JISC DMI PROGRAMME

DRAFT GUIDE TO COST/BENEFIT ANALYSES FOR RESEARCH DATA SERVICES

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1. BACKGROUND

Through the 07/09 Call, JISC is providing an opportunity for institutions and consortia, to determine the requirements of their researchers, to develop pilot data management services for particular groups of researchers, and to report on the results to the community in order to determine good practice.

To help assess future sustainability, projects will consider the costs, benefits and alignment with institutional strategy of any proposed solution. Projects will provide examples of how universities may make effective, reasoned and costed decisions concerning the implementation of data management policies and infrastructure. To achieve this end, projects will develop a structured methodology by which institutions may judge whether the solution for data management implemented is cost effective. They will assist institutions towards the creation of a suitable business model in order to ensure that data can be managed over the long term.

The DCC is providing general support for the programme with input from Charles Beagrie on cost/benefit analysis.

The role of this programme guide is to provide projects with methodologies such as the Keeping Research Data Safe2 activity-based cost model [1], and assistance for analysis of the costs and benefits of their implementations over the methods of data management previously employed by their researchers.

In addition the programme support will:

- Contribute to two programme meetings (in November 2009 and April or May 2010);
- Undertake site visits to support projects;
- Moderate and write-up a workshop on costs/benefits with projects in late 2010 or early 2011;
- Write a report with a summation and analysis of cost/benefit work by the projects that will pull together and share projects' learning on the application of these methodologies and their analyses of the costs and benefits of their approaches to research data curation.

2. INTRODUCTION TO COST/BENEFIT ANALYSES FOR RESEARCH DATA SERVICES

There are still only a relatively small number of socio-economic studies focussing specifically on data services or research support rather than research per se. However, such work is now beginning to be funded particularly in the UK and producing some promising results. Other research funders such as ESRC, who have been investing in developing socio-economic impact studies and methodologies for their research also believe that methods that have been applied to research can also be applied to their investments in data repositories and data management. Similarly existing econometric methodologies have been applied in business cases for some data infrastructures by European organisations.

A bibliography of such studies is provided in section 4 with short summary abstracts. For socio-economic impact studies for research generally, the recent literature review of the benefits from publicly funded research [3] is an excellent general reference. The 7 main mechanisms or benefit channels it identifies (increase in knowledge, increase in skilled researchers, new instrumentation and methods, developments of social networks and collaboration, enhanced problem-solving capacity, creation of new firms, and provision of social knowledge) may also be helpful in the context of evaluating the impact data repositories and data management.

For assessing costs we would recommend the activity-based costing approach, which is widely used in other sectors and has been taken up by projects such the NSA Cost Estimation Tool (NASA CET), the LIFE project, and Keeping Research Data Safe (KRDS) [1]. KRDS is our recommended tool for the programme as it has been specifically developed for research data in the UK by JISC and builds on and leverages any relevant work completed by NASA CET and LIFE.

For assessing benefits, KRDS2 will also contain a benefits framework and 2 benefits case studies. The activity based costing approach can assist in quantifying direct or counter-factual economic benefits. For assessing intangible benefits, the balance score card has been widely used in the not for profit sector and was applied in the JISC funded espida project [2]. Although espida focussed specifically on preservation, its general discussion of the balanced scorecard method also may be helpful to the DMI programme projects.

3. POTENTIAL BARRIERS AND SUCCESS FACTORS

A number of potential barriers and appropriate success factors for socio-economic impact studies for data repositories and data management can be identified from previous studies:

Barriers:

- **Attribution**: longer-term effects tend to arise from a complex combination of developments and circumstances which can be difficult or impossible to disentangle and attribute to use of a single data repository, dataset, or research project;
- **Cost data processing:** Where cost information exists (e.g. staff timesheets) it may still need significant time for processing and verification before it is in a form which can be used for comparison and analysis;
- **Critical Mass**: Usage of repositories and acceptance of data sharing often grows very slowly at first and may only become significant when a critical mass of data has been assembled. The length of time before or the point in time when a repository or dataset's impact is assessed can therefore be critical;
- **Maturity of the Discipline or its Information Use**: if a discipline or sub-discipline or its data management is still relatively immature, the focus of repositories activities may be on influencing its community and developing common standards and practice. Data use may still be relatively difficult and low until these are established.
- **Imperfect or Partial Indicators**: many measurable indicators are intermediate outputs such as research publications or citation of datasets in research publications. These may be imperfect as research dissemination may not always have impact: impact needs to be inferred from broader econometric studies or specific case studies. Similarly citation of datasets in research publications is currently very low and gives only a partial picture of actual research use.

