

# Assessing the Costs & Benefits of RDM Projects : Sudamih & VIDaaS

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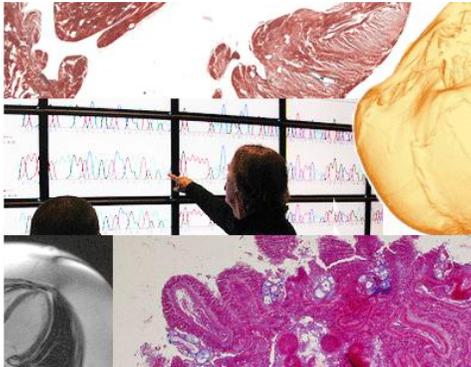
Virtual Infrastructure with  
Database as a Service (VIDaaS)



UNIVERSITY OF  
OXFORD

# Research data management infrastructure at the University of Oxford

- Programme began in 2008 with an internal scoping study



- Eidcsr (JISC funded, 2009-2010)
  - Scoping and piloting institutional data management infrastructure (software, metadata, responsibilities, etc.)
- Sudamih (JISC funded, 2010-2011)
  - Researcher training (organisation, software tools, etc.)
  - Pilot 'Database as a Service' (DaaS)

- VIDaaS (JISC & HEFCE funded, 2011-2012)

- Full production-level DaaS, hosted on cloud infrastructure

- DaMaRO (JISC funded 2011-2013)

- Integrate existing Oxford data management tools into enhanced infrastructure



# Evaluating costs and benefits of ICT investments

“Our knowledge of the factors which will govern the yield of an investment some years hence is usually very slight and often negligible.” – John Maynard Keynes

“A striking, and perhaps disappointing, fact is that over the past 50 years, no core or overarching theory of ICT evaluation has emerged despite an exceptional effort to find one.” – Dan Remenyi et al.

# JISC-funded models for evaluating ICT (1)

- **Charles Beagrie Business Case template (2010)** – practical suggestions for business cases & evidence required behind those cases
- **OUCS Toolkit for Costing IT Services (Oxford, 2010)** – Step-by-step guide to costing IT services, but not assessing benefits
- **BIILS Benefits of ICT Investment – Landscape Study, An Evaluation Framework and Toolkit (Strathclyde, 2010)** – Outlines various approaches to costs/benefits analysis
- **The Management of ICT Investments (JISC, 2005)** – brief guide to two toolkits, one looking at costs and benefits, the other at risks

# JISC-funded models for evaluating ICT (2)

- **Model for Evaluating the Institutional Cost and Benefits of ICT Initiatives in Teaching and Learning in Higher Education (University of Strathclyde, 2004)** - Emphasis on learning rather than research, but interesting way of scoring investments based on qualitative assessments measured against expressed goals of institutional (or other) mission statements, or stakeholder requirements – a comparative approach. Assumes retrospective approach.
- **Insight Framework for Evaluating Costs and Benefits of ICL Investments in teaching and learning (2004)** – detailed companion to the above, includes breakdown of benefit types and evaluation methods
- **JISC Infonet's 'Impact Calculator'** – simple model spreadsheet, but ill-equipped to represent complex costs

