

Marine Environmental Data and Information Network (MEDIN)

Annual Report for 2011-12



'Measure once, use many times'

1 Highlights in 2011-12

1.1 Established in April 2008, MEDIN is a collaborative partnership working to improve the management of marine data and information. MEDIN reports to, and is overseen by, the UK Marine Science Co-ordination Committee (MSCC). See governance details in **Appendix A**.

1.2 Important progress has been achieved in MEDIN in 2011-12, though there are still some areas where further work is needed (See Section 7).

1.3 The initial MEDIN DAC network of four DACs (BGS - Geology, Geophysics; BODC – Oceanography; DASSH - Marine Species and Habitats; UKHO - Bathymetry) is fully operational, and has expanded to include the Met Office DAC for marine meteorology. The Fisheries DAC (CEFAS and Marine Scotland) and the first component of the Historic Environment DAC (Archaeology Data Service) have passed accreditation and will be launched in October 2012.

1.4 A review of current data management arrangements for marine socio-economic data has been completed¹. This revealed a complex picture, with no single solution and a recommendation that MEDIN acts in a leading role. The Executive Team is currently considering how these results should be taken forward.

1.5 The discovery metadata standard is now well established across the marine community and MEDIN has developed a number of tools to generate metadata in this format. Support for generating metadata has been provided to many agencies through visits, dedicated workshops and a helpdesk. These standards are being widely adopted and metadata are being submitted to the DACs following the MEDIN standard. Data guidelines have been tested and new guidelines developed for noise, recreation and leisure, and seabed (and sub-seabed) surveys. Interest in the data guidelines is increasing.

1.6 Use of the MEDIN marine Discovery Portal has steadily increased throughout the year. By the end of March 2012 it had a population of over 2,600 metadata records. An upgrade to the portal which will improve the search functionality and the display of the recovered metadata records is currently underway. The portal is becoming well used with 3756 visits in the year to August 2012.

1.7 An action plan to improve access to reference data layers was completed and is now in the process of being implemented. Progress has been made towards developing web access to key reference data layers through the MEDIN web pages. An improved marine gazetteer has been developed and adopted on the MEDIN and data.gov.uk portals.

1.8 MEDIN continues to provide important links to European and international initiatives, including providing information, support and technical resources to assist the marine community meet their obligations to publish public data in the implementation of the INSPIRE directive. There has been close liaison with UK Location in this regard. Also important support has been provided to DEFRA and the devolved administrations (and UKMMAS), regarding the provision of data required for reporting under the Marine Strategy Framework Directive, and the subsequent publication of underlying data to the relevant bodies.

¹ MMO and Marine Scotland (2012) A Review of Marine Social and Economic Data. A report produced for the Marine Management Organisation and Marine Scotland, pp 45. MMO Project No: 1012. ISBN: 978-1-909452-01-5.

2 Progress against Key Performance Indicators

2.1 2011-2012 was the first year under the current three year (2011-14) Business Plan. In this period MEDIN is moving to an operational phase from a developmental phase, with a 30% reduced level of funding, from £763k per year to £530k per year.

2.2 The 2011-14 Business Plan outlined a programme of work to build on the foundations in place and establish a UK-wide operational framework for the management of marine data and information which provides:

- A single point of access for UK marine data and information.
- A robust network of definitive integrated Data Archiving Centres (DACs).
- The provision through the Data Archiving Centres of priority data to underpin UK and EU legislative and obligatory requirements, for monitoring and marine planning, in line with INSPIRE principles and the UK Governments Open Data Policy.
- Facilitation of full data flow to the DAC network for all government sponsored contracts in the marine and coastal zone environment.

2.3 Priorities in the MEDIN Business Plan, addressed in the 2011-12 Work Plan are identified by the 2011-2012 Key Performance Indicators (see tables overleaf)

2.4 Through meeting these KPIs, MEDIN will provide core capability in support of UK Government's marine objectives and will act for the benefit of the whole marine data and information community, including government bodies, research organisations, the private sector and the general public. MEDIN will work closely with the Marine Management Organisation (MMO) in England, Marine Scotland, and the equivalent bodies in Wales and Northern Ireland, helping to ensure these bodies have access to the data sets they require for their planning, management and licensing activities.

2.5 The overall priority was to ensure the consolidation of the work delivered so far and realise some genuine and tangible benefits from this work. Such benefits include easier access to a wider range of marine data for re-use, the ability to meet national and international obligations to publish metadata and data, and the ability to draw on collective effort to meet common needs.

Progress against Key Performance Indicators: 2011-12

2011-12 Key Performance Indicator	Progress
<p>1. <u>Increase the content of the Portal</u></p> <ul style="list-style-type: none"> a. The target was 4500 data set metadata records available by March 2012. b. A secondary indicator (to provide an indicator of currency) is the number of records for data sets collected in the last 5 years. A baseline measurement is the level at March 2012. c. Increase the usage of the portal The objective is to establish the portal as the recognized central source of information for marine data. Google analytics (put in place in 2011-12) provide the baseline (in terms of numbers of visits) against which future progress will be measured 	<p>Expect to complete in Dec2012.</p> <ul style="list-style-type: none"> a. In March 2012 1611 records were available, by July 2012 this had increased to over 3500, the target of 4500 is expected to be met by the end of December 2012. There were delays in meeting this target because of technical difficulties in implementing the metadata database tool (now resolved). b. 1022 of the 2611 records available in March 2012 contained data collected within the last 5 years (identified by a collected date later than 1st April 2007) c. Achieved - Portal visits doubled between February 2011 and February 2012, when there were 200 visits in the month. We still aim to significantly increase portal usage, so this work will continue. Further publicity is planned once upgrades to portal functionality are completed
<p>2. <u>Consolidate the DAC network / increase the transfer and flow of data.</u></p> <p>Initial measures are:</p> <ul style="list-style-type: none"> a. number of new data sets archived within the MEDIN DACs within the year b. number of requests for data received by the DACs. c. number of MSCC members sending data to the DACs 	<p>Achieved</p> <p>The DAC Network has continued to grow and work continues to consolidate the existing structure and allow an increase in data flow. The DAC network now includes 5 DACs, with two further DACs to be launched in Autumn 2012. The DAC network is now stable and embedded in data structures. Progress has been made on the Fisheries and Historic Environment DACs although slower than planned, though it is planned that these DACs will be operational in October 2012. A federated approach has been taken.</p> <ul style="list-style-type: none"> a. Initial measure is 541. However, it should be noted that a large variation in dataset size /granularity, dependant on data type and theme makes these statistics difficult to compare directly across DACs. The DACs are now looking at percentage increases for reporting purposes. b. Initial measure is 115,500, though only two DACs have automatic systems in place to register query numbers c. 17 out of 20 MSCC members currently send data to DACs, though there is scope for more data from the 17 members to be sent. Available funding to MEDIN is proving a limitation to setting up pilot projects with partners to establish data flows.
<p>3. <u>Maintain good communication & linkage across relevant initiatives.</u></p> <ul style="list-style-type: none"> a. hold a partners meeting and standards workshops, b. publish 4 issues of Marine Data News and increase its circulation c. increase the number of visits to the MEDIN website. d. publish metadata and linked data view and download services to data.gov (and hence INSPIRE) 	<p>Largely Achieved</p> <ul style="list-style-type: none"> a. A successful partner's meeting with > 60 participants was held in November 2011. b. Three issues of Marine Data News were published within the year, with a fourth in May 2012. c. The number of visits to the MEDIN website increased by 14% from the previous year d. A test publication of metadata to data.gov.uk was successful. Operational ongoing publication will start in autumn 2012. Linked view and download services will be provided as they become available from DACs

<p>4. <u>To articulate the role of MEDIN within UK and European data initiatives</u></p> <p>a. Produce a report which clearly articulates the role of MEDIN within the broader range of UK and European data sharing initiatives and identifies the more strategic issues that need to be tackled to establish a joined-up system.</p>	<p>Achieved</p> <p>a. A report was produced in March 2012 and is available on the MEDIN website.</p> <p>Participation in WG DIKE (MSFD), INSPIRE, MODEG and EMODnet pilot projects together with EU funded projects and networks such as MarBEF, SeaDataNet and Geo-Seas, has provided a good insight of major European data sharing initiatives. Further effort is required to tease out the issues and ensure appropriate joined up linkage between the MEDIN DACs and these initiatives to ensure a streamlined sustainable system which does not duplicate effort</p>
<p>5. <u>Establish widespread adoption of standards for metadata and data.</u></p> <p>a. Number of new data sets arriving at DACs in MEDIN standard formats (reported by DACs)</p> <p>b. Number of MSCC members that are enforcing the use of MEDIN standards.</p> <p>c. Number of downloads / registrations for use of MEDIN tools</p>	<p>Achieved</p> <p>a. DACs reported on new data sets received in their Annual Reports. However, due to different nature of the data streams and in the systems at each DAC, the figures are not immediately comparable. These will be made available after clarification with the DACs.</p> <p>b. It has not proved possible to monitor whether DACs are being provided with data in MEDIN standard formats – as the accession procedures do not specify this requirement. However, 3 standards workshops have been held, all have been fully subscribed, and more are planned for 2011-12 to meet a high demand.</p> <p>c. There have been totals of more than 200 registrations / downloads for both the online and stand alone metadata tools, compared to less than 100 at the same point last year – indicating a widespread and increasing application of the metadata standard</p>
<p>6. <u>Coordinate and provide access to reference data.</u></p> <ul style="list-style-type: none"> · To be measured by the number of reference datasets that are available through the MEDIN portal. The target for March 2012 is 6 reference data sets 	<p>Not Achieved</p> <p>Progress has been delayed, through difficulties with licensing, and availability of data and metadata from the publishing authorities</p>
<p>7. <u>Assess MEDIN performance against user expectations and needs</u></p> <ul style="list-style-type: none"> · A report will be provided by Work Stream 5 based on a questionnaire and feedback from the Partner Meeting 	<p>Achieved</p> <p>A questionnaire was distributed to users and a summary of the responses has been circulated. Whilst the responses demonstrated that the MEDIN framework was beginning to meet user needs, further work was needed to support adoption and engagement.</p>

