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**JISC *Research Data MANTRA* project at EDINA, Information Services,
University of Edinburgh**

Evaluation

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Introduction

This document reports on the findings of an evaluation of the Research Data MANTRA project¹ ('MANTRA' / 'the project') at the University of Edinburgh ('the University' / 'the institution'). The MANTRA project ran from 1 August 2010 to 31 July 2011. This evaluation is intended to provide, after a light-touch review, an impression of the extent to which the project achieved its goals and suggestions for where further work may be useful.

This evaluation was undertaken by Laura Molloy of the Humanities Advanced Technology and Information Institute (HATII) at the University of Glasgow. Laura is a digital curation and research data management researcher with experience of the JISC Managing Research Data (MRD) programme from various perspectives: she was part of two projects in the first MRD programme and currently works as an 'Evidence Gatherer' across the second JISC MRD programme² as well as contributing to the programme's current support and synthesis project, DaMSSI-ABC³.

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APPENDIX 1: Evaluation interview questions, May - June 2012

¹ <http://datalib.edina.ac.uk/mantra/index.html>

² <http://mrdevidence.jiscinvolve.org/wp/>

³ <http://www.dcc.ac.uk/training/damssi-abc>

1. About Research Data MANTRA ('MANTRA')

a. Description of JISC MRD programme 2009-11, RDMTrain strand

In 2009, the Joint Information Systems Committee ('JISC') invested several million pounds in the first Managing Research Data programme⁴, which consisted of thirty projects addressing the infrastructure, planning, support, citation, linking and other closely associated challenges inherent to improved research data management ('RDM'). Of these projects, five comprised the Research Data Management Training Materials⁵ ('RDMTrain') strand of activity, along with a support and analysis initiative for the training strand⁶.

From the JISC point of view, it is "a priority to promote and support good research data management and sharing for the benefit of UK Higher Education and Research"⁷, and specifically to maximise the benefits of undertaking research by improving the management of and access to the data created by research activity in UK research institutions.

An improvement in research data management practice in UK universities needs investment in technical infrastructure, but there is also a concomitant requirement for training and guidance, particularly at a level accessible to postgraduate students and early career researchers, and suitable for embedding within institutional postgraduate research training as part of good research practice.

The JISC recognised this need with its Call for Projects 04/10, which aimed to encourage production of RDM training materials targeted to a specific discipline or group of disciplines. This targeting was to be achieved by working closely during development with named academic departments, and incorporating discipline-specific terminology and examples within the generic guidance. Materials developed under this funding call were to be openly reusable by other institutions in order to maximise their potential impact and raise awareness of RDM issues.

Five projects, covering a range of subject areas, were funded representing an investment of nearly £300,000. Each of the projects ran for roughly 12 months and reached completion in July 2011.

b. Description of project

MANTRA provided a clear description of its approach and intentions in the project proposal.

"The project is a partnership between Information Services, the Institute of Academic Development, and three Graduate programmes at the University of Edinburgh. Online learning materials in research data management will be created which are grounded in the best practice of the respective disciplines, provide examples based on video interviews of senior researchers, and provide interactive components for postgraduate students, including data handling exercises in four software analysis packages. The resulting materials will be ported into a University VLE for use by all postgraduate and early career researchers and deposited with an open license in JorumOpen.

⁴ <http://www.jisc.ac.uk/whatwedo/programmes/mrd.aspx>

⁵ <http://www.jisc.ac.uk/whatwedo/programmes/mrd/rdmtrain.aspx>

⁶ Research Data Management Skills Support Initiative ('DaMSSI'), see <http://www.rin.ac.uk/our-work/researcher-development-and-skills/data-management-and-information-literacy> for details.

⁷ <http://www.jisc.ac.uk/whatwedo/programmes/mrd.aspx>

The aim of the project is to develop a structured programme of online resources that can be customised and repurposed for use in different disciplines as well as an on-demand resource open to all University postgraduate students and early career researchers.”⁸

The project’s final report⁹ makes it clearer that the initial target audience is University of Edinburgh PhD students in particular, although it is recognised that the materials are also likely to be useful to the University’s early career researcher population. In this report, a strong case is made that although the project developed its materials in conjunction with PhD teaching within three separate disciplines at Edinburgh – social science, clinical psychology and geosciences - the intention has always been to provide materials that can and will be repurposed, and extended for use in other disciplines.

“... we have used this approach to develop a structured programme of online resources that can be customised and repurposed for use in different disciplines as well as an on-demand resource open to all University postgraduate students and early career researchers.”¹⁰

The project had four critical success factors. These were:

- i. The commitment of academic/research staff to the project, providing input relevant to their students’ research data management training needs.
- ii. Positive feedback from user testing with this year’s students, coupled with formative evaluation to improve the quality of the final course.
- iii. Increased advocacy and awareness of research data management best practice across the University.
- iv. Evidence that the course is useful and used in other contexts outwith the University of Edinburgh.

This report will aim to survey the feedback and reception to the work of the project, and will attempt to establish how far the project has achieved these success factors by the time of writing.

c. Description of EDINA, including staff on project

The core MANTRA team forms part of the staff of Data Library, which together with the JISC-funded EDINA national data centre, functions as a division of Information Services at the University of Edinburgh. The Data Library team is a core-funded component of the division, specifically funded by the University to meet the needs of its staff and students¹¹.

“The Data Library supports staff and students in the discovery, access, use and management of research data for analysis, teaching or coursework. It also developed and operates the Edinburgh DataShare repository service.”¹²

⁸ <http://www.jisc.ac.uk/whatwedo/programmes/mrd/rdmtrain/mantra.aspx>

⁹ Available at http://www.docs.is.ed.ac.uk/docs/data-library/JISC_MANTRA_finalreport1.pdf

¹⁰ Ibid, p4.

¹¹ <http://www.ed.ac.uk/schools-departments/information-services/about/organisation/edl>

¹² From <http://www.ed.ac.uk/schools-departments/information-services/about/organisation/edl/who-we-are/edina-datalib-sections>

The project team consisted of specialists in data librarianship and e-learning. Full staff details are available on the team page of the project website.¹³

A key aspect of the partnership approach taken by MANTRA was the work undertaken by the team in concert with named contacts from three academic areas of the University, namely:

- Graduate School of Social and Political Science
- Doctorate programme in Clinical Psychology
- School of GeoSciences.

