

Data Harmonisation why it matters to coastal managers

Executive Summary

Background

In an ideal world, coastal data and information would be harmonised and interoperable. Harmonisation refers to the standardization of data so that they can be matched with other data and information regardless of the format. Interoperability is the ability of products, systems, or business processes to work together to accomplish a common task. In terms of standards, an international standard has been developed by ISO (the International Standardization Organization) to provide a standard structure for describing geographical data – ISO 19115. Another important aspect is related to the data itself. When we speak of data we mean data and metadata at the same time. Metadata is “*data about data*”. Although metadata creation might seem quite logical and inherent to the production of datasets, especially regarding geographical datasets, lack of metadata remains one of the main problems coastal managers face frequently.

Despite these considerations a major question remains - why are these underlying concepts not being applied? The answer may be easy: there is no framework setting common, unifying, data collection and production measures and a proper agreed exchange format between organisations.

This state of affairs has been the trigger for the development of the European spatial information infrastructure initiative which has led to the INSPIRE Directive¹.

The data and information available for coastal management widely varies in formats and types: from quantitative data to qualitative information, from Internet based digital reports to scientific books, maps and images. There are also various tools at hand for visualising, managing and obtaining data and information, first and foremost Geographic Information Systems (GIS), but also Remote Sensing (RS) and Decision Support Systems (DSS). Spatial data and information play a determinant role in the development of coastal related planning and management strategies. Although no real studies have been carried out about these issues, the “information” dimension probably represents 10 to 20% of the total cost of coastal zone management – including coastal engineering projects.

Coastal stakeholders’ needs and practices in terms of data and information are very diversified. While they vary according to the level of influence and the specificity of the policy issue being tackled, the constraints and difficulties remain relatively common.

The position paper aims to capture the aspirations of future users of a harmonised European spatial information infrastructure. To reach this goal, key coastal managers and professionals have been interviewed from national and regional governmental authorities, conservation bodies, and private companies, and findings from projects and initiatives in the European Union have been analysed.

The goal is to synthesise what limitations the current regime for data access has on the day-to-day work of coastal managers in Europe. This output is being used to define the ‘use case’ for the MOTIIVE project².

¹ The [INSPIRE directive](#) is available in the official languages.

² MOTIIVE is an EU project that examines the cost-benefit of using non-proprietary data standards while addressing data harmonisation requirements between the INSPIRE data component “elevation” (terrestrial, bathymetric and coastal) and INSPIRE marine thematic data for “sea regions”, “oceanic spatial features” and “coastal zone management areas”. MOTIIVE is providing guidance to the INSPIRE drafting tools on how data standards should be implemented to meet the needs of the coastal management community. EUCC – The Coastal Union, which is both a partner to MOTIIVE and a Spatial Data Interest Community registered with INSPIRE, has conducted a qualitative survey on how much missing spatial data interoperability is reducing efficiency of coastal managers and practitioners. More info available at project website: www.motive.net/

Key findings

Based on our interviews and analysis of projects, the main problems and constraints faced by Coastal Managers regarding data and information can be summarised as follows:

- there is a lack of metadata and correspondingly difficulties to discover data.
- currently a large variety of formats exist and these are not interoperable
- reference systems are not harmonized across borders,
- data sources are not consistent,
- scales are not compatible,
- there are restrictions for data accessibility and data handling is costly

The main reasons for these constraints are:

- lack of standardisation and guidance for data and metadata and associated publishing protocols
- the reference systems are defined at national level but not at European level,
- an entity that certifies the quality of data is missing,
- Lack of financial resources to adjust data according to common formats/protocols,
- Existence of copyrights hampers the wide use of data and imply additional costs,
- Data is being collected more than once due to lack of transparency,
- public security measures,
- Low awareness of metadata benefits which also relates to the lack of a data sharing culture.

It is envisaged that the INSPIRE directive may provide the legal framework to support the needs of the coastal and marine community. The spatial data infrastructure as it is currently being defined by INSPIRE, would address many of the above issues, ensuring both technical and non-technical issues are to be addressed.

The nature of the work of Coastal Managers means that such activities are routine and integral to their 'day job'. Given this however, there is a low degree of awareness and understanding by coastal managers and professionals regarding the new INSPIRE Directive and the solutions that are envisaged. The preparation of the present document has contributed to improving knowledge about INSPIRE and to creating a starting point for better understanding of the Directive.

Conclusions and recommendations

There is a growing need for better and harmonized data and information for the integrated management of the coastal and marine environment. Better ecosystem and seabed information is needed to spatially plan marine protected areas, to regulate marine resource exploitation, including extractive and shipping industries. Regarding the stakeholders involved in shipping and management of low-lying areas, forecasts of waves and surface currents are essential. Furthermore, those developing and/or protecting coastlines need tidal patterns, erosion rates and sea-level rise predictions, to name a few. Therefore, the common objective must be to better facilitate sharing of marine and coastal information.

As result of the consultation with stakeholders, and in order to counteract the present situation and to improve their performance, a set of key recommendations should be taken into consideration. These include:

- agreements must be achieved regarding common formats and protocols,
- a common reference system must be created,
- international quality standards need to be defined and enforced,
- a common system providing low-cost solutions should be envisaged, providing cost saving opportunities by avoiding double work, and being user-friendly,
- practical applications of standards should be presented
- efforts need to be made to raise awareness, in particular the adjustment of a legal framework making metadata obligatory, and
- targeted and well defined communication of the INSPIRE Directive and Implementation Rules should be ensured.

The spatial data and information infrastructure to meet the needs of the coastal management community should be developed taking into account two main user aspirations:

- 'seamless discovery' – the user would like to be able to search widely, at different levels and access all that exists. This entails the needs for agreements in terms of data descriptions, common metadata definitions, common protocols, data access and sharing policy. The user would like to use a geo-browsing platform like Google Earth to view all 'like for like' data according to a given subject in a given area.
- 'seamless use' – the user would like to easily identify the data available and to easily find what fits the purpose of his/her work and download it directly to their analysis software. This entails the needs for agreements on definitions of data, common models, measurements, and data sharing principles.

These above aspirations at face value are wholly consistent with INSPIRE. However a note of caution needs to be sounded to ensure these aspirations are realised. The INSPIRE initiative and the specifications that the Drafting Teams are producing are actually harmonisation frameworks comprising abstract models, principles, and rules. They are much less specific than many data creators or users would wish to see, especially regarding the question “how do I put these into effect, practically?” The answer to this question will come with time and the development of relevant tools and best practice experience in applying the rules to actual datasets, applications and services. In the meantime, it is important that the coastal community, whether involved in research or management, remains aware of the work emanating from the INSPIRE Drafting Teams and early practical applications of the rules.

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LINKS:

www.motiive.net - Full position paper for download in project website.
<http://www.eucc.nl/en/policy/index.htm>