Success Factors

- **Awareness of Context**: impact assessment methods should seek to capture the wide diversity of impacts and should examine the processes through which impacts occur within a particular setting, since the impacts are often contextually determined e.g. discipline or repository specific;

- **Involvement of relevant data community and expertise**: studies need to be context aware and any methodologies and tools easily implemented by relevant data management professionals. Expertise in socio-economic impact methodologies therefore needs to be teamed with relevant domain knowledge;
- **Established User relationships**: the pre-existence of networks and relationships with relevant user communities is shown to be of very high importance.
- **Existing Cost or Usage Data**: retrospective analysis is only possible if organisations have collected and retained usage and cost data for previous years and has done so on a consistent basis. This provides a much firmer basis for examining costs and benefits;
- **Mixture of Methodologies**: methods need to be context sensitive. Methodologies needs to be selected and modified according to need;
- **Appropriate Case Studies**: Case studies are selective and selection may be focussed solely on success stories. However challenges and failures encountered in case studies may be equally instructive. Wider results and impacts extrapolated from case studies may be distrusted if they are seen to focus on non-representative data repositories or datasets.

4. BIBLIOGRAPHY AND FURTHER READING

(a) Published Sources

[1] Neil Beagrie, Julia Chruszcz and Brian Lavoie, 2008, *Keeping Research Data Safe: a cost model and guidance for UK Universities*, (Joint Information Systems Committee 2008).
http://www.jisc.ac.uk/publications/publications/keepingresearchdatasafe.aspx
Keeping Research Data Safe2 project webpage: http://www.beagrie.com/jisc.php
This study investigated the medium to long term costs to Higher Education Institutions (HEIs) of the preservation of research data and developed guidance on these issues. It provided an essential methodological foundation on research data costs for the HEFCE-sponsored feasibility study for a UK Research Data Service. It developed a framework and guidance for determining costs consisting of:

- A list of key cost variables and potential units of record;
- An activity model divided into pre-archive, archive, and support services and divided into the major phases from our activity model and by duration of activity;
- A resources template including major cost categories.

A series of case studies from Cambridge University, King's College London, Southampton University, and the Archaeology Data Service at York University, illustrated different aspects of costs for research data within HEIs. Selective illustrations of cost benefits and costs over time were also provided.
A second phase project (Keeping Research Data Safe 2) has been funded by JISC to build on this work and will complete in December 2009. Further information will be available from the project webpage in late December 2009.
The study and methodology are currently unique in seeking to capture actual costs and some benefits for research data preservation and management over long-time periods based on well-established repositories and longitudinal information series for costs. This also provides a potential basis for projecting costs and benefits forward in time.

[2] *espida*. http://www.gla.ac.uk/espida/index.shtml

The espida project was completed in January 2007. The model that espida developed based on the balanced scorecard, can help make business cases for proposals such as digital preservation that may not necessarily offer immediate financial benefit to an organisation, but rather bring benefit in more intangible spheres. While it was designed initially to be used within the area of digital resource management, it has potential for far wider application (decision making, performance measurement, change management).There is a handbook, outcome scorecards & cost template and a training exercise available from the project publications webpage.

[3] Ben Martin and Puay Tang, 2007, *The benefits from publicly funded research*, Science and Technology Policy Research Working Papers, No. 161, (University of Sussex 2007).

http://www.sussex.ac.uk/spru/documents/sewp161.pdf

This report provides a literature review from 2001-2007 of studies assessing the social and economic benefits that derive from publicly-funded research. It suggests socio-economic impart studies to assess this have adopted 3 principal methodologies to assess benefits: econometric studies, surveys and case studies. It classifies benefits into 7 main mechanisms or benefit channels (increase in knowledge, increase in skilled researchers, new instrumentation and methods, developments of social networks and collaboration, enhanced problem-solving capacity, creation of new firms, and provision of social knowledge). 12 case studies are provided which suggest the relative importance of these channels varies according to scientific field, technology and industrial sector.

