

# Report from the Review Panel on the Review of the Marine Environmental Data and Information Network,

Final draft 20130827

## **Review Panel:**

Taco de Bruin (NIOZ Royal Netherlands Institute for Sea Research)

Colin Grant (BP Exploration)

Neil Holdsworth (International Council for the Exploration of the Sea)

## **1. Executive summary with conclusions and key recommendations**

MEDIN was established in 2008 with the objective to “improve access to, and management of, UK marine data and information” and supports the work under the UK Marine Science Strategy being guided by the Marine Science Coordination Committee. A series of objectives were set by the MEDIN sponsors in 2008 for the first 5 years of MEDIN operation.

In April 2013, an independent Review Panel was established, to review the progress that has been made towards these original objectives and to make recommendations on the future direction of MEDIN.

### **Conclusions**

1. The Review Panel, considering the progress made by MEDIN on all its objectives, firmly concludes that the MEDIN initiative has been, and continues to be, a sound investment in UK marine data infrastructure.

2. It therefore invites the MEDIN sponsors to continue their support of MEDIN, and urges the sponsors to provide sufficient funding in order that MEDIN will be able to deliver the benefits of its unified UK approach to marine data access and management. In particular, the Review Panel noted with satisfaction that:

- MEDIN is making data more widely available in the UK marine domain through enabling their discovery;
- MEDIN is highlighting and facilitating data management issues and standards and the related resources within individual organisations and that this has led to improvement in practices;
- The distributed structure with DACs, all linked to a central portal with a solid management organisation maintaining it, is a good approach to dealing with diverse organisations and data management cultures.
- MEDIN creates a (positive) pressure to conform to data standards.

### **Key recommendations:**

3. Some objectives remain as work in progress and the Review Panel hopes that the recommendations set out in detail in section 5 can shape the future of MEDIN in furthering the original vision established by the MSCC and sponsors.

4. The Review Panel is of the view that work to address the following recommendations should be seen as a priority for the future development of MEDIN:

- To provide direct access to data from the MEDIN Data Discovery portal. This would substantially enhance the engagement of users in MEDIN.
- Sponsoring organisations and their agencies need to ensure that MEDIN and its objectives are recognized as an integral part of their operational strategy. This will ensure that MEDIN is engaged and supported in a sustained way as an integral part of the UK marine data system.
- To develop a stronger focus on making datasets, services and products (even if 3rd party) available through the MEDIN homepage and portal at least as metadata records. This would be of substantial benefit for users and be of benefit for both product providers and MEDIN itself.
- To develop specific cost benefit examples of the value of MEDIN. These would provide clear evidence of the benefit of the MEDIN data infrastructure and clarity on the range of user requirements.

## 2. Introduction

MEDIN was established in 2008 with the aim of improving access to, and management of, UK marine environmental data and information, and through this seeking to make the most of the resources invested in marine data collection. MEDIN supports work within the framework of the Marine Science Coordination Committee including the UK Marine Monitoring and Assessment Strategy groups and its other science coordination work.

MEDIN has been funded through a partnership of government departments, agencies, research councils and private bodies (see Annex 4 – List of sponsor agencies, organisations, companies to MEDIN). The first phase of MEDIN funding ran from 2008 to 2011, and was mainly focused on establishing the MEDIN network. A second funding phase with a more operational focus started in 2011 with funding reduced by 30% in response to the challenging economic climate and will run until March 2014. In the Business Plan adopted by the MEDIN Sponsors in 2008 a series of objectives were set for MEDIN, to be achieved over 5 years:

- a. A single point of access to all relevant marine data and information;
- b. A robust network of definitive integrated Data Archiving Centres (DACs).
- c. The provision through the MEDIN 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;
- d. Facilitation of full data flow to the MEDIN DAC network for all government sponsored contracts in the marine and coastal zone environment;
- e. Necessary links with EU Directives and initiatives and advise of developments to stakeholders (e.g. SeaDataNet, INSPIRE);
- f. Measurable reductions in the proportion of project budgets spent on locating, accessing and retrieving marine data;
- g. An increased number of successfully furnished requests for archived marine environmental data from the public, government and industry.

