Managing Research Data: a pilot project in Health and Life Sciences Final Report - Executive Summary

Introduction

This report reflects upon the activities, findings, outcomes and achievements of a Jisc-funded project to begin to address Research Data Management (RDM) at the University of the West of England, Bristol (UWE). Also considered are some of the on-going issues and challenges to be addressed post-project.

Aim and process

The project focused on the data management needs of selected pilot projects in two research centres (the Centre for Health and Clinical Research and the Centre for Research in Biosciences) in the Faculty of Health and Life Sciences and sought to scope the associated challenges of establishing support structures and processes to enable this.

The fundamental aim of the project was to develop a data management system (processes, infrastructure, and services) with a clearly understood rationale, appropriate to a post 1992 institution which would reflect the research environment in which funding bodies are increasingly stipulating that data management be properly addressed. The lessons learned from establishing governance and a usable data management environment for the sample research centres would, in the longer term, be used to establish a university-wide RDM architecture to meet the needs of the university's research community, support institutional strategy and fulfil external requirements.

The project is presented as four strands made up of six work packages:

- *Ready* relates to the preparatory knowledge-building and model-building work (mostly found in work packages one and two).
- *Steady* represents the internal 'hearts and minds' journey approached through advocacy and policy development, and includes maturity modelling. Internal dissemination and engagement is work package six, but encompasses the entire project, while policy development is part of work package three.
- *Go* is concerned with project build of RDM solutions and services; the development and iterative testing of the tools (EPrints data repository, administrative processes and online guidance materials) which formed the heart of the project (mainly work packages three and four).
- *Show and tell* represents the UWE project's sharing of our experience and deliverables with the wider Jisc and higher education communities, and is outward facing.

The final report contains details of the project activities and outcomes. The table below summarises the objectives and the methodologies employed to achieve UWE appropriate outputs.

Objectives	Methodology	Key Project Outputs
To draw on the outcomes of previous JISC MRD projects to investigate current research data management and curation practices in selected projects of two research centres in Health and	Desk research, assessment of existing materials from the JISC Research Data Management Programme 2009-2011, briefings, presentations, questionnaire (pilot DAF survey), interviews, qualitative	**An assessment of existing RDM projects** and their relevance to the UWE environment. **Guidelines** a visual guide to

Life Sciences, which produce a wide range of data types. **To develop models** which address the research data management needs of the selected projects.	and quantitative questionnaire analysis and interview analysis and modelling existing outputs to the UWE environment.	model UWE research administrative processes.
To establish the groundwork for good research data management practice to become embedded in the research life cycle at UWE	Stakeholder analysis, Steering Group membership review, dissemination, "hearts and minds" advocacy, tailored messaging, informal and formal meetings, seminar, presentations, papers, poster, visual modelling, maturity modelling and benchmarking, as-is positioning, aspirational target setting, policy (principles) development, risk analysis, MoSCoW analysis, sustainability planning, business case development, pitching, social networking, articles, stakeholder interviews.	**Draft RDM policy for UWE** presented as eleven directive RDM principles in the context of a range of aspirational statements derived from Steering Group maturity modelling.
To develop suitable processes, infrastructure and guidance which are in keeping with the culture and administrative processes of the university, and which fulfil the needs of our researchers.	Case study, modelling, iterative development, focus groups and forums, workflow model testing and evaluation, workshops, presentations, personal development.	**Report** description and flowcharts of recommended processes incorporating issues of IPR, copyright and confidentiality, and explaining how these processes fit with current institutional practice.
To integrate the MRD system with our existing Research Repository, so that there are clear and obvious links between research outputs and their underlying data.	Iterative technical development, data load testing, repository model testing and evaluation, workshops, presentations, personal development.	**Pilot service** workable EPrints data repository interface and workflows, integrated with UWE's Research Repository, to allow RDM to take place.
To establish the groundwork for good research data management practice to become embedded in the research life cycle at UWE.	Case study, iterative development, workshops, testing and evaluation, presentations, personal development.	**Training package / Guidelines** online support for HLS researchers, relating to RDM processes at UWE.
To share knowledge and experience and project deliverables with the wider JISC and HE communities.	Case studies, project website, dissemination to and engagement with UA, MURG and Russell Group colleagues, national events, workshops, breakout groups, external presentations, project blog, library skills modelling, skills gap analysis.	**Case study** of key stages in our process that might be adopted or adapted by similar institutions **Dissemination event** Raising your ReDMan: approaches to research data management **Dissemination event** Reskilling for RDM: a workshop for academic librarians

Project developments

The project has developed a proof of concept institutional data repository, with inter-operability with the institution's existing Research Repository. An open data licence and empirical experience of data appraisal are required to deliver a fully operational, supported and discoverable data deposit service.