It notes and describes challenges of attribution of benefits to specific research projects; long time lags (sometimes a decade or more) before benefits are realised after the research; and that there are no perfect measures of research outputs only a number of imperfect or partial indicators (e.g. scientific publications, spin-off companies, etc). It notes the need for both qualitative and quantitative studies given these issues.

The study is a well-written and valuable overview of the field – also cited by several other studies in this analysis.

[4] AKOYA, 2006, *Measuring ATP [Advanced Technology Program] Impact-2006 Report on Economic Progress*, (National Institute of Standards and Technology USA 2007) http://www.atp.nist.gov/eao/gcr06-899.pdf

The ATP evaluation program involves four categories of measurements, including:

• Program inputs derived from Congressional appropriations and industry cost-share to provide budgets for making awards, convening staff to carry out the research, and providing for equipment, facilities, and other direct costs.

• Principal outputs, including the funded projects, collaborative relationships formed as a result of the program, plus publications, patents, models and algorithms, and prototype products and processes.

• Principal outcomes, including sales of new and improved products, processes, and related services; productivity effects on firms; changes in firm size and industry size; changes in the inclination of firms and other organizations to collaborate; the spread of resulting knowledge through publications, presentations, patents, and other means; and the adoption of the funded innovations and various adaptations by the market.

• Longer-term impacts related to the broad societal goal that drove the program's creation, including increased GDP, employment gains, improved international competitiveness of U.S. industry, and quality-of-life improvements to the nation's health, safety, and environment. Impacts may also include an effect on the nation's capacity to innovate.

[5] Allen Consulting Group, 2003, *A Wealth of Knowledge – The return of investment from ARC-funded research*, Report to the Australian Research Council, 4 September 2003 http://www.arc.gov.au/pdf/ARC_wealth_of_knowledge.pdf

In this study two approaches were adopted to attempt to quantify the social and economic benefits associated with ARC-funded research activities in Australia.

The first 'top down' approach, involved a review of Australian and international studies on the relationship between funding for R&D and multi-factor productivity growth. This productivity analysis approach was based on analysis of the average observed impact of research funding on productivity growth in Australia and other developed economies. This 'top down' analysis provides a 'benchmark' estimate of the impacts of ARC research funding.

The second 'bottom up' approach, involved a more complex analysis of the specific impact of ARC research funding in Australia. This approach involved examination of the level of benefits in each of the six areas that can be traced to ARC research funding.
Based on the findings from the 'top down' and 'bottom up' analysis, modelling scenarios were then developed to estimate the wider impacts of ARC research funding on the Australian economy.

[6] Patries Boekholt, Fritz Ohler, Wieneke Vullings, Brigitte Schwab, Stefan Rieder, 2006, *Manual for Evaluating the Pertinence and Impacts of the EU Support to Research Infrastructures*, September 2006.
ftp://ftp.cordis.europa.eu/pub/infrastructures/docs/guidelines-evaluation-research-infrastructures_en.pdf
This Manual aimed to develop a methodology for the evaluation of the pertinence and impact of FP6, specifically those activities which were new to FP6 and their impact on European research excellence and competitiveness.

[7] John Clark, Alessandro Muscio, Paul Simmonds, Nick von Tunzelmann, 2004, *Targeted review of added value provided by international R&D programmes,* (Office of Science and Technology UK 2004)
http://www.berr.gov.uk/files/file14840.pdf
This targeted review assessed the 'state of the art' as of 2004, in the understanding of the impacts of the EU Framework Programmes and their strengths and weaknesses in comparison with national programmes and other international research programmes, such as the US Advanced Technology Program (ATP). It noted the payoff to higher spending on R&D, and especially basic research, is subject to 'long and variable lags'. As such, in the medium term, the link between R&D and productivity is difficult to demonstrate. Evaluations involve a trade-off in terms of the timing of the review and the timing of the realisation of wider impacts. Generally, elapsed time is fairly short, so that the typical focus of programme evaluations is a concern to capture information on short term, local benefits such as the degree to which technical or commercial objectives are met, extent of collaboration, publications, researcher training, overall perceptions of satisfaction. Equally, primary data

tend to be gathered using participant surveys with few studies investigating effects in the wider research and business communities. In 2004, in attempting to assess long-term effects, there appeared to be no option other than to invoke general econometric estimates of the effects of public research expenditure on the macroeconomy. It also noted that the literature makes clear that the value of R&D is not confined to (eventual) commercial outputs. 'Indirect' payoffs such as expanding the supply of trained graduates may be as, or even more, important to business and society.

