

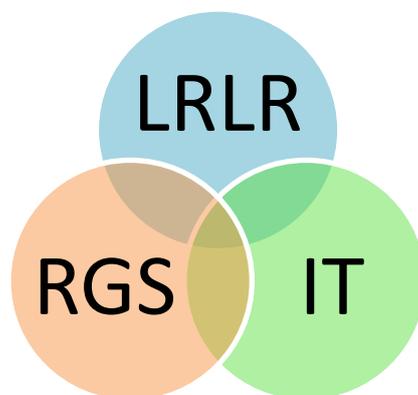
# Roles, responsibilities and skills matrix for research data management (RDM) support ADMIRe working document

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## 1. Introduction

This document describes some of the key initiatives and opportunities that currently exist for embedding RDM roles within an institutional context. It is important to note that roles and responsibilities in managing research data are not yet established but there is an opportunity here for the University of Nottingham to show leadership in establishing and embedding data-related competencies and skills within the RDM support services they provide to their research community. The ADMIRe project team will be reviewing and adding to this document as the project progresses and will make our findings available to the wider JISCMRD community at the end of the project.

This document focuses on the steps that the library community has taken to establish their position in the research data space. However, it is important to remember that when supporting researchers with their research data issues at different stages in the [research data lifecycle](#) an institution must involve key stakeholders and this does require a joined up and co-ordinated approach to RDM support services. At UoN the key professional services involved in RDM support are: Libraries and Research & Learning Resources (LRLR) IT, and Research Graduate Services (RGS).



A collection of papers with a research data management component were taken to the UoN Senior Management board during 2012/2013, these include the University of Nottingham Code of Research Conduct and Research Ethics (revision), an 'aspirational'

research data management policy, a UoN Information Classification Schema, the Research Data Security Policy, and the University of Nottingham reply to the EPSRC Policy Framework on Research Data.

## 2. RDM Stakeholders

There are several stakeholders *responsible for and interested in* delivering a sustainable institutional research data management infrastructure and service. These include:

- ❖ Researchers – as *creators of* and *users of* research data
- ❖ Libraries
- ❖ IT services
- ❖ Research support services (for example Research and Graduate Services)
- ❖ Archivists/record managers
- ❖ Other data creators
- ❖ Other data users
- ❖ Funders
- ❖ Research Computing
- ❖ Data Centres
- ❖ Publishers
- ❖ National and international bodies and services (for example, JISC, DCC, UK National Archive)

All of the key stakeholders in the RDM ecosystem are intertwined and we need to deliver *co-ordinated responses* at each point of RDM service delivery. We have to consider what our current capabilities are, resourcing (staff, time and investment), service sustainability, and embedding RDM awareness and training (training the trainers and the research community) within UoN practice. It is important to note however, that currently very few UK HEIs have the infrastructure (technical, policies, and support) in place to comply with funders' data expectations. Is it reasonable for research funders to demand what can't yet be supported?

## 3. Context and RDM Drivers

Within UK HEIs there are several institutional, national and international drivers which are pushing research data management higher up the institutional agenda, these include:

- ❖ Compliance with funders' mandates
- ❖ **EPSRC expectations (Roadmap)**
- ❖ Research integrity
- ❖ Legislative frameworks
- ❖ Facilitate good research practice (less data loss and benefits of data re-use)
- ❖ Data is seen as a 'valuable' institutional asset
- ❖ 'Open' Agenda
- ❖ Data to be viewed as a first class research output

The whole research community is being challenged by research data management issues and institutions need to meet this challenge by exploring best practice in RDM planning. The *JISC Managing Research Data Programme* (JISCMRD)<sup>1</sup> considers it a priority to promote and support good research data management and sharing for the benefit of UK

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<sup>1</sup> [http://www.jisc.ac.uk/whatwedo/programmes/di\\_researchmanagement/managingresearchdata.aspx](http://www.jisc.ac.uk/whatwedo/programmes/di_researchmanagement/managingresearchdata.aspx)

Higher Education and Research. The Managing Research Data Programme is targeting a number of key areas:

- piloting essential *research data management infrastructures* within institutions and for distributed research groups
- improving practice in *research data management planning*
- developing tools to help institutions plan their *research data management practice*
- encouraging the *publication of research data* and demonstrating the benefits of improved methods for citing, linking and integrating research data
- and, *stimulating the acquisition of appropriate skills*, among academics and research support staff in Universities

JISC has invested £4.6 million in the Managing Research Data Programme 2011-13, building on the earlier work which clearly demonstrated the [benefits](#) of improved research data management.