Consideration and assessment of online guidance packages available from the JISC MRD Programme 2009-2011 has led to the development of UWE specific online guidance for researchers, available from the project website at http://go.uwe.ac.uk/ynecq. The guidance has been divided into four main areas of data management activity:

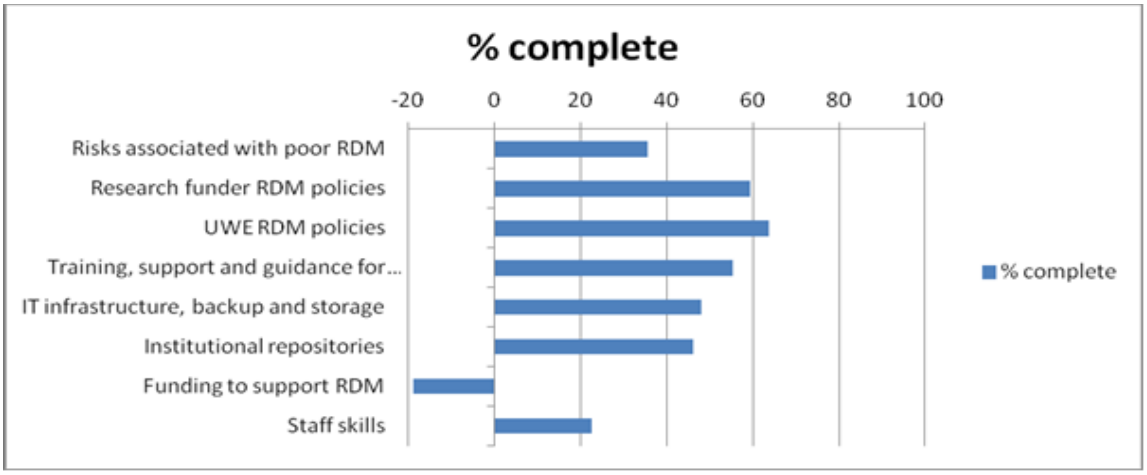
- **Create:** data management for funding bids, data planning, format selection, Intellectual Property Rights, data protection and ethics.
- **Organise and Care:** naming files, structuring folders, version-control, documenting work, storing and backing up data and reference management.
- **Access and Share:** accessing research data from off-site, sharing files with others, locating existing data for research, citing data and how the Freedom of Information Act applies to research.
- **Curate and Preserve:** maintaining data over time, archiving, selection for retention, using digital repositories and open access.

Administrative research process flowcharts incorporating RDM in institutional practice were developed to facilitate RBI evaluation of responsibilities, gaps, and training and development needs.

As a service to the wider HE and Jisc communities, the UWE project has shared extensively its project deliverables and knowledge and experience of developing a pilot RDM service through the project website and dissemination events. A narrative case study summarising early project experiences identified key stages in our process that might be adopted or adapted by similar institutions. Two national dissemination events, targeting distinct and different peers, were held at UWE and recognised for their positive contribution to RDM thinking and the value of the networking opportunity. It is acknowledged within the programme that the UWE project has 'punched above its weight' in contributing to the RDM community and wider society.