Other contributors to the work of the project include the following:

- Media Producer: Andy Pryde (University of Edinburgh, Information Services)
- SPSS practical writer: Joan Corbett (Scottish Centre for Social Research)
- NVivo practical writer: Aikaterin Chatsiou (UK Data Archive)
- R practical writer: Dr. Duncan Smallman
- ArcGIS practical writer: James Crone (EDINA);

in addition to the university staff and PhD students who were interviewed for the video case studies.

2. Project outputs

a. Description of project outputs

The project's outputs and outcomes, as specified in the project plan, were as follows:

- i. Online learning materials in research data management will be created which are grounded in the best practice of the respective disciplines.
- ii. Examples based on video interviews of senior researchers.
- iii. Interactive components for postgraduate students, including data handling exercises in four software analysis packages (SPSS, NVivo, ArcGIS, R).
- iv. A Creative Commons license will allow re-use and re-purposing with attribution, and be made portable in open standard formats and deposited in JorumOpen.
- v. Evaluation report.
- vi. Presentations and reports to be delivered at specific conferences, workshops, and meetings during 2010/11.
- vii. Final report to JISC.¹⁴

The project was successful in delivering these outputs and achieving these outcomes within the agreed timescale of the project.

Of these, the key output MANTRA aimed to produce was a set of training materials which presented research data management principles and examples to a PhD student-level audience. These materials were to take the shape of learning units, which were comprised of written guidance, interactive elements such as quizzes, and audiovisual content. In addition, the project aimed to produce several practical exercises in some of the most common data-related software in the three

¹³ <http://www.ed.ac.uk/schools-departments/information-services/about/organisation/edl/data-library-projects/mantra/team>

¹⁴ <http://www.jisc.ac.uk/whatwedo/programmes/mrd/rdmtrain/mantra.aspx>

target discipline areas of geosciences, clinical psychology and social sciences. The project planned to break down the production and distribution of these training materials into four key stages:

- i. Develop a set of engaging learning units
- ii. Create professionally produced short video narratives about data management as practiced by academics in the field
- iii. Develop a set of software-specific data handling exercises – in SPSS, NVivo, ArcGIS, and R
- iv. Port the produced materials to the WebCT courses and deposit open standard files into JorumOpen.¹⁵

Description of the learning units

There are ten units in total, as listed below.

- [Introduction to the course](#)
- [Research data explained](#)
- [Data management plans](#)
- [Organising data](#)
- [File formats and transformation](#)
- [Documentation and metadata](#)
- [Storage and security](#)
- [Data protection, rights and access](#) (in development)
- [Preservation, sharing and licensing](#) (in development)
- [Recommended resources](#)

These were produced using open-source Xerte software¹⁶. Of these units, the first is an introductory section; there are six completed training units; two further training units in development (at July 2012); and the last, 'Recommended resources', displays suggested further reading related to research data management.

These units are available on the MANTRA webpages hosted by EDINA and as deposits in Jorum, and are described by various other university webpages (see section 2b for more information). The project retained a flexible approach to delivery, responding to advice from partners. After discussion with the director of IAD, the project decided against porting the materials into the University VLE in favour of deposit with an open licence in the Jorum repository.

Description of the short video narratives

Short videos (varying in length between 0m:46s and 9m:53s) were produced by the project to allow two PhD students and four University professors (one of whom is Vice Principal, Knowledge Management and a senior champion of RDM at the institution) to present their experiences and views on various aspects of good RDM practice. Most of these videos were incorporated into the interactive units, giving the user a change in experience from the textual material.

The videos are listed in project reports as a discrete deliverable, but are not currently obviously situated for viewing or repurposing as resources in their own right; at least not on the University

¹⁵ <http://www.jisc.ac.uk/whatwedo/programmes/mrd/rdmtrain/mantra.aspx>

¹⁶ <http://www.nottingham.ac.uk/xerte/>

webpages. An online search on the open internet turned up a Youtube account for user 'Maltsvið', with a channel entitled 'Data Library', which held thirty-six videos consisting of high quality footage of a University PhD student and research-related staff members discussing RDM-related issues. These videos as a set had been viewed 1,205 times at the time of writing¹⁷. Twenty-five of these videos were labelled, 'MANTRA' along with speaker and title details. The team has subsequently put links in place between the Youtube channel and the EDINA webpages.

According to the viewing stats provided by Youtube, the videos in this set featuring the University VP had each been viewed more than twice as many times as any of the other videos¹⁸, with the exception of one PhD student video, 'Challenges when working with spatial data', which had been viewed significantly more than any other of the videos on this channel (234 times in comparison with the next most popular at 147 views)¹⁹. The videos embedded in the EDINA-hosted materials are hosted at Youtube. The video, 'Challenges when working with spatial data' is the first video to appear in the first unit of training material, 'Research data explained', which may explain its marked popularity.

Description of the software practical exercises

The full versions of these course elements are available from the EDINA-hosted webpage, which gives substantial content for each software package, including step-by-step instructions with screenshots in PDF documents, accompanied by openly licenced datasets to be imported into the analysis package of choice. Each software module is divided into between 3 and 5 sections, and available to download as separate sections or as one set in a compressed zip file. In addition, an outline version of these exercises is available on the Information Services webpage about the project, listing four exercises in outline, each 2 to 5 pages long, in PDF. This is potentially confusing for the user searching for these materials.

Description of additional project outputs

Additional outputs of the project include a Needs Assessment and a project wiki²⁰. The Needs Assessment was undertaken between August and October 2010 and consists of short discussions with the project's academic contacts in order to introduce the ideas behind the project, discuss the proposed headings of units, and better understand data-handling practices in the partner academic areas. Any particular requirements for students from each academic area were noted, terminology to use or avoid was clarified, and the project sought confirmation of the most appropriate software packages for which to develop practical exercises. This needs assessment work contributed to the achievement of the project's first critical success factor, as detailed in section 1b. The project

¹⁷ Viewing figures at 25 July 2012. 'Maltsvið' Youtube account available at <http://www.youtube.com/user/maltsvið/videos>

¹⁸ However, one of these videos featuring the VP was used to supplement the University data policy page and the other was used for MANTRA.

¹⁹ Viewing figures at 25 July 2012.

