

Marine Environmental Data and Information Network (MEDIN)

Annual Report for 2010-11



'Measure once, use many times'

1 Progress against Key Performance Indicators

1.1 Established in April 2008, MEDIN is a collaborative partnership working to improve the management of marine data and information, and provide better access to the UK's marine data resources. MEDIN reports to, and receives its strategic direction from, the UK Marine Science Co-ordination Committee (MSCC). MEDIN's aims, benefits to its stakeholders and organizational arrangements are detailed in **Appendix A**

1.2 Key performance indicators were adopted for 2010-2011. Progress on these is set out below.

2010-11 Key Performance Indicator	Progress
1. To define and help develop the cross cutting data products, tools and other resources required to help partners meet their current and future policy and regulatory objectives.	Due to complete in 2012. The questionnaire exercise has helped to identify requirements, but to fully meet this KPI requires further development of the portal, and implementation of the reference layer action plan, which will take place in 2011-12
2. To ensure that at least 2000 separate data sets, providing coverage across data types and specialties to meet key UK policy needs, are discoverable through the MEDIN portal.	Completed Sept 2011. 1,167 metadata records were available on the portal by April 2011, the target of 2,000 records was reached in September 2011. There were unexpected technical complexities in converting existing metadata records to the new format.
3. To establish flow of data into the MEDIN network and adoption of standards across a representative section of the public and commercial sectors.	Ongoing long-term task. Being facilitated through Data Archiving Pilot Projects under WS1, and through standards workshops and seminars. Support has been asked for at top level through MSCC. Data Flow into the DACs will be monitored as a long term Key Performance Indicator
4. To develop a practical, scalable funding model for marine Data Archiving Centres which is agreed by the MEDIN sponsors.	Complete. Recommendations were presented to the MEDIN Sponsors in November 2010. Support for DASSH now agreed by Defra, and Marine Scotland. Discussions are ongoing with CCW/WAG. Process to monitor DAC funding and provide recommendations as appropriate is in place
5. To publish a costed forward strategy for MEDIN which is agreed, and financially supported by, the MEDIN sponsors.	Complete. A Business Plan for 2011-14 was developed and accepted by the MEDIN Sponsors in November 2010. Commitments for all the requested funding have been received.
6. To help assess the need, scope and if required help deliver an information strategy to underpin the marine science strategy	Completed Summer 2011. A paper was presented to the MSCC in March 2011, which recommended that MEDIN provide the mechanism for defining and delivering the data and information strategy for the MSCC. This recommendation has since been adopted by the MSCC

1.3 It was recognised at the start of the year that despite the many achievements delivered by MEDIN there were some significant risks:

- Whilst a reasonable volume of data was available there was much more to do to get the content to a 'critical mass' where users will regard the MEDIN network as the definitive source for UK marine environmental data.
- It was important that both the MEDIN data flow mechanisms and the data sets mobilised through MEDIN become integrated within uses if the benefits of the initiative were to be realised.
- Uptake of the MEDIN standards and data clause could be improved. There is a need to consolidate MEDIN as the central coordinating body for Marine Data and Standards in the UK.

- It was not clear how the data archiving function will be funded in the medium to long term.
- 2010-11 was the final year of the current MEDIN funding agreement and there was a need to agree the strategy for the initiative beyond this.

1.4 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.

2 Highlights in 2010-11

2.1 The year was a busy one with a key aim to move MEDIN into an operational mode from its initial development stage. **Appendix B** provides more detail but the main areas to highlight are:

- The initial network of MEDIN accredited marine Data Archive Centres (DACs) is now established and operational, offering secure long-term data management facilities to the marine sector. Coverage presently includes bathymetry, geology and geophysics, oceanographic data, and marine species and habitats.
- A number of pilot programmes supported by MEDIN have established data flows from key partners into the DAC network. This covered a wide range of data types including fish farm survey data from the Scottish Environmental Protection Agency, Regional Environment Characterisation Survey data from the Marine Aggregate Levy Sustainability Fund, benthic survey data from the offshore oil and gas industry, and improved processes for recording marine historic environment survey data.
- The MEDIN discovery metadata standard, developed to comply with national and international standards including UK Gemini 2, ISO and INSPIRE, has proved to be a forerunner and has been adopted as a model of good practice beyond the marine community. Use of the standard ensures recording of the essential information needed to support the successful retrieval of data in the future. Forty-four organisations have now registered to produce metadata in this standard through an online tool developed by MEDIN. This includes organisations recording data holdings for the European Project KnowSeas.
- The MEDIN Metadata Discovery Portal went live in June 2010, providing a single central search capability for UK marine data. It now provides information on over 2,000 marine data sets. Content is expected to double in volume over the next year.
- MEDIN now maintains the UK Directory of Marine Observing Systems (UKDMOS), which provides information on all long-term marine observation programmes, including the relevant legislative drivers. UKDMOS also links into a European Marine Observing Systems Database and so supports coordination of monitoring programmes at a national and international level.
- MEDIN continues to make valuable input to development of European and International Initiatives, including the data exchange mechanisms under the European Marine Strategy Directive and INSPIRE.
- An action plan has been developed for identifying key reference information and reference data layers to be made available from the MEDIN website. This will be implemented over the current year.

- A report on Marine Data Policy provided an overview of the current approaches to data licensing across the UK marine sector, and highlighted issues to for MEDIN to address.
- MEDIN has sought to move to a more sustainable funding basis articulated through the MEDIN business Plan 2011-2014. A sustainable funding approach for the Marine Data Archive Centres has also been developed.