## 4. RDM Skills and Roles

In an effort to build capacity and to improve the sustainability of an institutional RDM support service it is useful to look at some of the current and emerging research data management roles and responsibilities.

In the 2008 JISC report '*Skills, Role & Career Structure of Data Scientists & Curators: Assessment of Current Practice & Future Needs*'<sup>2</sup> Swan identified four key roles for research data management service delivery:

- **Data Creator** Researchers with domain expertise who produce data. These people may have a high level of expertise in handling, manipulating and using data
- **Data Scientist** People who work where the research is carried out – or, in the case of data centre personnel, in close collaboration with the creators of the data – and may be involved in creative enquiry and analysis, enabling others to work with digital data, and developments in data base technology
- **Data Manager** Computer scientists, information technologists or information scientists and who take responsibility for computing facilities, storage, continuing access and preservation of data
- **Data Librarian** People originating from the library community, trained and specialising in the curation, preservation and archiving of data

Some examples of established RDM research support roles can be found at the following institutions:

Data Librarian	London School of Economics (LSE)
Science Data Librarian	Stanford University
Data Management Librarian	Oregon State University
Data Curation Librarian	New South Wales
Research Data and Digital Curation Officer	University of Cambridge
Research Data Manager (Libraries)	University of Columbia
Research Data Management Co-ordinator	University of Sheffield

Increasingly, there are more roles being created to support the delivery of RDM at an institutional level. Recently the following UK HEIs advertised job vacancies, which all

<sup>2</sup> <http://www.jisc.ac.uk/publications/reports/2008/dataskillscareersfinalreport.aspx>

required essential skills in delivering RDM support to researchers within UK HEIs. Recent examples include:

### Jobs advertised in 2012

1. Data Librarian, Bodleian Libraries, University of Oxford in February 2012
2. Data Management Project Officer, British Library in February 2012
3. Research Data Management Project Manager, London School of Hygiene and Tropical Medicine, in April 2012
4. Research Data Management Officer (University of East London) in August 2012
5. Programme Manager: Research Data and Information Management Programme (Cardiff University) in October 2012
6. Digital Record's Officer (King's College) in October 2012

### Jobs advertised in 2013

1. Research Data Management Co-ordinator, University of Sheffield, January 2013
2. Scholarly Communications Manager, University of Edinburgh, January 2013
3. Leicester Research Archive Manager, University of Leicester, January 2013
4. Research Data Management Project Manager (internal only), University of Loughborough, January 2013
5. Research Data Support Officer, University of Strathclyde Glasgow, April 2013
6. Research Data Management Project Manager, Royal Veterinary College, April 2013
7. Open Access and research data officer, University of East Anglia, May 2013
8. Research Data Management Manager, University of Liverpool, May 2013
9. Research Support Librarian, University of Sussex, June 2013

### Essential skills required

Reviewing all the job descriptions of the above posts showed a clear indication that the following key RDM skills were considered *essential* by and common to most of the recruiting organisations:

Key skill/competency	Key skill/competency
Understand and create organisational culture change	Managing and influencing business change initiatives
Experience of data and document management	Experience of working with a HE research establishment
Interaction with and co-operation business and IT personnel	Understanding of RDM policy issues and best practice
Training and advocacy and awareness-raising activities	Familiarity with RDM lifecycle
Familiarity with various metadata and data standards	Knowledge of repositories and other digital initiatives

The final report from the influential JISC-funded *Incremental project*<sup>3</sup> recognised the importance of a supportive institutional context (in terms of policy and provision) when

<sup>3</sup> <http://www.jisc.ac.uk/whatwedo/programmes/mrd/rdmi/incremental.aspx>

supporting researchers in their management of data. One of their key findings highlighted the importance of connecting researchers with support staff who offer one-to-one advice, guidance, and partnering. This highlights that supporting data management problems could be expensive and labour intensive.

