

**IHO/CHRIS Marine Spatial Data Infrastructure Working Group  
(MSDIWG)  
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**Marine SDI and the International Hydrographic Community**

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**Background**

The International Hydrographic Organisation (IHO) represents the member interests of the National Hydrographic Offices and the hydrographic community across the World. The IHO has focussed successfully on the primary role of its membership, to ensure the development and sustainability of standards associated with the capture, management and use of hydrographic data in support of UN Convention for Safety of Life at Sea (SOLAS). It does this through the publication of "official" navigational charts and supporting publications.

In November 2005, the IHO hosted a Seminar in Rostock, Germany entitled "The Role of Hydrographic Services with regard to Geospatial Data and Planning Infrastructure". The seminar recognised formally that hydrographic data was not only important in support of Safety of Life at Sea but also to Defence and the wider Environment.

The hydrographic community has a reputation based on quality and professionalism. It has built up a store of experience and expertise that is relevant when considering wider use of hydrographic data. The role of IHO is to impart knowledge, provide guidance and standards to practitioners and inform Government and other stakeholders on hydrographic matters. The change in the IHO's constitution to embrace the need to encourage wider use of hydrographic information represents an opportunity for the IHO to use this wealth of knowledge and experience to underpin the development of best practice in the creation marine components of NSDI.

Regional SDI's are emerging. For example; in the European Union, legislation is being formulated to create an Infrastructure for Spatial Information in Europe (INSPIRE) to develop interoperability between datasets (e.g. land and sea interface at the coast line); harmonise data and metadata standards, develop network services and encourage the re-use / sharing of public sector information. The INSPIRE EU Directive was announced on 22nd November 2006 and will be implemented in mid 2007.

HO's may wish to establish a role for themselves and the information they are responsible for in the development and management of National Spatial Data Infrastructure (NSDI) programmes. The IHO recognises that this can only be done on the basis of the structure of the individual National Administration and that this will differ from country to country.

## What is a SDI?

A Spatial Data Infrastructure is a term used to summarise a range of concepts, processes, relationships and physical entities that, taken together, provide for integrated management of spatial data and information. The term covers the processes that integrate technology, policies, criteria, standards and people necessary to promote geospatial data sharing throughout all levels of Government. It covers the structure of practices and relationships among data producers and users that facilitates data sharing and use. It covers the set of actions and new ways of accessing, sharing and using geographic data that enable far more comprehensive analysis at all levels of government, the commercial and not-for-profit sectors and academia. It also describes the hardware, software and system components necessary to support these processes.

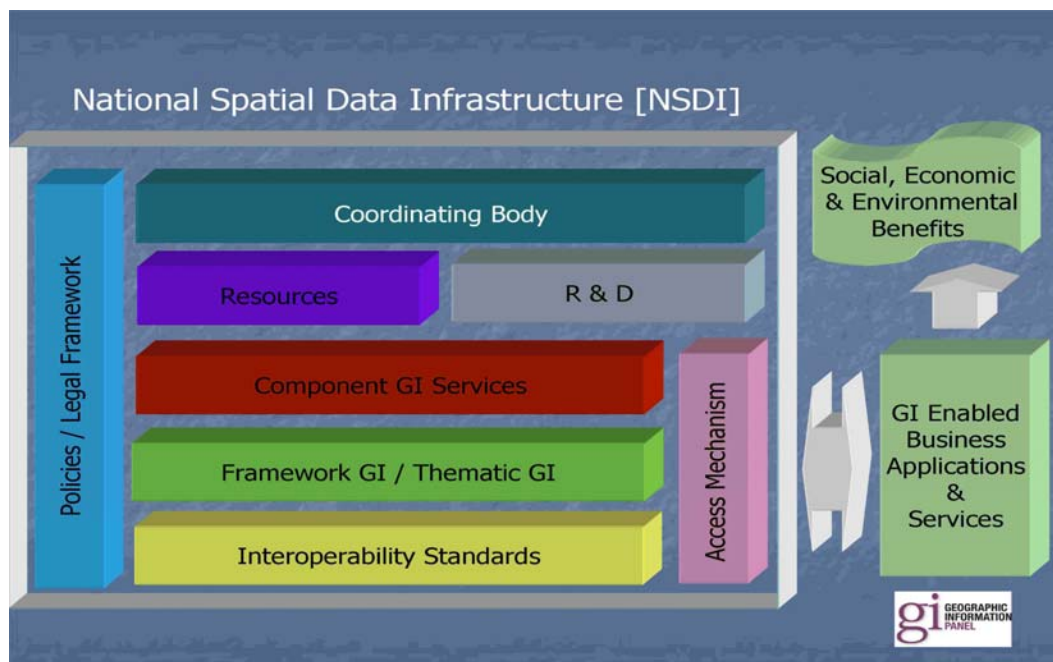


Figure 1 Components of the UK NSDI (Source: UK GI Panel, Oct 06)

## Marine SDI

Marine Spatial Data Infrastructure (MSDI) is the component of NSDI that encompasses marine geographic and business information in its widest sense. This would typically include seabed topography, geology, marine infrastructure (e.g. wrecks, offshore installations, pipelines and cables etc); administrative and legal boundaries, areas of conservation and marine habitats and oceanography.

## What constitutes a SDI?

SDI is a framework comprising the following key components:

## **Policy**

Above all there needs to be a policy to create information that is interoperable. This is often linked to a nations or organisations strategy for geographic information (GI).