3 Financial Summary 2010-11

Total MEDIN income 10/11	£	Provisional actual spend	£	Work stream	£
2009-10 Carry forward	£140,048	Employment Costs of Core Team	£381,398	WS1: DACS	£143,504
Sponsor funds	£763,000	Travel and Subsistence	£16,836	WS2: Stds	£119,985
Minus funds to support DASSH	-£125,000	Contracts	£289,027	WS3: Portal	£166,693
				WS4: Intl	£22,271
				WS5: Res/Apps	£44,804
				WS6: Comms	£59,546
				WS7: Mngmnt	£130,458
Total Available	£778,048	Total spend	£687,261		£687,261

3.1 Thus the provisional **end of year balance is £90,787**. The main reasons for the under-spend are:

- Approx. £32,000 less on staff costs. Main cause was departure of metadata scientist in June and not being replaced due to the Government wide recruitment freeze.
- £21,164 less on travel and workshop costs. This was a deliberate policy following guidance from sponsors, in line with reduced Government spending.
- Approx £12,973 less spent on contracts. Main cause was a lower than expected spend in the Resources and Applications Work Stream.
- Taking into account that the original Work Plan was £24,640 less than the funds available (£778,048), the projected end of year balance is £90,787.
- The major under spends have occurred in WS6 (Communications) and WS7 (Management), areas where government wanted to reduce cost, and WS5.

3.2 Carry forward of surplus to 2011/12 would benefit MEDIN given the 30% reduction in available sponsorship funds, and would enable important areas of MEDIN activity to be supported. These funds would be most useful in:

- WS1: Only £20,000 per annum had been allocated to support further Data Archiving projects from 2011-12 onwards. There is still a need to support

further activities to establish data archiving processes between data sources and DACs.

- WS3: There is a requirement to provide support for partners in metadata generation and publication. No funds had been allocated for this in the initial 2011-14 work plan.
- WS5: Given that new reference data projects meeting the required criteria were identified in 10/11, surplus funds can support this activity in 2011-2012.

4 MEDIN Work Streams 2010-11

4.1 Detailed summaries of the activities of the seven MEDIN Work Streams for 2010-11 are in Appendix C. The highlights are below:

WS1 Network of Data Archive Centres

- The network of Marine Data Archive Centres accredited by MEDIN is now in place, offering secure long-term data management facilities to all in the marine sector.
- Work has continued on increasing the coverage beyond that of the four original DACs (BGS, BODC, DASSH and UKHO) to include metocean and fisheries data. A report has been commissioned to provide recommendations on the best approach for Historical Environment data.
- The first round of 12 data archiving projects has been completed, and 7 further projects started to establish data flows into the DAC network.
- The document “MEDIN Data Archive Centre Network- A Review of Future Funding Options” has been published, and provides a model for sustainable funding of the archiving of marine data.

WS2 Standards for Data and Metadata

- 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 2010-11.
- Tools to support the generation of MEDIN format Discovery Metadata have been updated and released. The MEDIN standard is consistent with Gemini 2, ISO and INSPIRE. This has proved to be a fore-runner of its kind and has been adopted as a model of good practice by other communities. By March 2011, 94 users from 44 organizations had registered for use of the online metadata tool.
- Guidelines for Noise, Phytoplankton and Leisure and Recreation have been developed and added to the existing suite of data guidelines.
- Good progress has been made towards the adoption of a single common species (taxon) list.
- Dissemination activities to encourage uptake of standards continued through the year, with particular interest being shown by the renewable sector, thanks to requirements placed on them by the Crown Estate.

WS3 Web Portal, Products and Services

- The MEDIN metadata discovery portal went live in June 2010, with the aim of providing a single central search capability for all UK marine data. By June 2011, 1167 metadata records were available (against a target of 2000 records). Some of the technical difficulties in adopting and implemented a

new standard had been underestimated. DASSH has been contracted to work with partners to help in the production of metadata records.

- The UK Directory of Marine Observing Systems provides metadata on UK marine monitoring programmes, and is maintained and updated by MEDIN. It now also links to a data base on measurement protocols and to an application providing information on research vessels.
- MEDIN also maintains and updates a number of web-based catalogues and databases covering tide and sea level data, wave data, research cruises and the UK part of the European Directory of Marine Environmental Data Sets.

WS4 International Awareness, coordination and data delivery to global databases

- 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.
- 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).
- MEDIN 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. EMODnet is especially important in terms of preparation for reporting to the European Marine Strategy Framework Directive.
- 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

- 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.
- A partner questionnaire was issued to update knowledge on user requirements and how well the MEDIN resources met these requirements.
- The strengthening and maintenance of key reference data sets is a priority of this work stream, and an action plan was developed to address this issue.
- Projects designed to improve, or provide recommendations on how to improve reference data on post 1947 shipwrecks, offshore infrastructure, marine gazetteer (sea regions) and archaeological events were completed.

WS6 Communications: Outreach, forums, publicity

- Communications and outreach activities continued throughout the reporting year but at a lower level from June 2010 according to public sector guidance.
- The website was frequently updated and various enhancements included in order to maintain and increase its effectiveness. In 2010-11 there were 11,106 visits to the MEDIN website from 7,003 visitors.
- Publication of Marine Data News continued on a quarterly basis. There are 647 subscribers.
- A well attended (62 participants) Partners' Meeting was held at IMAREST, London in September. MEDIN also had a presence at Coastal Futures in Jan 2011, and the AGI/IMAREST joint meeting on Information Strategies for Coastal Planning.

WS7 Management, Planning and Coordination

- 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.
- A report on marine data policy was completed and provided important recommendations to the community to help improve access to data for reuse.
- 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, three years on good progress has been made, although much remains to be achieved.

2013 Objectives	Progress
1. Single point of access to all marine data	Portal complete – operational from June 2010. Emphasis now on increasing metadata population over early months of 2011-12.
2. Network of integrated Data Archiving Centre (DACs).	Initial DAC network complete. 4 DACs established to cover geology & geophysics, oceanography, marine species and habitats, and bathymetry. A further 2 DACs under development to cover fisheries survey and metocean data.
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 (Initial Assessment due in 2012). 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. 19 Pilot projects have been established with selected partners (under WS 1) to identify data submission processes and 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 asked to report on practical benefits. Expect progress in 2011/12 & 12/13.
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 on this are due at the end of 2011/12. Expect progress in 2011/12 & 12/13.

6 Conclusions

6.1 MEDIN has successfully promoted collaboration in marine environmental data and management in the UK and already provided better coordinated access to the UK's marine data resources. As described above, MEDIN has established a single point of access to UK marine data, a network of accredited marine data archive centres, and developed a suite of standards for data and metadata.

