

PARTNERSHIPS

Managing UK

Management of marine data and information is important, not just for individual organisations trying to maximise their resource, but to the whole marine sector to maximise our understanding of the marine environment. The Marine Environmental Data and Information Network (MEDIN) was established in April 2008 and has the objective to improve access to, and management of, UK marine environmental data and information. It aims to achieve this primarily through the development of a coordinated framework for managing marine data and information, whose main components are Data Archive Centres (DACs), standards, a data discovery portal, improving availability and quality of base reference layers and coordinating input to international data commitments. MEDIN has implemented a partnership approach to meet these aims and is now starting to realise much of the effort which has drawn on the technical expertise and knowledge from all sponsors.

MEDIN Components

Marine data can be relatively expensive to collect because of ship time and specialist equipment. If existing data sets are reused rather than new data sets collected this can provide potentially large resource savings. Therefore, one of the largest drivers for MEDIN is to promote the reuse of existing marine data. To further these aims a metadata discovery portal has been released that allows users to discover and find information about existing data sets where after they can then contact the originators to gain access to the data.

Data is the lifeblood of research, yet much information remains hidden away after the initial analysis by the primary researchers. In this article Dr Mark Charlesworth and Dr David Cotton, explain how MEDIN – the Marine Environmental Data and Information Network is striving to ensure that the best use of existing data can be brought about by improving access through partnership



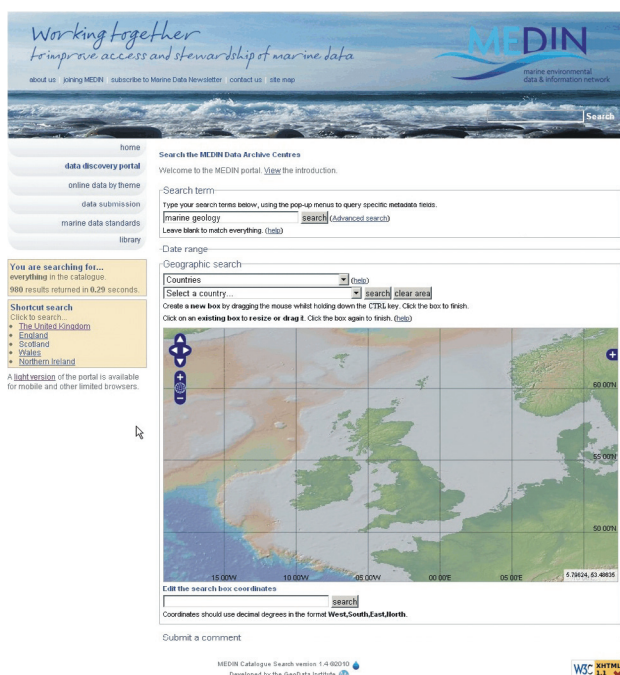
The user interface currently contains an initial set of over 1000 records describing key data held within the MEDIN network. The numbers of records will grow over the coming months and years to cover all marine data themes to become the first port of call to discover marine data. The front page for the portal is purposefully simple and uncluttered so as not to deter the non-expert; advanced search functionality for the expert user is imbedded within the search headings 'Search term', 'Data range' and 'Geographical search'. The user can choose in what order to use the search to create a query in a flexible and simple manner. Portal records can be created in the

FRV Alba Na Mara.
Ship time can be
expensive Courtesy
Marine Scotland

MEDIN metadata format using the MEDIN online metadata tool which automatically assists with, and guides you through, production of the record which is compliant with the UK GEMINI 2 and therefore INSPIRE metadata standards.

Once a data set has been used for the purpose it was collected, it often sits on an individual's PC or dusty shelves and never sees the light of day again. The establishment of DACs was aimed at ensuring that those data are archived and therefore available to the community in the long term. The DACs, which build on existing organisational capabilities, will ensure the secure, long-term, curation of key marine data sets, according to best prac-

marine data



- Data can be readily exported to DACs and other users
- Instils good practice amongst users

Once the data management and long term security of data sets has been achieved then the community can start using the infrastructure to build new products, and MEDIN has been active in this area by recommending and developing base reference layers that can be used to support a variety of needs, such as marine spatial planning.

The Partnership Approach

MEDIN has 13 sponsors and many more partners that are primarily from the government sector but also include some private organisations. This network has been important in the delivery of the technical requirements and standards for MEDIN as the expertise and knowledge of all partners has been built upon wherever possible. In many cases we have been able to adopt existing standards

and technology in their existing form thus avoiding reinventing the wheel. This has also led to good coordination with other initiatives such as the UK Location Programme and the UK Marine Monitoring and Assessment Strategy.

Partner commitment to MEDIN remains critical. The long term success of MEDIN will only be achieved if members of the marine community critically review their data management arrangements and aim to adopt the best practices proposed by MEDIN. This includes the adoption of standards, the generation and publication of metadata, and the archival of data within the MEDIN DAC network. MEDIN will continue to build on the membership already established though invitation to partners meetings, invitations to get involved with working groups and the MEDIN online publication 'Marine Data News'.

Whilst the main focus of MEDIN's work has been on Government policy requirements, MEDIN equally intends to derive benefits for the whole marine community including industry, research, education communities and the heritage sector.