3 Financial Summary 2011-12

3.1 £620,787 was available to fund MEDIN activities in 2011-12, as follows:

MEDIN Sponsorship income (Table 1):	£530,000
Carried forward from 2010-11:	£90,787
Funds available:	£620,787

Sponsor Name	Funding
DEFRA: Department of Environment Food and Rural Affairs	£175,000
NERC: Natural Environment Research Council	£131,000
Scottish Government	£100,000
DECC: Department of Energy and Climate Change	£30,000
Met. Office	£14,000
Countryside Council for Wales	£14,000
The Environment Agency	£14,000
Marine Management Organisation	£14,000
Maritime and Coastguard Agency	£7,000
The Crown Estate	£7,000
HR Wallingford	£7,000
UK Hydrographic Office	£7,000
The Joint Nature Conservation Committee	£5,000
Northern Ireland Environment Agency / Agri-Food Biosciences Institute	£5,000
TOTAL	£530,000

MEDIN Sponsors for 2011-12

- 3.2 The income from Sponsors in 2011-12 was £530,000, down by about 30% from £763,000 per annum in the previous three years.
- 3.3 The carry forward of funds from 2010-11 (£90,787) helped to lessen the impact of that reduction.
- 3.4 The allocation of funds across work streams, and according to category, is given in the table below. Of the £619,736 total spend, £383,507 was allocated to cover the costs of employment of the MEDIN Core Team (3.4 Full Time Equivalent staff members in 2011-12); £17,163 on Travel and Subsistence, and £218,976 on contracts which both contributed to the maintenance and operation of the MEDIN network as well as some of the developments described in this report. The major items of external expenditure in 2011-12 are given in Appendix C.
- 3.5 The Work Streams with the highest allocation of costs were the Portal (WS3), Management (WS7), DACs (WS1) and then Standards (WS2) – all with costs of close to, or more than £100,000. WS4 (International Links), WS5 (Resources and Applications, and WS 6 (Communications), had costs close to, or less than £50,000.
- 3.6 The end of year balance is £1,051.

3.7 The spend in 2012-13 must be further reduced to match the available sponsor funds (£530,000).

Total MEDIN income 11/12	£	Actual spend	£	Work stream	£
<i>2010-11 Carry forward</i>	<i>£90,787</i>	<i>Employment Costs of Core Team</i>	<i>£383,597</i>	<i>WS1: DACS</i>	<i>£102,694</i>
<i>Sponsor funds</i>	<i>£530,000</i>	<i>Travel and Subsistence</i>	<i>£17,163</i>	<i>WS2: Standards</i>	<i>£95,530</i>
		<i>Contracts</i>	<i>£218,976</i>	<i>WS3: Portal</i>	<i>£162,172</i>
				<i>WS4: International Links</i>	<i>£32,160</i>
				<i>WS5: Resources and Applications</i>	<i>£53,713</i>
				<i>WS6: Communications</i>	<i>£42,407</i>
				<i>WS7: Management</i>	<i>£131,060</i>
Total Available	£620,787	Total spend	£619,736		£619,736

4 MEDIN Work Streams 2011-12

4.1 Detailed summaries of the activities of the seven MEDIN Work Streams for 2011-12 are in Appendix D. Highlights are provided below:

WS1 Network of Data Archive Centres

4.2 The DAC network has expanded in 2011/12 to include the Met Office. The network now includes:

- British Oceanographic Data Centre (for water column oceanography data),
- British Geological Survey (for geophysical and geological data),
- DASSH (for marine species and habitats data),
- UK Hydrographic Office (for bathymetric data),
- Met Office (meteorological data).

4.3 Work continued to include fisheries and marine heritage data and DACs are expected to be in place in 2012/13.

4.4 The DAC network is working towards INSPIRE compliance according to the relevant programme deadlines, and provide the principal point of contact for marine data in the UK. A number of data flow initiatives were implemented in 2011/12.

WS2 Standards for Data and Metadata

4.5 Standards are essential to support the location and evaluation of marine data sets, and to provide guidelines for the generation and preparation of data so that they can be more easily reused. In addition to the ongoing maintenance and updating of existing standards, and provision of support to new users, the following major developments were achieved in 2011-12.

4.6 In cooperation with JNCC, UNICO MARINE and DASSH, the UK front end to the World Register of Marine Species, 'The Marine Species of the British Isles and Adjacent Seas' has been established², and a management regime through the MEDIN standards group has been agreed. This is an important achievement as it provides a single reference for all UK users.

4.7 Guidelines for Leisure and Recreation, and Seabed and Sub-Seabed survey data have been published.

4.8 A series of practical standards workshops have been held to encourage adoption of MEDIN standards

4.9 The downloadable metadata desktop tool "Metadata Maestro" was released, and there have been 233 registrations and downloads since. 232 users have registered for the separate online metadata tool, compared to 94 users by April 2011.

WS3 Web Portal, Products and Services

4.10 The MEDIN Metadata Discovery Portal³ provides a single central search capability to enable users to identify and source marine data sets for all uses. By March 2012 the portal searched a catalogue of 2,611 metadata records. Coverage continues to be extended, with the aim of reaching 5,500 records by March 2012. An upgrade to the portal is underway which will offer much improved search functionality.

4.11 MEDIN provides a metadata helpdesk capability and in conjunction with the

² <http://www.marinespecies.org/msbias/index.php>

³ <http://portal.oceannet.org/search/full>

Standards Working Group runs regular workshops to assist UK organisations to adopt the MEDIN discovery metadata standard, publish metadata records on their holdings, and prepare data according to MEDIN guidelines. All the workshops have been fully subscribed and indeed there is a waiting list for further workshops.

4.12 MEDIN also maintains the **UK Directory of Marine Observing Systems** (UKDMOS⁴). Established to support the UK Marine Monitoring and Assessment Strategy, UKDMOS provides detailed information on all Marine Monitoring programmes in the UK and so helps to coordinate and review monitoring activity. Additional tagging has been added to provide better support to the implementation of the European Marine Strategy Framework Directive.

WS4 International Awareness, coordination and data delivery to global databases

4.13 Activities within this work stream ensure that UK developments are linked in and consistent with European and other international initiatives, and that obligations to provide data to global databases are met.

4.14 MEDIN acts as a focus for and continues to provide support for UK input to INSPIRE (the European directive underpinning the development of a European Spatial Infrastructure) and to WISE marine (the marine component of the Water Information System for Europe).

4.15 MEDIN provided the UK focus for input to the development of the European Marine Observation and Data Network (EMODnet) (an initiative supported by the EC Directorate of Maritime Affairs to provide access to European marine data), and ensured UK compliance with IOC and ICES Data Policies. EMODnet is especially important in terms of agreeing appropriate linkage with the European Marine Strategy Framework Directive reporting.

4.16 MEDIN also supports the near real time transmission of temperature and salinity data from CTDs, and tagged seals, to the Global Telecommunication System, from where they can be incorporated into operational ocean models.

WS5 Resources and Applications Development

4.17 The aim of WS5 is to help define and develop access to the data, data products and tools MEDIN sponsors need in order to meet their scientific, engineering, statutory and commercial objectives.

4.18 The focus during 2011-12 was the development and publication of an Action Plan for Reference Data Layers, identified in previous years as being of key importance to MEDIN sponsors and partners. The Action Plan and subsequent workshops succeeded in engaging with data holders, documenting issues and setting in train the development of web pages on the MEDIN portal. However, much more effort is required to realise MEDIN's aims, with the ambition and resource availability of data holders of particular concern.

4.19 Feedback was obtained via the partner questionnaire. The results reinforced the priority being given to Reference Data but also identified the need to improve the tools for metadata creation, and to consider providing guidance and protocols for data quality assurance.

4.20 Version 1 of the Marine Gazetteer was published and, following the success of the Gazetteer, for example within the mapping interface on data.gov.uk, the specification for version 2 was developed. Version 2 includes digital output provided

⁴ <http://www.ukdmoss.org/>

by UKHO, further engagement with Ordnance Survey and a use case provided by the MCA.

4.21 No other external projects were funded, with resources focussed on the Action Plan, Marine Gazetteer and the development of the Reference Data web pages.

WS6 Communications: Outreach, forums, publicity

4.22 The website was frequently updated and various enhancements included in order to maintain and increase its effectiveness. In 2011-12 there were 13,830 visits to the MEDIN website from 7,484 visitors.

4.23 Publication of Marine Data News continued on a quarterly basis. There are 674 subscribers.

4.24 A well attended (over 60 participants) Partners' Meeting was held at the Institute of Education, London in November 2011. MEDIN also had a presence (and held a workshop) at the MASTS annual science meeting in Edinburgh in August 2011, at Coastal Futures in Jan 2012, and at Oceanology International in March 2012.

WS7 Management, Planning and Coordination

4.25 The MEDIN Business Plan for 2011-14 was completed and presented to Sponsors. Commitments for annual sponsorship funding of £530,000 per annum have been received.

4.26 A report on marine data policy was completed and provided important recommendations to the community to help improve access to data for reuse.

4.27 MEDIN is working closely with the UK Location Programme and data.gov to ensure that the MEDIN resources are well coordinated with these initiatives, and to help all in the marine sector meet their data publishing obligations.