²⁰ Available at <https://www.wiki.ed.ac.uk/display/mantra/Research+Data+Mantra+project+wiki>

produced a short report, summarising these discussions, which was later returned to during the evaluation process.²¹

The project wiki was set up “for informal sharing of resources between the project team and stakeholders. Some of the pages are private, but the main page is open, so as to be open to others working on similar projects (such as fellow JISC MRD projects).”²² The wiki page does hold a great deal of information and links to resources that are and would be useful to others developing research data management training materials, but as some of the material here consists of outputs which are understandably in various stages of development, the wiki is not a resource that should be considered a primary location for users of the MANTRA training materials.

b. Initial publication of project outputs

The materials are publicly and freely available through various means. There is a project website hosted by University of Edinburgh Information Services²³ which describes the project, including its staff, planning, outputs and relationship to the wider activities of EDINA and Data Library. The course materials are presented as one element of the project here, and are readily available as a link to an EDINA-hosted website at <http://datalib.edina.ac.uk/mantra/>. This EDINA webpage provides direct access to the training materials, and links back to the Information Services website. In addition, it links to more information about research data management at the University of Edinburgh. This set of relationships between webpages, whilst possibly confusing to the first-time visitor, does provide a clear impression of MANTRA as one set of activities in research data management guidance amongst many others at the institution.

The materials are also available through the Jorum repository of learning objects, as a SCORM-compliant package ready to import into a variety of VLEs²⁴. In April 2012, MANTRA was the ‘featured resource’ on Jorum’s front page²⁵.

The JISC Managing Research Data programme also hosts a page describing the project²⁶. This page links to the website hosted at University of Edinburgh Information Services, rather than the EDINA-hosted course webpages.

As mentioned above, the project wiki holds some outputs in various stages of development, as does the ‘Deliverables’ page of the Information Services webpage, but due to the presence of non-final products, these locations should not be considered primary sources for access to the project outputs.

²¹ A report of its findings is available at <https://www.wiki.ed.ac.uk/download/attachments/108030107/NeedsAssessmentNotes-MANTRA.pdf?version=1>.

²² Description from MANTRA ‘Deliverables’ webpage hosted by Information Services, at <http://www.ed.ac.uk/schools-departments/information-services/about/organisation/edl/data-library-projects/mantra/deliverables>

²³ <http://www.ed.ac.uk/schools-departments/information-services/about/organisation/edl/data-library-projects/mantra>

²⁴ Available at <http://dspace.jorum.ac.uk/xmlui/handle/123456789/16055>

²⁵ See <http://www.jorum.ac.uk/news/new-featured-resources-for-april-2012-the-mantra-project>

²⁶ <http://www.jisc.ac.uk/whatwedo/programmes/mrd/rdmtrain/mantra.aspx>

Of these online locations for the MANTRA training materials, the EDINA-hosted page appears to be the most referenced, linked to from approximately 6,580 locations online, including via Twitter status updates, and saved 22 times on bookmarking website Delicious. This is in contrast with approximately 4,420 links to the University's Information Services page, 41 links to the JISC page and 9 links to the Jorum page.²⁷

Robin Rice reported that the University's Institute for Academic Development (IAD) added the MANTRA resources to several areas of their website. Searching for these as an individual not previously familiar with the contents of this website, I found that various likely search routes were not fruitful. For example:

- "Study skills support for students" > "Postgraduate" > "Doctoral researchers"
- "Researchers: career and skills development support: PhD students" > "Advice and support"
- "Researchers: career and skills development support: PhD students" > "Learning resources"

However, the route:

"Researchers: career and skills development support: PhD students" > "Courses and events" > "Online courses"

was successful. Through this search route, MANTRA was listed alongside the University's 'Postgraduate Essentials' course and academic writing training. The link supplied here was to a page describing the project and the course's learning outcomes. To access the materials, there was a link to the EDINA-hosted page.

None of the project's web locations are, at the time of writing, listed in the IAD A-Z course list or A-Z of support. As a project which is a partnership co-directed by IAD, it would be appropriate to include the project in these listings to aid discoverability at the institution. As these IAD webpages are also publicly available (i.e. on the open internet), this would provide potentially improved discoverability to the wider community too.

The project is variously known as 'Research Data MANTRA' and 'MANTRA', so it would be useful in A-Z listings to use both of these titles. Consideration should also be given to the most effective way to raise the discoverability of the course website to researchers who are not aware of the specific name 'MANTRA' but are looking for training in the digital curation or research data management areas.

It is particularly worth investing the time to get the project resources visibly listed on the IAD webpages as it is to these pages that the other project partners, i.e. the three academic Schools, link when providing researchers of each discipline with information on available research data management training.

²⁷ Searches carried out using Google search engine, July 2012.

c. Planned future development

The project team, which is still in employment at the University a year after the end of the project, will continue to work with the three partner Schools at the institution to promote embedding of the materials in the academic year 2012-13. In addition, the Institute of Academic Development is promoting the course across schools (including those who were not one of the original three partners).

Robin Rice, the project manager, intends to work with Information Services staff at the University of Edinburgh to enhance the research data management support services currently available. This will be done by “extending MANTRA into more PhD training programmes as well as doing more awareness-raising for researchers and extending available storage for research data as part of the IS 2012-13 Plan.”²⁸

The existing six completed units, plus the introductory unit, are to gain two more units, ‘Data protection, rights and access’ and ‘Preservation, sharing and licensing’, which are currently (July 2012) in development.

Rosanna Maccagnano is manager of research training and development in the School of Geosciences, and was this School’s primary contact for the project. She plans to work with the new head of research training and development to integrate MANTRA into the School’s own training programme in the near future.²⁹

John MacInnes, Convenor of the Core Quantitative Data Analysis for Social Research course in the Graduate School of Social and Political Science reported that he successfully used MANTRA in a Scottish Graduate Summer School on secondary data analysis in the summer of 2012, and plans to include the materials in a new online undergraduate quantitative methods course which is currently (summer 2012) in development.³⁰

Also, MANTRA featured in a PhD training day in June 2012 for researchers in the Biological Sciences subject area at the University, which was not an original stakeholder in the project. In addition, the School of Divinity has indicated they will use the MANTRA materials in their Research Methods course, and the Scottish Graduate School of Social Science distributed MANTRA flyers provided by the Data Library at a research ethics training day in early 2012.

3. Usage: Statistics

a. Google Analytics

The project employed Google Analytics to ascertain visitor figures to the materials hosted by EDINA at the University. Some key results from 11th October 2011 to 11th June 2012 include:

Number of visits: 10,636
Unique visitors: 5,723

²⁸ Information from email from RR to LM, 17 May 2012.

²⁹ Email from RM to RR, 11 May 2012

³⁰ Email from JM to RR, 2 Aug 2012

Page views: 27,553
 Average Pages per Visit: 2.59
 Avg. Visit Duration: 00:03:15

Peak usage of the site to date is 1,064 visits during the week of 30 October -5 November 2011, which coincided with the launch at the University of the project resources.