6.2 MEDIN is working under a current five year plan of delivery, to deliver a coordinated framework for managing marine data and information. Half way into this five year programme, good progress has been made in establishing the operational MEDIN framework as planned, providing the capability to archive data, to search and identify marine data needed for specific applications and to retrieve data from the Data Archive Centres.

7 Look ahead for 2011-12

7.1 Activities within the 2011-2012 MEDIN Work plan will represent the move to an operational phase for MEDIN, specific objectives include:

7.2 **Increase the content and usage of the portal** - increasing the content of the portal is critical if its true value is to be realised. At the time of writing it contains just over 2000 records which provide good initial coverage. However, there is a vast amount of additional data within MEDIN partners and the wider marine community (public and private sector) which needs to be published through it. In addition, the functionality of the portal will be reviewed with users and enhanced as required.

7.3 **Consolidate the current DAC network** - Expansion of the DAC network is planned to include fisheries and metocean data, and options for improving the management of historic environment and socio-economic data will be investigated. Resources, in addition to those required to meet operating costs, have been allocated to improve internal efficiency and data publication (particularly meeting demands through INSPIRE / UK Location Programme and building direct links between the metadata records viewable on the portal and data download capability).

7.4 **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) and other data centric initiatives and portals.

7.5 **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. 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.

7.6 **Establish widespread adoption of standards for metadata and data** – The standards already developed will be reviewed with users, and adapted where necessary. New standards will be developed to fill gaps where standards are missing and limiting the re-use of data. A critical element of this work will be reviewing and, where necessary, developing tools to encourage the uptake of the standards.

7.7 **Establish streamlined publication of data from MEDIN partners** – Critical to the success of MEDIN is the uptake of the principles and standards by partners to ensure data collected become available through the DAC network. MEDIN will work with partners to encourage uptake of the data clause, ensure data standards are adopted and arrangements for archiving data are included in projects costs. 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.

7.8 **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.

7.9 **Assess MEDIN performance against user expectations and needs** – Through use cases and other form of user interaction MEDIN will track its performance against its core aims, and identify and deliver against the common needs of its sponsors and partners.

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.
 - Improving 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 preparation for the first Initial Assessment Report under the Marine Strategy Directive, which is due in 2012.

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.

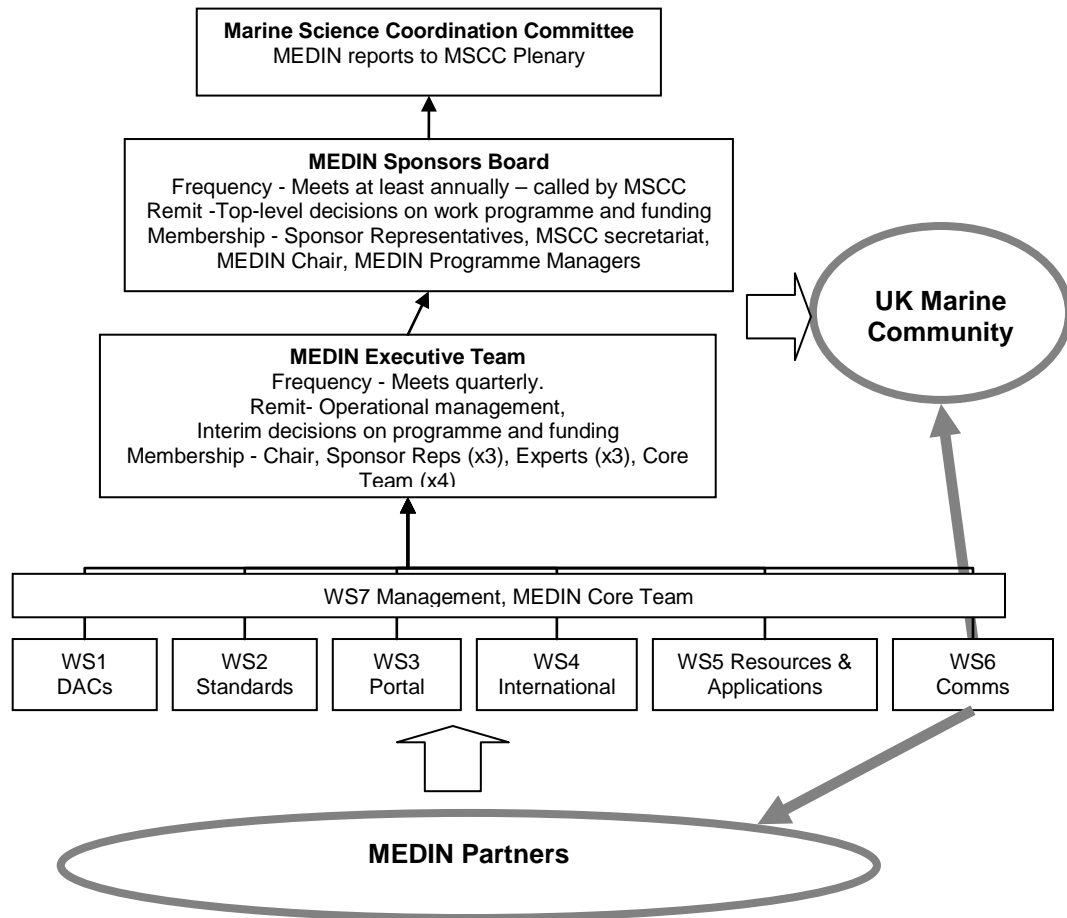
Publishing Marine Data to the Public – INSPIRE, the UK Location Programme and Data.gov.uk