All these communities stand to benefit from efficiency gains (flowing from reduced costs and project time incurred in locating and accessing required data sets) and access to a wider range of reliable, authoritative and well-managed marine data. A workshop 'Marine Data Accessibility and Use: A review of government and industry sectors in the UK' was held specifically to look at barriers between the industry and government sector and ensure that the framework for marine data management in the UK is being developed to meet both industry and government needs. Since this

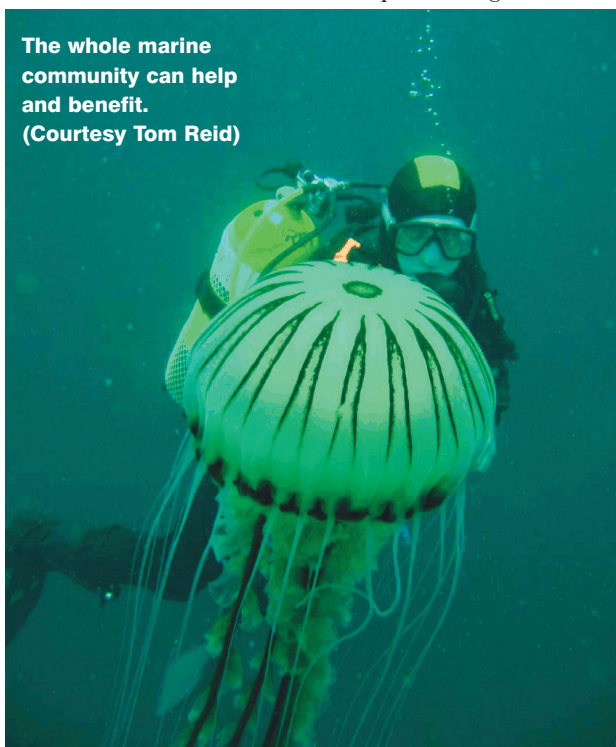
tice and to accepted international standards.

The adoption of standards can speed up access to, and use of, geographical data. In recognition of this the government have stated that they 'will ensure that all data published by public bodies is published in an open and standardised format, so that it can be used easily and with minimal cost by third parties'. MEDIN is working towards these aims by deriving standards, in particular for the data and information that must be stored with a particular data type, to ensure it can be readily used. As such these standards recommend term lists and hierarchical structures to the data. The principle benefits of this suite of standards are:

- Allow a contracting organisation to easily specify a format that data should be returned in that can be readily used and includes all relevant attributes
- Provides a consistent format for contractors to work to (rather than a different format for each contract)

The new portal user interface has been built by the GeoData Institute at the University of Southampton.

The whole marine community can help and benefit.
(Courtesy Tom Reid)





Offshore wind farm

Courtesy Mills Media

workshop MEDIN has engaged with industry to derive and test standards, promote the archiving of data in DACs from government contracts by specifying a clause in the contracts and generate base reference layers for the wider community to use.

Opportunities for Efficiency

Evidence quantifying the time and effort taken to source and initially process data in preparation for assessments and applications includes:

- In the 'Finding Sanctuary' project 128 days were spent exclusively on tracking down information on the required datasets (i.e. the metadata). (<http://www.finding-sanctuary.org/>)
- The first four months of the UKSeaMap2 project (20% of project time) was devoted to sourcing and processing data into a standardised format. (www.jncc.gov.uk/UKSeaMap/)
- ABPMer advised that over a range of projects, 10-17% of project costs are spent on data gathering.
- Research for the "Atlantis" floods project showed that users spent 26-50% of project time on cleaning up data and fitting them together.

Clearly a disproportionate amount of time is spent discovering and using existing marine data, which has the potential to be reduced by the adoption of standards and raised awareness of existing data and information.

MEDIN also manages a number of other applications aimed at reducing costs such as the UK Directory of Marine Observing

Systems (UKDMOS), an application that allows the analysis of existing monitoring programmes with a view to improved coordination. Furthermore the way in which MEDIN operates, through a partnership approach, leads to saved resources as the whole is greater than the sum of its parts.

Once fully operational and adopted by the marine community, the MEDIN framework can be expected to deliver a range of real, practical benefits to the UK marine community, including:

- An improved evidence base for decision making and marine planning built on best available data.
- Efficiency gains in sourcing and ingesting data to meet project aims. Evidence shows that completing these activities presently takes between 10 and 75% of project costs
- Improved access to data

Example page from MEDIN portal

The screenshot shows the MEDIN portal interface. At the top, there's a navigation bar with links like 'home', 'data discovery portal', 'online data by theme', 'data submission', 'marine data standards', and 'library'. The main content area is titled '2002 Strategic Environmental Assessment SEA3 Technical report - Existing economic activities (North Sea)'. It includes a map of the North Sea, a list of search results, and a detailed metadata entry for the report. The metadata entry includes fields like 'Unique resource identifier', 'Licitation on public access', 'Conditions for access and use constraints', and 'Resource type'.

thereby supporting its re-use and maximising past investment in data.

- Coordination of marine survey and research activities, resulting in efficient use of expensive marine facilities.
- Consistent and clearer terms and conditions for data use, resulting in lower uncertainty, sustainability and more accurate project cost estimates.
- Support in meeting obligations to publish data (and metadata) through data.gov and INSPIRE.
- Contribution to international databases ensures understanding of climate change is based on the best possible evidence base.
- Technology transfer and awareness from international arenas into the UK leading to resource savings and knowledge of compliance needs.

Summary

The establishment of MEDIN was the UK Government's acceptance that marine data needed improved management. This can be achieved by implementing the MEDIN aims and putting in place the framework to address the unglamorous, but vital, core management processes necessary to secure UK marine data and make it widely available to answer complicated (and increasingly political) questions. The UK can manage without this framework, but it will cost ever increasing funds to assemble an increasing number of pieces of a more complicated jigsaw and the resultant picture may then not be fit for purpose. Investment in a marine data and information framework will achieve the coordinated, consistent and best practice approach to data management that ultimately will save money and benefit the whole of the marine community in the UK well into the future. (Further details at: enquiries@oceannet.org).