Visits by top ten countries:

1.	United Kingdom	5,709
2.	United States	1,728
3.	Australia	672
4.	New Zealand	450
5.	Canada	317
6.	Netherlands	241
7.	Germany	156
8.	Greece	98
9.	Japan	92
10.	Portugal	84

Top ten sources of traffic:

1.	(direct) / (none)	6,404
2.	ed.ac.uk / referral	1,150
3.	google / organic	538
4.	jisc.ac.uk / referral	294
5.	t.co / referral (Twitter)	289
6.	edina.ac.uk / referral	131
7.	dcc.ac.uk / referral	97
8.	facebook.com / referral	97
9.	data-archive.ac.uk / referral	85
10.	jorum.ac.uk / referral	80

Two hundred and fifty different website referrers were counted in Google Analytics. A number of these are UK and US educational institutions, etc., while some of these are detritus from the internet, i.e. not legitimate websites but artefacts of email links, etc.³¹

“[P]eople who stayed on the site viewing pages for longer than ten minutes are considered to be actual learners rather than just browsers. This segment made up 10% of the total visits, or 1,072 users. The number of such visits by project staff has not been counted but is considered to be trivial, especially since the period in question is after the material had been written.”³²

Quantitative indicators of the interaction with project materials as available online are useful for tracking *awareness* of the materials’ existence and location, and to supply information about, for example the effectiveness of promotion, but do not indicate *use* of the materials (beyond the estimate above that viewers spending more than ten minutes on the site are “actual learners”).

³¹ Paraphrased from Robin Rice, ‘Evidence of MANTRA impact’, short report to JISC MRD programme manager, 13 June 2012

³² Robin Rice, ‘Evidence of MANTRA impact’, short report to JISC MRD programme manager, 13 June 2012

However, raised awareness remains one of the preliminary challenges to be met in the successful creation and embedding of research data management training resources, and so these qualitative indicators still have value. Visitors to the online materials at the University are not only aware that research data management is an issue for postgraduate researchers but also that these materials are available to help researchers, and specifically that they have a relationship with other guidance and help available within the institution (as there is a link to other institutional data management guidance from the EDINA-hosted front page).

Statistics from this type of tracking are also useful to gain an approximate idea of the spread of awareness of the resources in terms of international exposure. The resource was funded initially to provide guidance to University of Edinburgh researchers, and so it is appropriate that a majority of visitors are from the UK, but it is also encouraging to see a large minority of visitors are from the Americas, continental Europe and Australasia. This is borne out by the qualitative feedback on the MANTRA materials which, beyond the University, is markedly international in source. This may reflect the effort specifically allocated to dissemination by the project team, including via international conferences, an active Twitter presence by team members and to participation in the IASSIST network. This may also be influenced by the strong ties between the JISC Managing Research Data programme and parallel initiatives in, particularly, the USA and Australia.

It is tempting to try to draw concrete conclusions from webpage statistics, but these can often be misleading. It is possibly useful, however, to place these numbers in the context of an institution which has 3,961 postgraduate students by research, of which the School of Geosciences has 216, the Doctoral programme in Clinical Psychology has 138 and the School of Social and Political Science has 325³³. Of these, postgraduate students specifically undertaking PhDs will be a smaller group. In the context of these numbers, a unique visitor count of 5,728 over eight months appears convincing, and must be something the project can be proud of. JISC Managing Research Data programme manager, Simon Hodson, who has sight of the access statistics for many resources developed across the Managing Research Data programmes, described the access statistics for the MANTRA webpages as “pretty encouraging”.³⁴

In addition to the visitor numbers at the University-hosted pages, the Jorum webpage attracted 15,402 views between 15th February and 24th July 2012. The busiest period for views on Jorum to date was April 2012, coinciding with its period as the website’s ‘Featured resource’, where it attracted 11,981 views in that month alone.

b. Twitter

MANTRA does not have a project-specific Twitter account *per se* but the project manager is a well-established Twitter user with regular MANTRA updates appearing on her account. Also, the project has an ‘Addthis’ widget on the EDINA-hosted webpage to facilitate interaction with social media including Twitter. The following ‘share’ actions of the EDINA-hosted webpage were counted between 11th October 2011 and 13 June 2012 (combining ‘/mantra’ and ‘/mantra/index.html’):

³³ University of Edinburgh factsheet 2011/12, available at <http://www.docs.sasg.ed.ac.uk/gasp/factsheet/StudentFactsheet310112.pdf>

³⁴ Evaluation interview, 25 July 2012

- 92 Tweets
- 22 Facebook 'like's
- 7 Google +
- 31 other shares³⁵

These figures show an active reception by, if not particularly extensive engagement with, social media which may have helped drive the healthy web statistics.

Information on the qualitative feedback received via Twitter is provided in section 4e below.

4. Usage: Qualitative feedback on embedding and use

a. At Edinburgh: Interview responses

The project built relationships with two Schools and one Doctorate programme at the University. These were key to the success of the project, and not only during its development phase but also for the evaluation process. Named individuals agreed to participate with the project, put forward their views in the Needs Assessment, input into the development of materials for their subject area, embed the materials and provide any feedback from students or colleagues on the materials. These contacts were:

- Graduate School of Social and Political Science:
 - Kate Orton-Johnson, Convenor, Qualitative Data Analysis
 - John MacInnes, Convenor, Core Quantitative Data Analysis for Social Research
- Doctorate programme in Clinical Psychology:
 - Karen McKenzie, Senior Lecturer in Clinical Psychology, Learning Disabilities
- School of GeoSciences:
 - Rosanna Maccagnano, Dr. Mary Elliot, and Dr. Kate Heal, Research Training & Development Organisation (PhD Training and Monitoring, School of GeoSciences)
 - Owen Macdonald, GIS Support Officer

As part of their commitment to the project, Kate Orton-Johnson, Karen McKenzie and Rosanna Maccagnano were interviewed by Laura Molloy in June 2012. John MacInnes also supplied some feedback. Questions are attached as Appendix 1 to the current document. Project co-directors Peter Burnhill (Director, EDINA and Data Library) and Jon Turner (Director, IAD) were also interviewed as part of this evaluation, as was JISC MRD programme manager, Simon Hodson.