5 Progress against MEDIN Business Plan 2008-13

5.1 MEDIN announced a five-year development programme in 2008, four years on good progress has been made, although much remains to be achieved. This progress is further discussed in a separate review document⁵

2013 Objectives	Progress
1. Single point of access to all marine data	Portal complete – operational from June 2010. Contained 2,611 metadata records by March 2012. Emphasis now on moving towards complete coverage of all key marine data sets, and improving linkage between metadata records and data view / download capabilities.
2. Network of integrated Data Archiving Centre (DACs).	Comprehensive DAC network in place. 5 DACs established to cover geology & geophysics, oceanography, marine species and habitats, bathymetry, and metocean. Accreditation for the initial components of two further DACs (fisheries and historic environment) is complete and a launch is planned for early autumn 2012
3. Provision of priority data sets to underpin UK and EU legislative and obligatory requirements	Work in progress. European Marine Strategy Directive a main focus. Working closely with DEFRA and UKMMAS to meet the necessary obligations, Once in place will be an ongoing responsibility
4. Facilitation of data flow to DAC network for all government sponsored contracts	Work in progress Being achieved by partners ensuring that data flow to DACs. Tools to be used include the Data Clause or agreeing data flow arrangements with DACs. Meetings have been held with agencies and pilot projects initiated to put in place data submission processes and identify any problem areas.
5. The necessary links with EU Directives & initiatives	Complete. Necessary links established in WS4. Now a matter of ongoing work.
6. Measurable reductions in costs of locating, accessing and retrieving marine data	Work in progress Partners have been asked to report on practical benefits, but have found it difficult to provided accurate estimates of financial benefits. Expect progress in 2012/13.
7. An increased number of successfully furnished requests for archived marine environmental data	Work in progress DACs are required to monitor and report as part of their annual reporting requirement. The first reports providing the baseline were provided in the 2011-12 DAC reports. Progress will be reported in 2012-13.

6 Look ahead for 2012-13

6.1 The 2012-2013 MEDIN Work plan covers the second year of the consolidation / operational phase that started in 2011-12. Funding will be even tighter this year, as there will be no carry-over of funds to supplement the Sponsors income. The Work Plan will continue to address the priorities identified in the MEDIN Business Plan for 2011-14:

6.2 **Increase the content and usage of the portal** - this is critical if its true value is to be realised. Currently it contains just over 3,500 records. The aim in 2012-13 is to increase this to 5,500 records, by including metadata on data within the Fisheries and Historic Environment DACs as well as additional data held by MEDIN partners and the wider marine community (public and private sector). The upgrade to the portal functionality will be completed and a campaign to publicise and raise the profile of the portal initiated.

6.3 **Consolidate the current DAC network** – The Fisheries and Historic Environment DACs will be launched in autumn 2012, and recommendations from the review on how to improve management of, and access to, Marine Socio-Economic

⁵ MEDIN Review and Forward Look; A paper for the MEDIN Sponsors' Board, 9th November 2012

data (including activities and pressures data) will be considered. Further pilot projects to engage data collectors and establish standardised procedures to archive new data in the DACs will be completed. Work will continue to develop the necessary capabilities in DACs to meet the data publication (view and download) specifications of the INSPIRE / UK Location Programme and to build direct links between these services and metadata records.

6.4 Maintain good communication and linkage across relevant UK initiatives – In addition to communicating progress within MEDIN to the marine community it is also important that the developments both complement and contribute to other relevant initiatives across the UK. This includes the UK Location Programme (where MEDIN represents the marine sector), the UK Environmental Observation Framework, and other data centric initiatives (e.g. UK-IMON) and portals.

6.5 Ensure a good fit of MEDIN with key international and European data initiatives – It is important that the MEDIN framework also meets any obligations or requirements to share data at larger scales. Key amongst these are the European INSPIRE Directive, and the mechanisms being put in place for reporting data and information for the Marine Strategy Framework Directive. MEDIN will critically review the relevant initiatives and standards and ensure that the developments within MEDIN are complementary or where greater engagement/join up is required.

6.6 Establish widespread adoption of standards for metadata and data – Work will focus on encouraging uptake through theme specific workshops, and tracking uptake. Where resources allow, further guidelines may be published if gaps are identified, and tools developed for existing guidelines to make them easier to apply and validate.

6.7 Establish streamlined publication of data from MEDIN partners – It remains critical to the success of MEDIN that the principles and standards are adopted across the marine community, to ensure data collected become available through the DAC network. MEDIN will review the application of the data clause, and work with the appropriate departments to consider how the requirements within it could be included within the licensing regime. Establishing a streamlined flow of data from data providers through the DAC network and to the MEDIN portal will be one of the real measures of the initiative's success.

6.8 Coordinate and provide access to reference data A set of core reference data sets have been identified by users as critical to a wide variety of applications. MEDIN will be proactive in coordinating the specification, creation, publication and maintenance of these data sets by working with competent authorities and other key data holders. Where possible, these data sets will be published under the Government's Open Licence and form a marine subset of reference data (aka marine geographies) that contribute to the UK Location Programme. A marine data policy statement and strategy will be prepared to reflect and articulate these aims.

6.9 Assess MEDIN performance against user expectations and needs –Through use cases and other forms of user interaction MEDIN will track its performance against its core aims, and identify and deliver against the commons needs of its sponsors and partners.

7 Conclusions

7.1 MEDIN continues to build collaboration in marine environmental data and management in the UK and has already established better coordinated access to the UK's marine data resources. As described above, the MEDIN data management framework has moved to an operational status, offering a single point of access to UK marine data, a network of accredited marine data archive centres, and a suite of standards for data and metadata.

7.2 During 2011-12 MEDIN adapted to a challenging budget, reduced by 30% from the previous year. The impact of reduced funds has been softened to some extent by a carry through from the previous year. However, the consequence of reduced funding has already been seen in a reduced level of support available for important projects e.g. to facilitate the archival of data into the DAC network, the development of data and metadata tools, and the reference data layer action plan. 2012-13 will see a continuing of this reduced funding, with further impact on the ability to support projects to develop additional functionality or widen coverage.

7.3 There was a high turnover of staff in the MEDIN Core Team in 2011-12 with two out of five staff members taking extended leave. Although very capable temporary replacements were found some efficiency was inevitably lost as the new staff were trained up and developed an understanding of MEDIN.

7.4 The challenge facing MEDIN is now to build adoption of the framework across UK marine organisations and establish data flow into the MEDIN Data Archive Centre network from all government contracts, and the provision of data from that network to support UK and EU legislative and obligatory requirements.

APPENDIX A: MEDIN Aims, Benefits, Priority Drivers and Organisational Arrangements

A.1 MEDIN aims, benefits, and priority drivers

1. MEDIN is a collaborative and open partnership, established in April 2008, working to improve the management of marine data and information, and provide better access to the UK's marine data resources. Sponsors include government departments, research councils, environmental and conservation agencies, trading funds and commercial organisations. It operates under the auspices of the Marine Science Coordination Committee (MSCC), and reports to that body.
2. MEDIN **aims** to establish a coordinated framework for managing marine data and information, with the following key objectives:
 - A single point of access to all relevant marine data and information.
 - A robust network of definitive integrated Data Archiving Centres (DACs).
 - The provision through the DAC network of priority data sets to underpin UK and EU legislative and obligatory requirements, for monitoring and marine planning, in line with INSPIRE principles.
 - Facilitation of full data flow to the DAC network for all government sponsored contracts in the marine and coastal zone environment.
 - Coordinate input to the development of international data commitments and drivers that may influence marine data management in the UK.
 - Improve mechanisms to facilitate international data exchange (including contributing to global databases).
 - Develop and maintain new/existing MEDIN resources that support improved access to marine data (data catalogues and inventories, data products, services, guidelines and tools).
3. Marine data and information are acquired, maintained and used for a wide variety of different purposes by numerous public and private sector organisations to support their statutory, regulatory, development, commercial and compliance activities. Common to all these activities is the recognition that good quality comprehensive marine data and information are essential as input to good management and evidence based decision making.
4. MEDIN is working to **benefit** its stakeholders in the following five key areas:
 - Marine Monitoring: Enabling UK organisations to meet their obligations under National and International Environmental Legislation.
 - Marine Management and Planning: Supporting a harmonised and improved marine management regime in UK seas.
 - Supporting Scientific Research: Delivery of the UK Marine Science Strategy
 - Increasing availability of marine data to the public: Making marine environmental data more widely available in accordance with the aims of the UK government's Open Data Policy and the European INSPIRE directive.
 - Cost Reduction: Addressing inefficiencies and reducing costs for data collection and re-use.

5. Each of these **priority drivers** requires improved access to marine environmental information.

Marine Monitoring

6. The UK Government and devolved administrations have adopted a shared vision for clean, healthy, safe, productive and biologically diverse oceans and seas. Specific legislative drivers that relate to this vision include commitments to international treaties, such as the OSPAR Convention, and requirements of European Union Directives, such as The Birds Directive, The Habitats Directive, The Water Framework Directive, and the Marine Strategy Framework Directive. The EU Marine Strategy Framework Directive, with the stated aim of achieving Good Environmental Status for European Seas by 2021, extends the responsibility for monitoring and managing the marine environment out to national limits. Together these obligations demand an ever increasingly complex set of environmental quality and status assessments supported by formal, evidence-based, uses of marine data and information.
7. All these drivers depend on a robust and relevant monitoring regime, generating a variety of raw, processed and interpreted marine data, and access to authoritative, consistent background or base information to provide historical and spatial context. The UK Marine Monitoring and Assessment Strategy (UKMMAS), established to coordinate marine monitoring in the UK, is predicated on a fully operational robust national framework for marine data and information to provide the necessary data management support.
8. Thus MEDIN is working closely with UKMMAS to help ensure the data needed are more easily accessible. A key driver for the immediate future is getting ready for reporting data and information for the Marine Strategy Framework Directive. MEDIN is helping by providing expert input to the working groups developing plans for data and information provision to the EU.

