

Virtual Infrastructure with Database as a Service (VIDaaS) Project

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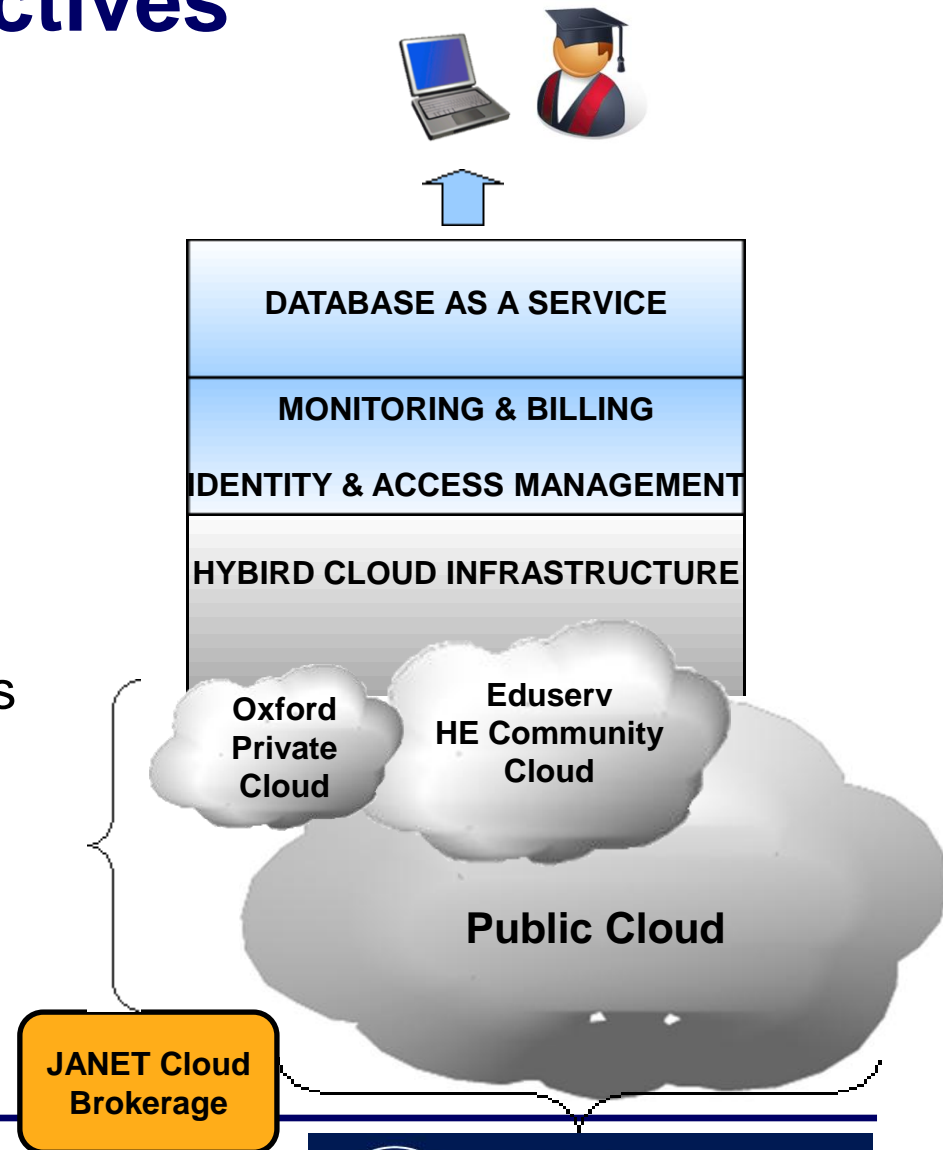
Virtual Infrastructure with
Database as a Service (VIDaaS)



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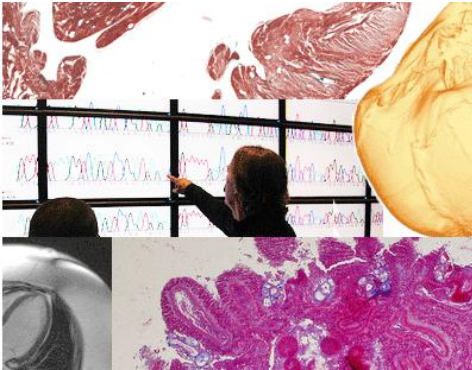
VIDaaS objectives

- Deliver costs savings / efficiencies to UK research
- Create production-ready 'Database as a Service' (DaaS)
- Create hybrid cloud infrastructure on which to host DaaS
- Enable sharing of infrastructure and services
- Provide appropriate user training and support for DaaS
- Ensure services are sustainable beyond the life-span of the project