As a partnership between Information Services, the Institute of Academic Development, and three graduate programmes, all at the University of Edinburgh, it can be reasonably expected that there is substantial awareness of the project in at least these areas of the University and those areas they directly serve. This expectation is supported by an EDINA newsletter article of 28 March 2012 which reports that the project has now become a University service with a "commitment" from the Data Library to "ensuring that the online hosted course remains up-to-date and fit for purpose."³⁶

³⁵ Robin Rice, 'Evidence of MANTRA impact', short report to JISC MRD programme manager, 13 June 2012

³⁶ http://edina.ac.uk/cgi-bin/news.cgi?filename=2012-03-28-mantra_service.txt

Rosanna Maccagnano (Research Training and Development Manager, School of Geosciences) emailed the online feedback form to students when she distributed the materials. This feedback form had not been completed by any University of Edinburgh students by the point of project evaluation.³⁷ None of the academic partners of the project had received any feedback from students at the time of writing, or had received any specific feedback from peers to report, although a couple reported they had mentioned the MANTRA materials to a colleague.

The evaluation interviews with academic partners revealed that the materials had not, to date, been embedded in any structured way in any of the three subject areas. Three respondents had introduced the materials to their students as an optional additional set of material to the existing course materials. None reported that they monitored their students' use of the materials, or used them in a teaching session or lab.

Orton-Johnson has been on sabbatical and then maternity leave since the materials were launched; she indicated her intention to introduce the materials to her students on her return to teaching in January 2013. She is unsure, however, about where to find them:

"I don't know exactly where the materials are or how I would like to use them. Do I download the PDF and embed in my own materials, or link to the page on the MANTRA website? Should I put them into the VLE? I'm not sure what's best yet."

Another possible challenge to embedding is the perception that RDM isn't relevant to all research students. McKenzie argued that "RDM doesn't affect every PhD student in every subject."

Orton-Johnson noted "a tension between wanting to produce the well-rounded social science researcher; versus the feeling of the students that it might be a distraction from their main research activity. They don't see [RDM] as necessarily important or interesting."

Jon Turner, IAD Director, is keen to follow up with the partner schools about whether the resources have been employed in research training for their postgraduates, but is aware there are not such clear routes to gaining the attention of early career research staff. IAD is also in a position to promote MANTRA materials by way of a clear connection from their Online Essentials postgraduate training resource and the PhD Planner tool.

The general impression received from interviews with academic staff involved in the project is that the training materials have emerged as useful and relevant resources which correspond to student needs, but they are not yet being used by project partner staff in any structured way. In order for the materials to have a chance of being embedded and used in a robust fashion, and to attract specific and focused feedback to aid further development, more needs to be done by the project partners in academic departments to use, embed and review the materials. MANTRA may usefully aid this process by easing some of the challenges to uptake. For example, promotion of the relevance of RDM across all disciplines, perhaps by publication of case studies from varied disciplines and through training events; continued partnership working with the primary contacts from partner departments; soliciting feedback specifically from target student audiences in each department, and

³⁷ There was one entry, which was identified as from a data manager employed elsewhere. The feedback will be discussed in the section dealing with feedback from beyond the institution.

the incorporation of the MANTRA resources into research student induction sessions and the PhD Planner provided by IAD may all usefully contribute to this goal.

b. At Edinburgh: User testing by project eLearning Advisor

Cuna Ekmekcioglu arranged for five PhD students to engage in user testing of four units near the end of the project, in April 2011. This allowed time to fine-tune the training materials before the end of the project. Units tested were:

- Unit 1: Research data explained
- Unit 2: Data management plans
- Unit 3: Organising data
- Unit 6: Storage and security

Testers spent between 15 and 32 minutes on each unit, and feedback was “generally positive”. Ekmekcioglu reported the following as the significant findings of the user testing:

- Learning objectives listed for the module have been met (i.e. raising awareness of the importance of data management, information given could help students to start implementing a data management approach for their own study/project, module will be useful for their research/study)
- Units are informative and interesting.
- No issues with navigation. Overall look could be made more interesting with colours and images.³⁸

More detailed information is supplied in the project final report. The user testing feedback suggests that the units, although not yet published, were in an advanced state of development by the time they were testing with students, and met most expectations for quality, content and usability.

The user testing itself suggests the project took seriously the requirements and expectations of their target audiences and was willing to invest time and energy in thoughtful research to capture feedback at an appropriate stage of development, as part of the development process.

c. At Edinburgh: Other sources

Qualitative feedback was gathered by project team members during the work of the project. As these pieces of feedback were generated by individuals who had engaged with the outputs of the project to the extent that they volunteered comments and praise, these cannot be relied upon to give a balanced critical commentary, but they do indicate the amount and spread of enthusiasm engendered by MANTRA’s outputs.

A balanced critical commentary would be more likely to emerge from a structured feedback exercise conducted on the completed material.

³⁸ From report on user testing incorporated into project final report at http://www.docs.is.ed.ac.uk/docs/data-library/JISC_MANTRA_finalreport1.pdf.

Much of the feedback received indicates intention to embed or at least introduce the materials to students in disciplines other than the partner academic areas. It would be valuable to ascertain how many of these intentions have been carried out, the nature of the introduction or embedding, and to gain feedback from users.

d. Beyond University of Edinburgh

There is a convincing body of evidence that this small project has had a large impact on others working to develop RDM training for similar audiences beyond the University of Edinburgh. There is a smaller but still emphatic body of evidence that MANTRA's ambition to be used in training contexts has the potential to be realised. These pieces of feedback come largely from initiatives based in other countries, notably the Americas.

Use in the JISC Managing Research Data programmes (2009-11, 2011-13)

MANTRA was funded during the first MRD programme, which ran from 2009-11. Simon Hodson, JISC Managing Research Data programme manager, considers the influence of MANTRA on subsequent work in the MRD programme to be "pretty significant - I know MANTRA has provided a useful model of the outline and structure and content of this type of training course, and has served in that way as a reference for a number of other projects making subsequent work in the same area."³⁹

This is confirmed by the JISC KAPTUR project (MRD02, 2011-13) in a paper at the 2012 Electronic Visualisation and the Arts conference:

"Of particular relevance for the KAPTUR project were ... training materials developed by Research Data MANTRA (2009-11)"⁴⁰

Another project funded by the JISC MRD programme is Newcastle University's Iridium project, which praised MANTRA outputs after using them (characterised as a tool) with postgraduate students:

"Thank for making the MANTRA tool available and for giving it a Creative Commons licence. We found it very helpful and have used it to help induct postgrad students working on the iridium JISC MRD02 project."⁴¹

Throughout June and July 2012, the Iridium project published four blogposts consisting of detailed, positive feedback from postgraduate students who worked through the MANTRA materials.⁴²

³⁹ Evaluation interview, 25 July 2012

⁴⁰ Garrett, Gramstadt (2012). 'KAPTUR: Exploring the nature of visual arts research data and its effective management', proceedings of EVA London 2012. British Computing Society, London. Available online at <http://ewic.bcs.org/content/ConWebDoc/46109>.