During 2013 MEDIN Sponsors will need to take decisions on the funding of MEDIN beyond 2014, which need to ensure that MEDIN can be taken forward in an operational manner that capitalises on the work that has already been done and articulates effectively with the current landscape. The Marine Science Coordination Committee and the MEDIN Sponsors Board agreed that an independent review of MEDIN be commissioned to inform these decisions.

Following discussions in a small sponsors task team, the independent review panel was convened by Defra in April 2013, consisting of Neil Holdsworth (ICES), Colin Grant (BP) and Taco de Bruin (NIOZ) (see Annex 1).

## 3. Procedure

The review procedure consisted of a series of related activities:

- studying the review documentation developed by the MEDIN Executive Team and the results of a consultation on MEDIN from the UK marine community (see Annex 2)

- testing and using the MEDIN website at [www.oceannet.org](http://www.oceannet.org);
- two teleconferences, prior to;
- a two-day meeting with all stakeholders (see Annex 4);
- first thoughts presentation on recommendations to MEDIN sponsors;
- writing of this final report with conclusions and recommendations;

During the first teleconference (7 June 2013, with Neil Holdsworth, Colin Grant, Taco de Bruin, Richard Emmerson, David Cotton, Lesley Rickards attending) the Review Panel members were introduced and an outline of the goal, procedures and timetable of the review process was given by Richard Emmerson. Following this, David Cotton gave a presentation introducing MEDIN. Several questions were adequately answered, either directly or later via email (see Annex 2).

The second teleconference on 12 June 2013 (with Neil Holdsworth, Colin Grant, Taco de Bruin, Richard Emmerson attending) was devoted to the final preparations and checking that the Review Panel had all the required documentation and was fully aware of its mission.

The Review Panel met face to face for the first time on 18 June 2013, and was then engaged in review meetings with the MEDIN Core Team, the representatives of the DACs and the representatives of the sponsor organisations on 18 and 19 June 2013 (see Annex 4).

At all times, the Review Panel was free to ask whatever it wanted and received satisfactory answers. On several occasions/moments the Review Panel invited Richard Emmerson to provide additional information, especially to clarify matters concerning the correct procedures. The Review Panel has taken all input (documentary and oral evidence) as equally valid, and gave no undue weighting to any particular party's point of view.

## **4. The achievements of MEDIN**

The Review Panel concludes that the MEDIN initiative has been, and continues to be, a sound investment in UK marine data infrastructure. Specifically:

- MEDIN is making data more widely available in the UK marine domain through enabling their discovery;
- MEDIN is highlighting and facilitating data management issues and standards and the related resources within individual organisations and that this has led to improvement in practices;
- The establishment of DACs is seen as a good approach to dealing with diverse organisations and data management cultures;
- MEDIN creates a (positive) pressure to conform to data standards;
- MEDIN metadata standards (discovery) have been implemented in the business processes of many of the sponsoring agencies, which demonstrates they have an intrinsic value and that the sponsors believe in MEDIN as an approach;

- Users are interacting with MEDIN via the development processes for data guidelines. This should be encouraged alongside steps to improve the eventual uptake of the products of this work.

Based on these findings/conclusions, the Review Panel invites the MEDIN sponsors to continue their support of MEDIN, and urges the sponsors to provide sufficient funding in order that MEDIN will be able to deliver the benefits of a more unified UK approach to marine data access and management.

## 5. Recommendations

The Review Panel organized their analysis around a number of headings that suited the structure and grouping of the issues, as opposed to the way the terms of reference of the review panel were organized. For clarity, Annex 5 - Independent Review Panel Terms of Reference and Responses addresses the questions as they were originally posed.

