Paper for Consideration by the WENDWG

Update on the IHO ENC Catalogue

Submitted by:	**IHB**
Executive Summary:	This paper provides updated information on the development of the IHO ENC Catalogue. It includes preliminary considerations of the comments provided in November 2014 by Canada and USA.
Related Documents:	Actions WENDWG4/13 (IHB to provide a scoping paper on the IHO ENC Catalogue) and WENDWG4/14 (WENDWG Members to provide comments)
Related Projects:	N/A

Introduction and Background

1. The IHO ENC catalogue is referred to in the guidance provided to ECDIS users by the International Maritime Organization (IMO).

2. The development of the IHO ENC catalogue was initiated in 2004, at the request of the IMO, to show the growing ENC coverage and the Raster Navigational Charts (RNC) coverage in areas where there was inadequate Electronic Navigational Charts (ENC) coverage. As a result of significant improvements in ENC coverage however it was decided (some time ago) to remove the RNC coverage layers from the catalogue. The draft MSC Circular providing a consolidated "ECDIS – Guidance for Good Practice," as endorsed by NCSR 1, includes the following statement (NCSR 1/WP.8):
   "*The IHO provides an online chart catalogue that details the coverage of ENCs together with references to coastal State guidance on any requirements for paper charts (where this has been provided). The catalogue also provides links to IHO Member States' websites where additional information may be found. The IHO online chart catalogue can be accessed from the IHO website at: www.iho.int.*"
   It is worth noting that the IHO Strategic Performance Indicator No 2 ("*Growth in ENC coverage worldwide, as reported in the IHO on-line catalogue, relative to the existing gap in adequate coverage (as defined by IMO/NAV) from the benchmark 01 Aug. 2008*") and IHO IRCC Working Level Performance Indicator No 15 *(= SPI2*) should be based on this IHO online chart catalogue.

3. The IHO ENC catalogue has been upgraded since the WENDWG3 meeting with the intention of providing the most complete and authoritative display of available ENC coverage. This is the main scope of the IHO ENC Catalogue.

4. The greatest difficulty with building and maintaining the catalogue has always been getting comprehensive ENC coverage metadata. Attempts to get ENC coverage metadata directly from Member States, on a regular basis, in a consistent format, even through RHCs or the WENDWG, has proven to be very difficult. For practical reasons, the primary source of ENC coverage information shown in the catalogue is therefore based on AVCS coverage data supplied by the UKHO on a monthly basis. These include (in addition to data coverage limits) the following attributes: cell name, usage band and scale.

Catalogue Application

5. The IHO ENC catalogue is based on a Geoserver application which provides a web map service for each of the 6 ENC usage bands. The IHB developed a Java based web map client which displays the 6 ENC usage band services as layers within the application. Three base layers (World schematic, Continents and GEBCO 08) were included to provide different backgrounds against which the ENC layers and a port layer can be added for

additional information.

6. The basic map client (which is based on the GeoEXT and EXT JS libraries), includes basic functions to switch on/off layers, change their display priority and transparency, and interrogate attribute information. The catalogue can be accessed from the IHO web site at http://www.iho.int > ENCs & ECDIS > ENC Availability, or directly here.
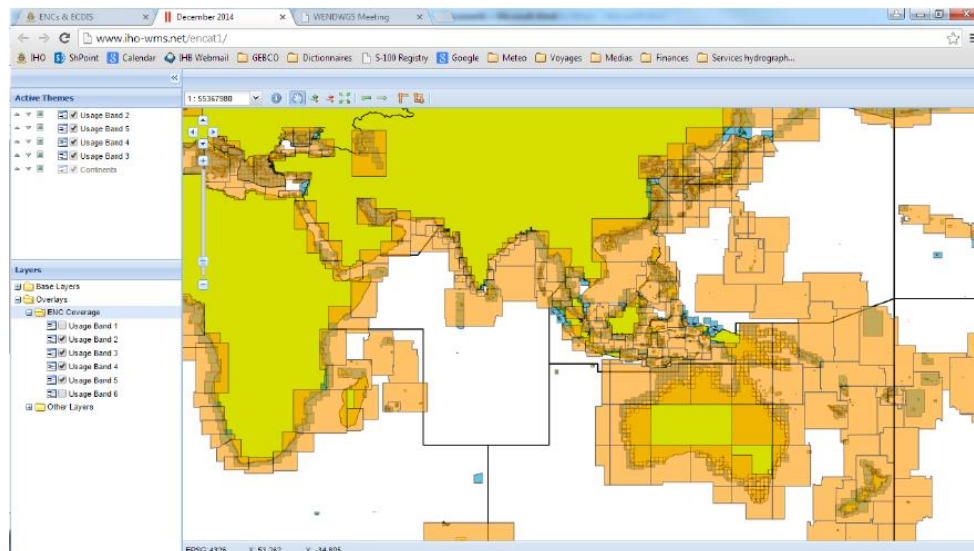