⁴¹ Email from Lindsay Wood, JISC Iridium Project Manager, University of Newcastle to the Data Library email address, 14 Jun 2012

⁴² The first at <http://iridiummr.wordpress.com/2012/06/14/iridium-postgraduate-student-feedback-on-mantra-rdm-training/>; the second at <http://iridiummr.wordpress.com/2012/06/20/iridium-second-postgraduate-student-feedback-on-mantra-rdm-training-2/>; the third at <http://iridiummr.wordpress.com/2012/07/16/iridium-third-postgraduate-student-feedback-blog-on-mantra->

On Twitter, the Iridium project commented further:

“I don’t think there is another comprehensive RDM primer like MANTRA? It’s been V useful...” [sic]⁴³

Use of materials deposited with Jorum

The materials were deposited, in line with JISC MRD programme expectations, for open use (in their existing forms) and re-use (for new contexts) in the Jorum repository. The license used was ‘Creative Commons Attribution Only 2.0, UK: England and Wales’ – this means that as long as the user attributes the author of the original material, the user is free to copy, distribute, display and perform the work; to make derivative works; and to make commercial use of the work.

Whilst this choice of licence is very much in the spirit of the JISC MRD programme’s aim to create openly available and re-usable training resources, and may stimulate use of the Jorum-held resource, the project noted that there was a considerable amount of effort required to negotiate and clear copyright in material used in the production of the training materials.

“This turned out to be ambitious at times and meant that material using Share-alike or Non-commercial licenses were out of bounds, unless direct permission was received.”⁴⁴

The amount of effort and care taken to negotiate rights with those contributing to the outputs of the project is confluent with the level of care and attention to detail characteristic of the project outputs. The resulting high-quality materials are therefore particularly worth continuing to promote and position to maximise use and re-use.

The quality of these materials was recognised by the choice of MANTRA as Jorum’s featured resource in April 2012.

Whilst viewing figures for the materials in Jorum are substantial (15,402 views between 15th February and 24th July 2012), *downloads* of the resource were significantly lower, at between 2 and 75 downloads per month (again, peaking in April 2012).

Users can interact with the materials on the EDINA webpages without being required to download them, and so figures for visits are more useful when considering the use of the EDINA pages as opposed to Jorum. It is probable that most users will engage with the materials, particularly during the earliest period of their availability, via the EDINA interface rather than downloading from Jorum due to the simple access to materials and the promotion of the EDINA location via Twitter. It should also be noted that from the four sets of RDMTrain 01 training materials deposited in Jorum, MANTRA can show the highest download figures both in total and across months since deposit. However, to convincingly demonstrate that the materials are being re-used, Jorum downloads will need to be stimulated.

rdm-training/ and the fourth at <http://iridiummrd.wordpress.com/2012/07/20/iridium-fourth-postgraduate-student-feedback-on-mantra-rdm-4/>.

⁴³ Twitter message from @iridium_mrd to @sparrowbarley (RR), 10 July 2012, 21.54 BST

⁴⁴ MANTRA final report, available at http://www.docs.is.ed.ac.uk/docs/data-library/JISC_MANTRA_finalreport1.pdf, p7.

Feedback on use in the wider research and teaching community

Hodson finds it more difficult to assert the influence of MANTRA on subsequent work in the wider research community, but is aware of “a positive-sounding response to MANTRA, when it was released, in Australia and elsewhere. It has been looked at by other people, other training providers as something significant. It was developed as a relatively generic postgraduate course. It is always a challenge for JISC-produced materials – often produced by libraries, data services, providers of generic training - to get the outputs taken up and embedded in discipline specific training. It’s harder to get it implemented and embedded. There’s commonly a disconnect between what people in the library do, the things that learning technologists do, and what researchers do, etc. It’s not always the case but in general it is hard to bridge those gaps. This is the challenge. I don’t know precisely what the uptake of MANTRA is. But I think the course is well regarded; it is being used (along with other materials) as a point of reference; and I think there is a good chance that the modules, materials approach etc will seep into the offerings of other institutions and departments. There’s no question about the fact that MANTRA has been influential.”⁴⁵

He agrees that there is another level of influence which is harder to measure, namely the usage and embedding of the materials as teaching materials being put to use in training courses:

“I think MANTRA has been useful and interesting and a point of interest for people interested in RDM. But how far it’s been embedded and used for postgraduate students wanting to come to terms with this new aspect of their activity is harder to assess.”⁴⁶

Robin Rice, MANTRA project manager, reported in July 2012 that the team has “been contacted by a number of institutions that use or point to MANTRA for training, or plan to do so: University of Nottingham, London School of Economics, University of Melbourne, University of North Carolina iSchool, Carleton College (Canada). The network of Canadian data librarians is particularly promoting the course and it may get adopted by more institutions”⁴⁷. The project team has also had conversations about MANTRA with the University of Singapore⁴⁸, the University of Rosario, Buenos Aires (who have shown interest in translating the material into Spanish)⁴⁹ and the Associate Dean for Research at Purdue University Libraries, USA⁵⁰ who indicated interest in collaborating on writing additional material for MANTRA aimed at biosciences researchers.

Again, the project was able to supply many positive quotes from those who had been impressed with MANTRA outputs and had volunteered feedback. As with the quotes supplied by Edinburgh colleagues, these do not pretend to constitute a critical commentary, but demonstrate the geographical reach of the materials to date.

As project staff members are still in post at the institution, this means that these connections and the resulting requests for further information or additional material can be considered, and so the

⁴⁵ Evaluation interview, 25 July 2012.

⁴⁶ Ibid.

⁴⁷ Robin Rice, ‘Evidence of MANTRA impact’, short report to JISC MRD programme manager, 13 June 2012

⁴⁸ Conversation with Cuna Ekmekcioglu during University of Singapore visit to IAD

⁴⁹ Conversation with Stuart Macdonald at IASSIST, Washington DC, 6 June 2012

⁵⁰ Skype call with D Scott Brandt. These conversations recounted in an email, RR to Simon Hodson, 15 June 2012

impact and influence of the project, which will in the ordinary course of events take some time after the end of the project to build, can be supported.

Feedback received from the online feedback form

This form has received one response at the time of writing, which is labelled as from a data manager working at an institution other than the University. The response appeared to be generally positive but asked for more explanation of terminology in the 'Documentation and metadata' unit.