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 2010-11

1. The initial network of **MEDIN accredited marine Data Archive Centres (DACs)** is now established and operational. This network provides the capability to upload and retrieve marine data, ensuring the data are managed according to best practice and are readily available for re-use. The network currently comprises four DACs:
 - 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. The Met Office is close to submitting its accreditation submission to act as the DAC for MetOcean data and CEFAS and Marine Scotland are also working towards accreditation to act as “nodes” in a distributed DAC for Fisheries Data. A report has been completed which considers DAC options for Historic Environment data.
3. 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.
4. The **MEDIN discovery metadata standard**, developed to comply with national and international standards including UK Gemini 2, ISO and INSPIRE, has proved to be a forerunner and has been adopted as a model of good practice by a number of other communities. The standard has been updated to retain consistency with Gemini 2 and UKLP / INSPIRE requirements. MEDIN has also supported the testing of existing data guidelines and developed further guidelines for specific data types (noise, phyto-plankton, Leisure and Recreation). These guidelines are important to ensure interoperability and re-use of data.
5. The **MEDIN Metadata Discovery Portal** went live in June 2010– to provide a single central search capability to enable users to identify and source marine data sets for all uses. The portal already has a rich content, initially covering biology, geology and geophysics with oceanography, archaeology, metocean and fisheries data to follow soon. Coverage will be further extended once the implementation of batch production tools is complete. Population of the portal is slightly behind schedule, as the technical complexity involved in converting existing records to the new format had been underestimated.
6. MEDIN now 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.
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 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 Expert Group for EMODNET (European Marine Observation and Data Network)
 - 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. Further progress has been made in **identifying common requirements for reference information and a reference layer action plan** to meet these requirements has been developed. If accepted, this action plan will be adopted and progressed in the coming year.
 9. **Communications and outreach activities** continued in order to advise all interested parties of the developments and resources being made available by MEDIN. This activity was at a lower level than originally planned, according to public sector guidance received in the summer of 2010.
 10. Reports on **Marine Data Policy** and **Sustainable Funding for Marine Data Archive Centres** have been published.
 11. March 2011 marked the end of the initial 3 year funding phase for MEDIN, and so a **new Business Plan was prepared** and presented to the Sponsors. This proposed a slightly reduced level of operation in 2011-14, with a 30% reduction in costs. This was achieved by moving into an operational mode of operation phase, slightly earlier than planned. Further development activities will be limited. This plan was accepted by the MEDIN Sponsors and sponsorship commitments for £526,000 per annum have been received to date.

APPENDIX C: Work Stream Deliverables

WS1 Network of Data Archive Centres

DAC Status

1. The main objectives for the DACs work-stream in 2010-11 were:
 - To continue to build the DAC network as an operational capability accessible to all UK Marine organisations.
 - *Establish data flows into the MEDIN DAC network from partners through pilot projects.*
 - *Ensure ongoing flow of new data into the MEDIN DAC network through implementation of the “Data Clause” in new contracts for data collection.*
 - To widen the coverage of the MEDIN DAC network to incorporate fisheries and marine meteorology data, and to consider suitable arrangements for marine heritage and contaminants data.
 - To engage with the commercial sector and support pilot projects to bring key data sets from this sector into the MEDIN DAC network
 - To develop strategies for managing complex data sets, higher level products, and large volume geophysical data sets within the MEDIN DAC network.
 - To develop long term plans for a financially secure MEDIN network of marine Data Archive Centres.

The current status of the MEDIN DAC network

Name	Expertise	Contact Information	Web links	MEDIN Status
Round 1 DACs				
British Geological Survey (BGS)	Seabed and sub-seabed geology, geophysics	Paul Henni phoh@bgs.ac.uk	www.bgs.ac.uk www.bgs.ac.uk/geoindex/home.html	Accredited
British Oceanographic Data Centre (BODC)	Oceanographic Data, marine data from NERC programmes.	Polly Hadziabdic enquiries@bodc.ac.uk	www.bodc.ac.uk www.bodc.ac.uk/data/where_to_find_data	Accredited
Data Archive for Marine Species & Habitats (DASSH)	Benthic flora, fauna and habitats	Dan Lear dble@mba.ac.uk	www.dassh.ac.uk	Accredited
UK Hydrographic Office	Bathymetry Data	Chris Howlett chris.howlett@ukho.gov.uk	www.ukho.gov.uk	Accreditation approved
Progress on Round 2 DACs				
Marine Met. DAC	Marine meteorology	Met. Office, Nicky Scott		Requirements document being finalised
Fisheries DAC (I)	Fisheries survey data	Marine Scotland Science (Jens Rasmussen) CEFAS (Sergio Vettese), AFBI		Preparation for accreditation in progress
Fisheries DAC (II)	Data from IFCAs	DASSH (Dan Lear)		Report completed
Marine historic landscapes (heritage) DAC				Report completed; workshop planned

2. The DAC Requirement list was reviewed and republished; DACs will report against this in next annual report.
3. Good progress has been made on the development of the Met DAC: the internal case has been approved by the Met. Office and the potential Met. DAC has completed a first draft of the DAC requirements document and feedback on this has been provided. The revised and finalised version should be completed soon. They have also looked at the MEDIN metadata standard.
4. Work on developing the Fisheries DAC is proceeding more slowly partly due to the more complex nature of the DAC and partly due to a lack of data managers at some of the organisations, although this is improving now. However, a Fisheries DAC meeting helped to clarify the issues and map a way forward. In addition, discussions have been held with the Sea Fisheries Committees and the emergent Inshore Fisheries Committees (IFCAs) with a view to DASSH being responsible for their data. Initial funding will come centrally from MEDIN with agreements put in place between DASSH and the IFCAs to manage ongoing data ingestion and archive.
5. Progress has also been made on the archiving of Marine Historic Environment data. This is very complex area, with different models of data flow in England, Scotland and Wales. The heritage agencies have held discussions and whilst they recognise that the different policies and systems for data management in Scotland, England and Wales make it difficult to collaborate in the creation of a common MEDIN DAC for digital maritime archaeological data, they are keen to work together to provide some form of central access to record information. A contract was awarded to Maritime Archaeology Ltd and SeaZone to carry out a scoping study for a Marine Historic Environment DAC.