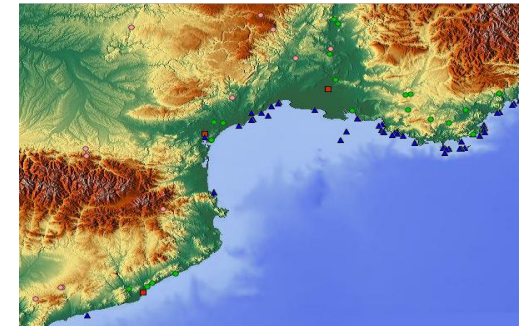
Research data infrastructure at Oxford

- Programme begun 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



Project team

Prof. Paul Jeffreys – Principal Investigator
Dr. Michael Fraser – Co-investigator
Dr. Stuart Lee – Director of OUCS
Dr. James A J Wilson – Project Manager
John Ireland – Lead Architect (DaaS)
Jon Hutchings – Lead Architect (VI)
Peter Jones – Lead Architect (infrastructure)
Asif Akram – Software Developer
Christian Fernau – Software Developer
Adrian Park – VI Specialist
Dr. Meriel Patrick - Analyst



Elena Blanco – Technical Author
Dr. Miko Flohr – Research Representative
Diane West – PA to the Director of IT

What is the DaaS?

- A web-based system that will enable researchers to quickly and intuitively
 - build a relational database from scratch, or
 - Import an existing database in common formats (such as Access)
- Generic data addition, editing, and querying interfaces
 - Research groups may, if desired, develop their own Web front-end interfaces to databases hosted by DaaS
- Databases centrally hosted, maintained, and routinely backed up
- Access controls to determine who can view or edit each database
 - Easy to share data with colleagues or even the general public
- Metadata capture to improve data rediscovery

User requirements

- Intuitive interface
- Better collaboration functions (data editing and sharing; multiple permission levels)
- Straightforward means of publishing datasets
- Automated back-up
- Ability to import and export data in various formats
- Training on principles of database design
- Cheap
- Great visualization tools [mostly out of scope]



VIDaaS enhancements

- Extended functionality beyond the humanities
- Frequent testing with 'early adopters' group
 - In exchange for 3 years hosting without charge
- Improved user interface, documentation, and support
- Enabling 'publication' of data, or sub-sets of data
 - Both dynamic and static data publishing options
- XML databases as well as relational databases



Progress

- Set up and tested VMware vCloud infrastructure at Oxford ✓
 - Tested DaaS on Colt public cloud (it works) ✓
 - Completed researcher requirements analysis ✓
 - Identified and prioritized technical requirements ✓
 - Developed online DaaS provisioning mechanism ✓
 - Agreed Service Level Description ✓
 - Started recruiting early adopters ✓
- BUT...
- Delays developing IAM and monitoring systems ✗

Delivery dates and dependencies

| Deliverable | Due Date | Dependency |
|---|---------------|------------|
| VMWare vSphere hybrid cloud in place | August 2011 | VMware |
| Non-humanities user requirements identified | August 2011 | |
| Pilot DaaS on Vmware delivered to Eduserv | October 2011 | Eduserv |
| Launch of DaaS to early adopters | November 2011 | |
| Launch of DaaS as production service within Oxford | December 2011 | |
| Launch of DaaS on Eduserv infrastructure | January 2012 | Eduserv |
| Final ROI & business case | February 2012 | |
| Functioning IAM and monitoring & accounting system in place | February 2012 | |
| All documentation and training materials delivered | March 2012 | DCC |
| Final report | March 2012 | |

Barriers to uptake

Project concerns

- Initial usability of system

Researcher concerns

- Expectations mismatch
- Lack of user control over their data

Institutional concerns

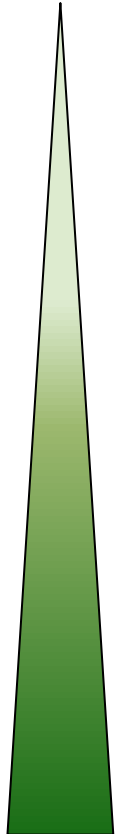
- Lack of publicity / institutional steer
- Period before ROI is achieved
- Lack of expert support

National concerns

- Unwillingness of other institutions / national bodies to offer DaaS
- Concerns about long-term sustainability
- Use of non-standard technical standards

Business models & sustainability

Economies
of scale



| Model |
|---|
| Packaged software Simplest model & necessary starting place. Operational burden on customer |
| Pre-configured software Simplifies customer installation |
| Appliance Highly portable solution with reduced burden on customers & greatly increased return on VI investment |
| Cloud SaaS No technical responsibilities for customers. Requires substantial development of self-service interface and charging mechanisms |
| National Service Maximises economies of scale. Facilitates researcher mobility. Reduces HEI autonomy. Requires establishment of governance and operational organisations |

Some basic sustainability models:

1. Each institution hosts DaaS themselves (whether on their own or national cloud infrastructure).
Institution provides user support.
An organisation 'owns' the service and coordinates software updates.
A 'service board' collectively develops software, documentation, & training.
2. As 1, but 'owner' also offers 'train the trainer'
3. 'Owner' provides full user support via central helpdesk.

Contacts

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