### Portal (user interaction, search and functionality)

	Recommendation	Issue
1	Provide direct access to data from the MEDIN Data Discovery portal. This would substantially enhance the engagement of users in MEDIN.	<p>Linkage of discovery (meta)data to granular datasets at DACs is not in place (no mapping has been made in an automated/electronic method).</p> <p>This is a critically limiting factor for users/potential uses of MEDIN, which is possible to address technically. DASSH have provided an example that shows how this can be achieved. The panel would encourage other DACs to make progress on this. There are also international examples of operational and successful data access infrastructures in the marine realm.</p> <p>The review panel noted that activity describing this in the MEDIN Annual workplan is very vague, and lacks weight and consequence.</p>
2	Improve the MEDIN Data Discovery Portal to facilitate use (functionality, signposting, data slicing, overview of what is in MEDIN catalogue, filter by data licence conditions, product/dataset/service).	The MEDIN Data Discovery Portal is not intuitive. Feedback from stakeholders suggests there could be improvements in functionality to improve the use of search terms, enable data slicing, allow filtering by data/licence conditions, product/dataset service There needs to be more interaction

	Engage users, especially expert users, in the portal's development in an interactive way that draws on their experience with its use.	with regular users to aid development.
3	The sponsors and core team need to reach agreement on the main end users/end products of MEDIN. This will make discussions on what MEDIN should provide much easier.	MEDIN aims to make data available in a way that enables its re-use by a diverse community of consumers. There needs to be a clearer definition of the range of end-users and their respective needs. This should help to engage end users by more clearly articulating their needs.

### Funding and Sponsors

	Recommendation	Issue
4	Develop specific cost benefit examples of the value of MEDIN. These would provide clear evidence of the benefit of the MEDIN data infrastructure and clarity on the range of user requirements.	<p>The Review Panel has noted that it has proved difficult to demonstrate the real cost benefit of having the MEDIN infrastructure.</p> <p>However, use cases are needed as evidence of the benefits of investment in MEDIN. These should be real examples relevant to sponsoring organisations and users. For example, anecdotally the panel heard one sponsor state "from a private company perspective, up to 20% of costs of a project can be the initial data mining (finding out what are already available) – if this overhead could be reduced then MEDIN proves its worth". To help identify use cases, users need to be encouraged to acknowledge their use of MEDIN data sets and to report the benefit of doing so.</p> <p>This information needs to be elaborated into real examples of real cost savings/benefits.</p>
5	Sponsoring organisations and their agencies need to ensure that MEDIN and its objectives are recognized as an integral part of their data management strategy. This will ensure that MEDIN is engaged and supported in a sustained way as an integral part of the UK marine data system.	Although signed sponsor agreements are in place, institutional buy-in is closely linked to the interests of the incumbents of the office, and is therefore vulnerable to changes in senior management.
6	MEDIN should take the leading role in monitoring, coordinating and supporting INSPIRE implementation across the	The case for funding needs to have more emphasis on services that MEDIN is to deliver, rather than the provision of data

	marine sector.	management structure alone. For example, MEDIN needs to be more clearly recognized and acknowledged as the national platform for coordinating UK level delivery of marine data developments required under EU legislation, e.g. INSPIRE. MEDIN can provide a collective technical capacity and associated resources to support this. There are examples from other countries where organisations similar to MEDIN fulfill such a national role with respect to marine data within INSPIRE.
7	MEDIN sponsors should consider different approaches to the funding cycle as the current 3-year funding cycle may not be optimum to achieve the longer-term goals they have set.	Funding regime; the collective approach to funding is excellent for achieving shared buy-in, but the relatively short time horizon of (project type) funding may not be optimal when dealing with longer term policy objectives, for example, in relation to MSFD or INSPIRE. A more coherent multi –annual plan towards fulfilling policy objectives would be facilitated by a corresponding funding certainty.
8	Funding agencies need to enforce more vigorously the use/search of existing data before funding new data collection.	There are no/few requirements from funding agencies to ensure that applications for new data collection activity make use of/search for relevant existing datasets. This will not realize the MEDIN vision of “measure once use many times” or ensure a return on investment.
9	MSCC should examine the potential conflicts of the Government policy on open data access with some agencies requirements to generate revenue from their data and associated products and consider whether this should be given further attention.	UK Government policy demands for open access to data are in apparent conflict with some agencies requirements to generate revenue through products and services related to these data.
10	MSCC to consider having the Chair of MEDIN on MSCC.	MEDIN reports to MSCC but has no dedicated independent representative. Reporting and messages need to be relayed via sponsors representatives which may not be the optimum approach.