Progress of Data Archiving Proposals

6. The first round of the Data Archiving proposals were completed including summaries describing the data sets that are now available and links to the data.
7. New pilot projects, to establish data flows from MEDIN partners into the DAC network, have been commissioned and kicked off for the following:

Project	DAC
Standardizing & archiving UKBENTHOS surveys from Oil and Gas UK (1975-present).	DASSH
Introducing the OASIS data capture form in Wales	ADS and RCAHMW
Archiving Scottish marine fin fish farm benthic surveys collated by SEPA (2005-Present)	DASSH
Archiving MALSF data	DASSH and BGS
Development of a metadatabase of marine datasets held by the University Marine Biological Station Millport (UMBSM) and investigation of how priority datasets might be utilized by a local biological records centre through the Marine Life Information Network.	DASSH
Review and report on the current data holdings of the 12 Sea Fisheries Committees (SFC) to provide a baseline assessment ahead of IFCA establishment	DASSH
Archiving Oil and Gas Industry Site Survey top-level metadata within the existing MEDIN Data Archive Centre (DAC) network.	BGS (in collaboration with DECC)

Other Progress

8. DAC web pages on the web-site are being improved, in particular to provide simple and clear guidelines for standard procedures for submitting data to DACs.
9. The MEDIN recommendation for a standard data collection clause to be used in contracts has been updated and can be downloaded from the web-site.
10. A document was produced, MEDIN Data Archive Centre Network – A Review of Future Funding Options¹, offering a proposal for a sustainable long-term funding model of the DACs.

Work Stream 1: Data Archive Centre Network		
Deliverable	Status	Commentary
Q1 2010-2011		
Review DACs Requirement List, update and publish	Complete	Requirement list reviewed and republished. DACs to report against in next annual report.
Hold DACs meeting	Complete	Meetings held 15/6/2010; 7/12/2010
Start first data submission pilot projects		Datasets identified and projects due to start pending discussions of DAC WG.
Complete outstanding DAC archival projects carried over from 2009-10	80% complete	Majority of archival projects now complete and reviewed. Some clarification sought.
Q2 2010-2011		
Fisheries DAC meeting	Meeting	Meeting held on 7 th December. CEFAS, AFBI, Marine Scotland and new IFCAS.
Start further pilot projects	Delayed following HF's departure	No decision by MALSF until Q3 KPI 2 KPI4, KPI5
Three to Five year forward look for DACs	DAC funding paper	DAC funding paper as part of Business case. DACs to be requested in annual report for further view.
Q3 2010-2011		
Generate web pages on how to submit data to DACs	Underway	Part of review of Web pages
Submission from Met DAC for accreditation	First draft received	First draft of accreditation document received and comments provided. Final draft in preparation.
DAC WG meeting / Inshore Fisheries Workshop	Complete	Meetings held on 7 th December 2010. Review of data under IFCAS complete
Q4 2010-2011		
Completion of Data submission pilot projects	Underway	To be completed ASAP
New DAC pilot projects	Started	
Production of DAC publicity material	Deferred	
DACs Work Plan for 2011-2012	Complete	
DACs annual report	Complete	
DAC Report for 2010-11	OComplete	KPI 2 completion

¹ See <http://www.oceannet.org/...>


WS2 Standards for Data and Metadata

11. 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.
12. In 2010-2011, in agreement with the MEDIN Standards Working Group the following work was prioritized:
 - Multibeam data workshop
 - ArcCatalogue tool
 - Data Guidelines for Noise, Phytoplankton and Leisure and Recreation
 - Practical review of the Data Guidelines
 - Publication of a MEDIN Standards Leaflet
 - CSW 2.2 migration for back-end.
13. Following discussion with JNCC and BGS the Multibeam workshop was deemed unnecessary and the CSW 2.2 migration work was transferred to the MEDIN Portal WG. With the exception of these two items, all work has been completed as follows:
 - The ArcCatalogue tool was upgraded and released on the MEDIN website allowing the GIS community to easily generate discovery metadata records for GIS layers. These records will then be searchable on the MEDIN portal increasing visibility of the available datasets leading to improved reuse.
 - Data guidelines set out requirements that must be recorded when data of a certain theme is being collected. This will in turn lead to increased ability to exchange and use datasets. Data Guidelines for Noise, Phytoplankton and Leisure and Recreation have been finalised. Following the review of the published Data Guidelines they are being revised in structure and the way in which they are accessed via the web. The new data guidelines once also revised will be published and made available via the MEDIN website.
 - The MEDIN Standards Leaflet has been printed and distributed.
14. In addition the other work completed in 2010-2011 includes:
15. The MEDIN discovery metadata standard is the first vital step to improving the reuse of datasets. It is consistent with the relevant standards including UK Gemini 2, ISO and INSPIRE and is available, with guidelines on the MEDIN website. It has proved to be a fore-runner of its kind and has been adopted as a model of good practice by other communities. Due to changes in GEMINI2 and other drivers, revisions of the standard have been implemented and new versions released. Following demand from the community and negotiation with SeaZone, a desktop tool to create discovery metadata is in the process of being built.
16. Discussions to move the biological community towards being able to exchange taxonomic data using 1 taxon list (The World Register of Marine Species) has made significant progress. It is likely that in the following months a web based tool showing 'Marine Species of the British Isles and Adjacent Seas' will be released. This will be the first updated resource to be released since 1997 and

will allow users to more easily exchange, marine taxonomic data by using 1 species list that everybody can work to.

Work Stream 2: Standards		
Deliverable	Status	Commentary
Q1 2010-11		
Hold MEDIN Standards Meeting elements to include.	<i>Complete</i>	
Complete upgrades to ArcCatalog and on-line metadata generation tools	<i>Partly Complete</i>	Arc tool is complete, on-line tool is under final review
Give MEDIN standards presentation at ISO meeting	<i>Complete</i>	
Agree contract specification for new data guidelines and review of data guidelines	<i>Partly Complete</i>	Awaiting comments on draft
Revise Data Guidelines into new agreed structure	<i>Complete</i>	
Q2 2010-11		
Produce and distribute MEDIN standards leaflets	<i>Done</i>	
Maintain Discovery Standard	<i>Ongoing</i>	
Let contracts to review existing and derive new Data Guidelines	<i>Done</i>	KPI 1
Three to Five year forward look for STDs work	<i>Done</i>	KPI4, KPI 5
Q3 2010-11		
Revise Data Guidelines in light of reviews	<i>Done</i>	
Hold workshop if necessary on multibeam echosounder data.	<i>Not done</i>	Standards WG agreed it was not useful at this stage
Hold MEDIN standards meeting	<i>Done</i>	
Q4 2010-11		
Production of Geophysical Survey Data Guidelines	<i>delayed</i>	Issue of this contract was delayed due to staff changes at MCA. Will be carried out in 2011-12
Standards Work Plan for 2011-2012	<i>Complete</i>	
Standards Report for 2010-11	<i>Complete</i>	