Marine Management and Planning

9. A major objective of the Marine Acts passed by the Westminster and Holyrood parliaments in 2009 and 2010 respectively, is the harmonization and integration of the marine licensing and spatial planning regime and a unified approach to marine conservation zone / marine protected area selection. This involves the review and analysis of a wide range of marine environmental data. Without access to authoritative marine data and information the Marine Management Organisation (MMO), Marine Scotland and the bodies with the equivalent responsibilities in Wales and Northern Ireland, will not be able to carry out their functions.
10. Marine planning will require a wide range of existing data resources to be improved, new datasets created and new methodologies and tools developed. Whilst the delivery bodies are in the process of developing and testing tools, the precise details of what data are required within the system are still evolving. MEDIN has a vital role in helping to define, facilitate access to and improve the reference data that will be required to deliver marine plans. This includes specifying data products, providing guidance on how these are created, supported, maintained and improved and how the quality of these data products are assessed and communicated to users.

Supporting Marine Scientific Research

11. The UK Marine Science Strategy, published by the Marine Science Coordination Committee in 2010, sets out a framework for enabling the delivery of world class marine science for the UK. The strategy highlights the need to foster a culture of

data sharing and good management, including common protocols for data collection and quality assurance for data obtained and specifically identifies the key role MEDIN has to establish this in the UK.

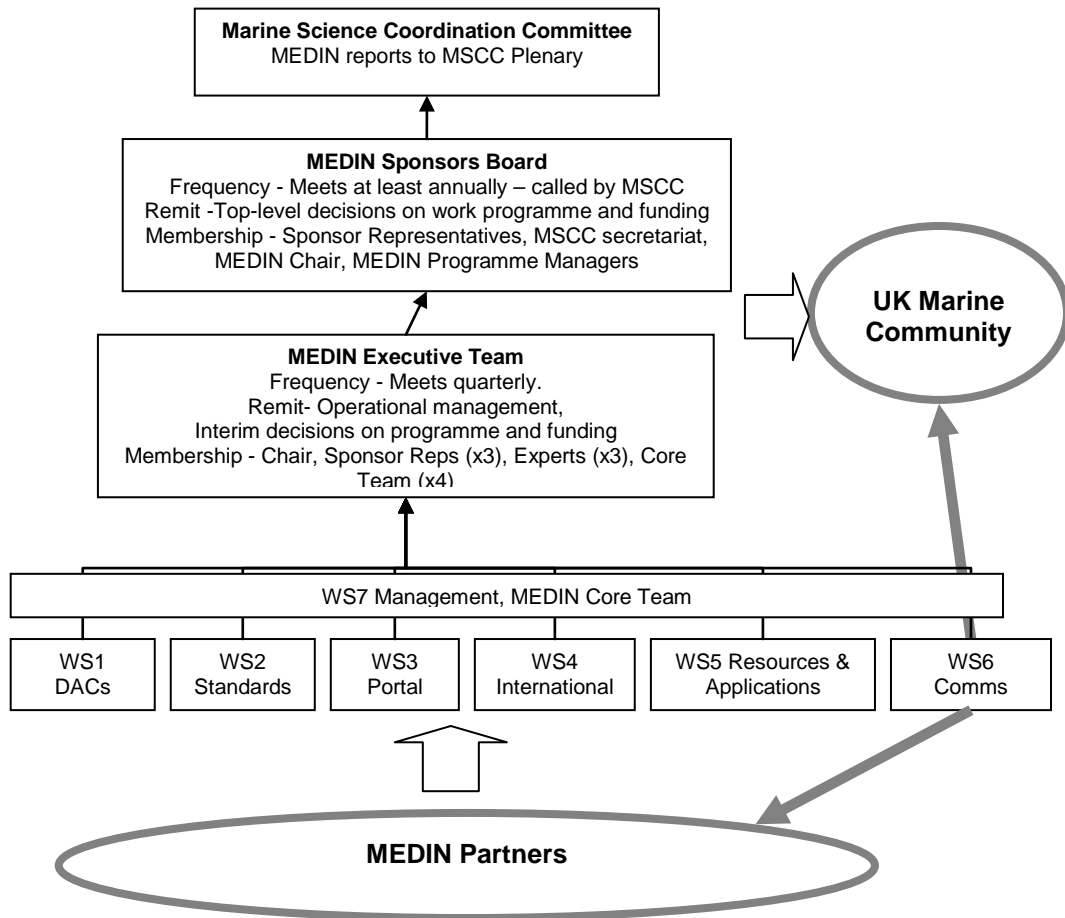
Publishing Marine Data to the Public – INSPIRE, the UK Location Programme and Data.gov.uk

12. In recent years there has been an increasing demand for wider access to spatial and environmental data, addressed by a number of national, European and international initiatives. The European INSPIRE (Infrastructure for Spatial Information in Europe) Directive places obligations on bodies holding public spatial information in terms of the way they manage, present and describe these data. Nationally, the UK Location Programme (UKLP) and the Coalition Government's Transparency Agenda is driving the release of all public service information, including geographic and marine information, under common licence terms through a consistent and open set of technologies. The data.gov.uk portal enables the central searching of metadata from a variety of sources and resources are being developed to help public sector bodies meet their obligations under INSPIRE, as well as FOI, EIR and ROPSI legislation.
13. MEDIN is working closely with the above initiatives to tailor and develop additional resources specific to the marine domain, as well as informing and providing the necessary guidance for preparing and publishing marine specific data and metadata. The UK geoportal will harvest metadata published to the MEDIN portal and reference geographies established within the UKLP extended to include MEDIN specified marine and coastal reference data. Overall, MEDIN will provide the insight and coordination required to ensure the marine community realises the benefits of these wider initiatives, whilst at the same meeting the needs, developing the resources and providing the required leadership to the marine sector.

Cost Reduction and Efficiency Gains

14. Everyone in the marine sector stands to benefit from efficiency gains in data access and re-use. The wide range of potential beneficial impacts include:
 - Improved capture and re-use of industry and research generated data to save industry money and achieve better value from public and private funding.
 - Research to be better informed and coordinated with less replication of effort and collaboration opportunities more easily identified.
 - Wider availability of data to support transparency in decision-making.
 - Reductions in the proportion of project budgets spent on locating, accessing and retrieving marine data.

A.2 MEDIN Organisational arrangements



15. The Marine Science Coordination Committee (MSCC) is the parent body for MEDIN, it provides strategic direction to MEDIN and defines high-level goals. MEDIN reports to MSCC, through this annual report and shorter progress updates as requested. MSCC has requested that MEDIN supports a representative on the MSCC communications group.
16. The MEDIN Sponsors' Board is the executive body, responsible for approving budgets and work plans. It will meet at least once each year, to be called by MSCC. The current chair of the MEDIN Sponsors' Board and the Executive Team is Professor Peter Liss, CBE FRS.
17. The MEDIN Executive Team meets quarterly, with the remit to provide interim guidance and management of the MEDIN work programme between Sponsors Board meetings.
18. The MEDIN work programme is carried out within seven work streams (See Figure above). Work stream leaders have been appointed and are responsible for the management and planning of the work stream activities.
19. A MEDIN core team of five staff is hosted the British Oceanographic Data Centre, which provides administrative and logistic support to MEDIN. The MEDIN core team provides project management, leadership for six of the seven work streams and secretariat support.

Organisations Active in MEDIN

ABPmer	Marine Environmental Consultancy, (www.abpmer.co.uk)
AFBI	Agri-Food and Biosciences Institute (Northern Ireland), (www.afbini.gov.uk/)
BGS	British Geological Survey, <i>Accredited MEDIN DAC</i> (www.bgs.ac.uk)
BODC	British Oceanographic Data Centre, <i>Accredited MEDIN DAC</i> (www.bodc.ac.uk)
CEFAS	Centre for Environment Fisheries and Aquaculture Science, (www.cefas.co.uk)
CCW	Countryside Council for Wales (www.ccw.gov.uk). <i>Sponsor</i>
The Crown Estate	<i>Sponsor</i>
DASSH	Data Archive for Seabed Species and Habitats, hosted at MBA. <i>Accredited MEDIN DAC</i> . (www.dassh.ac.uk)
DECC	Department of Energy and Climate Change <i>Sponsor</i> , (www.decc.gov.uk/)
DEFRA	Department for Environment Food and Rural Affairs. <i>Sponsor</i> (www.defra.gov.uk)
EA	Environment Agency, <i>Sponsor</i> . (http://www.environment-agency.gov.uk/)
EDINA	Unit of Edinburgh University. Provides GI services for academic Community, (www.edina.ac.uk)
English Heritage	(www.english-heritage.org.uk)
Finding Sanctuary	A project aiming to create a network of Marine Protected Areas of the South West Coast of England. (www.finding-sanctuary.org/)
Geodata	Consultancy based at University of Southampton, specialising in environmental data management. (www.geodata.soton.ac.uk)
Historic Scotland	www.historic-scotland.gov.uk
HR Wallingford	Marine consultancy. <i>Sponsor</i> (www.hrwallingford.co.uk)
IMAREST	Institute for Marine Science and Technology. (www.imarest.org.uk)
JNCC	Joint Nature Conservation Committee. <i>Sponsor</i> (www.jncc.gov.uk)
MMO	Marine Management Organisation, <i>Sponsor</i>
Marine Scotland Science	(www.marlab.ac.uk)
MBA	Marine Biological Association (www.mba.ac.uk)
MCA	Maritime and Coastguard Agency. <i>Sponsor</i> (www.mcga.gov.uk)
Met Office	<i>Sponsor</i> (www.metoffice.gov.uk)
MOD	Ministry of Defence. <i>Sponsor</i> (www.mod.uk)
NERC	Natural Environment Research Council, <i>Sponsor</i> (www.nerc.ac.uk)
NIEA	The Northern Ireland Environment Agency, <i>Sponsor</i> (www.ni-environment.gov.uk)
OceanWise Ltd	Private independent consultancy specialising in marine data acquisition, management and GIS
RCAHMS	Royal Commission on the Ancient and Historic Monuments of Scotland (www.rcahms.gov.uk)
SAMS	Scottish Association for Marine Science (www.sams.ac.uk)
Scottish Government	<i>Sponsor</i> (www.scotland.gov.uk)
SNH	Scottish Natural Heritage (www.snh.org.uk)
SeaZone	Commercial Company delivering marine GI products, <i>Sponsor</i> (www.seazone.com)
SEPA	Scottish Environment Protection Agency. (www.sepa.org.uk)
SSMEI	Sustainable Scotland Marine Environment Initiative. (clydeforum.org/SSMEI/) and (www.nafc.ac.uk/Marine_Management/General/SSMEI/)
UKHO	United Kingdom Hydrographic Office. <i>Sponsor, and MEDIN Accredited DAC for Bathymetry data</i> (www.ukho.gov.uk)
Wessex Archaeology	(www.wessexarch.co.uk/)