## Resources, use of resources

	<b>Recommendation</b>	<b>Issue</b>
11	MEDIN Sponsors should consider making dedicated resources available for specific tasks in the work plan.	Progress on specific issues can be slowed because resources are made available through the overall sponsorship budget on a model that has to fit around other workplans/availability. Dedicated resources (for specific tasks/cases) may be beneficial to drive development more quickly in key areas, and reduce collective frustration on progress. The review panel noted in the meetings that the sponsors recognized that the current resource planning/commitment model was a limiting factor, at the same time they had a desire to progress more rapidly.
12	MEDIN Sponsors should help to guide identification of key priorities to be addressed with the recognition that it may not be able to address all possible tasks.	In several of the documents examined by the reviewers it is suggested that MEDIN and the DAC network will need to deal with new areas of marine data collection/provision (marine litter, noise, socio-economics). MEDIN runs a very real risk of stretching its resources too thinly. If it is tasked with dealing with these additional areas without additional resources, it may fail on some of its core activities.
13	Develop more direct management documentation throughout MEDIN.	The Review Panel observed that management documentation, is often expressed in rather vague, caveat-rich terms. Whilst it is understood that this approach has evolved to cover for uncertainties in the flow of contributions in kind, it will be of benefit to adopt a more direct style, identifying deliverables, due dates and dependencies. This would enable clearer identification of risks, delays and development of appropriate mitigation strategies.



## Products

	Recommendation	Issue
14	Develop a stronger focus on making datasets, services and products (even if 3 <sup>rd</sup> party) available at least as metadata records in MEDIN (would be a win-win for both product providers and MEDIN itself).	The prime focus of MEDIN is generally on the underlying datasets in its discovery catalogue, while products and services derived from the datasets are of more immediate interest/use by the users of such a portal. A stronger focus on data products and services would be a win-win for MEDIN and product providers, e.g. HR Wallingford is prepared to put metadata for all products on MEDIN. The approaches to dealing with licensing of products and services should seek to ensure that these are not a barrier to making products available.

## Standards and Data Management

	Recommendation	Issue
15	Give greater focus to ensuring that data standards/guidelines be agreed for use by the user community with the aim that the use of MEDIN (approved) standards can become a standard condition of funding for data collection. This will substantially enhance the uptake and value of the MEDIN work on data standards/guidelines.	MEDIN has carried out substantial development of marine data guidelines, but there are still substantial barriers to their uptake throughout the user community. There needs to be further work to clarify whether the standards are sufficiently pragmatic in terms of cost of implementation versus benefit derived. There should be clearer processes for adoption of standards ensuring their endorsement by all relevant organisations, possibly through MSCC/UKMMAS. When there is enough confidence that this is the case there should be a broader promotion of the standards by the public sector across the major contractors.
16	Identify data acquisition standards to be worked in each coming period and publicise the work at an early stage.	The review panel would hope within the next year MEDIN could make significant progress in enabling common agreement on, and uptake of, a number of priority data acquisition standards. Currently work around data standards is included in the

		<p>annual work plan but there is no information on which standards are to be worked on and who should be involved. This information needs to be promoted at an early stage in the work planning process in order to foster engagement (e.g. MEDIN identifies, through the Executive Team and Sponsors, those standards to be the subject of its work in the year before it carried out the work).</p>
17	<p>MEDIN should provide improved guidance for data submission to the DACs.</p>	<p>The panel recognizes that DACs have long established processes for accession and these have every reason to continue. However, there is no unified way of making data submission into the DAC network. Alignment and guidance on data submission at the MEDIN Home Page level is needed to help ease the experience for data submitters.</p>
18	<p>MEDIN to implement an periodic audit of the DACs as a part of the accreditation process.</p>	<p>MEDIN accredits the DACs initially but this process does not include a subsequent audit to assess whether standards and procedures are being maintained. It would be prudent for either a member of the accreditation team (or suitable alternative) to formally revisit the DACs and review whether the accreditation still holds.</p>

## **Annex 1 - Review Panel Membership**

### **Neil Holdsworth**

Head of Data and Information in an international marine scientific organization (ICES). Working in an international setting with partners such as the European Commission, FAO, European Environment Agency and Regional Sea Commissions. Member of the Commission Marine Data and Observation Expert Group (MODEG) and partner in large scale European data infrastructure projects such as EMODnet, SeaDataNet and iMarine.

