Coastal SDI data is crucial for planning, executing and monitoring developments of coastal infrastructure onshore and offshore

A SEA VIEW

NATIONAL SPATIAL DATA INFRASTRUCTURES RARELY TAKE INTO ACCOUNT MARINE DATA. ROGER LONGHORN AND MIKE OSBORNE REPORT ON THE FEW THAT DO AND ONGOING WORK TO MAKE THEM THE RULE, NOT THE EXCEPTIONS

National governments began focusing on national spatial data infrastructures (NSDI) more than 20 years ago. However, most NSDI initiatives focused solely on land-based geospatial data, sometimes (but not always!) including coastlines.

The marine community is one of the few thematic geodata communities to develop SDI concepts and programmes identifying specific marine information needs, challenges and benefits. Unfortunately, in many cases, the marine SDI work has not been aligned or integrated with land-based SDI developments, as the latter were typically driven by topographic mapping and/or cadastre agencies. These actors had little regard for, or understanding of, marine information needs, even at coastlines, let alone farther out to sea. Thus, identifying marine SDI needs and benefits has usually been missing from NSDI developments, globally.

An additional challenge is the number of disparate 'marine' communities, including the offshore navigation community comprising mainly national hydrographic offices, the remit of which extends principally to safe navigation, and multiple research and marine economic communities, including the coastal zone planners and managers, aquaculture, fisheries (near shore and offshore), and energy exploration and production. Perhaps this is one reason that 'Marine SDI' was a theme rarely visited, with a few exceptions (see below), at national level.

Australian Marine SDI developments

In Australia today, elevation and depth are in the national Foundation Spatial Data Framework, under custodianship of the Intergovernmental Committee on Surveying and Mapping. The bathymetry dataset includes a 50m multibeam dataset of Australia to provide an understanding of the nature of the seafloor plus various representations of the coast, ranging from lowest to highest tide, to aid in coastal planning and monitoring. The available elevation and depth data underpins safe hydrographic navigation, definition of maritime and administrative boundaries, emergency management, natural hazard risk assessment, water management, natural resource exploration and exploitation and national security.

USA Coastal SDI

The Coastal Services Center of NOAA (now the Office for Coastal Management) published in 1999 definitions and goals for the Coastal National Spatial Data Infrastructure (CNSDI) within the US NSDI. In the late 1990s, the CNSDI supported establishing coastal data metadata

Standardised maritime SDI data aids safe navigation globally

Working with geospatial data where land meets sea is not easy today, especially when datasets need to be integrated

standards within the remit of the Federal Geographic Data Committee (FGDC) work on the national content standard for digital geospatial metadata. Today, coastal and marine SDI developments are in the remit of the FGDC's marine and coastal spatial data subcommittee.

The vision of the US Marine and Coastal NSDI is that current and accurate geospatial coastal and ocean data will be readily available to contribute locally, nationally, and globally to economic growth, environmental quality and stability, and social progress. Today, NOAA's DigitalCoast is one of the most-used resources in the US coastal management community.

Canadian Marine GDI

The Canadian Marine Geospatial Data Infrastructure (MGDI) concept was published in 1999, followed by a comprehensive ***Marine Use Requirements for Geospatial Data*** report in 2001. One of the challenges noted 14 years ago was 'Capacity building (training) will be needed to create demand for MGDI and to create the capacity to use MGDI to the fullest' – a challenge that remains today.

Marine SDI work in Canada now focuses on marine cadastre within the national SDI programme, GeoConnections, and development of the Arctic SDI, which involves many nations with Arctic connections. Important work in eastern Canada is led by the Coastal and Ocean Information Network Atlantic, a hub for coastal and ocean information in Atlantic Canada for the Atlantic Coastal Zone Information Steering Committee.

Global Marine SDI

One group looking at Marine SDI needs at the global level is the Marine SDI Working Group (MSDIWG) of the International Hydrographic Organisation (IHO), which was formed in 2007 in response to the IHO's remit being broadened to include socio-economic development and environmental protection. The group's principal objectives are to raise awareness of Marine SDI within the hydrographic office (HO) community and to provide guidance and other support to HOs wishing to be involved in NSDI and regional SDI initiatives. The MSDIWG is one of the working groups of the IHO's Inter-Regional Coordination Committee (IRCC) that promotes and coordinates activities that might benefit from a regional approach.

Another working group under IRCC is the Capacity Building Sub-Committee (CBSC), the remit of which is to support regional hydrographic commissions in assessing the need for and delivering training programmes in the areas of hydrography and marine cartography. Traditionally, these areas have focussed on publishing a range of information products dealing mainly with navigation as required by the International Convention for the Safety of Life at Sea. More recently, however, the CBSC's remit has expanded to include courses on geographical information management and SDI. This is not only seen as essential in supporting the wider uses of hydrographic data, and hence the broader remit of HOs, but also in helping to develop the knowledge and technologies required for e-navigation.

IHO S-100

In addition to its capacity building activities, the IHO has extended its electronic navigation data standard, S-57, used for exchanging navigation data between HOs and since 1997 in the production of ENCs to the development of S-100 as a 'Universal Hydrographic Data Model', and S-99, 'Operational Procedures for the Organization and Management of the S-100 Geospatial Information Registry'. Along with similar standards in other geographical domains, S-100 is aligned with the ISO 19100 series of geographic standards, thereby making the use of hydrographic data interoperable with other ISO 191100 based datasets and facilitating the exchange of data between the HO and other geographical communities.

Consequently, the goal for S-100 is to support a wide variety of hydrographic-related digital data sources, products, and customers, including imagery and gridded data, 3D and time-varying data, and new applications that go beyond the scope of traditional hydrography, such as high-density bathymetry, seafloor classification and marine GIS. S-100 compliant data sources will also enable the use of web-based services for acquiring, processing, analysing, accessing, and presenting data. Thus, the series of data specifications being developed under the S-100 framework will be key to helping implement a global Marine SDI that extends beyond traditional navigation, supporting the work of numerous agencies involved in a wide range of marine themes.

PERHAPS THIS IS ONE REASON THAT 'MARINE SDI' WAS A THEME RARELY VISITED, WITH A FEW EXCEPTIONS

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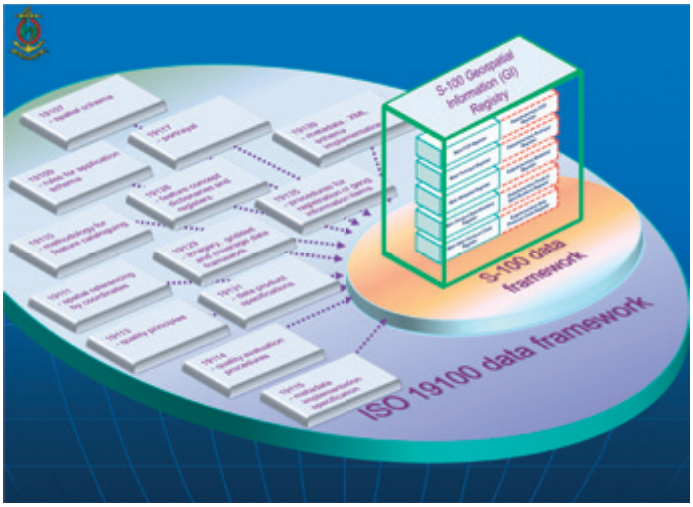

S-100 specifications and Registry are being aligned with ISO's TC-211 series of 19xxx global standards