

Spatial Data Infrastructure (SDI) Note by Germany

Collecting, evaluating and supplying marine data, i.e. hydrographic, oceanographic and other relevant data of the marine environment in conjunction with the various responsibilities of Hydrographic Offices belongs to their core business. This is particularly true for the traditional HO services for safety of navigation and has been brought about as yet through the standard paper products.

It is a well established fact that the world is going digital, and this includes also geographic (or spatial) information, as one can see from the most successful launch of “Google Earth”. However, the availability of digital spatial information is mostly confined to terrestrial data, and here particularly on imagery. Geographic imagery of the oceans and seas, though, is quite useless, while digital marine vector data (which includes hydrographic data), with appropriate documentation (“metadata”) is almost completely missing in the internet.

The digital world has the potential of netting together information from a vast number of sources, and where this potential exists, pressure increases to exploit it. In terms of spatial information, networking together data from different sources, though, requires in the first place a common basis which has been called “Spatial Data Infrastructure” (SDI). This need has been identified in many countries of the world and has led to a number of national projects, which in turn have triggered regional and even world-wide SDI projects. An example of a regional project is the EU project **Infrastructure for Spatial Information in Europe** (INSPIRE) which aims at bundling together the national SDIs of European Member States.

The relevance of SDI to Hydrographic Offices has been discussed at a Seminar organised, on behalf of the North Sea Hydrographic Commission (NSHC), jointly by BSH, Germany, and the IHB, in Rostock, Germany, in November 2005¹. Establishing an SDI also in the hydrographic world has been identified as an issue of major strategic importance to Hydrographic Offices. One of the conclusions of this Seminar was, following the proposal of the IHB President VAdm Maratos, that Hydrographic Offices should work together in forming a “**Marine Spatial Data Infrastructure**” (MSDI), as a sub-structure of a global SDI. Another important conclusion was that it is necessary to link together marine and terrestrial spatial data as this is needed to resolve the problems of *coastal zone administration, disaster prevention and assessing the impact of global warming on rising water levels*.

The findings and conclusions of the Rostock Seminar have been endorsed and extended at a recent Marine SDI Workshop held by IHB and the Cuban HO in Havana, Cuba (13 to 14 February 2007), where it was concluded that there is a need for all IHO Regional Commissions to put the development of MSDI as a strategic item on their standing agenda.

¹ The presentations and results of this Seminar are available from BSH on request (email: horst.hecht@bsh.de)

What is “Spatial Data Infrastructure” all about? Its purpose is to provide access to geospatial data of all kind, for an encompassing digital geographic description of the earth and the hydrosphere, to facilitate the use of spatial information for all purposes.

The term “SDI” comprises:

- A common set of standards, both for data and geodesy,
- A set of procedures and tools to work with the data
- A set of spatial data bases
- A network linking the databases together.

Each one of these SDI components constitutes already a big task for every individual HO – it may require already considerable efforts needed to bring together all digital spatial data within an individual HO, under a single user interface, so that they can be used and interpreted in conjunction with each other. But taken together, i.e. in a network linking together a potentially large number of different sites represents a challenge by itself that requires the close cooperation of all partners.

It has to be recognised that land mapping agencies in most countries are already far advanced in SDI matters, largely ignoring the hydrosphere, however. This reflects the fact that so far land mapping and hydrography are usually disconnected in many countries – something which makes it even more difficult to harmonise both spheres in terms of spatial data. On the other hand, this illustrates the need for taking action, for national HOs as well as IHO as the competent international organisation.

On a national level, by HOs taking the initiative for integrating the marine sector with the terrestrial one opens them a golden opportunity to raise their profile as the competent national body for marine matters.

Fortunately, IHO has based its entire digital future on an elaborated data standard, S-57, which is not only the standard used for ECDIS, but also the platform on which a more comprehensive standard is being developed, called S-100, which can accommodate a wide variety of marine (e.g. 4-dimensional oceanographic) and other – even terrestrial – application profiles. As S-100 is being developed by IHO within the framework of the worldwide ISO 19100 series of geographic information standards it will offer a compatible (at least inter-operable) basis for joining marine and terrestrial spatial data. It has to be recognised, though, that IHO S-100 is little known outside the realm of hydrography, it is unknown even within the oceanographic world. This information deficit clearly is something which needs to be addressed by IHO, particularly with IOC.

Conclusion:

- HOs should recognise the need to work together both nationally and internationally on developing the MSDI, in conjunction with the relevant national and regional SDI projects, as a matter of high strategic importance
- NIOHC, like other Regional Hydrographic Commissions, should place the MSDI development as new item on their standing agenda.