### **Colin Grant**

Technical Authority for meteorology and oceanography in BP Exploration, with over 30 years of experience in the sector. Based in the UK but with a global remit. A member of the Ocean Processes Evidence Group (OPEG) which answers to MSCC. Performed the independent review for MEDIN of the Met Office DAC application.

### **Taco de Bruin**

Head of the Data Management Group at NIOZ Royal Netherlands Institute for Sea Research. Chair of the Netherlands National Oceanographic Data Committee (NL-NODC) and representative of the NL-NODC to the European SeaDataNet project and several EMODNet projects. Dutch delegate to the IOC-IODE committee. Acting co-chair of the SCAR Standing Committee on Antarctic Data Management and member of the data committees of the Southern Ocean Observing System (SOOS) and of OceanSITES.

## **Annex 2 – Documents provided to Review Panel**

**(Version date is the date that the document was made available to the Review Panel)**

**(Documents 1-10 were available before the review meeting, documents 11-15 were made available during or subsequent to meeting)**

1. Terms of Reference for an Independent Review of the Marine Environment Data and Information Network (MEDIN) - Version 7 June 2013
2. Agenda Review of the Marine Environment Data and Information Network (MEDIN) – Version 14 June 2013
3. Presentation The UK Marine Environmental Data and Information Network –MEDIN – David Cotton - Version 6 June 2013 (presented during teleconference on 7 June 2013)
4. Email RE: Questions on MEDIN presentation – David Cotton – Version 7 June 2013
5. Marine Environmental Data and Information Network (MEDIN) - Annual Report for 2012-13 draft version21 – 5 June 2013
6. Review of MEDIN – Complied responses to an open call for views to help inform the MEDIN Review issued on the website of the UK Marine Science Coordination Committee at the start of March 2013.– Version 6 June 2013
7. MEDIN Review –Issues for the Panel (Document prepared by the MEDIN Core Team with input from the MEDIN Executive Team– Version 6 June 2013
8. MEDIN Review and Forward Look – Autumn 2012 – MEDIN Sponsors Board Nov 2012 P5 - Version 7 June 2013
9. MEDIN Work Programme 2013-14, v2.0 – Key Activities – Version 13 June 2013
10. Phil Durrant – GARDLINE Ltd (private consultancy) – MEDIN Review input – Version 13 June 2013
11. André Cocuccio - Maritime & Coastguard Agency (MCA) – Review of MEDIN response form 13-03-01 – Version 13 June 2013)
12. MEDIN Work Programme 2013-14 v2.0 Complete – Version 19 June 2013
13. International data initiatives relevant to the UK marine sector – a MEDIN summary – Last updated June 2013 – Version 18 June 2013
14. MEDIN portal 2011 upgrade version 4.1 reviewers.xlsx – Version 20 June 2013
15. Access to the new demonstrator for the new search capability on the MEDIN Discovery Portal – Version 20 June 2013
16. Additional emails with post-hoc thoughts by Richard Emmerson (Version 21 June 2013), Jamie Moore (Version 19 June 2013) and John Pepper (Version 19 June 2013)

## **Annex 3 - Attendees at MEDIN Review Meetings – 18-19 June 2013, London, UK**

### **1. Meeting between Review Team, MEDIN Core Team and Work Stream Leads – 18 June 2013**

Neil Holdsworth (Review Panel, ICES)

Colin Grant (Review Panel, BP)

Taco de Bruin (Review Panel, NIOZ)

Richard Emmerson (Defra)

David Cotton (MEDIN)

Peter Liss (MEDIN Executive Chair),

Lesley Rickards (MEDIN, BODC)

Clare Postlethwaite (MEDIN)

Gaynor Evans (MEDIN, BODC)

Terry Allen (MEDIN)

Juan Brown (BODC)

Jon Parr (Marine Biological Association)

Ulric Wilson (JNCC)