Finally the report identified that the literature deals poorly with the question of 'critical mass,' providing no ready reckoner to check whether more or better capacity is necessary. However, empirical studies suggested that certain fields of scientific endeavour – space astronomy or gene sequencing for example – are more demanding than are others – social anthropology or history of art for example – in terms of both capital investment and research capacity. The need to seek partnerships beyond national boundaries depends on size too. For smaller European states, recent evidence suggested that international collaboration is vital to maintaining world class capabilities in many areas of S&T.

[8] ESRC, 2009, *Taking Stock: a summary of ESRC's Work to evaluate the impact of research on policy and practice* (Economic and Social Research Council UK 2009) http://www.esrcsocietytoday.ac.uk/ESRCInfoCentre/Images/taking_stock_tcm6-30940.pdf

The ESRC's impact evaluation work to date indicates that there are certain key factors that are vital for social impact generation. These include:

• Established relationships and networks with user communities;

• Involving users at all stages of the research;

• Well-planned user-engagement and knowledge exchange strategies;

• Portfolios of research activity that build reputations with research users;

• Good infrastructure and management support;

• Where appropriate, the involvement of intermediaries and knowledge brokers as translators, amplifiers, network providers.

In all the social impact case studies, the most important factor contributing to the generation of social impact was the pre-existence of networks and relationships with research users.

Sustained contacts with users, based on personal relationships and built up over the long term were the most important channels for policy and practice applications.

[9] Frontier Economics, 2009, *Evaluating the Impact of ESRC funding: a report prepared for the Economic and Social Research Council*, (ESRC 2009)

http://www.esrcsocietytoday.ac.uk/ESRCInfoCentre/Images/Measuring%20the%20Impact%20of%20ESRC%20Funding_tcm6-32129.pdf

Frontier Economics has previously developed in 2007 an analytical framework for measuring the value of research. This earlier study found that it is difficult to measure the economic impact of research on high-level economic factors such as productivity, employment and economic well being. The study recognised the complex interrelationships and uncertainties in the process. However, the study did propose using valuation methodologies that might go some way in developing estimates of the value of different types of research activity. The follow up study published in 2009 tested these methodologies on the research practices of two of the UK's leading research centres, the Centre for Economic Performance (CEP) and the Centre on Skills, Knowledge and Organisational Performance (Skope), to identify what in practice can be done to measure value. In particular, we focus on understanding the extent to which they could:

• identify the key outputs of a research centre, the users of those outputs and the value users place on those outputs; and
• understand how the research produced by the centres is used to influence, shape and develop policy.

[10] Jenny Fry, John Houghton, Suzanne Lockyer and Charles Oppenheim, and Bruce Rasmussen, 2008, *Identifying benefits arising from the curation and open sharing of research data produced by UK Higher Education and research institutes*, (JISC UK 2008)
http://www.jisc.ac.uk/media/documents/programmes/digitalrepositories/jiscdataproposal-public.pdf

This study was commissioned to identify benefits arising from the curation and open sharing of research data. It suggests potential benefits of the open sharing and re-use of research

data include: maximised investment in data collection; broader access where costs would be prohibitive for individual researchers/institutions; potential for new discoveries from existing data, especially where data are aggregated and integrated; reduced duplication of data collection costs and increased transparency of the scientific record; increased research impact and reduced time-lag in realising those impacts; new collaborations and new knowledge-based industries. Broader indirect benefits might include transparency in research funding, use of data sets in education to enhance data awareness of students, enhanced researchers' skills through access to a broader range of data, tools and standards have potential to increase data quality, and increased visibility and promotion of institutions and researchers.

The study used a mixed method approach, including a literature review and qualitative case studies to inform the development of a model on which to build a business case for data sharing in UK Higher Education. This is based on extensions to the research data preservation cost model proposed by Beagrie et al, to allow estimation of cost benefits to users depositing or accessing data. The case studies investigated were the European Bioinformatics Institute (EBI) and Qualidata, which is part of the Economic and Social Data Service. The case studies were based on semi structured interviews with service providers and users of the service. The interviews were supported by documentary evidence in order to identify and illustrate the benefits and costs for the different stakeholders.