WS3 Web Portal, Products and Services

17. The MEDIN Metadata Discovery Portal went 'live' in June 2010. The number of records in the portal has reached 1163 over the year. The aim was to achieve a critical content of at least 2000 metadata records before the end of March 2011 (KPI 1). This has not been achieved to date due to the technical complexities of converting non-MEDIN records into MEDIN formatted records and the underestimation of how long this would take. Useful feedback from a partner questionnaire sent out in December 2010 indicated aspects of the portal that need to be improved. The number of visitors to the portal page on OceanNET since November 2010 has been 15-20 per week (compared to 200-250 visitors per week to <http://www.oceannet.org/>). Once the portal is better populated and its search interface improved, it will be advertised widely to improve user uptake.
- 
18. The number and range of records in the portal is critical to its success. DASSH have been under contract to MEDIN since November 2010 to provide metadata support and facilitate the flow of records into the portal. This has been a successful activity with one-to-one meetings between DASSH and partners plus the extensive use of a 'metadata helpline'.
19. MEDIN funds the update of UKDMOS, a portal that provides metadata for marine monitoring programmes carried out in the UK. During this year, the database has been developed to allow searches by the descriptors and indicators used in the implementation of the Marine Strategy Framework Directive. A technical change to the front end allows linking of the ships used for each monitoring programme to a sister application called 'Eurofleets' where past and future ship cruise plans are available. Metadata from the UKMMAS Protocols Database has been taken from a standalone database and integrated into UKDMOS so that the protocols for each monitoring programme can be viewed. In the last quarter, the content of records has been updated in response to emails sent out to the contacts for each programme.
20. GeoData Institute is nearing completion 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.
21. The Business Plan for this work stream for 2010-2014 has been completed (KPI 4 and 5).

Work Stream 3: Web Portal and Services		
Deliverable	Status	Commentary
Q1 2010-11		
Hold MEDIN portal steering group meeting	<i>complete</i>	Held 20 th April 2010
Implementation of steering group recommendations by GeoData	<i>complete</i>	
Go 'live' of portal	<i>complete</i>	KPI 1
Q2 2010-11		
Installation of portal discovery service onto MEDIN virtual server at BODC.	<i>delayed</i>	Delayed until 2010-11
Batch tool to generate MEDIN format metadata	<i>ongoing</i>	A metadata standard issue has to be addressed before this tool can be finished
Metadata from DAC archive projects complete and available	<i>ongoing</i>	KPI 1
Integrate UKMMAS protocols data database with UKDMOS and update with new monitoring programmes	<i>complete</i>	
Three to Five year forward look for Portal and web services	<i>complete</i>	KPI4, KPI5
Q3 2010-11		
Provide CSW (or WAF) service link to UK Geoportal (and hence INSPIRE)	<i>ongoing</i>	Test records have been supplied to UKLP. STFC have CSW in place
User review of Portal functionality	<i>ongoing</i>	Survey sent out by WS5 to partners includes portal related questions
Q4 2010-11		
Attainment of KPI 1 (2000, representative, metadata records searchable through portal)	<i>ongoing</i>	
Portal and Web Services Work Plan for 2011-2012	<i>complete</i>	
Portal and Web Services Report for 2010-11	<i>complete</i>	

WS4 International Awareness, coordination and data delivery to global databases

Overview

22. 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

23. Ongoing provision of advice, primarily to Defra in relation to EMODnet and its preparatory actions especially in relation to MSFD data issues. In particular input was provided to Defra for the Maritime Policy Expert Group - Marine Knowledge 2020 discussion on 23 February 2011. Attendance at an EIONET meeting (25-26 November 2010) which included a presentation of the vision for submitting data to European initiatives through EMODnet by the Head of the ICES Data Centre and discussion about the obligations of Member States for submitting data and information for the Marine Strategy Framework Directive. Following these two meetings advice has been provided to Defra and MARG on the potential capability of these initiatives for reporting data and information for the MSFD.

24. Meetings of the EU Marine Observation and Data Expert Group, including a focus on offshore wind energy and coastal protection, updates on progress of financial regulation for 2010-2011 and Marine Knowledge 2020 including feedback from the Friends of the Presidency, Parliament, Committee of the Regions and the Member State Expert Group on Maritime Policy. MODEG has also regularly reviewed the EMODNet preparatory actions (the UK is involved with all six of these, the most recent being the physical parameters lot which began in December 2010).

25. Participation in IODE-XXI meeting (23-26 March 2011) and IODE 50th Anniversary Conference (21-22 March 2011). MEDIN contributed a poster to the Conference.

26. Participation in ICES Working Group on Data and Information Management (25-27 May 2010).

Support and links to global databases

27. 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.