There are some interesting initiatives and projects doing research in the area of roles and skills for RDM, which need exploring further. The outputs from these projects and initiatives can be used to inform and develop our RDM roles and re-skilling of research support staff. These include the [DCC Skills Frameworks](#), [DigCCuR](#), [DigCuRV](#), and [DaMSSI](#), the Research Data Management Skills Support Initiative which was led by DCC and co-funded by the Research Information Network (RIN) and JISC, and DaMSSI-ABC, the Research Data Management Skills Support Initiative - Assessment, Benchmarking and Classification which continues the work of DaMSSI.

## 5. DCC Institutional Engagement

The Digital Curation Centre (DCC) is funded by the Higher Education Funding Council for England (HEFCE) during 2011/2013 to assist UK HEIs in developing research data management strategies and services through their institutional engagement programme<sup>4</sup>. The University of Nottingham ADMIRE project have allocated 4 days of DCC engagement for Spring 2013, with the explicit aim of raising research data management awareness amongst Information Services staff<sup>5</sup>, in particular those staff who have been identified as offering RDM support, IT and library staff.

The DCC provides **free**, half-day training sessions for both researchers and research support staff. The institution provides the venue and the participants, and the DCC provide the trainers and materials.

In August we noted that the OpenExeter JISCMRD project had invited the [Digital Curation Centre \(DCC\)](#) to deliver sessions on Research Data Management (RDM) training/awareness sessions for the University of Exeter PGR students and Professional Services Staff. See all the training presentations [here](#).

We contacted the DCC to see if they could provide some of their time and resource to assist us with our RDM planning and training. Tom, Mark and Laurian (ADMIRE) held a conference call with Joy Davidson, Martin Donnelly, and Sarah Jones from the DCC on the 30th August.

Key topics and outcomes from the conference call were:

- ❖ They can provide us with 5 days of their time and expertise (at no cost as it is part of their remit to provide services to UK HEIs working on RDM)
- ❖ We provisionally agreed on dates which were suitable to both UoN and DCC
- ❖ They will deliver workshops for both PhD students and research support staff (library and IT)
- ❖ DMP Online - an XML API is available
- ❖ Open Access issues must be covered in any RDM planning and resource
- ❖ Need to embed RDM planning within institutional practices
- ❖ Local support must be added to any training material
- ❖ Training materials are most useful when you \*embed local information \*
- ❖ Look out for the DCC DMP Roadshows - this is where data management planning (especially the DMP Online tool) is covered in greater detail

<sup>4</sup> <http://www.dcc.ac.uk/community/institutional-engagements>

<sup>5</sup> For the purposes of the training it was felt that IS staff (LIS and IT) was an appropriate term even though the 'IS separation' and restructuring took place in November 2012

- ❖ The UK Data Archive are the authoritative source on research ethics and sensitive data
- ❖ Feedback on local fledgling services and tools is really useful when considering training requirements and needs of local researchers
- ❖ Workshops must not have more than 25 participants (makes facilitating very difficult)
- ❖ ADMIRE to produce a detailed programme for the DCC outlining what we want the sessions to cover, our key audience and any UoN detailed support which can be embedded within the training

Through their training programme The Digital Curation Centre (DCC) supports researchers and data custodians with the development of the skills they need to share and preserve data effectively.

**Update:** The DCC Institutional Engagement was successfully delivered on the 16<sup>th</sup> May 2013. Two separate workshops were delivered on the day:

**Event one** was for key professional services staff (libraries, IT Services, and Research and Graduate Services) that may in the future be supporting UoN researchers with their research data management queries. The event had 35 attendees, the majority of which were from IT Services.

**Event two** was a 'drop-in' RDM surgery/clinic for researchers and was attended by 30 researchers from different faculties and schools.

## 6. RDM and Libraries

As research funding bodies acknowledge the importance of providing research data management services and infrastructure to organise and preserve research data, academic research libraries have been identified as locations in which to base these research data services (Association of Research Libraries<sup>6</sup>, 2010).

Do libraries have a central role in pushing research data management initiatives forward within an institutional setting? There is evidence that within the UK HEIs environment several research data management initiatives have emanated from the library, for example the data library at EDINA and the Bodleian Library at the University of Oxford.

It is interesting to note that half of the DCC institutional engagements (covered in section 4) have **been initiated by the library**. Only 2 of the 18 engagements are led by IT services. (Pickton et al, 2012<sup>7</sup>). There is currently a lot of activity around embedding research data management skills and the role that libraries may have in delivering a research data management support service. This includes the establishment of the Research Information and Digital Literacies Coalition (RIDLS), the Association of European Research Libraries (LIBER) '*10 recommendations for libraries to get started with research data management*' final report and the RLUK '*Re-skilling for Research*' report. All are briefly discussed here.

