.4 Regional Product Specifications

It may be found that some S-57 Object Classes, attributes, attribute values and encoding rules are specific to a local water network to such an extent that inclusion within the international product specification is impractical. Such features should be described in a regional product specification. A complete product specification for International Inland ENC production is therefore comprised from both the Base and, possibly, a Regional Product Specification (i.e., Base + Regional = International)

2.2.5 Guidelines for Inland ENC specifications

a) For using existing S-57 objects:

- Wherever possible, use existing object classes, attributes and attribute values from current IHO S-57 ENC Product Specification, Edition 3.1.
- For additional object classes, attributes or attribute values that are not already described in the IHO S-57 Object Catalogue first check the central registry for Inland ENC features.
- If the required object classes, attributes or attribute values are not described in the central registry, then object classes, attributes or attribute values can be drafted and put forward to the IEHG for inclusion in the International Inland ENC set.

b) For creating new object classes, attributes or attribute values:

- An object class definition should be complete, covering all aspects of a real-world entity.
- An object class should represent an easily comprehendible concept. It is better to make two separate object classes if the definition of one object class is too lengthy and confusing.

- Each attribute should only exist once in an object class definition and should only contain one attribute value. The only exceptions to this rule are attributes of the type 'List'. These attributes should contain a composite string that can be broken down into a number of discrete values.
- The value of one attribute should not influence the value of other attributes, thus avoiding hierarchical dependencies within the attribute list of an object class.

c) For creating encoding rules

For all object classes, attributes, and attribute values, encoding rules should:

- Explain the basis for its creation
- Describe its relationship to the real-world entity.
- Provide criteria for its proper use
- Provide specific encoding examples for practical guidance.

3 Way forward

It was agreed that the following work actions should be performed by the IEHG during the next 9-12 months:

1. Identify all real-world features, objects and attributes that need to be included into an "all inclusive" Inland ENC Base Product/Content Specification.
   - Start with the nine (9) primary features previously identified
   - Focus on combined union of two standards
   - Should contain both IHO ENC Product Spec and necessary, real-world inland ENC objects
   - Primary focus will be on data, not display aspects

2. For the Content Specification, agree on (real world) feature to object class mapping.
   - There may be some additional features that need to be added.
   - Identify those S-57 objects contained in the IHO ENC Product Specification that should be included; put those into the draft Content Specification.
   - Figure out how to deal with duplication (e.g., same thing, different name).
   - Goal is to achieve on a harmonized content specification.

3. In terms of producing a harmonized Encoding Guide, a two-step approach will be as followed:

   Step 1 - Definition of a harmonized structure:
   - Set up structure; avoid using just a MS word file approach
   - Design a report with specific fields of information
   - Agree on a template database structure (e.g., MS Access)
   - Use the USACE Coding Guide as a "start"
   - Check, whether the database developed within the D4D project can be used

   Action/ dates:

   End of Oct 04 - Ralph Scheid and Joel Box; D4D-database to be provided by Dieter Hintenaus.

   Early Nov 04 - Send to Peter Kluytenaar and Bernd Birklhuber.

   Mid Nov 04 - European IEHG (core members) will meet and discuss (Ralph Scheid to attend). Invite Vladimir Sekachev (Transas Marine, Russia) to participate.

   Dec 04 - Finalization of harmonized database structure.

   Step 2 - Produce Encoding Guide using the harmonized data base structure

   Need to:

   a) Identify all details that each feels is necessary
   b) Agree on a similar/common encoding approach (harmonized)
      - It will be necessary to develop additional descriptions of new object classes, attributes, and values, especially on the European side

- The Encoding Guide should include examples of presentation of Inland ENC information for each object class

N.Am – start with existing USACE IENC Encoding Guide
Europe – add to what was developed

4. Other related follow-on actions:
   a) Definitions – need to "refine"
   b) IHO ENC Product Spec → to Inland ENC Content Spec/Coding Guide
   c) Report to IHO TSMAD (Action: Lee Alexander will prepare)
   d) Article in Hydro INTERNATIONAL (and others)
   e) Areas of participation (e.g., TSMAD, RTCM)
   f) Draft an Implementation and Publication Plan including what will be the mechanism for maintenance of the standard
   g) Consider how to accommodate new developments/concepts into Inland ENC specifications (high-density bathymetry, water-level adjusted, multi-layer, time/temporal change, etc.)