Figure 1 - IHO ENC Catalogue (as of December 2014)

7. The IHB is currently moving its GIS applications to the ESRI ArcGIS environment and is considering making the ENC Catalogue available as an ArcGIS online layer in due course, through WMS applications. If and when this is completed it is anticipated that the current ENC catalogue will be withdrawn. Due consideration will be given to IHO MS policies on intellectual property and software licences, including investigation of the impacts, if any, when using the ESRI cloud and confirmation that no software licence is needed to access ArcGIS online. In any case, it is duly noted that some users will not be able to open up ArcGIS online accounts or any other specific software to use this catalogue. The final solution will be "industry-neutral" from a user point of view and it is assumed that an up-to-date web-browser should be sufficient.

8. The updating cycle of the IHO ENC Catalogue is expected to be aligned with the provision of appropriate data updates. However, for practical reasons and resources available at the IHB, this will be at intervals of not less than every two months, unless an automated flow is set-up.

9. Information on carriage requirements for paper charts used in connection with ECDIS and links to the catalogues of IHO Member States are provided under separate headings on the IHO web site:
   - http://www.iho.int > ENCs & ECDIS > ENC Availability > Backup Paper Charts;
   - http://www.iho.int > ENCs & ECDIS > ENC Availability > On line Chart Catalogues.

IHO MS are invited to provide the IHB with the appropriate updates.

Way ahead

10. The IHB is developing a viewer application in order to be able to display ENCs content using a WMS service provided by PRIMAR. This application will be part of the IHB GIS environment and will be strictly for internal IHB use only.

11. It is the intention of the IHB to improve the IHO ENC Catalogue within the IHO/IHB GIS environment in order to be able:
    - To display ENCs distributed through the system of RENCs (by March 2015)

- To display ENCs not distributed by the system of RENCs but which are nevertheless available through End User Service Providers only (AVCS, Jeppesen, HOs, and others) (by March 2015);
- To automatically generate the IHO strategic indicators on ENC availability and the information to be reported to the IMO (NCSR) on an annual basis (10 weeks before NCSR meetings),
- To link the IHO ENC catalogue to the GIS-based INT paper chart catalogue (schemes/production status) now under development (by Dec. 2015).

12. Other functions proposed by IHO Member States (actions WENDWG4/14 and /15 refer) or ICCWGs can be considered for implementation in accordance with the maintenance and upgrade procedures that still need to be defined. The IHB is perfectly aware that more metadata would be helpful to users of the IHO ENC online catalogue. However, based on previous experience, the IHB is in the opinion that an incremental approach is the most appropriate as it is clearly an issue to get the data from various sources. These additional functions could be:

- search functions by ENC name and Producer Code, issue date, update date, distribution points;
- typical GIS functions such as: opacity, layering,..;
- polar projections that are more suitable for displaying ENC coverage in the polar regions;
- designated and reliable additional source datasets (such as Ports);
- robust controlled-version of the database in force (ENC released or under preparation, ENC schemes when they exist to display planned ENCs, etc.)
- availability of base maps (GEBCO08, World Schematic, etc.) for most of the servers (as some ports might be blocked by some servers);
- downloading functions in XLS, SHP formats if possible;
- availability of URLs from Independent Service Providers for getting the most comprehensive coverage.

13. The IHB will investigate also the possibility of making available, using password-protected access for internal use only (IHO MS, RHC, ICCWG, RENCs, IHB), the tools developed by PRIMAR that provide in a very user-friendly environment, basic but essential information on ENC coverage and overlap reports. In the future, and resource permitting, if existing solutions are not satisfactory enough, it would be useful to consider the establishment of an IHO XML catalogue metadata S-100 product specification.