### 6.1. Research Information and Digital Literacies Coalition (RIDLS)

The importance of research and digital literacy skills is highlighted with the development of the Research Information and Digital Literacies Coalition (RIDLS)<sup>8</sup> in June 2012. The RIDLS is a loose coalition of partners, working together to promote "the value of

<sup>6</sup> <http://www.arl.org/rtl/eresearch/escien/nsf/leadershiproles.shtml>

<sup>7</sup> <http://conference.ifla.org/sites/default/files/files/papers/wlic2012/116-pickton-en.pdf>

<sup>8</sup> <http://www.researchinfonet.org/wp-content/uploads/2012/01/flyer-for-RIDLS-v11.pdf>

information and digital literacies for academic researchers, and to enable activities which help to advance relevant knowledge, understanding and skills.” Bodies that are currently associated with this initiative include:

SCONUL, CILIP, RLUK, British Library, Digital Curation Centre (DCC), Higher Education Academy, JISC, Jorum, Vitae, and the UK council for Graduate Education.

## 6.2. RLUK – Re-skilling for research

Published by the RLUK in January 2012, the report ‘Re-skilling for research’<sup>9</sup> emphasises that as research activities evolve, **research support must evolve** with them. The RLUK outlines how libraries need to place the needs of researchers in the context of the libraries current offering, and look at how library services must change to fulfil the new demands placed upon them. It is important to note that of the nine areas identified as having potentially the *most significant skills gap* are related to research data management.

## 6.3. LIBER ten recommendations for libraries to get started with research data management

Published in July 2012 the LIBER working group on E-Sciences published their 10 recommendations for libraries to get started with research data management<sup>10</sup>. The topic of research data was their area of focus as it was felt that it was the most ‘urgent element’ of research that is of relevance to the community of research libraries. Key research data management topics covered by these recommendations include:

1. RDM support and Data Management Plans
2. Metadata and data standards for research data
3. Creation of data librarian posts and development of professional skills
4. Knowledge of and participation in the research data lifecycle
5. Liaison and partnership with researchers on RDM issues
6. Research data citation (DOIs)
7. Research data storage provision
8. Data catalogue or data repository provision
9. Subject-specific RDM support
10. Co-operation with IT colleagues on RDM needs

In November 2011 a LIBER survey of more than 110 European Research Libraries took place. The survey focused on the role of libraries in data exchange and the survey showed that over **80% of LIBER libraries are experiencing demand for data management support**. Does this indicate the direction that library services must go in order to take advantage of the **opportunities** that exist for libraries in the data management landscape?

RDM support may be a new territory for libraries but it is an opportunity for library services to engage further with researchers and enhance the research support services they currently provide.

Libraries aim to support researchers at each stage of the **research lifecycle**:

- ❖ *Discovery of new ideas* (current awareness strategies, finding information, managing references)

<sup>9</sup> <http://www.rluk.ac.uk/files/RLUK%20Re-skilling.pdf>

<sup>10</sup>

<http://www.libereurope.eu/sites/default/files/The%20research%20data%20group%202012%20v7%20final.pdf>

- ❖ *Securing funding to investigate the ideas* (sources of funding, research data management plans for grant proposals, bibliometrics)
- ❖ *Undertaking the research* (research data management tools and research collaboration)
- ❖ *Dissemination of research* (open access, compliance with funders requirements, scholarly journals, measuring citation impact, copyright)
- ❖ *Archiving and preservation* (preserving data, capturing and adding metadata, archiving data)

As noted by Pryor (2012) in *Managing Research Data*<sup>11</sup> librarians have the *relevant* experience and expertise to contribute to the data challenge. Libraries have already taken impressive steps to establish their place in the research space, the challenge of data management must be met.