### **2. Meeting between Review Team, MEDIN Core Team and DAC Representatives – 18 June 2013**

Neil Holdsworth (Review Panel, ICES)

Colin Grant (Review Panel, BP)

Taco de Bruin (Review Panel, NIOZ)

Richard Emmerson (Defra)

David Cotton (MEDIN)

Peter Liss (MEDIN Executive Chair),

Lesley Rickards (MEDIN, BODC)

Clare Postlethwaite (MEDIN)

Gaynor Evans (MEDIN, BODC)

Terry Allen (MEDIN)

Juan Brown (BODC)

Jon Parr (Marine Biological Association)

Ulric Wilson (JNCC)

Dan Lear (DASSH)

Jens Rasmussen (Marine Scotland)

Mary Mowatt (British Geological Survey)

### **3. Meeting between Review Team and MEDIN Sponsors Board – 19 June 2013**

Neil Holdsworth (Review Panel, ICES)

Colin Grant (Review Panel, BP)

Taco de Bruin (Review Panel, NIOZ)

Richard Emmerson (Defra)

David Cotton (MEDIN)

Martyn Cox (Marine Scotland)

Juan Brown (NERC)

John Pepper (Oceanwise)

Jamie Moore (The Crown Estate)

Anjan Pakhira (MMO)

Kevin O'Carroll (DECC)

Steve Wilkinson (JNCC)

Kieran Millard (HR Wallingford)

Rob Hensley (UKHO)

## **Annex 4 – List of sponsor agencies, organisations, companies to MEDIN**

Department for Environment, Food and Rural Affairs

Natural Environment Research Council

Scottish Government

Department for Energy and Climate Change

Met Office

Natural Resources Wales

Environment Agency

Marine Management Organisation

Maritime and Coastguard Agency

The Crown Estate

HR Wallingford

UK Hydrographic Office

Joint Nature Conservation Committee

Department of the Environment, Northern Ireland / Agri-Food Biosciences Institute, Northern Ireland

Oceanwise (as of April 2014)

## Annex 5 - Independent Review Panel Terms of Reference and Responses

MEDIN Review Terms of Reference	Review Panel conclusions
<p>How far has progress been made towards the original objectives of MEDIN?</p>	<p><i>See section 4</i></p>
<p>Do those objectives remain fit for purpose, in the light of national priorities and international developments, including:</p> <ul style="list-style-type: none"> <li>i. increased Governmental emphasis on transparency, including in 2012 the Open Data White Paper and Departmental Open Data Strategies and relevant initiatives by the UK Devolved Administrations;</li> <li>ii. the development and implementation of the UK Location Strategy and relevant initiatives by the UK Devolved Administrations;</li> <li>iii. the development of the European Commission's Marine Knowledge 2020 Initiative and its development of a European Marine Data and Observation Network;</li> <li>iv. progress in implementing the European Union Marine Strategy Framework Directive and taking forward marine planning. In particular whether MEDIN is providing what is necessary for the Devolved Administrations, as well as the UK, for MSFD and marine planning?</li> </ul>	<p><i>Recommendations 5, 6 and 9</i></p>
<p>Are the data needed by organisations readily accessible from the DACs and</p>	<p><i>Recommendations 1 and 2</i></p>



<b>MEDIN Review Terms of Reference</b>	<b>Review Panel conclusions</b>
can they be accessed in a straightforward way and how can this be further developed?	
How did the UK marine scientific community (government, industry and academia) adapt to the use of MEDIN, the Data Archive Centre network and MEDIN data and metadata standards and what more needs to be done?	<i>Recommendations 5 and 8.</i>
What further developments would support and enhance the use of MEDIN, the Data Archive Centre Network and MEDIN data and metadata standards?	<i>Recommendations 2, 3, 4, 5, 8 and 15</i>
Should MEDIN be given a stronger and more central role and, if so, how?	<i>Recommendations 9 and 10</i>
What options for the future scope of MEDIN should be explored?	<i>Recommendations 11, 12, 13, 14, 15, 16, 17 and 18</i>
Are there different funding models for MEDIN that should be explored?	<i>Recommendation 7 and 11</i>