Whilst the detailed feedback which could be provided via this form would be very useful to the project, it is not currently being used by those engaging with the MANTRA units. Obviously, there needs to be a much higher rate of response to constitute a robust source on which to base development decisions.

e. Feedback received via Twitter

There was much qualitative feedback provided via Twitter, the use of which has been encouraged by the JISC MRD programme for its projects to stimulate ongoing reporting of project news and discussion across the programme. Feedback on MANTRA via Twitter has appeared both during the life of the project and afterwards. Twitter feedback is reflected upon in this discrete section of the current report due to the difficulties in accurately attributing the institution or indeed country from which Twitter users are publishing. Project staff gathered the first fifty of these Twitter mentions. It is worthwhile noting almost all tweets gathered which specified a URL for the materials provided one for the EDINA-hosted webpages.

Where there is a legal name as well as a Twitter identity, both are provided with the Twitter identity listed first. In so far as the origin can be identified, tweets were published from users in the UK, continental Europe, Australia and the USA. There was one Japanese-language tweet; this appeared to be in connection to the eSciDoc conference of 2011, in Berlin.

Hashtags employed include #phdchat, #eresearch, #jiscmrdrd, #ESRI, #eSciDoc11, #marinemetadata, #mantra, #datamanagement and #nzdata – this is one indicator of the context in which the tweeter is presenting the materials to their readers.

The enthusiasm and positivity shown on Twitter in relation to the materials may have contributed to the healthy visitor figures to the EDINA-hosted webpages.

5. Conclusions: Achievements and recommendations

a. Achievements

A major achievement of the work of the project team is that, as reported above, the project has now become a University service with a “commitment” from the Data Library to “ensuring that the online hosted course remains up-to-date and fit for purpose.”⁵¹

The project also has an impressive array of qualitative feedback praising the content of the materials and their presentation, from a network of scholars from the UK and international institutions.

MANTRA can also boast the healthiest download figures from the RDMtrain01 projects who have deposited in Jorum.

In short, this small project has achieved a great deal and continues to be referred to by the subsequent projects of the Managing Research Data programme and elsewhere.

However, the project’s greatest value is arguably primarily in the potential it has to be extended and repurposed. This view is echoed by Peter Burnhill, EDINA Director and Head of Edinburgh University Data Library:

“MANTRA hasn’t achieved all it can, yet.”⁵²

Burnhill argues that by being based on rigorous research and published in an open, modular way, the materials have great potential not only to be used in a wide variety of research contexts and institutions, but also to be reused, repurposed and translated in order to extend their impact.

Other benefits have also emerged from the work of the project. Burnhill agrees with Jon Turner, IAD Director, that the project has strengthened relationships between the staff of IAD and EDINA / Data Library. Burnhill described MANTRA as ‘cementing’ these existing relationships; Turner also reports mutual benefit from sharing practice and contacts and hopes for increasing confidence in undertaking similar projects in the future. Turner is particularly pleased that team members have had exposure to authoring in Xerte and further experience in project management.

When returning to its four critical success factors, we can see a certain amount of undoubted success.

- i. The commitment of academic/research staff to the project, providing input relevant to their students’ research data management training needs.

The project has demonstrated that students’ research data management training needs were a major consideration when developing the materials and that this was delivered by successfully soliciting the commitment of academic / research staff to the work of the project. This is evidenced by the relationships built with academic partners, which constituted a core part of project activity; the initial needs assessment work to ascertain partners’ perception of student needs; and by the user testing with students. Most of the primary contacts from each of the three partner Schools participated in evaluation interviews for this report, and all quotes supplied below are from evaluation interviews with these contacts.

⁵¹ EDINA newsletter article of 28 March 2012, available at <http://edina.ac.uk/news/newsline17-2/mantra.html>

⁵² Peter Burnhill, evaluation interview, 11 June 2012.

Responses to the material from the partner Schools showed high satisfaction with the relevance to student groups, both in terms of content of units, and ease of use of the online material. This reflects the project's success in responding to the needs of postgraduate students in partner Schools, as articulated by the primary contacts, in the resulting training materials.

Kate Orton-Johnson is pleased that the materials "looked really helpful. The materials were quite closely based on work I'd sent [the MANTRA team]". Rosanna Maccagnano agrees: "The module is very clear, has really good elements."

Academic partners also report that the terminology used in the materials is appropriate and meaningful to their respective student groups, and that the material is "clear, interesting, well-structured and relevant". "It keeps attention all the way through."

Karen McKenzie expresses a desire for slightly closer tailoring to specific student groups, but also recognises that there has to be a balance with more generic content:

"It covers general issues that are likely to be relevant to our students, but there is perhaps not so much focus on specific issues (which is understandable given that it is a generic resource)."

Maccagnano reports that "some of the elements [are clearly targeted to my students]. It is quite generic. ... Those who work with ArcGIS and R, it's useful [for them]."

Orton-Johnson remarked that this balance between generic and discipline-specific is achieved in a way that augments existing training.

"The tricky thing with qualitative [data management] in the context of our teaching [is that] you're trying to teach across so many discipline areas and levels of ability. It's always quite difficult to teach and pitch but I thought [the MANTRA material] was really useful in providing the basics and at the other end the more advanced stuff that I don't have the time or space to cover in the course."

Another way in which MANTRA is seen to be relevant to the needs of the target student audience is the fact that, as an online resource, the material is available on-demand, as Maccagnano affirms:

"We have PhDs who start throughout the year, so it's great to have online resources ready when they need it. This is also true for students starting at the usual time in September but don't think about RDM until year two. Rather than holding a workshop-type course, it's great to have that online resource ready."

In summary, the project has succeeded in this measure. We can see that, as a result of relationship-building and user needs research, the project has been successful in engaging academic staff. They, in turn, have shown sufficient commitment to the work of the project to enable MANTRA to produce materials which are relevant and useful. This achievement can be usefully exploited with further partnership working in order to extend and embed use of the MANTRA materials in academic departments at the University.

- ii. Positive feedback from user testing with this year's students, coupled with formative evaluation to improve the quality of the final course.

As detailed in the section narrating the user testing feedback, above, we can see that this was attained and that the project employed the information gained from user testing near the end of the development process to further refine the materials.

This report, delivered a year after the end of the project, is itself the formative evaluation envisaged, and provides an opportunity for the team to continue to reflect on and refine the materials, as well as to consider ways to improve their embedding and use.

iii. Increased advocacy and awareness of research data management best practice across the University.