Glossary

AGI	Association for Geographical Information
CTD	"Conductivity, Temperature, Depth" – shorthand for a standard water column profile measurement of temperature and salinity against depth
DAC	Data Archive Centre
EMODNET	European Marine Observation and Data Network
FRS	Fellow of the Royal Society
GEMINI2	Discovery metadata standard managed by the AGI and adopted by UKLP
GTS	Global Telecommunications System
HBDSEG	Healthy and Biologically Diverse Seas Evidence Group
IACMST	Inter Agency Committee on Marine Science and Technology (www.marine.gov.uk)
ICES	International Council for the Exploration of the Sea
INSPIRE	Infrastructure for Spatial Information in Europe, EC Directive (inspire.jrc.it/)
IOC	Intergovernmental Oceanographic Commission
IPR	Intellectual Property Rights
ISO	International Organisation for Standards
MDN	Marine Data News
MEDIN	Marine Environmental Data and Information Network
MMO	Marine Management Organisation.
MSCC	Marine Science Coordination Committee
NGO	Non Governmental Organisations
OSPAR	International Commission for the Protection of the Marine Environment of the North-East Atlantic (www.ospar.org)
OPSI	Office of Public Sector Information
UKDMOS	UK Directory of Marine Observing Systems – an initiative under the UK Marine Monitoring and Assessment Strategy to provide information on marine monitoring programmes.
UKLP	UK Location Programme
UKMMAS	UK Marine Monitoring and Assessment Strategy. The UK government led programme to coordinate marine monitoring necessary to meet government objectives of a clean, healthy, safe, productive and biologically diverse marine ecosystem (see www.defra.gov.uk/environment/water/marine/uk/science/monitoring.htm)
WISE	Water Information System for Europe, a joint initiative between the European Environment Agency and the European Commission.

Appendix B: Highlights in 2011-12

1. The DAC network has been expanded to include the Met Office. This brings the number of accredited DACs to five. The other four are:
 - British Oceanographic Data Centre (for water column oceanography data)
 - British Geological Survey (for geophysical and geological data)
 - DASSH (for marine species and habitats data)
 - UK Hydrographic Office (for bathymetric data)
2. MEDIN has supported a number of **pilot programmes to establish data flows** from partners into the DAC network. The intention is that these programmes will set up data submission processes and ensure future data flow into the MEDIN DAC network.
3. Adoption of **MEDIN standards for data and metadata**, is essential for data discovery and interoperability. To this end MEDIN has released a downloadable standalone metadata tool (*metadata Maestro*), and held a series of workshops. MEDIN has also established a UK front end to the World Register of Marine Species, and published new data guidelines for noise, recreation and leisure, and seabed survey data.
4. The **MEDIN Metadata Discovery Portal** provides a single central search capability to enable users to identify and source marine data sets for all uses. By March 2012 the portal searched a catalogue of 2611 metadata records. Coverage continues to be extended, with the aim of reaching 5000 records by the end of 2012. An upgrade to the portal is underway which will offer much improved search functionality
5. MEDIN provides a **metadata helpdesk** capability and runs regular **standards workshops** to assist UK organisations to adopt the MEDIN discovery metadata standard and publish metadata records on their holdings. All the workshops have been fully subscribed
6. MEDIN also maintains the **UK Directory of Marine Observing Systems** (UKDMOS). Established to support the UK Marine Monitoring and Assessment Strategy, UKDMOS provides detailed information on all Marine Monitoring programmes in the UK and so helps to coordinate and review monitoring activity. Additional tagging has been added to provide better support to the implementation of the European Marine Strategy Framework Directive.
7. MEDIN continues to provide important **links to European and International Initiatives**:
 - Supporting DEFRA, SG, WAG, NIEA in planning for data requirements under the European Marine Strategy Framework Directive, including participation in the Working Group for Data, Information and Knowledge Exchange.
 - Participation in IOC's International Oceanographic Data and Information Exchange Committee
 - Participation in ICES Working Group on Data and Information Management
 - Participation in the Marine Data and Observation Expert Group (MODEG) which provides advice to DG MARE in relation to the development of the European Marine Observation and Data Network (for EMODnet)

- MEDIN partners are also active in INSPIRE Technical Working Groups for specific themes (Sea Regions and Ocean Geographic Features and Elevation)
 - Transfer of FRV Scotia CTD data to the Global Telecommunications System
8. Steady progress is being made on the **publication and improvement of reference datasets**. There has been engagement with data holders and workshops are being held to support engagement. However, it is clear that data holder priorities and the availability of resources will be a barrier to MEDIN meeting its aims in this area.
 9. **Communications and outreach activities** continued in order to advise all interested parties of the developments and resources being made available by MEDIN.
 10. In cooperation with Marine Scotland and the Marine Management Organisation a **Review of Marine Socio-Economic Data and Tools** was initiated.
 11. Meetings have been held with Gardline, The Crown Estate, AFBI, and CEFAS – to encourage and plan adoption of MEDIN standards and procedures, and greater uptake of the **MEDIN data clause** in the public and private sector. The Crown Estate has adopted the MEDIN standards as a requirement for data from all Round 3 offshore renewable developers.

APPENDIX C: External Expenditure

Work Stream 1: Data Archive Centres

Major Items of External Expenditure:

Costs falling in 2011-12		
Meeting Costs	U Liverpool	756
Assorted		174
Metadata from Oil and Gas Industry Site Surveys	BGS	11,967
Archiving Archaeological data to DACS: Phase 3	Wessex Arch, ADS	11,147
Audit of DBRC Marine Data and Metadata Creation	DASSH	6,091
BGS DAC costs contribution	BGS	12,000
BODC DAC Costs contribution	BODC	12,000
DASSH DAC costs contribution	DASSH	12,000
UKHO DAC Costs contribution	UKHO	12,000
Socio-Economic Data Review	EMU	29,950
2011-12 Total Cost		108,085
Income		
MMO contribution to Socio-Economic Data Review	MMO	20,000
Marine Scotland contribution to Socio-Economic Data Review	Marine Scotland	10,000
2011-12 Total Income		30,000
2011-12 Total Cost to MEDIN		78,085

Costs Falling in 2012-13		
Archiving and Rationalising the Dorset Integrated Seabed Study (DORIS) Data	DASSH	11,720
Archiving IFCA data and establishing Standard Operating Procedures	DASSH	10,793
Archiving JNCC data	BGS	10,000
Archiving Archaeological data to DACS: Phase 3	BGS	11,200
Archiving Smart Buoy Data	BODC	10,264
Managing Socio-Economic Data Review	OceanWise	5,100
2012-13 Total		59,077

Work Stream 2 Standards

Major Items of External Expenditure:

CCW standards work - no cost as funds provided by CCW	DASSH	£0
GIS Stylesheet Development and contribution to workshops	SeaZone	£7,242
Derivation of Data Guidelines for Seabed Survey	Gardline/Setech	£27,468
MEDIN Discovery Metadata Tools testing	EDINA	£2,880
Various (meetings costs, etc)		£1,207
2011-12 Total		£38,797

Work Stream 3: MEDIN Website, Portal and Webtools

Major Items of External Expenditure:

Costs falling in 2011-12		
UKDMOS website	Maris	2,016
Provision of Metadata Service to MEDIN by STFC -	STFC	9,675
MEDIN Metadata Support April –September	MBA	19,922
Portal Maintenance and Updates	GeoData Institute	6,600
MEDIN Metadata Support September-March	MBA	13,987
MEDIN RDBMS tool	GeoData Institute	600
Public source code repository for MEDIN portal code (GitHub)	GeoData Institute	600
MEDIN portal hosting by GeoData	GeoData Institute	720
Portal Upgrade and metadata tool support	Geodata Institute	5,800
Updates to metadata catalogue API	STFC	2,873
Various (meeting costs etc)		497
2011-12 Total		£63,290

Costs falling in 2012-13		
Finish Portal Upgrade	Geodata Institute	£9,000.00
Total		£9,000.00

Work Stream 5: Mapping and Applications

Major Items of External Expenditure:

Work shop costs	IMAREST	271
Reference Data Layer	Oceanwise	2,525
Gazetteer	Geodata	23,850
2011-12 Total		26,646

Work Stream 6: Communications

Major Items of External Expenditure:

Venue Hire (Partners Meeting) and delegate costs	Institute of Education, London	2,724
Meeting Costs	Foresight Centre, Liverpool	588
Leaflets	Graphics Workshop	570
Newsletter	Newsweaver	2,088
Various (badges, etc)		31
Chair's costs for visit to Gardline	Liss Associates	700
2011-12 Total		6,701