## 7. RDM Training

The DCC are committed to providing a range of training courses that meet a variety of training needs. Materials are available for the absolute beginner to the more experienced data curator. The JISCMRD Programme has produced a substantial and extensive collection of training resources, many of which can be re-used and adapted. Some of the key resources which have been critically reviewed by ADMIRE staff include:

- ❖ [Jorum resources](#) - videos, presentations, audio interviews
- ❖ Outputs from JISC-funded RDM Training projects
- ❖ [DCC Training](#)
- ❖ [Curating Artistic Research Output \(CAiRO\)](#)
- ❖ [MANTRA](#)
- ❖ [DATUM for Health](#)
- ❖ [DMTpsych](#)
- ❖ [DataTrain](#)
- ❖ [Supporting Data Management Infrastructure for the Humanities \(Sudamih\)](#)

In July 2012 JISC funded another tranche of RDM Training projects; all the information on these projects is available from [here](#). JISC stated that these projects aim to contribute to an increase in research data management skills in UK higher education and research organisations.

**Update:** The ADMIRE training paper provides an overview of current training initiatives in the UK HEI sector and detailed information can be found at <http://admire.jiscinvolve.org/wp/files/2013/05/ADMIRE-RDM-Training-for-Researchers-CPD-Course-Material.pdf>

## 8. RDM Skills Matrix

We need to think about the skills that may be required (or that we currently have) in order to deliver a sustainable and embedded RDM support service. In September/October 2012 we consulted with and asked for feedback from the academic librarians, Caroline Gregory (Head of IT support), IT support group leaders and team leaders, and Chris Middleton (Head of Academic Services) on a skills matrix for RDM. We

<sup>11</sup> <http://www.dcc.ac.uk/node/9337>

intend to ask for views and thoughts on the matrix from Caroline Williams and Bill Hubbard (ADMIRE Co-Directors) and Helen Hurman (RGS).

It was interesting to note how the perception of the current skills varied between LIS staff and IT staff. Further analysis needs to be done on the feedback and it will be added to this document. The RDM skills matrix developed by ADMIRE can be seen in the table below.

		RGS	IT	Library
<b>Research process</b>	<b>Research lifecycle</b>			
<b>Data management</b>	Data Management Planning			
	Data storage			
	Data preservation			
	Archiving data at project close			
	Managing big data			
	Metadata allocation			
	Data discovery			
	Data linked to publications			
	Data reuse			
	Reuse of purchased data			
	Management of purchased data			
	HPC usage			
<b>Funding</b>	Bid writing			
	Public funding			
	Private funding			
	Compliance with funder mandates			
<b>Collaborative research</b>	Policy statements			
	Open access requirements			
	Cross-discipline			
	Multi-institutional			
<b>Data classification</b>	Multi-national			
	Sensitive data			
	Ethical considerations			
	Commercial data			
	Legal issues			
	Licensing			
<b>Data types</b>	Documents			
	Spreadsheets			
	questionnaires			
	Software files			
	audio			

video and film  
photographs,  
models  
algorithms  
database contents  
slides  
specimens  
artefacts  
Methodologies  
workflows

It is important to note that those consulted considered these skills as part of their current RDM 'skill set'. This is without any 'upskilling' or 're-skilling' or additional RDM awareness or training.

**Update:** In April 2013 the Digital Curation Centre published the handbook '[Research Data Management for librarians](http://www.dcc.ac.uk/sites/default/files/documents/events/RDM-for-librarians/RDM-for-librarians-booklet.pdf)' which included the skills matrix developed by ADMIRe, see <http://www.dcc.ac.uk/sites/default/files/documents/events/RDM-for-librarians/RDM-for-librarians-booklet.pdf>

## 9. UK HEIs and developing RDM Services

There is currently a lot of planning activity within research-intensive UKHEIs regarding transitional RDM institutional services and what such a service should deliver for its research community.

As noted by the DCC in their document 'How to Develop Research Data Management Services – a guide for HEIs' which is due to be published shortly, it is noted that each institution will have specific local requirements and differences in culture that must be considered when planning a RDM support service. They identify three key elements which will help to manage this process of change:

1. a *research data management policy* to define core principles
2. a *roadmap/strategy* to programme the activities needed
3. a *business case* to secure investment of resources

It is essential to explain and agree on why a RDM Service is required at your local institution and outline clearly what such a service should consider. Several universities area already providing a RDM service, and it is useful to review what they have done in order to deliver sustainable RDM services.

The ADMIRe document '[UK HEIs RDM service models and skills to support research data management](#)' provides a detailed look at the different models and approaches that other research-intensive universities are considering for RDM service delivery and staffing. This paper was presented to the ADMIRe project group and the ADMIRe Steering Group in February 2013 for their consideration as part of the RDM models work package.