# Thinking about costs

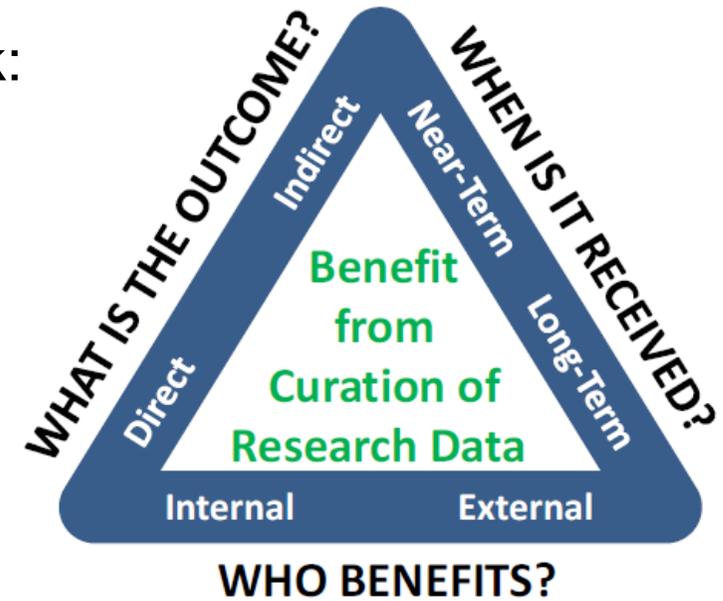
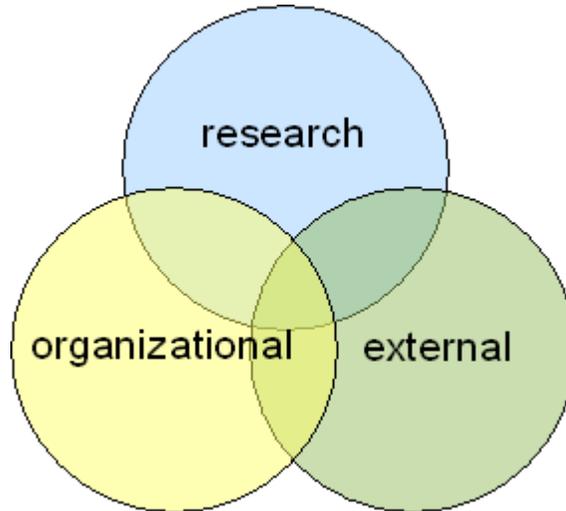
- Important to identify all costs contributing to Total Cost of Ownership
- Consider fixed, variable, and stepped variable costs
- Bear in mind some costs might become transparent that were previously hidden – which can make things seem comparatively expensive (e.g. energy consumption)
- Dis-benefits – e.g. Efficiency loss due to familiarization period
- Service-to-service costs
- Opportunity costs – what is not being done which could have been?
- Do some brainstorming

# Identified costs for VIDaaS

Ongoing bug-fixing; governance of open-source development; software updating and enhancements; supporting/adding new IaaS providers; service monitoring; publicizing service to researchers; 'helpdesk' user support; updating user documentation and training materials; provision of training to researchers; train the trainer sessions; data storage costs; server maintenance and replacement; power supply & cooling; networking; hardware and software licences; platform upgrades; system administration; data back-up; change control; user account administration

# Thinking about benefits

- Reflect upon Neil Beagrie's RDM work:
- Or the Strathclyde model:



- Consider your stakeholders
- Don't worry how you will measure benefits at first
- Again, a team brainstorming session is recommended

# Identified benefits deriving from VIDaaS

Quicker initiation of database from request to use; Lower cost to deploy database - not using own resources / local ITSS to maintain & provide service; Data can be linked to publications; Evidence that University of Oxford is delivering 'Shared Services'; Builds up data expertise amongst researchers; Economies of scale in technical support; Automated data back-up; Improved data security; Easier and cheaper collaboration between research groups and institutions; Data can be shared online more easily; Automates (some) metadata capture; Metadata can be used in a local registry of research data; Enables controlled access to data; Enables searching of data; Frees up researchers time to concentrate on research (rather than running data storage services); Data can be published, increasing impact; Improved accessibility of data; Data recovery much cheaper than otherwise; Easier migration of data from one environment to another; Continuity of storage of data; Fewer orphaned datasets; Greater efficiency (time saved) finding data; Standardization of data storage reduced overheads & complexity; Improved data integrity = improved research integrity; Improved institutional awareness of data assets; Facilitates publication of data-based research; Increases accountability of researchers (varification etc.); Enables centralised software updating; Improves researchers awareness of good data management; Standardised format facilitates data mash-ups; Facilitates long-term preservation & accessibility; Change logs identify editors, enabling misunderstandings/poor data entry practices to be ironed out; Better awareness of other datasets should reduce risk of data duplication; Shows OUCS is capable of producing state-of-the-art technology

# Measuring costs & benefits

- Talk to the right people
- “Many ICT investment benefits cannot be satisfactorily stated in monetary terms. Nonetheless they yield real business benefits. These ‘intangible’ or ‘soft’ benefits need to be taken into account in any development of the investment evaluation equation for ICT or other assets” – Dan Remenyi et al.
- Evaluation methods & measures might include
  - Reductions in staff time
  - Questionnaires & surveys
  - Focus Groups / user observation sessions
  - Take-up
  - Anecdotal user narratives
  - Compliance with mandates / standards