NB There were no major items of External Expenditure in WS4 or WS7

APPENDIX D: Work Stream Deliverables

WS1 Network of Data Archive Centres

DAC Status

1. The main objectives for the DACs work-stream in 2011-12 were:
 - To continue to build and consolidate the DAC network as an operational capability accessible to all UK Marine organisations using the MEDIN portal.
 - To widen the coverage of the MEDIN DAC network to incorporate fisheries and marine meteorology data, and to consider suitable arrangements for marine heritage.
 - DACs to look to install INSPIRE compliant view and download services

The current status of the MEDIN DAC network

Name	Coverage	Contact Information	Web links	MEDIN Status
BODC	Marine Data	enquiries@bodc.ac.uk	www.bodc.ac.uk	Accredited , operational
British Geological Survey	Marine geoscientific data	offshoredata@bgs.ac.uk	www.bgs.ac.uk	Accredited , operational
DASSH	Marine Species and Habitats	Dassh.equiries@mba.ac.uk 01752 633291	www.dassh.ac.uk	Accredited , operational
Met Office	Marine Meteorological Data	enquiries@metoffice.gov.uk	www.metoffice.gov.uk	Accredited , operational
UK Hydrographic Office	Bathymetry	Andrew.talbot@ukho.gov.uk	www.ukho.gov.uk	Accredited , operational. Web delivery under development
FishDAC	Fish and Shellfish, Fisheries, Aquaculture and related samples	England and Wales:		Accredited summer 2012, To be launched October 2012
		Scotland		Accredited summer 2012, To be launched October 2012
Marine Historic Environment	Marine Historic Environment fieldwork derived datasets	help@archaeologydataservice.ac.uk	http://archaeologydataservice.ac.uk	Accredited summer 2012, To be launched October 2012

2. The Met DAC is now in place and became the fifth accredited MEDIN DAC
3. The Fisheries DAC has moved forwards with accreditation for Fisheries DACs with Marine Scotland and CEFAS covering Scotland, England and Wales approved. In England DASSH will archive the inshore fisheries data for the IFCAs.
4. A workshop was held on Marine Historic Data in Southampton at the end of 2011. There was agreement to go forward with a federated DAC structure. The Archaeological Data Service (ADS) has been accredited as the first component.
5. DAC workshops were held and included reviews of data (e.g. identification of gaps in data sources, with particular reference to data needed for MSFD and data from MSCC organisations) and an overview of the current status of, and MEDINs relationship with INSPIRE/data.gov.

Progress of Data Archiving Proposals

6. The first round of the Data Archiving proposals were completed and reported in 2010/11. A further series of pilot projects, to establish data flows from MEDIN partners into the DAC network, were advertised. Twelve proposals were received. Seven were commissioned and are underway. They are reported below:

DAC	Project
BGS	Metadata from Oil and Gas Industry Site Surveys
Wessex Arch, ADS	Archiving Archaeological data to DACS: Phase 3
DASSH	Audit of DBRC Marine Data and Metadata Creation
DASSH	Archiving and Rationalising the Dorset Integrated Seabed Study (DORIS) Data
DASSH	Archiving IFCA data and establishing Standard Operating Procedures
BGS	Archiving JNCC data
BODC	Archiving Smart Buoy Data
In addition a review of Socio-economic data was commissioned and a report produced.	
EMU	Socio-Economic Data Review (funded by MMO and Marine Scotland)
OceanWise	Managing Socio-Economic Data Review (OceanWise) – on behalf of MEDIN

WS1 Deliverables

Deliverable	Status	Relevant KPI
Q1		
Met DAC accreditation to be completed	Complete	KPI3
FishDAC accreditation underway	CEFAS submission received	KPI3
Q2		
First DAC WG meeting. WG to review INSPIRE/UKLP	Completed	KPI3
Workshop on Heritage data	Completed	KPI3
Report on internal DACs and data collation gaps	Completed but further input required on litter and noise data	KPI3
	Complete	
MEDIN core staff to discuss data clause with all MEDIN partners	Complete for Cefas and Marine Scotland; gap remains in N Ireland	KPI3
FishDAC accreditation underway		KPI3
Q3		
Second DAC WG and workshop on Socio-Economic Data. DAC portal requirements assessed	Completed. Contract let and report delivered for Socio-economic data	KPI3
Core staff to report to DAC WG on data clause	Completed	KPI3, KPI6
Data Archiving projects launched	Completed	KPI3
Best practice and common standards Web site update	Not completed; Web site being considered and updated by DACS	
Q4		
Third DAC WG and workshop on Oceanographic data	Completed, but no workshop on oceanographic data	KPI3
	Completed	
Report on socio-economic data	Completed	KPI3
DAC WG to report implementation plan to MEDIN Exec on data clause ingestion		KPI3
DAC WG statement on future delivery to be published on Web site	Under Discussion	

WS2 Standards for Data and Metadata

7. Standards are essential to support the location and evaluation of marine data sets, to provide guidelines for the generation and preparation of data according to recognised standards and best practice, and to help partners meet their obligations under the INSPIRE directive. This aspect of MEDIN activity aims to establish, promote, document and provide guidance for standards for data and metadata to cover an expanding range of data types.
8. In 2011-2012, in agreement with the MEDIN Standards Working Group the following work was prioritized:
 - Develop a UK front end to the World Register of Marine Species
 - Review INSPIRE Data Specifications for Sea Regions and Oceanographic Features (and other themes as indicated by MEDIN DACs) and understanding impact on Data Guidelines
 - Review outputs from different MEDIN Discovery tools and testing against GEMINI, ISO and INSPIRE requirements.
 - Produce seabed and sub-seabed Data Guidelines; Identify other guidelines that are missing; develop tools for data guidelines.
 - Hold at least 3 workshops to disseminate MEDIN standards to the wider community
9. All work has been completed as follows:
 - In cooperation with JNCC, UNICO MARINE and DASSH, the UK front end to the World Register of Marine Species has now been established: 'The Marine Species of the British Isles and Adjacent Seas' <http://www.marinespecies.org/msbias/index.php>, and a management regime through the MEDIN standards group has been agreed.
 - Output from the different MEDIN metadata tools was tested and validated.
 - The existing data guidelines were reviewed, revised into a new structure, and re-published.
 - Data guidelines for seabed (and sub-seabed) surveys, noise, and recreation and leisure were developed and published.
 - Standards Workshops were held at Liverpool, the Isle of Man, and London. The first of these was specifically targeted at the renewable energy (offshore wind farm) sector, the third at Inshore Fisheries and Conservations Authorities.
 - The final versions of the relevant INSPIRE data specifications were not released during the year, so this task is carried forward
10. In addition the other work completed in 2011-2012 includes:
 - The MEDIN Discovery Metadata Standard is the standard which underpins the portal and allows people to create metadata that is INSPIRE compliant via the various tools we have produced. There have been minor changes to the standard and these changes have filtered down to the tools.
 - The downloadable Desktop metadata tool "Metadata Maestro" was released, and there have been 233 registrations and downloads since. 232 users have registered for the separate online metadata tool, compared to 94 users by April 2011)

- An e-mail listing service of over 100 participants has been established to keep MEDIN Standard users informed of changes to standards and further developments.
- The tools to generate MEDIN discovery metadata are well received by those attending the Standards workshops.
- A specific 2 hour session on MEDIN was held at the INSPIRE conference during the Marine and Coastal Workshop which preceded the main conference and was attended by approximately 40 people.

Work Stream 2: Standards		
Deliverable	Status	Relevant KPIs
Q1 Negotiate and test new desktop discovery metadata creation tool Agree contract specification for new data guidelines Propose changes to Data Guidelines following reviews Progress the adoption of WoRMs	Completed Completed Completed Completed	 KPI6 KPI6
Q2 Present standards and portal at INSPIRE workshop Release the desktop tool metadata maestro Let contract for testing discovery metadata tools Advertise contract for derivation of MEDIN Data Guidelines for seabed surveys Progress the adoption of WoRMs and derivation of new UK front end. Revise Data Guidelines and republish on website	Completed Completed Completed Completed Completed Completed	 KPI4 KPI2, KPI6 KPI4, KPI6 KPI6
Q3 Complete review of INSPIRE Data Specifications 'Marine Species of the British Isles and Adjacent Seas' website to go live Let seabed survey Data Guideline development Hold 2 MEDIN Standards workshops	Completed Completed Completed Completed Completed	 KPI4 KPI6
Q4 Review of the Data Guidelines for Seabed Survey Start publicising of MSBIAS	Completed Ongoing	KPI6 KPI6

WS3 Web Portal, Products and Services

11. The number of records in the portal reached 2611 in March 2012 from a starting point of 1167 in April 2011. Achievement of the aim of 4500, representative, metadata records (KP1) has been delayed due to technical difficulties with a tool developed to produce large batches of metadata from relational data base systems. It is expected this objective will now be achieved in December 2012.
12. DASSH has continued to be under contract to MEDIN to provide valuable metadata support and facilitate the flow of records into the portal. This has included one-to-one meetings between DASSH and partners, the organising of metadata workshops plus the manning of a metadata hotline and email helpdesk.
13. The portal steering group was convened in July 2011 to draw up a list of improvements to be made to portal search function. A further meeting was held in December 2011 with the contractor GeoData Institute to discuss the technical detail for the upgrade work, changes needed to code to deal with updates to the Metadata Standard, and progress work with specific tools such as the relational database tool. Following this meeting, the contract was finalised. The majority of the upgrade work was completed by the end of March 2012 as originally planned (8 outstanding task remained out of 30).
14. Additions and updates were made to the UK Directory of Marine Observing Systems (UKDMOS) database throughout the year. UKDMOS follows the EDIOS application managed by SeaDataNet which was amended and upgraded. This in turn required changes to the UKDMOS database including migration to a new EDIOS schema, and changes to the data entry forms. The European front end (EDIOS) is being populated by other countries and so the UK is ahead of the game having already done this through UKDMOS. A variety of analyses have been completed on UKDMOS to identify coordination of UK monitoring programmes with a view towards establishing a UK Observatory and monitoring programmes for the MSFD. These were presented at the UK Observatory meeting, CSSEG and a MSFD Descriptor 9 meeting. Further discussion with UK Environmental Observation Framework (UK-EOF) looked at streamlining the transfer of UKDMOS information to the EOF catalogue. Testing was undertaken for an upgrade to the UKDMOS web interface which includes a way of storing searches and bringing in web mapping services to the map interface.
15. MEDIN was registered on data.gov.uk as a provider and with the aid of STFC a pilot record (Met Office MAWS record) sent through to data.gov.uk. STFC have enabled there systems to harvest records from not just OAI but also CSW and WAF servers. This was actioned on request by several MEDIN partners who do not use OAI.
16. GeoData Institute continued work on a tool for bulk extraction of metadata records from partner databases. This tool is awaited for use with a number of databases and will facilitate the flow of MEDIN records to the portal considerably.