## **People & Organisations**

There needs to be willingness and practical co-operation between the various organisations that create, share and use information to implement the overall policy.

## **Enablers**

Enablers are essential building blocks in the development of NSDI's providing the framework for data acquisition, management and updating. Examples include:

- Standards; Standards for geographic information are being created internationally (ISO19xxx, OGC) and in many areas sectoral standards reference these standards (e.g. S-100).
- Geodetic Reference System; the horizontal and vertical datum to which geospatial information (content) is referenced and the coordinate transformations between systems.
- Metadata; at its simplest metadata is 'data about data' and describes the characteristics of a dataset (i.e. content, value and limitations).

## **Content**

Content is at the core of SDI should be application-neutral thereby ensuring that it meets the needs of the widest user base. Users should have immediate and easy access to up to date, accurate and appropriate information that is linked to other information in a way that reflects how it exists in the real world. Content can be described in the following illustration:

- Reference Information; Geographic features that are used as a locational reference for application information or are used in geographic analysis by a majority of users. Reference information is formed of base and associated reference information.
- Application Information; Any business-oriented information that requires connectivity through a geographic reference of some kind (such as a building, field, road or user defined feature such as a property parcel) to enable the end-user to analyse and interpret the integrated information from different sources.

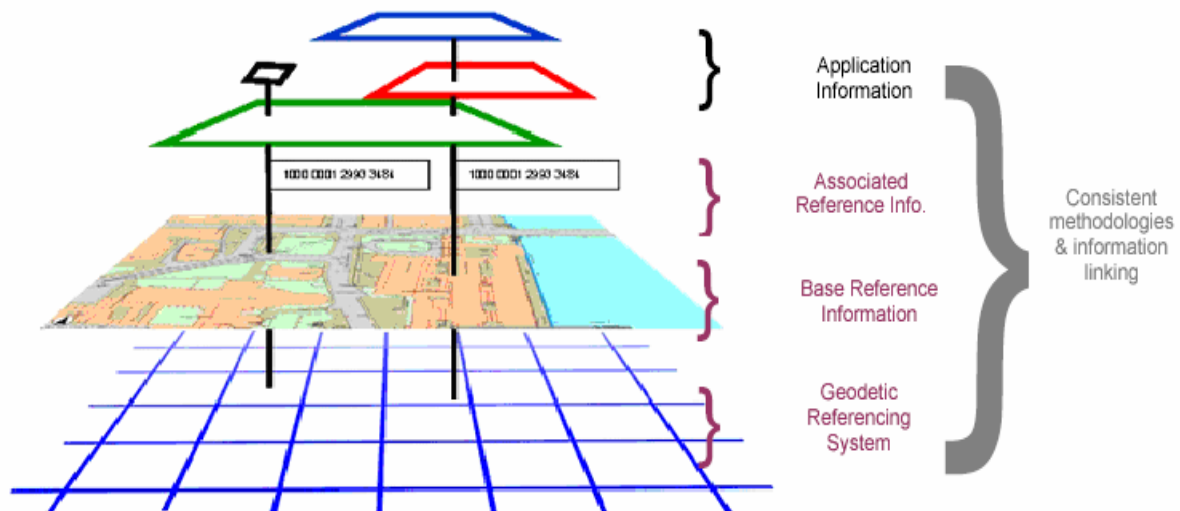


Figure 2: Layers of content within a NSDI (Source: DNF, 2004)

### The role of the Hydrographic Offices in supporting NSDI

Hydrographic Offices (HO's) wishing to or being invited by their National Governments to be involved in the development and management of National SDI should consider the following questions:

- Does the structure of the national SDI allow for a comprehensive marine SDI (MSDI), a MSDI that excludes hydrographic information or only a specialised hydrographic SDI (HSDI)?
- Does the NSDI allow for a HO to become responsible for or partner in their national MSDI and its incorporation into the NSDI?
- Does the type of data provided by HO's support MSDI and / or NSDI?
- Does the HO collect data purely for the safety of navigation or does it meet the needs of a wider user community?
- Does the quality and usability of existing spatial databases within the framework of the NSDI include access to metadata?
- What are the requirements for quality assurance of data outside of its use in support of SOLAS?
- Does the establishment of user requirements for supply of hydrographic information impact on any necessary restrictions on data access?
- Does the financial, administrative and technical requirements and / or national policy on cost recovery impact on the establishment and maintenance of MSDI and / or NSDI?

### Recommendations to Conference

The IHO accepts that the development and management of SDI rests with the Member States and that the role of national HO's within NSDI will be for that country to define. However, the IHO is keen to raise awareness of the benefit of supporting MSDI's and NSDI's across its membership.

The IHO offers to examine the needs of members and provide capacity building support to requests from Member States. IHO will also determine its role within the framework of an evolving Global SDI (GSDI).

The IHO has an opportunity to develop a wider remit as part of its role in representing the hydrographic community and to ensure that its members interests are represented in the creation of MSDI's and NSDI's.

The IHO asks conference to endorse the establishment of a task group, independent of existing IHO working groups (as this topic is multi-faceted), to review, inform and assist those working groups and to forge links with other bodies (e.g. OGC, ISO TC211, IOC) to ensure that IHO interests are represented.

[DRAFT ToR attached - TBA.]