Work Stream 4: International Links and Coordination		
Deliverable	Status	Commentary
Q1 2010-11		
Delivery of water bottle and CTD data to global data centres (part 1)	<i>Started</i>	Assessment of CTD data not provided to international data centres; water bottle data to be reviewed and resubmitted to WDC Silver Spring.
Delivery of CTD data from Marine Scotland Science/NERC vessel to the Global Telecommunication System	<i>Ongoing</i>	Data continue to be submitted to the GTS from Marine Scotland. Temperature and salinity data from Tagged Seals are also routinely provided to the GTS.
Q2 2010-11		
Delivery of water bottle and CTD data to global data centres (part 1)	<i>Started</i>	Assessment of CTD data not yet provided to international data centres; water bottle data to be reviewed and resubmitted to WDC Silver Spring late 2010/early 2011.
Delivery of CTD data from Marine Scotland Science/NERC vessel to the Global Telecommunication System	<i>Ongoing</i>	Data continue to be submitted to the GTS from Marine Scotland. Temperature and salinity data from Tagged Seals are also routinely provided to the GTS
Q3 2010-11		
Delivery of water bottle and CTD data to global data centres (part 1)	<i>Started</i>	Assessment of CTD data not yet provided to international data centres updated October 2010; water bottle data to be reviewed and resubmitted to WDC Silver Spring early 2011.
Delivery of CTD data from Marine Science Scotland/NERC vessel to the Global Telecommunication System	<i>Ongoing</i>	Data continue to be submitted to the GTS. Data received from RRS James Clark Ross.
Q4 2010-11		
Delivery of water bottle and CTD data to global data centres (part 1)	<i>Started</i>	Assessment of CTD data to be provided to international data centres updated October 2010; water bottle data to be reviewed and resubmitted to WDC Silver Spring in 2011.
Delivery of CTD data from Marine Science Scotland/NERC vessel to the Global Telecommunication System	<i>Ongoing</i>	Data continue to be submitted to the GTS. Data received from RRS James Clark Ross. Temperature and salinity data from Tagged Seals are also routinely provided to the GTS.
Twenty-first meeting of the IOC's International Oceanographic Data and Information Exchange (IODE) Committee	<i>Completed</i>	UK will be represented by BODC, UKHO and Trevor Guymer (Head of UK delegation to IOC)
International Coordination Work Plan for 2011-2012	<i>Completed</i>	
International Report for 2010-11	<i>Completed</i>	

WS5 Resources and Applications Development

28. 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.
29. 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. Currently, this includes reviewing the data management needs of the UKMMAS, monitoring the performance of existing and new data resources through the continuation of use cases and strengthening reference datasets by working with data holders (identified under INSPIRE or elsewhere).

Review of 2010-2011 Objectives

30. The objectives defined in the MEDIN Work Plan for 2010-2011 are presented in the table below, together with the key activities undertaken to deliver on these objectives and a summary of the outcomes.

Objective	Key Activity	Outcome
Revalidate user requirements and validate new emerging requirements	Partner Conference Questionnaire	User requests included: Provision of 'view and download of commonly required datasets' and provision of 'metadata creation and management tools' Plan of current and future MEDIN projects to be made available on the website.
Review existing resources on MEDIN portal in terms of how these meet users existing expectations and requirements and identify any major gaps	Partner Conference Questionnaire	Users requested specific data to meet their business needs e.g. Fishing Activity and detailed Seabed Habitat (including confidence levels) coupled with a user-friendly system to facilitate access. There were requests for reference data sets and supporting documentation (e.g. vocabularies, spatial boundaries, coastlines, data standards) with effort needed to 'coordinate [their] creation and managing them.' Training courses on metadata and data standards were requested, as was the standardization of data formats for improved interoperability.
Identify use cases to evaluate metadata creation tool	Feedback from Users / DASSH	No use cases were identified. Instead, DASSH has list of FAQs based on the questions regularly put to them as part of their metadata support work (see www.oceannet.org/marine_data_standards/mds_faq.html for details). There were further requests for a desktop metadata tool, which will be available for users to download from June 2011, and consideration of extending the GeoNetwork based tool being developed for the UK Location Programme to include the MEDIN profile; this is currently on hold pending discussion with UKLP. An ESRI ArcCatalog tool had been developed, however, there is incompatibility with ArcGIS 10 that needs to be resolved. A tool that converts database records to the MEDIN format is being installed at BODC.
Study into how	Included in	This objective was included in the agreement to commission

<p>users will access data using examples of existing best practice and whether there is scope to share resources within the marine community of wider (INSPIRE Services).</p>	<p>Action Plan (see below)</p>	<p>the development of an action plan for reference data. The plan included consideration of the difference between publishing raw data and data products.</p> <p>Current MEDIN view is that DACs will be responsible for developing view and download services for the data they hold, as the variety of data types and IT infrastructure that would be required means that a central download and view capability would be very expensive and complex. Thus DACs will create (download and view) web services and the metadata will have (ideally direct) links, in URLs, to these services.</p>
<p>Consider how data products are created and maintained from raw data and how these are accessed and managed.</p> <p>Strengthen reference datasets through use cases identifying issues.</p> <p>Engage with competent authorities to make them aware of MEDIN, its goals and resources available to them.</p> <p>Collaborate with MMO, Marine Scotland, Crown Estate in the context of meeting the needs for marine planning.</p>	<p>Completion of projects started in 2009 following call for proposals</p> <p>Action Plan</p>	<p>Following the limited response and hence success of the call for proposals in 2009 for the creation and maintenance of reference data it was agreed that MEDIN should be more proactive and prescriptive of its desired outcomes.</p> <p>Consequently, it was agreed to undertake the development of an action plan for marine reference data that would take into account existing projects and initiatives, and the views of data holders.</p> <p>The action plan was completed in March 2011 and potential next steps considered below. These will be discussed at the Executive Team meeting in June 2011.</p> <p>All of the projects started in 2010 were completed by March 2011. These included an update of the National Monument Record to include post 1947 shipwrecks, consideration of how to address records of offshore infrastructure and the development of a marine gazetteer. A subsequent project to update archaeological events was also undertaken successfully by English Heritage.</p> <p>Several areas of concern were highlighted during the course of the projects and limited discussions with stakeholders:</p> <ol style="list-style-type: none"> 1) MEDIN needs to be made aware of sponsor initiatives to create and publish reference data and invited to be involved in these projects from an early stage. Without this there is risk of duplicated effort and inconsistent outputs 2) Sponsors need to be more forthcoming about their own requirements for data and other resources and look to MEDIN to provide a solution.