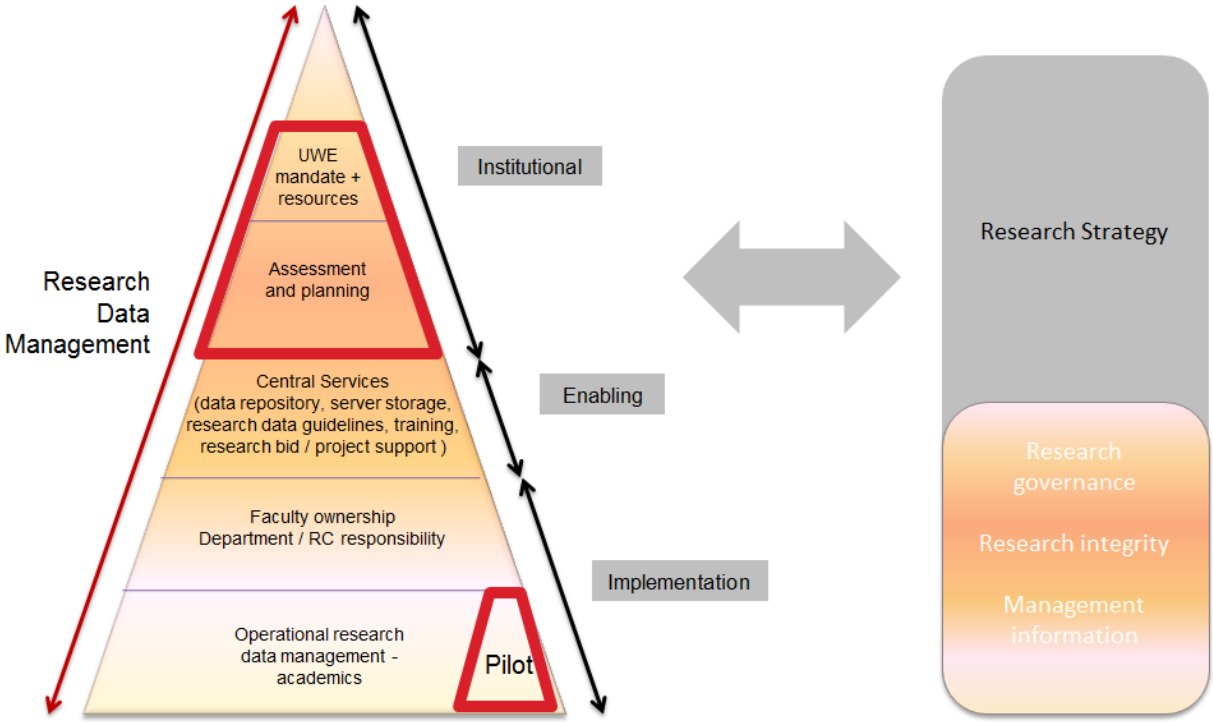
Areas and issues of particular note

Whilst the pilot project was localised within the university, the hearts and minds journey necessary to scale the project for development beyond the pilot phase extended well beyond this. Maturity modelling and as-is positioning were used in a wide variety of university and project meetings as a means of raising awareness, gaining engagement, and provoking discussion. Responses to the model revealed perceptions of where UWE was on the RDM spectrum at the start of the project and an aspirational view of where UWE would like to be was established. This early use allowed initial scoping of the extent of the work necessary to achieve an RDM infrastructure. Towards the end of the project, the exercise was repeated with the project steering group, revealing significant progress in all areas except funding.



The maturity model has been one of the most successful outputs of the project (in terms of consumption and re-use) both internally and externally.

Continual stakeholder engagements challenged initial project assumptions around stakeholders and revealed additional key influencers who needed to be involved in the work of the project, for example the chair of the University Research Ethics Committee and the head of IT Services. The need for a wider institutional RDM remit was a pivotal early finding and the breadth of advocacy that evolved highlights the project's impact on stakeholder understanding of key issues in relation to internal aspects of research governance. The project found that in order to drive effective research data management it was necessary for a range of stakeholders to collaborate to achieve common goals. It also concluded that a 'bottom-up' approach' alone was of limited impact; in order to effect the organisational change required to establish good research data management infrastructure, strategic influence was key. The scope of the pilot project against the scale of work necessary in order to achieve a working, sustainable RDM infrastructure for UWE is visualised below.



Conclusion

There is a real need to protect and build on the groundwork that has been laid by the JISC project at UWE. While there has clearly been considerable effort and work to raise awareness of RDM in the institution in the last 12-18 months, there is still much work to do to scale RDM for the university beyond the scope of the pilot project. Paul Gough, Pro-Vice Chancellor for Research, highlights the importance of maintaining the momentum: "It [RDM] will become not a nice to have, but a must have in a very short space of time."

Short term additional funding allows for the further development of a business case for sustainability; the project's steering group has been expanded to form a working group to facilitate some of this work. It seems

likely that there will not be a central RDM office at UWE; work will be led from RBI, and devolved appropriately among stakeholders, forming part of a wider research governance plan.

There is no one size fits all solution to the issue of research data management. However there are some clear drivers that define a typical pathway to RDM which can be viewed as a virtuous circle, as illustrated below.

In a research influenced teaching and business engaged institution such as UWE there is likely to be much more of a cultural shift required than in research intensive universities. Early work to highlight the benefits of RDM for individuals and the institution is vital if this shift is to be effected. Widespread and high level ambassadorial work, plus engagement of a wide range of appropriate and influential stakeholders is also necessary in order to achieve the required cultural change.

Recommendations

The full project report offers extensive recommendations for work post project; however the following recommendations are critical to a future RDM pathway.

Recommendation	Objective	Responsibility
Identify named RDM lead in university	To determine responsibility, ownership and accountability	RBI/ RDM working group
Divide the service enablers for RDM principles into component responsibilities within UWE	To implement policy principles and incorporate them into university strategy	RBI/LIB/ITS/ Project team

Agree a written policy on open access to research data	To meet research council funder requirements (& ESPRC roadmap)	RBI/LIB/Senior management
Agree a licence for the data repository (dependent on open access policy)	Determine if data repository accepts open access data only. Requirement for data loading, helpful for research data appraisal and selection	LIB
Develop selection and appraisal guidance (for initial data load)	Selection of data for deposit and re-use	LIB / others
Identify and develop specialists to support RDM	Agree where support for which elements of RDM should come from	RBI / LIB
Identify who is responsible for producing Data Management Plans and develop appropriate staff skills	Clarity on who should produce plan and who is responsible for plan	RBI
Conduct a full Data Audit Framework survey of UWE researchers and their data	To determine the full extent of UWE research data assets	ITS/Project team
Identify how RDM work is split between researchers, PIs and administrators	Agree RDM responsibilities	RBI / Academics
Determine if a data management governance structure similar to UWE ethics committee structure is required	Governance, process and ownership/responsibility	RBI
Demonstrate the relationship between researcher identified (faculty RKEC analysis) research outcome priorities and good RDM practice	To develop researcher and strategic understanding of the key research drivers at UWE and role of RDM to support these	Project team

Project website:
http://www1.uwe.ac.uk/library/usingthelibrary/servicesforresearchers/datamanagement/managingresearchdata.aspx