Portal web traffic

17. Visits to the portal page from OceanNET doubled since Feb 2011, with an increase of around 50% since Sept 2011. The number of new visitors to the portal page and the OceanNET site has remained more or less constant during this annual period.

Figure 1: Visits and new visitors to <http://portal.oceannet.org/search/full>

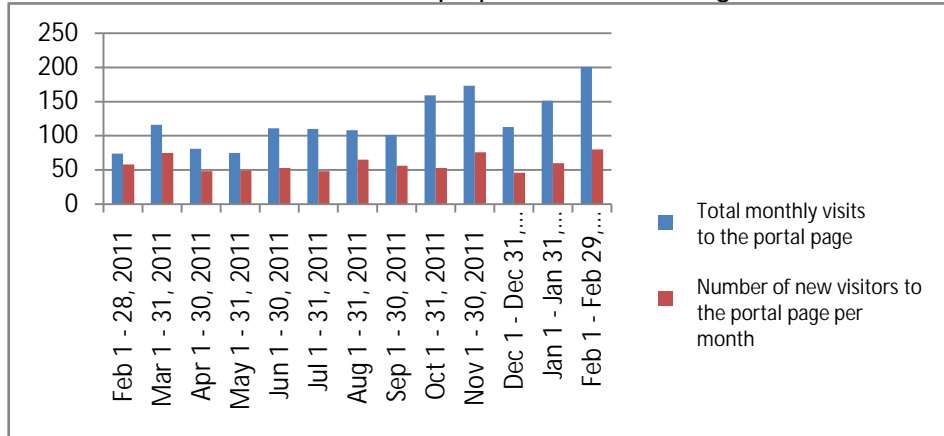
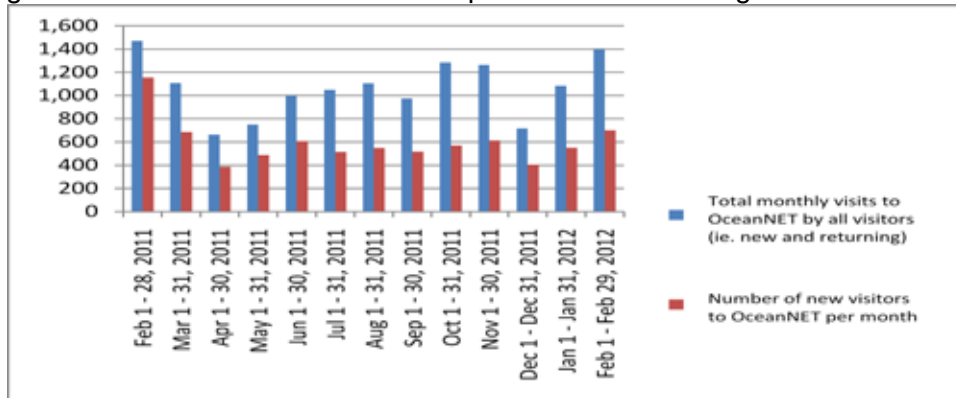


Figure 2: Visits and new visitors to <http://www.oceannet.org/>



Portal and Web Services Deliverables table 2011 - 2012

Work Stream 3: Web Portal and Services		
Deliverable	Status	Commentary /Relevant KPIs
Q1		
Installation of portal discovery service onto MEDIN virtual server at BODC.	Not done	Awaiting completion of portal upgrade tasks by GeoData
Batch tool to generate MEDIN format metadata	Done	KPI 1
Provide CSW (or WAF) service link to UK Geoportal (and hence INSPIRE).	Done	KPI 1
Attainment of KPI 1 (2000, representative, metadata records searchable through portal)	Done	KPI1
Convene portal steering group to produce specification	Done	KPI 2
Produce specification for improvement to portal interface	Done	
Generate web stats for portal	Done	
Q2		
Contract GeoData to implement portal improvements	In progress	In progress, KPI 2
Generate web stats for portal	Done	
Q3		
Advertise the Discovery Portal	Not Done	on portal upgrade completion, KPI2
Generate web stats for portal	Done	
Q4		
Generate web stats for portal	Done	
Portal and Web Services Work Plan for 2012-2013	In Progress	
Portal and Web Services Report for 2011-12	Done	

WS4 International Awareness, coordination and data delivery to global databases

Overview

18. WS4 ensures that UK developments are linked in and consistent with European and other international initiatives, and that obligations to provide data to global databases are met. MEDIN acts as a focus for and continues to provide support for UK input to INSPIRE (the European directive underpinning the development of a European Spatial Infrastructure) and to WISE marine (the marine component of the Water Information System for Europe). It provided the UK focus for input to the development of the European Marine Observation and Data Network (EMODnet), and ensured UK compliance with IOC and ICES Data Policies. In addition, the transfer of temperature and salinity data to the Global Telecommunication System (GTS) in near-real-time has been undertaken. This is important as these data can then be assimilated into operational models by the Met Office.

A focus for information on European and International initiatives/drivers relevant to MEDIN

19. Ongoing provision of advice, primarily to Defra in relation to EMODnet and its preparatory actions especially in relation to MSFD data issues. Attendance at three meetings of the EU Marine Observation and Data Expert Group (MODEG), including a focus on reviewing progress of the EMODNet preparatory actions (the UK is involved with all six of these). DG-MARE announced that new calls for tender for the next phase of EMODnet would be announced in Q2 of 2012.

20. The WG on Data Information and Knowledge Exchange (DIKE) was set up to ensure that the data and information needs of the MSFD are met; MEDIN provides technical input to Defra who are the policy lead. Most specifically this group will oversee the development of WISE-marine - (Water Information System for Europe) which will be the formal route by which countries will report on the progress on the implementation of the directive to the EC. Three meetings were held which developed 'reporting sheets' for Member States to report on their initial assessments and other required information describing their interpretation of Good Environmental Status and developed a concept of "5 quick wins" to take the process forward.

Support and links to global databases

21. A system is in place for the near-real-time transmission of temperature and salinity data from CTDs to the Global Telecommunication System – new data are checked and transmitted when received. Data have been received from RV Scotia/Marine Scotland and RRS James Cook/NERC cruises and transmitted to the GTS. Temperature and salinity data from Tagged Seals are also routinely provided to the GTS.

22. Further historical CTD data have been supplied to the Carbon Hydrographic Data Office (CCHDO) for use in generating the Argo Reference Data Set.

WS4 Deliverables 2011-12

Work Stream 4: International Links and Coordination		
Deliverable	Status	Relevant KPIs
Q1		
Feedback from relevant European/ International Expert/Working Groups	Completed	KPI5
Delivery of temperature and salinity data to the Global Telecommunication System	Completed	KPI5
Quarterly Progress report	Completed	
Q2		
Feedback from relevant European/ International Expert/Working Groups	Completed	KPI5
Plan delivery of water bottle and CTD data to global data centres	Completed	KPI5
Delivery of temperature and salinity data to the Global Telecommunication System	Completed	KPI5
Quarterly Progress report	Completed	
Q3		
Feedback from relevant European/ International Expert/Working Groups	Completed	KPI5
Update the international initiatives table and compile a document on getting ready for reporting data and information for the MSFD	Completed	KPI5
Delivery of temperature and salinity data to the Global Telecommunication System	Completed	KPI5
Delivery of water bottle and CTD data to global data centres (part 1)	Completed	KPI5
Quarterly Progress report	Completed	
Q4		
Feedback from relevant European/ International Expert/Working Groups	Completed	KPI5
Further updates to the international initiatives table	Completed	KPI5
Delivery of water bottle and CTD data to global data centres (part 2)	Completed	KPI5
Delivery of temperature and salinity data to the Global Telecommunication System	Completed	KPI5
Quarterly Progress report	Completed	

WS5 Resources and Applications Development

Overview

23. The aim of WS5 is to help define and develop access to the data, data products and tools MEDIN sponsors need in order to meet their scientific, engineering, statutory and commercial objectives as easily and efficiently as possible.
24. WS5 supports MEDIN's overall objectives by identifying and helping to develop the resource requirements of its sponsors, providing advice, research and specifications, which are then implemented within WS5 or other work streams, as appropriate.