The study suggests benefits may accrue in a variety of ways, including cost savings, efficiency gains, and new opportunities to create value through doing things in new ways and doing new things. These are, successively, more difficult to quantify: not least because they often emerge over time and can only be realised in the future. They present a simple example of cost benefit analysis applicable to an individual dataset or repository, based on costs and potential cost savings. It describes the data requirements and walks the reader through the process step by step. The approach is then extended to explore the more diffuse benefits of data curation and sharing at the institutional and disciplinary levels. Finally the study recommends future work to establish common baseline reporting, model questionnaire, and developing a community resource.

[11] Susan Imholz and Jennifer Weil Arns, 2007, *Worth Their Weight: An Assessment of the Evolving Field of Library Valuation*, (Americans for Libraries 2007)

http://www.bibliotheksportal.de/fileadmin/0themen/Management/dokumente/WorthTheirWeight.pdf

This study looks at cost-benefit and social valuation models that have been applied in American Libraries. It is part of an initiative that aims to develop the knowledge necessary for strengthening advocacy for libraries and public access computing.

The studies reviewed clearly demonstrate the field's growing sophistication, showing advancement from simple questionnaires to complex surveys, and from simple economic cost/benefit assessments to complex economic algorithms and forecasts.

A second observation is that mastery of purely economic measures is giving way to concerns about incorporating the public library's more intangible social dividends, and to finding new ways to express and quantify learning values and cultural benefits. It notes that the concept of social return on investment (SROI) is gaining acceptance in the corporate world through tools such as the Balanced Score Card which combines financial and nonfinancial measures to create a richer framework for evaluation— and triple-bottom-line reporting—which characterizes the social, financial, and environmental debits and credits of a business. Some of these and other concepts from the business world can be usefully applied to the valuation of public libraries. These expanded value propositions highlight the need to draw upon education research and social science expertise, and even to redefine monetary value and efficiencies in the context of sustainable, healthy communities when making the case for public libraries. It suggests the field could benefit enormously from a formalized "collaboratory," a web-based environment that includes forums for sharing information, multiple datasets, and open-source experimental tools.

The study has been very influential outside the US, for example stimulating cost/benefit studies for the British Library. More generically, evaluation of library services may provide a good comparator and source for socio-economic impact methodologies for data repositories.

[12] OECD, 2008, *Science, Technology and Industry Outlook* (OECD Publications 2008) http://www.oecd.org/document/36/0,3343,en_2649_34273_41546660_1_1_1_1,00.html
The OECD Science, Technology and Industry Outlook 2008 reviews key trends in science, technology and innovation in OECD countries and a number of major non-member economies including Brazil, Chile, China, Israel, Russia and South Africa. Using the latest available data and indicators, it examines topics high on the agenda of science and innovation policy makers, including science and innovation performance; trends in national science, technology and innovation policies; and practices to assess the socio-economic impacts of public research.

[13] PriceWaterhouseCoopers, 2006, *Socio-Economic Benefits Analysis of GMES* [Global Monitoring for Environment and Security], (European Space Agency 2006) http://esamultimedia.esa.int/docs/GMES/261006_GMES_D10_final.pdf

The Global Monitoring for Environment and Security (GMES) programme is a joint initiative of the European Commission ("EC"), the European Space Agency ("ESA") and European Member States. It is intended to provide autonomous and operational information tools required by European environment and security policies. GMES represented a significant investment. Therefore, the Member States recommended that a review of the resulting socio-economic impacts should be conducted. This review assessed qualitative and quantitative impacts and characterised where potential benefits are to be realised. Assessment of the costs associated with GMES was excluded from the scope of the study. Placing a monetary value on all the potential impacts and adding these together for GMES as a whole was not practical: in practice, many of the wider societal impacts are not susceptible to measurement (aggregation) in such terms. Instead, the report assessed these impacts using a diverse range of indicators. The assessment of GMES benefits presented in the report was based on:

- A stakeholder consultation process to assess the impacts made by GMES
- Benchmarking stakeholder inputs and feedback with published sources
- Desk based review of a wide variety of secondary sources

- Comparison of impact estimates against case studies showing what is possible today or in the near future.

Although a business case analysis with many caveats, this study is interesting in applying existing methodologies to the potential impact of data and information on policy and society.

