Report of the IHO-EU Network WG (IENWG)

Introduction

The EU Marine and Maritime Policy WG (EU2MPWG) was established as a WG under North Sea Hydrographic Commission in 2006. The 31st NSHC meeting decided to disband the EU2MPWG and supported to continue the cooperation with EU through the IHO-EU Network Working Group (IENWG). The first meeting of this new WG took place 2 September 2014 and a second meeting on 28-29 January 2015. The IENWG is chaired by France. NHC was represented by Norway in both meetings.

The Joint European Coastal Mapping Program (JECMaP)

DG Mare (EU) issued a Call for Tender for a Coastal Mapping project in August 2014. The deadline for responding to the Call was 24 November 2014. NHC was informed about this call for tender during the NHC58th meeting. The IENWG (and EU2MPWG) had over some time communicated with DG Mare and contributed with written input for the specification process.

France volunteered to coordinate the response to the tender. After intensive work period, the application was delivered in time. A consortium has been created with 19 partners from 15 countries. A detailed project proposal was prepared with the following main Work Packages:

- Digital Mapping (develop a portal infrastructure). Responsible: France
- Share experience, standards and practices. Responsible :Italy
- Future programme. Responsible: France
- Management and communication. Responsible: France

All packages have several sub work packages. Both Norway and Sweden will be involved in some subWP. The total budget for the program is € 1.330 mill. The selection of the candidate for the program will most likely be published in March according to DG Mare (not available at the day of writing, 18 March).

EMODnet III

DG Mare earlier announced that a Call for Tender for the third phase of the EMODnet Bathymetry could be expected early 2015. This call is delayed until the fourth quarter of 2015. The phase of the project will include multiple resolution of digital terrain models ("the best available"). Generally, the resolution should be 1/8 minute grid or better. The ambition is to cover all European waters with high resolution data free of charge. DG Mare is well aware of the constraints that some HOs have with respect of creating revenues from sales.

The creation of a consortium for responding to the Call for Tender has been discussed within IENWG. Given the situation that a decision of the JECMap is pending, no Member was volunteering to take responsibility for the administrative work for the time being. Most likely, the IENWG will propose the have a "basin approach", building on the outcome of the

successful work within the Baltic Sea with respect to a common bathymetric database. The chair of IENWG has approached all chairs of HC within Europe about the subject "Baltic Sea Bathymetry Database (BSBD) concept". The letter, dated 13 February 2015, is copied in Annex 1. This letter gives an in depth description of the actual challenges and propose actions to be taken.

Marine Spatial Planning (MSP)
EU has recently launched the MSP Directive. This Directive has a much broader scope than the traditional responsibilities of a HO. It is likely that HOs a least will be data provider for other national disciplines and planning. The IENWG has met with DG Mare to be informed about and discuss the implications of the MSP Directive.

European Parliament Intergroup for Seas, Islands, Rivers and Coastal areas.
The IENWG discussed how to contact, meet and influence members of the Intergroup. The WG will try to organize a meeting with the chair of the Intergroup during May 2015 to promote the action of European HOs, highlight our role in the blue economy and other relevant topics.

Horizon 2020
The Horizon 2020 covers research activities that will be supported by EU for the period 2014-2020. The Blue growth initiatives is emphasize in the Introduction of the Horizon 2020 document. In capt. 9 the food, agriculture, marine and maritime research is outlined. The HO should explore the possibilities for submitting proposals within relevant areas. IENWG will continue to stay updated on the Horizon 2020 development.

The NHC is invited to note this paper

Attachment: Letter to Chairs of HCs, with an annex

**SERVICE HYDROGRAPHIQUE
ET OCÉANOGRAPHIQUE
DE LA MARINE**

DIRECTION DES MISSIONS
INSTITUTIONNELLES ET DES
RELATIONS INTERNATIONALES

Dossier suivi par :

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Paris, February 13th, 2015
N° 014 SHOM/DMI/NP

L'ingénieur en chef de l'armement Michel Even,
chair of IHO-EU Network WG

à

Destinataires in fine

Subject : Baltic Sea Bathymetry Database (BSBD) concept
Enclosure : Annex : The Baltic Sea Bathymetry Database approach.

