

## **Considerations about the EU Strategy for Data from a nautical chart perspective**

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### Introduction

Nautical charts are either Paper Charts (PC), Raster Navigational Charts (RNC) or Electronic Navigational Charts (ENC). They are highly standardized products, produced in order to fulfil the carriage requirements of the IMO SOLAS Convention by Hydrographic Offices (HO) around the world. ENCs and RNCs are meant for navigation in an Electronic Chart Display and Information System (ECDIS). HOs cooperate through the IHO. Nautical charts are in most countries not regarded as open data.

Further, there is a separate market for unregulated Electronic Chart Systems (ECS). This market is very competitive, as nautical chart data are used by dozens of commercial parties under licence for commercial navigation systems and products for usage outside of ECDIS. These products are mostly meant for smaller craft, like recreational boats and fishing vessels. Also, nautical charts are re-used by commercial companies for other purposes than originally intended (i.e. SOLAS and non-SOLAS navigation), using similar licencing mechanisms.

### Source data

The socio-economic benefits of making marine information available online are achieved best using general-purpose source data, like the source data that HOs use for their nautical chart production. These source data have already been published online as open data by many European HOs, mostly through European programmes like INSPIRE and EMODnet.

### Nautical charts

The Directive on Open Data and Public Sector Information (PSI) covers re-use only, not intended use. In the case of nautical charts, the intended use is navigation by surface ships with a SOLAS carriage requirement (ECDIS) as well as other surface ships (ECS), each using their own route to market. In theory, those markets would not be subjected to the PSI Directive. See the Annex for more details on the definition of navigational purpose.

What would happen if nautical chart are available online for free bulk download, as a consequence of their potential addition to the List of High Value Data Sets?

*i. Official charts for vessels with a SOLAS carriage requirement:* The ENC is distributed through an encrypted delivery chain involving commercial Value Added Resellers (VARs) throughout Europe. If it would be available online, ship crews would use the free up-to-date chart file and the added value of the VAR distribution chain would be unused for European waters. The added value consists of aspects like cyber-secure encrypted distribution and selection of an optimal ENC portfolio including contingency planning.

*ii. Commercial charts for small craft:* At present, the commercial publisher has a choice to use the chart file of the HO, or to use its own sources (crowd sourced, open source data sets, etc.) for its ECS. The latter is worrisome: they create a new environmental picture, a common understanding by all users of the marine space is not achieved. If it would be available online, commercial publishers would use the free up-to-date chart file, also those that currently create a new chart image using source data. This solves the above problem, except for commercial products that have insufficient added value, and therefore will not survive the competition with the free online chart data.

*iii. Re-use:* Nautical charts will be widely used for purposes that they are not intended for. Nautical charts are not some sort of general purpose “marine maps”. They are highly specialized products meant for surface

navigation only. Usage for other purposes is unhandy at best and risky at worst. Information that is not essential for surface navigation is omitted. Examples include:

- Nautical charts are shoal biased, i.e. only the shallowest few depth figures and defensively drawn isolines are shown. Detailed depth variation is not present in the nautical chart;
- Further, the depth figures and isolines are referred to chart datum, defined for tidal areas as an extremely low level: the lowest water level that occurs under average meteorological conditions;
- Marine cadastral information is incomplete or absent: rights, restrictions and regulations;
- Marine biological, chemical and geological information is absent;
- Details are reduced/omitted where a larger scale nautical chart is available.

There is nothing wrong, however, with using a nautical chart as background data by non-navigation users, as long as they understand the nature of the product (like the five examples above).

### Market distortion

There is a range of European VARs and licenced companies with commercial interests that are in danger of being considerably distorted by publishing nautical charts online. For the ECS market, the small craft user benefits from the freedom to choose, between the product of the HO and products with added value from commercial publishers. The level playing field will need to rebalance as a consequence of publishing our charts online, which endangers the business models of European and non-European commercial publishers and distributors.

### Chart file manipulation

There is a difference between web services that constitute a view service and those that constitute a download service. A view service does not enable a user to download the data file or change its contents or presentation. A download service would allow for changes to contents and presentation, as well as subsequent redistribution, enabling the supply of charts with accidental and deliberate errors. Especially the existence of deliberately manipulated nautical chart files for surface navigation would present a clear and immediate danger to navigation.

### Pressure from re-users

Online availability will attract a different audience than originally intended. Re-users will have different demands for the product and may not be aware of the original goal of the product. How should pressure from re-users be avoided to add information not relevant for surface navigation? It can be expected that they would like to re-use nautical charts for other purposes that would require additional data layers: Marine Spatial Planning, for instance.

### Advantages of chart view services

Nautical charts exist to contribute to safe navigation at sea. Public availability helps to find errors and omissions, and stimulates crowd sourced data collection. Stakeholders, public authorities and the general public could see at any time if a hydrographic service needs to be informed about a necessary change.

In order to avoid collisions in busy sea areas, it is important that every actor at sea has access to the same environmental picture (contents and presentation). Also, in case of natural disasters, it is paramount that all relevant information is necessary immediately to everyone involved.

### Conclusion

The coordinated establishment of view services for nautical charts in Europe should be welcomed by the nautical sector. However, the establishment of unrestricted download services for nautical charts will render the added value of the SOLAS distribution chain unused, and could be dangerous for navigation. Such download services for nautical charts also have strong disadvantages for Re-use, because they do not serve

socio-economic interests like their open source data already do while distorting considerable commercial interests.

## **Annex: defined purposes of nautical charts**

### IHO S-32:

chart: nautical. A CHART specifically designed to meet the requirements of MARINE NAVIGATION, showing DEPTHS of water, NATURE OF BOTTOM, ELEVATIONS, configuration and characteristics of COAST, dangers and AIDS TO NAVIGATION. Also called marine chart, hydrographic chart, or simply CHART.

navigation. The process of directing the movement of a craft from one point to another

navigation: marine. NAVIGATION of water craft.

### IMO SOLAS V/2 1974 (as amended):

2.2 Nautical chart or nautical publication is a special-purpose map or book, or a specially compiled database from which such a map or book is derived, that is issued officially by or on the authority of a Government, authorized Hydrographic Office or other relevant government institution and is designed to meet the requirements of marine navigation.

### IHO S-4:

The primary purpose of nautical charts is to provide the information required to enable the mariner to plan and execute safe navigation. In constructing charts and selecting content it is therefore important to understand the mariner's need for appropriate, relevant, accurate and unambiguous information. Particular care must be exercised to avoid errors and the creation of situations where the mariner may be faced with too much information (chart clutter) or irrelevant information which causes confusion or distraction. (...) Additional information to suit non-navigational requirements (for example: sub-surface operations (military, research, fishing etc); natural resource exploitation; recreation; port development; international boundaries and national limits) may be included on nautical charts if considered useful or necessary by the producing authority. On paper charts, the cartographer's expertise in design and selection, biased towards safety, is essential to achieve the required clarity. The format of electronic charts may allow detail additional to that shown on the paper chart, specific to navigation using Electronic Chart Display and Information Systems (ECDIS), to be included. However, irrespective of format, additional information must not be added at the expense of clear portrayal of navigationally significant information.