# What we did in Sudamih

- Defined likely benefits for both aspects of projects
  - Database as a Service
  - Research Data Management Training
- Determined which benefits we could measure and how
- Surveyed attendees at workshops and training events attracting right stakeholders
  - “Research databases in the humanities - where next” workshop
  - “Research Information Management: Organising Humanities Material” & “Research Information Management: Tools for the Humanities” face-to-face courses
- Most measurement involved staff time savings

# Financial Savings – DaaS (and for VIDaaS bid)

OXREP case study:

Estimated hypothetical research savings (on time spent working with the database) during 2010 = 21%

Estimated data hosting savings during 2010 = 37% (just central VI, not cloud hosted)

Please be aware that these numbers are estimates from just one research project. Precise savings are likely to vary significantly according to circumstances.



Comparison of estimated DaaS hosting costs:

Single physical server running 30 2GB database instances = £125

Oxford VM running on local VI with 100 2GB instances = £79

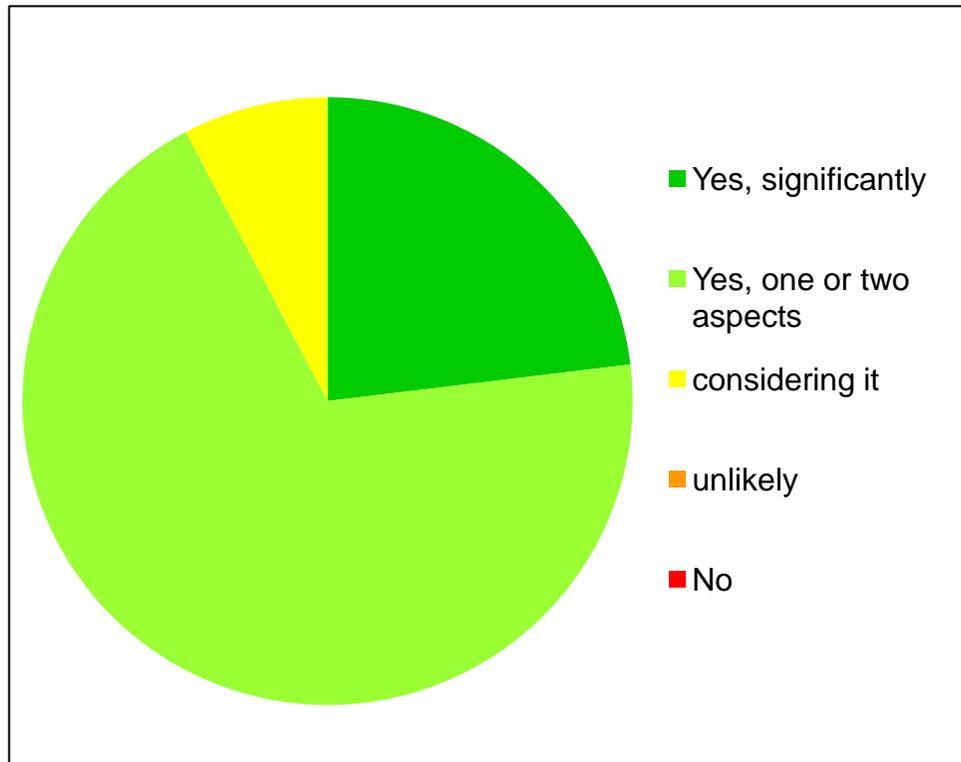
Oxford VM running on local VI with 100 8GB instances = £109

Eduserv VM running on VI with 500 8GB instances = £76-98

Amazon VM with 8GB instances = £660-744

# Response to Courses

Have you or will you change any aspects of your own information management practices as a result of the course?



- I will look at IT tools from a different perspective (how they will move my project forward, rather than how I fit my project to the IT tools)
- After the course I started to work as a 'horizontal organizer' and I feel it works much better for me. Also now I plan ahead how to get these materials organized and traceable, rather than working it out afterwards as I did before.
- I'm getting more and more organized and happy now! It changed not only my ways of working, but also my mood and my attitude