Dear Chairs of the Regional Hydrographic Commissions assigned to European Waters,

I am writing to you in my capacity as Chair of the IHO-EU NETWORK WORKING GROUP. This group conducted its second meeting in Saint Mandé, France, on 28 & 29 January 2015. We enjoyed participation of representatives from Denmark, France, Germany, Norway, Spain, Sweden, United Kingdom, the IHB (Gilles Bessero) and DG Mare (Iain Shepherd and Cristina Amil Lopez). According to our objectives, the group considered ways and channels to interface with EU policies, activities and processes (mechanisms) through Regional Hydrographic Commissions (RHCs) initiatives, through the IRCC or through the IHO in general.

Two main issues were on our agenda: the update on projects initiated by DG Mare in relation to hydrographic themes (with special emphasis on the Coastal Mapping Project (JECMAP) and the future EMODNET Phase III) and EU initiatives and national activities on Maritime Spatial Planning.

Both issues are of vital strategic importance for the future stance of Hydrographic Services in their respective national and regional context. In reflection to this, IENWG took already action last year and formed a consortium consisting of fifteen European Hydrographic Offices plus Academia partners to bid to the JECMAP tender. The acceptance of our bid is still pending. DG Mare indicated at our meeting that a decision should be announced by mid-March.

Because of the undecided situation with the coastal mapping tender, the group found it difficult to describe precisely how to proceed in view of the announced EMODNET III call for tender. The discussion turned out that our community of European Hydrographic Offices organised in RHC´s should not simply wait for EU-tenders but take proactive action in order to establish ourselves as the competent network for EU-waters bathymetry. This is the reason for this letter to you.

Magnus Wallhagen from Sweden inspired us with a very instructing presentation about the set up and the operation of the Baltic Sea Bathymetry Database BSBD (for your own impression, please visit www.bshc.pro under 'Services'). The BSBD basically delivers bathymetric data in form of a Digital Terrain Model (DTM) of the Baltic Sea for display and download. The respective national data sets made available are – even though not consistent in their resolution – harmonized along their seams in such a way that they provide a seamless model. The associated metadata are available as well. Gaps are filled with GEBCO data. The model is due to be regularly updated with new survey data delivered by the Member States in the region, approximately once per year.

A longer follow up discussion at Saint Mandé resulted into the idea to motivate other Regional Hydrographic Commissions to adapt the BSBD concept for their particular region. Such initiative was regarded as the best preparation for future requests for European wide bathymetry in relation with projects and permanent services subsidised by the European Commission and its General Directorates.

The group concluded that the technology and the way the BSBD was made operational constitute a blueprint for a comparable activity in other European sea basins under the auspices of the respective RHCs. A brief description of the technicalities of the BSBD is attached as Annex to this letter. Sweden stands ready to provide more detailed explanations in response to individual requests.

Considering that local conditions in terms of personal, technical, operational and - not the least - geopolitical matters vary from RHC to RHC, it is clear that the Baltic solution cannot be simply duplicated in any region. In this regard it is also worth noting that there is currently no specific budget assigned to this activity. As a consequence, it will be up to the particular regional arrangements and the capacity of the Member States to allocate appropriate resources or to identify in kind support for this important activity.

Therefore, I invite you, the Chairs of the respective Regional Hydrography Commissions, by means of this letter, to initiate the following process within your Commission:

- Present the idea of adapting the BSBD concept to the sea basin under the auspices of the Commission you are currently chairing.
- Investigate options for the setup of a suitable DTM either for the whole sea basin or parts of, subject to the availability of data and the willingness of the members to contribute.
- Identify members who might potentially take over the technical implementation and operation of such a regional bathymetric database.
- Motivate members to seek for allocations of national financial, technical and personal resources for the implementation and operation.
- Contact the operators of the BSBD to learn about practical steps towards a comparable database in your area of responsibility.

This project should definitely become an agenda item of the upcoming meeting of your RHC. However, prior communication with the members of your Commission about the above described activities would be the best preparation. The European Commission is pushing its activities with regard to maritime geoinformation ambitiously under its HORIZON 2020 programme. If we, as the European Hydrographic Services community, wish to remain relevant as competent bodies for bathymetric data products we have no time to loose. So, please take appropriate action.