This measure is ambitious for a short project, and possibly one that can be demonstrated more convincingly across a longer timeframe. There is little in the way of irrefutable evidence from the partner departments that their students – and early career researchers – are more aware of RDM best practice as a result of the work of the project at this relatively early stage. However, the project has produced and positioned some key resources within the University which may allow this improvement to take place over time. With continued work in partnership with departments to embed and evaluate the MANTRA materials, including efforts to specifically solicit detailed feedback and to aggregate requests from further discipline areas, and through the auspices of IAD to raise the profile of the materials with postgraduate researchers, real change could be effected.

Jon Turner agrees with this view. “[Increased advocacy and awareness] has definitely been achieved in that it has been built into the support we’re [at IAD] offering to researchers and postgraduates and among people involved in this project.

It’s fairly straightforward to see the numbers of people accessing the material but I’m not so sure about the extent to which it is embedded. Once the evaluation is finished, we should have a wrap-up meeting with this project to decide what we do next.

We need to decide at a certain point in time whether we want to tailor it to further disciplines or have further conversation with colleagues about how to embed. Perhaps we should agree something about sustainability, e.g. to look at it every year for the next three years. I think it would be essential as a team to have those conversations.”

iv. Evidence that the course is useful and used in other contexts outwith the University of Edinburgh.

The statistics of visitors using the webpages and the numbers of those downloading the materials from Jorum indicate that there is some way to go before the project can definitively demonstrate that the course has a well-established track record of *use* (as opposed to *awareness*) in other contexts outwith the University of Edinburgh.

However, the available qualitative evidence is striking for the enthusiasm of those responding to the materials and the wide geographic spread of such respondents. This indicates there is clear potential and appetite for the wider embedding and use of the materials beyond the institution.

b. Recommendations

There are several recommended next steps for the project team which, given the commitment to ongoing support for the maintenance and development of the resource which has already been achieved, should be possible as part of this commitment and indeed considered part of it.

In order to emphatically achieve success factors (iii.) and (iv.), to build on existing successes of the project work and to maximise the impact of MANTRA, the project team should consider the following actions:

1. Continue work in concert with partner Schools at the University to embed and evaluate the MANTRA materials, including efforts to specifically solicit detailed feedback and to aggregate requests from further discipline areas.
2. Follow up with those areas of the institution who, without being project partners, have nonetheless supplied praise or feedback, especially those who indicated they will present the materials to students, to encourage this to happen and to get substantive feedback.
3. Ascertain how many of these stated intentions – from both Edinburgh and other institutions - have been carried out, the nature of the introduction or embedding, and any suggestions from both student and staff users.
4. Working with IAD, raise the profile of the materials across the postgraduate researcher population, including by the incorporation of an instructive reference to MANTRA materials into the IAD PhD Planner.
5. Include the project in IAD listings to aid discoverability at the institution. As these IAD webpages are also publicly available, this would provide potentially improved discoverability to the wider community too.
6. The project is variously known as ‘Research Data MANTRA’ and ‘MANTRA’, so it would also be useful in A-Z listing to use both of these titles.
7. Consider the most effective way to raise the discoverability of the course website to researchers who are not aware of the specific name ‘MANTRA’ but are looking for training in the digital curation or research data management areas.
8. Clarify which webpages are the primary location for MANTRA outputs to simplify the user experience and focus promotional efforts.
9. Remove out of date / early stage outputs from the public internet (although the wiki, as it is more obviously a working environment, may be acceptable as a location showing resources in development, as long as this is clearly indicated).
10. Position the videos more clearly as discrete resources for use and repurposing.
11. Provide an indication of when the remaining two units are expected to be available.
12. Consider ways to stimulate use of the feedback form, to inform future development. A link to it on the last page of each unit (‘What to do next?’) may be a useful way forward, allowing the project to capture the user’s response to the material immediately.
13. Instigate regular review meetings as suggested by Jon Turner to establish and support future activity.

APPENDIX 1: Evaluation interview questions, May - June 2012

JISC MANTRA evaluation 2012

Questions for academic contacts (questioner version): Maccagnano, MacKenzie, Orton-Johnson

1. Information about initial feedback, as asked for in needs assessment

Go over this briefly with subject to refresh their memory, check agreement.

2. Feedback on completed module(s) – first impressions

2.1 Did it make sense?

2.2 Was it clearly targeted for your students?

2.3 Was the language appropriate for your discipline?

3. Feedback on implementation process

3.1 Have you introduced the module to your students yet?

a) Yes

- Any teething issues?

b) Not yet, but planning to soon

c) No

If no: identify roadblocks / challenges to implementation. Do not suggest issues, but if subject does not introduce them, some useful questions might be:

- Would the material be a better fit if more discipline-specific?
- Would an assessment function encourage uptake?
- Is there anything the MANTRA team can do to help embed?

d) Other (e.g. I would like to but there are issues I need to get around to first / It's on my to-do list, etc.)

If 3.1 = Yes, proceed to questions in box. Otherwise continue to question 5.

3.2 How does it fit with existing course materials?

- a) Supplements as an optional extra
- b) Supplements as a compulsory part of course/programme
- c) Replaces some older material
- d) Have not yet implemented

4. Feedback on the module in practice, where possible.

4.1 What has the student reaction been?

4.2 Have there been any pieces of feedback or questions or issues from students?

4.3 Have the MANTRA materials allowed you to do anything [i.e. in teaching/training] you couldn't do before?

4.4 Have the MANTRA materials allowed students to do anything they weren't doing before?

4.5 Did the length of each exercise seem appropriate?

4.6 Having used the MANTRA materials, do you have any suggestions or ideas for improvement?

5. Have you discussed MANTRA materials with any peers?

- Any feedback

6. Do you have any general thoughts about the place of research data management in postgraduate student training?

7. Space for any other comments or feedback.

Questions for John Turner, Director, IAD:

1. What has MANTRA achieved, in your view?

- For researcher staff
- For postgraduate student
- For the wider community

2. This is a critical success factor for the project: 'increased advocacy and awareness of research data management best practice across the university.' To what degree has this been achieved, in your view?

Questions for Peter Burnhill, Director, EDINA:

1. What has MANTRA achieved, in your view?

- For researcher staff
- For postgraduate student
- For the wider community

2. This is a critical success factor for the project: 'increased advocacy and awareness of research data management best practice across the university. To what degree has this been achieved, in your view?'

Questions for Simon Hodson, JISC MRD programme manager:

1. What, in your opinion, has been the influence of MANTRA on subsequent work in the JISC MRD programme?

2. What, in your opinion, has been the influence of MANTRA on subsequent work in the wider research community?