# Costs & Benefits of Training

1. Time saved by researchers by locating and retrieving relevant research notes and information more rapidly
2. Improved quality of research by locating better, more relevant research information than would otherwise be the case
3. Improved quality of research by linking materials in such a way as to highlight connections and trigger new ideas
4. Improved comprehensibility of research information and data after long time periods
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7. Reduced risk of data loss
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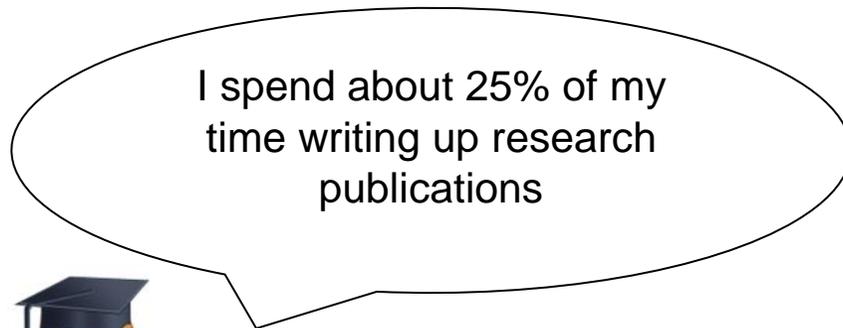
| Activity                                  | Resource  | Costs per term (to run both courses once)  |
|---|---|--|
| Update course content                     | 25 hours at £13.77  | £344.25                                    |
| OUCS Training Room hire & set-up          | 25-person capacity room for 6 hours. Not charged to ITLP-led courses. | £0 (would otherwise cost c. £180)          |
| Printing of course booklets               | 25 booklets, covered by course price.                                 | £0 (would otherwise cost c. £150)          |
| Cost of teacher (preparation)             | 6 hours at £13.77   | £83.62                                     |
| Cost of teacher (delivery)                | 6 hours at £27.54   | £165.24                                    |
| Cost of assistant (preparation & support) | 12 hours at £13.77  | £165.24                                    |
| <b>TOTAL</b>                              |   | <b>£758.35</b><br><b>(£2,275 annually)</b> |

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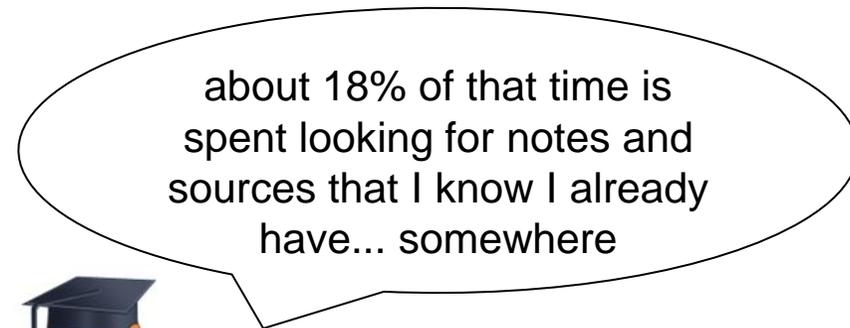
**25%**



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about 18% of that time is spent looking for notes and sources that I know I already have... somewhere

$$25\% \times 18\% = 4.5\%$$

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I'm paid roughly £44,000 each year, but in terms of FEC, I cost £110,000

**25% X 18%**  
**= 4.5%**  
**Of £110,000**  
**= £4,950 per year**



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If I attend the two training courses and, as a result, I only spend 16% of my time hunting notes & sources



**25% X 18%**  
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**Of £110,000**  
**= £4,950 per year**  
**2% of £4,950**  
**= £99**

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The costs of running the courses is recouped over the next 8 years of my employment

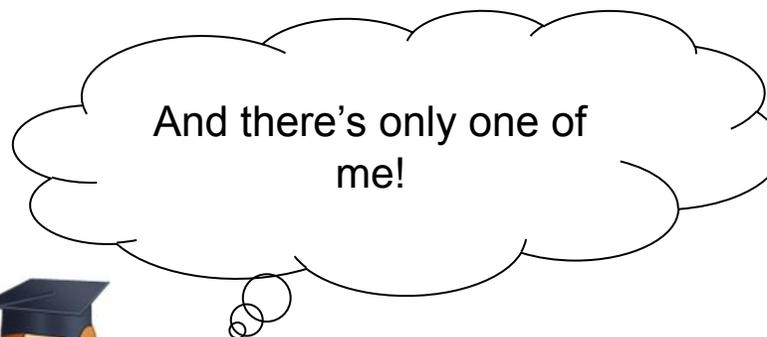


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**= £99 x 8 years = £792**

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# Contacts

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