Review of 2011-2012 Objectives

25. The design of the reference data pages on the MEDIN website was finalised in conjunction with BODC. MEDIN identified reference datasets are being merged with the MCZ datasets, broken down by INSPIRE Theme, to ease discovery and use.
26. The reference data web pages on the portal will go live as soon as licensing terms can be agreed with Defra for the MCZ data. This is being pursued by the MEDIN Secretariat.
27. Area datasets are being included as search terms in the portal. It is minded to extend the catalogue and action plan to other key datasets in the future e.g. outputs from the MMO and Marine Scotland socio-economic data study currently completed by EMU Ltd and managed by MEDIN.
28. Steady progress is being made on the publication and improvement of reference datasets. There has been engagement with data holders and workshops are being held to support engagement. However, it is clear that data holder priorities and the availability of resources will be a barrier to MEDIN meeting its aims in this area.
29. Work on version 2 of the MEDIN Marine Gazetteer commenced Mar 2012, with Ordnance Survey and English Heritage now involved in sharing information and steering the project. UKHO is providing data and is involved in the steering group.

Resources and Applications Deliverables 2011 – 2012

Work Stream 5: Resources and Application Development		
Deliverable	Status	Comments / Relevant KPIs
Q1		
Action Plan for Reference Data accepted by ET Marine Gazetteer (V1.0) completed and published on MEDIN web site	Completed	Action Plan being implemented.
Identify potential work packages to support strengthening and publication of reference data layers	Completed	Contract with Geodata Institute carried over from 2010/11. Measurement of MEDIN's performance against its objectives and current user needs.
Q2		
Marine Gazetteer (V1.0) accepted by SeaVox and published internationally	Completed	Now working on version 2.
Engage with data holders to establish roles in publishing Reference Data	Completed	Data holder priorities resource availability a concern and potential barrier to progress.
Establish Reference Data page on MEDIN website	Completed	Launch pending Licence Agreement with Defra.
Q3		
Identify, design and develop resource requirements of MEDIN sponsors and partners by: - Participation in Partner Conference - Repeat of Questionnaire in Nov 2011 Collate results of Partner Conference and 2011 questionnaire and report Liaise with other Ws and provide input to 2012/13 work programme	Completed Completed Completed Completed	Activities will help make users aware of MEDIN's capabilities and resources. Results used as input to 2012/13 objective and business plan.
Q4		
Document data management requirements of UKMMAS, especially wrt MSFD, gap analysis and prepare Action Plan to address shortfalls Minimum of SIX Reference Datasets added directly or as links to MEDIN website	Partially completed Not achieved On hold pending above	Addressed in part as part of Socio-economic Study and MEDIN participation in PSEG. KPI6 (To be completed at launch of Reference Data web pages)
Update Action Plan for the strengthening and publication of reference and other core data		Progress is being made via thematic workshops being held during 2012/13.

WS6 Communications: Outreach, forums, publicity

30. Activities under this work stream include all forms of publication and outreach (direct emails, newsletter, the holding of workshops and partners meetings, and the presentation of MEDIN at seminars and workshops). This is a key activity for MEDIN as it is essential to communicate to the marine community the resources that have been developed, to provide advise and support on how to use them, and to receive feedback on the utility of these resources.

31. Communications and outreach activities continued throughout the reporting year. We provide details below, but the general highlights are:

- The website was frequently updated and various enhancements included.
- Publication of Marine Data News continued on a quarterly basis.
- A well attended (over 60 participants) Partners' Meeting was held at the Institute of Education, London in November.

Website: Oceannet.org

32. The figures presented below compare:

- the number of visits to the site,
- the number of new visitors, and
- the number of pages viewed

from 01/05/09 - 01/05/10, 01/05/10 - 01/05/11, and 01/05/11-01/05/12.

Period	Visits	Visitors	Pageviews
2009-2010	8,110	4,431	28,222
2010-2011	11,854	7,496	32,131
2011-2012	13,830	7,484	47,353
% change from last year	+14%	-0.2%	+32%

Webstats from comparable time periods in 2009-10, 2010-11 and 2011-12.

33. Although the number of visitors has stayed almost exactly the same, there has been an increase in number of visits and page views.

34. The top ten pages (as measured by the number of times a page was viewed) are listed below and account for over half of all page views (56%):

Page	Pageviews	% Pageviews
Home page	10,475	17%
Marine Data Standards	2,882	5%
MEDIN Discovery Standard	2,874	5%
Online Data by Theme	2,748	4%
Portal	1,728	3%
MEDIN Data Guidelines	1,625	3%
Data Submission	1,417	2%
Metadata Maestro	1,039	2%
About Us	889	1%
Marine Data Newsletter	839	1%
TOTAL	47,353	43%

Top ten pages from 1st May 2011 – 31st May 2012

35. MEDIN continually seeks to update and improve the oceannet.org website in order to increase its effectiveness. The users' questionnaire asked some specific questions about the communications activities.
36. The majority considered the level of content/detail on the MEDIN website and in MEDIN communications, and the frequency of those communications to be at the 'correct' level. Of those who did not feel the level was correct, feedback on what could be done to improve the situation suggests a review of the layout of the website, which the core team had already identified and are in the process of carrying out.

Marine Data News

37. Publication of Marine Data News continues with Issues 20, 21 being published in July 2011 and December 2011.
38. Total subscribers to Marine Data News currently stands at 674 up from 647 last year.

Conference Presence and Meetings

MEDIN Workshop at the *MASTS Annual Science Meeting*:

Heriott Watt University

24 August 2011

MEDIN Partners Meeting: "Engaging with MEDIN in its operational phase" at the Institute of Education

2nd November 2011

'Spatial Data Sharing and Use for Cost-Effective Marine Asset Management and Decision Support'. School of Economic Science, London

30th November 2011

Coastal Futures, presentation "Data and Information: Meeting the challenges of developing and managing marine resources" (Mike Osborne)

18th January 2012

Oceanology International 2012: MEDIN had a presence within the BODC booth at Oceanology International

13-15 March 2012

Other publications and articles.

- Briefing Notes on MEDIN and the UK Location Programme, published on the MEDIN website and in Marine Data News.

Other

39. The MEDIN twitter account (https://twitter.com/MEDIN_marine) is followed by over 50 organisations and private individuals interested in marine science and data, representing a two-way communications outlet with the potential to reach a global audience. Additions to the website as well as other general announcements are broadcast on twitter using scheduling software to ensure tweets are sent at a time most likely for them to be read

Work Stream 6: Communications		
Deliverable	Status	Commentary / relevant KPIs
Q1 2011-12		
Issue of Marine Data News	<i>Complete</i>	KPI4
Attend meetings as required for outreach	<i>Complete</i>	Coastal Futures 18-20 th Jan
Quarterly Progress report	<i>Complete</i>	
Q2 2011-12		
Issue of Marine Data News	<i>Complete</i>	KPI 4
Attend meetings as required for outreach	<i>Complete</i>	MASTS workshop 24 th Aug
Arrange MEDIN partners meeting	<i>Complete</i>	KPI 4
Improvement and maintenance of website	<i>Complete</i>	KPI 4
Quarterly Progress Report	<i>Complete</i>	
Q3 2011-12		
Edition of Marine Data News	<i>Complete</i>	KPI 4
Produce more publicity material as required	<i>Complete</i>	
Publish articles in on-line newsletters and magazines on MEDIN portal and standards	<i>Not complete</i>	Waiting for portal upgrade to be finished
Q4 2011-12		
Attend meetings as required for outreach	<i>Complete</i>	Coastal Futures presentation in plenary and Oceanology presence
Edition of Marine Data News	<i>Complete</i>	KPI 4
Edit and maintain website	<i>Complete</i>	KPI 4

WS7 Management, Planning and Coordination

1. Work Stream 7 covers the management, planning and coordination activities as provided by the core team based at BODC, with the support of the MEDIN Executive Team. This includes the organisation of MEDIN Executive Team meetings, quarterly and annual reporting, and the production of an annual Work Plan.
2. Due to high turnover in staff during the year, management effort has been diverted to ensuring continuity in the work streams, and less effort has been available to address some of the intended priorities of this work stream, although some progress has been achieved.
3. MEDIN has worked closely with the UKMMAS (UK Marine Monitoring and Assessment Strategy) community to:
 - Develop plans for data management and setting up data transfer arrangements in support of the UK implementation of the European Marine Strategy Framework Directive.
 - Improve the processes for collating and managing activities data, to meet the UKMMAS need for improved evidence on pressures and impacts on the marine environment from activities. MEDIN supported the organisation of a workshop on this issue.
 - Help direct, and ensure MEDIN resources are built upon, the development of a UK Integrated Marine Observatory Network.
4. MEDIN continues to engage closely with UK Location Programme and the associated data.gov initiative to coordinate input from the marine community, and to ensure that the MEDIN and data.gov.uk resources developed for publishing data and metadata are consistent and linked. Regular face to face meetings between MEDIN and UK Location have been instigated and a joint workshop is planned for autumn 2012.
5. Meetings have been held with Gardline, The Crown Estate, AFBI, and CEFAS – to encourage and plan adoption of MEDIN standards and procedures, and greater uptake of the MEDIN data clause in the public and private sector.
6. In cooperation with Marine Scotland and the Marine Management Organisation a Review of Marine Socio-Economic Data and Tools was initiated.
7. MEDIN has provided progress updates to the six monthly Marine Science Coordination Committee plenary meetings

Work Stream 7: Management, Planning and Coordination		
Deliverable	Status	Commentary / Relevant KPIs
Q1 (Apr-Jun 2011) Finalise MEDIN 2011-12 Work Plan	Completed	
Q3 (Oct – Dec 2011) Hold MEDIN Sponsors' Board Users Review	Completed	KPI 8
Report on the effectiveness of the Data Clause Pressures Workshop in coordination with UKMMAS	Carried out under WS5 Ongoing Completed	KPI 6
Q4 (Jan-Mar 2012) Annual Report for 2011-12 Work Plan for 2012-2013	Completed Completed	