Work Stream 5: Resources and Application Development		
Deliverable	Status	Commentary
Q1-2 2010-11		
Questionnaire based on perceived user needs to revalidate user requirements and validate new emerging requirements	<i>Completed</i>	Issued Q2, results available Q3
Complete reference layer projects (gazetteer and infrastructure)	<i>Completed</i>	Completed in Q4 2010-11
Three to five year forward look for Resources and Applications Development (e.g. data delivery and services)	<i>Completed</i>	Included in MEDIN Business Plan for 2011-14
Q3 2010-11		
Initiate Heritage Reference Layer Data Project (Recording Events)	<i>Completed</i>	Completed in Q4 2010-11
Q4 2010-11		
Recommendations for MSCC information strategy	<i>Completed</i>	Presented to MSCC in March.
Recommendations for Reference Layer Action Plan	<i>Completed</i>	Included in Work Programme for 2011-12
Resources and Applications Development Work Plan for 2011-2012	<i>Completed</i>	KPI4, KPI5
Resources and Applications Development Report for 2010-11	<i>Completed</i>	

WS6 Communications: Outreach, forums, publicity

31. 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.
32. Communications and outreach activities continued throughout the reporting year but at a lower level from June 2010 onwards according to public sector guidance. 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 (62 participants) Partners' Meeting was held at IMAREST, London in September. Conference attendance was otherwise limited.

Website: Oceannet.org

33. 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 and 01/05/10 - 01/05/11.

Period	Visits	Visitors	Pageviews
2009-2010	8,110	4,431	28,222
2010-2011	11,106	7,003	30,098
% change	27%+	37%+	6%+

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

34. There has been an increase in all above metrics as compared to last year. Of all visitors, 60% were new visitors.
35. 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 (59%):

Page	Pageviews	% Views
Home page	8,540	28%
Online data by theme page	1,969	7%
Marine data standards main page	1,883	6%
Marine data standards - MEDIN discovery standard page	1,284	4%
Marine data standards - MEDIN data guidelines page	1,087	4%
Data submission page	788	3%
Online data by theme - Marine geology and bathymetry page	628	2%
About us page	617	2%
Search page	572	2%
Marine data standards - Other marine data standards page	516	2%

36. MEDIN continually seeks to update and improve the oceannet.org website in order to increase its effectiveness.

Marine Data News

37. Quarterly publication of Marine Data News continues with Issues 16-19 being published in April 2010, June 2010, December 2010, and March 2011

38. Total subscribers to Marine Data News currently stands at 647, up from 587 last year.

Conference Presence and Meetings

MEDIN Partners Meeting IMAREST 1st September 2010
 AGI/IMAREST Conference on Information Strategies for Marine Spatial Planning 2nd September 2010

North West Coastal Forum 25th November 2010
 Coastal Futures 19th-20th January 2011

39. Other publications and articles.

- A challenger news article on the MEDIN portal
- Article in Marine Scientist titled 'A partnership approach to managing UK marine data'
- A MEDIN twitter account has been created, (@MEDIN_marine) which has a number of national and international followers

Work Stream 6: Communications		
Deliverable	Status	Commentary
Q1 2010-11		
Edition of Marine Data News	<i>Complete</i>	Published End March
Publish articles in on-line newsletters and magazines on MEDIN portal and standards	<i>Complete</i>	Various
Edit and maintain website	<i>Complete</i>	Various additions made, including portal
Establish MEDIN representation on MSCC communications sub-group	<i>Complete</i>	Mike Osborne is MEDIN representative
Q2 2010-11		
Organise and hold MEDIN partners meeting	<i>Complete</i>	Held at IMAREST on 1 st September, 62 attendees
Edition of Marine Data News	<i>Complete</i>	
Visit organisations to promote MEDIN and discuss further sponsorship	Ongoing	
Three to Five year forward look for Comms	Ongoing	KPI4, KPI5
Q3 2010-11		
Edition of Marine Data News	<i>Complete</i>	
Publish articles in on-line newsletters and magazines on MEDIN portal and standards	<i>Complete</i>	
Q4 2010-11		
Edition of Marine Data News	<i>Complete</i>	
Edit and Maintain Website	<i>Complete</i>	Further improvements added
Communications Work Plan for 2011-2012	<i>Complete</i>	
Communications Report for 2010-11	<i>Complete</i>	

WS7 Management, Planning and Coordination

40. 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.
41. The report on Marine Data Policy, commissioned in 2009-10 was delivered in October 2010.
42. A paper providing recommendations for a Sustainable Funding Model for Marine Data Archive Centres was published and presented to the MEDIN Sponsors in November 2010. (see http://www.oceannet.org/library/work_stream_documents/).
43. MEDIN has engaged closely with the UK Location Programme and the associated data.gov initiative to ensure that the resources developed for publishing data and metadata are well coordinated. MEDIN is active at a number of levels in the UKLP including within the UK Location Information Interoperability Board, the UKLP Users Group, and the Working Groups on Metadata and Data Publishing.
44. MEDIN has presented to the Marine Science Coordination Committee plenary on two occasions in the past year. This included a recommendation that the MSCC to adopt MEDIN as the de facto data and information strategy for MSCC.

Work Stream 7: Management, Planning and Coordination		
Deliverable	Status	Commentary
Q1 2010-2011		
Hold MEDIN Sponsors Board	<i>Complete</i>	Held 22 April 2010
Report on Marine Data Policy	<i>Complete</i>	Published December 2010
Finalise and Publish MEDIN Priorities Document	<i>Complete</i>	Paper to MEDIN (November) Sponsors Board
Finalise MEDIN 2010-11 Work Plan	<i>Complete</i>	Paper to MEDIN (November) Sponsors Board
Q2 2010-2011		
Report on Data Archive Centre Funding Models	<i>Complete</i>	KPI 3, Published
MEDIN Business Plan for 2011-14	<i>Complete</i>	KPI 4, Paper to MEDIN Sponsors' Board
Develop Information Strategy for recommendation to the Marine Science Coordination Committee	<i>Complete</i>	Paper with recommendation regarding Information Strategy presented to MSCC March 2011
Hold MEDIN Sponsors Board	<i>Complete</i>	Held 23 November 2010
Q3 2010-2011		
Users' Review	<i>Complete</i>	Questionnaire in WS5
Report on the Effectiveness of the Data Clause	<i>Not done</i>	Need to devise a methodology to assess
Pressures workshop in coordination with UKMMAS	<i>Not done</i>	UKMMAS had higher priority objectives in 2010-11
Q4 2010-2011		
Annual Report for 2010-11	<i>Complete</i>	
Work Plan for 2011-2012	<i>Complete</i>	
Hold MEDIN Sponsors' Board	<i>Complete</i>	