5. Next meeting NAm – European IEHG

   Primary Focus: Discuss/finalize International Inland ENC Product Specification

   Meeting options:
   - January 2005, Vancouver, BC (Canada), in conjunction with IIC Workshop
   - March 2005, San Diego, CA (USA), in conjunction with US Hydro 2005
   - March 2005, Vienna, Austria, in conjunction with COMPRIS demonstrator
   - 16-20 May 2005, St. Petersburg, FL (USA) in conjunction with RTCM Annual Assembly
   - [May-June 2005, European location in conjunction with COMPRIS]
   - September 2005, Mainz, Germany in conjunction with COMPRIS

4 Conclusions

- Also the effort of organising the second IEHG workshop has been very worthwhile.
- The workshop showed a continued successful and efficient cooperation between North Americans and Europeans and managed to take a further step ahead in harmonising the North American and European Inland ENC developments.
- The Inland ENC Encoding guide that was developed by the North Americans appeared to be a very valuable tool not only in encoding Inland ENCs, but also as a reference for the harmonisation efforts.
- The workshop agreed:
  - to undertake the task to draft an all inclusive International Inland ENC Product/Content Specification,
  - to have further communication and discussions via the OpenECDIS forum
  - and regional meetings where necessary,
  - to limit trans-Atlantic meetings to no more than once per year.
- There is need for a more permanent framework within which the IEHG can draft a first version of the International Inland ENC Product/Content Specification as well as its maintenance in the future.
- There is a need to find funding for the much-needed activities of the private partners within IEHG.

5 Recommendations

- The Commission of the EU, the European RIS Platform, CCNR, Danube Commission and the UN/ECE are requested to consider, support and adopt the proposed outline for International Inland ENC Specifications.

- The aforementioned bodies are kindly requested to consider a more permanent framework for the Inland ENC Harmonization Group; one that would also provide finances for the much needed support by the private partners within IEHG.

- The International Hydrographic Organisation is IHO is asked to take continued notice of the developments with regard to Inland ENCs.

Annex 1 Workshop Programme

Inland ENC Harmonization Group

Adams Mark Hotel
St. Louis, Missouri
22-24 September 2004

Program

Wednesday, 22 September
Hotel Meeting Room

Morning, 8:30-12:00
- Welcome, Opening Remarks – Tony Niles, Bernd Birklhuber
- Introductions – All
- 2003 Meeting and Task Review – Lee Alexander, Peter Kluytenaar
- North American Draft and discussions – Lee Alexander
- European Draft and discussions – Peter Kluytenaar

Lunch, 12:00-13:30

Afternoon, 13:30-17:00
- Discussion of differences
  Unique features in North American draft
  Unique features in European draft
- (continued discussions) How to move ahead

Thursday, 23 September
Hotel Meeting Room

Morning, 8:30-12:00
Summarize results of day 1, start definition of primary features

Lunch, 12:00-14:00

Afternoon/Evening, 14:00-19:30: Mississippi River Tour and Dinner
- 14:00 – Board vans at hotel
- 15:00 – Tour of Melvin Price Lock and Dam

- 16:00 – Board ceremony barge, depart on river trip, dinner served, presentations on river history and significant facts
- 19:30 – Disembark, board vans back hotel

Friday, 24 September
Hotel Meeting Room

Morning, 8:30-12:00
- Presentation Inland Waterway Transport in the USA – Sandra K. Knight (USACE, PIANC)
- Finalize discussions
- Outline and agreement on work plan for coming year
- Next meeting

Lunch, 12:00-13:30

Afternoon, 13:30-16:00
Small working group to summarize results and distribute documents

Annex 2 Workshop attendees

Country	Family name	Given name	Company
Austria	Birklhuber	Bernd	Ministry of Transport
Austria	Hintenaus	Dieter	via donau
Germany	Pillich	Dan	SevenCs
Germany	Rottmann	Eric	SevenCs
Germany	Vogel	Jörg	WSD-SW, Ministry of Transport
The Netherlands	Kluytenaar	Peter	Serendipity Unltd
United States	Alexander	Lee	University of New Hampshire
United States	Box	Joel	ICAN Inc.
United States	Conyon	John	IIC Technologies, Inc.
United States	Ganjon	Fred	IIC Technologies, Inc.
United States	LaDue	Denise	US Army Corps of Engineers
United States	Lower	Jeff	3001, Inc.
United States	Niles	Anthony	US Army Corps of Engineers
United States	Scheid	Ralph	US Army Corps of Engineers
United States	Spickler	Fred	Photo Science, Inc.
United States	Szlauko	Mike	NGA

Mrs. Sandra K. Knight of the US Army Corps of Engineers, was auditor during part of the workshop.