I hope to receive your positive reply about the initiation of this important activity within your RHC before the third meeting of IENWG which is scheduled for the end of May 2015 in Brussels, Belgium.

Best regards,

Signé : Michel Even

Destinataires	:	Chairs of EatHC, MBSH, NHC, NSHC, SAIHC
Copies intérieures	:	Chair of BSHC - DG – DMI – Archives (DMIDSD/4.530)

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Date
10 February 2015

Collaborative bathymetry:

The Baltic Sea Bathymetry Database approach

1. Gather all hydrographic offices for the region in one working group [BSDB: Sweden, Finland, Estonia, Latvia, Poland, Germany, Denmark actively participate. The working group is also in contact with Russia, Lithuania and Norway.]
2. Assign clear areas of responsibility *[BSBD: Area split according to ENC responsibility, as no official digital EEZ borders are available.]*
3. **Pragmatically set realistic goals based on common denominators.** Focus on what can be achieved now, and postpone any nice-to-have features for future improvements. This includes parameters such as:
    - Spatial resolution *[BSBD: 500m due to commercial and military interest in higher resolution bathymetry in some countries]*
    - Vertical datum *[BSBD: EVRS2000 (EPSG:5730), but we presently don't care about the various different chart datums, as the errors/differences are negligible (<20cm) for the envisioned kind of applications in the current resolution.]*
    - Projection *[BSBD: Primarily ETRS89-LAEA (EPSG:3035), which works for all of Europe. The nationally important projections are supported through re-projecting from ETRS89-LAEA.]*
    - Licensing of the data set *[BSBD: licensed under a Creative Commons Attribution 3.0 Unported License. Additional restrictions apply (generally: the data, or any derived products, is not to be used in any way for navigation). For possible high-resolution areas in the future, also different licenses could be possible.]*
    - Update frequency/policy *[BSBD: Whenever enough new source data has been collected so that an update becomes significant enough. In practice that means once or twice a year.]*
    - …
4. Find one hydrographic office that is willing to do the actual work. It is much easier to have the work done (mostly) in one place, as compared to sharing the work. Let the coordinator act freely towards the common goals, instead of micro managing them from the working group *[BSBD: SMA in Sweden coordinates and carries out most of the work]*

5. All hydrographic offices deliver the most appropriate source data, preferably in as XYZ data points without any interpolation/gridding applied. Spatial resolution should ideally be somewhat better (2 to 5 times) than the final product, but much higher resolution is not necessary (and harder to handle). Higher resolutions of the source data might be needed if more than one depth is to be presented per grid cell (example: min, max, average, median and standard deviation). *[BSBD: Mostly extracts from the national depth databases. Charted soundings extracted from ENCs are a low-quality fallback when absolutely necessary.]*
6. Data is harmonized at the coordinating office with regard to format, projection, vertical datum (if needed).
7. Add additional data sources to fill gaps or constrain edges *[BSBD: GEBCO_08 in the North Sea, land elevation data to aid gridding along the coast line…]*
8. Run source data through a gridding process, to down sample too dense data and interpolate between sparse data. This also smoothens any border effects between different countries or areas of responsibility. *[BSBD: Block median filtering followed by Stacked Continuous Curvature Splines in Tension interpolation]*
9. Make final grid available for end users *[BSBD: Map centered web site with download functionality, OGC services]*
10. Actively reach out to the end users!

In summary, points 3 and 4 have been the keys for our success with the Baltic Sea. Of course, data delivery (5) is also very important. Even though 8 and 9 required quite a lot of work, one should not focus on them too early.

The Swedish Maritime Administration welcomes any visitors from Hydrographic Offices, undertaking the work to coordinate a bathymetry portal for another Hydrographic Commission, to get a more detailed insight of the setup of the BSBD in Sweden (both technical and organisational). Please contact: Hans Öiås (hans.oias@sjofartsverket.se) or Benjamin Hell (benjamin.hell@sjofartsverket.se)

For a more in-depth description of the BSBD and its background, please refer to our IHR article:

Hell and Öiås (2014). A new bathymetry model for the Baltic Sea. International Hydrographic Review (12): 21-31.
http://www.iho.int/mtg_docs/IHReview/2014/IHR_Novemberspecial2014.pdf