[14] United States Senate, 2000, *The benefits of medical research and the role of the NIH* (United States Senate 2000)
http://opa.faseb.org/pdf/2008/nih_research_benefits.pdf

This report examines how National Institute for Health (NIH) funding for medical research provides economic benefits, reduces suffering from illness, and helps Americans live longer, healthier lives. It is primarily an advocacy document to support the case for doubling the budget of the NIH. It cites research studies on the direct and indirect costs of ill-health and provides specific case studies of research which has reduced the cost of treatment or eradicated specific illnesses as examples of benefits from investment in medical research.

[15] Developing a CIHR Framework to Measure the Impact of Health Research. (Canadian Institutes of Health Research September 2005).

http://www.cihr-irsc.gc.ca/e/30324.html

This report summarises progress in developing a conceptual framework to measure the impact of health research and the returns on investment in health research by Canadian Institutes of Health Research (CIHR). The project was designed to first obtain advice from leaders of Canada's health research community and then develop an agenda for implementing the framework. It was decided to adapt the five dimensional categorisation in the Buxton Hanney “Payback model”. The five categories, as adapted, are:

1. **Knowledge production**: The contributions to knowledge from a research project or a body of research involving multiple projects. Knowledge production is usually measured through contributions to scientific publications and patents or invited presentations (e.g. conferences) but includes knowledge fed more directly to users through commissioned reports etc.

2. **Research targeting and research capacity**: Benefits to future research activity. This includes the use of research information to improve targeting of future research;individual and group development of research skills and research capacity; development of the capability to use existing national or international research.
3. **Informing policy and product development**: Clinical and administrative benefits, including the development of informed information bases upon which to make decisions, and the application of research findings in policy development (at all levels of policy). Includes development of clinical practice guidelines. Benefits for product or process development where research findings feed into commercial decisions and developments. (This category has been modified in the CIHR framework, where product development and commercialization of research findings will be included in the category, Economic benefits).
4. **Health and health sector benefits**: Improvements in life expectancy and quality of life through advances inprevention, diagnosis or treatment; made possible by research. Increased efficiency of service organisation. Improved equity in the health sector. (This category has been modified in the CIHR framework, where efficiency in the form of cost-effectiveness will be included in the category, Economic benefits).
5. **Broader economic benefits**: Benefits to the economy that result from health research. These benefits can include economic returns from commercialization and contributions to the economy from improvements in workforce health. (This category has been modified in the CIHR framework, where it is called 'Economic benefits' and includes all economic impacts).

[16] *UK Research Data Feasibility Study (UKRDS) Final Report, December 2008*. http://ukrds.ac.uk/resources/download/id/16

This study was funded by HEFCE (the Higher Education Funding Council for England) under its Shared Services programme, with support from JISC (the Joint Information Systems Committee) with the objective of assessing the feasibility and costs of developing and maintaining a national shared digital research data service for the UK Higher Education sector. The feasibility study concluded that embedding the skills, capability and organisation

into the HEI research management process was the best approach and that a relatively small national service structure would be needed to foster this through channelling training, tools and good practice developed by existing national and international skill centres.

Chapter 4 of the study is a business case and business plan for the proposed service.

(b) Unpublished Reports and Works in Progress:

[17] Blue Ribbon Task Force on Sustainable Digital Preservation and Access. Bibliography

http://brtf.sdsc.edu/bibliography.html & Interim Report

http://brtf.sdsc.edu/biblio/BRTF_Interim_Report.pdf

A useful and regularly updated bibliography covering economics and digital preservation and the interim report from the Taskforce. The Blue Ribbon Task Force on Sustainable Digital Preservation and Access was created in late 2007. During the next two years, it is exploring the sustainability challenge for digital information with the goal of delivering specific recommendations that are economically viable of use to a broad audience, from individuals to institutions and corporations to cultural heritage centres.

[18] JISC and RIN, 2009, *Project Specification [call for Tender] The Benefits of Research Data Centres*, (RIN May 2009).

http://www.rin.ac.uk/data-centres

The Research Information Network (RIN) and the Joint Information Systems Committee (JISC) in the UK has issued an invitation to tender for a study on *The Benefits of Research Data Centres* that focuses on investigating the usage and impact of effective sharing and curation of research data for the UK research community. Close collaboration and synergies with the Keeping Research Data Safe study are required in the ITT. The study is to start in June 2009 and conclude by March 2010.

[19] The Dutch Data Archiving and Networked Services (DANS) is conducting an extensive cost analysis of its research data service that will be published in 2010.