JISC

Project Document Cover Sheet

Project Information			
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Lead Institution	University of Oxford		
Project Director	Professor Paul Jeffreys		
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VIDaaS Project Plan

1. Background

The VIDaaS Project forms part of a programme to improve data management infrastructure at the University of Oxford. It builds upon previous projects, including an internally-funded scoping study, [1] the JISC-funded Embedding Institutional Data Services in Research (Eidcsr) Project, [2] and, most specifically, the JISC-funded Supporting Data Management Research for the Humanities (Sudamih) Project.[3]

The Sudamih Project began the process of developing a Database as a Service (DaaS) system for researchers in the Humanities. By the time the project concluded, at the end of March 2011, a pilot online DaaS was in place at Oxford which enabled users to create relational databases from scratch or import existing databases in common formats (including Microsoft Access), add and edit data, restructure the database, build forms via a drag-and-drop interface, and filter the contents of database tables. Although we did not have the time to undertake extensive user testing on the pilot software, we did have a small humanities-based testing team in place by the end of Sudamih. This pilot DaaS forms the starting point upon which the VIDaaS Project builds.

2. Aims and Objectives

The Virtual Infrastructure with Database as a Service (VIDaaS) Project aims to deliver cost savings and improve the efficiency of UK HE research through the creation of a production-ready hybrid Virtual Infrastructure (VI) hosting a 'Database as a Service' (DaaS) system. 'Hybrid' is used here to indicate both local and central VI components deploying common hypervisor technology. The hybrid 'Infrastructure as a Service' (IaaS) component provides a virtual infrastructure upon which the DaaS and other 'Software as a Service' (SaaS) components can be hosted. This involves enabling seamless capacity management and the sharing of infrastructure and services between universities and/or other academic institutions, with a HE VI based initially at Eduserv.

The hybrid VI developed by VIDaaS will be based on VMware, the market leader in virtualisation technology. A key aim of the VIDaaS project will be to understand how to deliver the necessary management capabilities (security, identity and access management, usage tracking, billing, quality of service). The project will initially implement these within a local Oxford University VI, and then extend the tools to the HE VI and beyond. The local VI will serve as a staging post for developing SaaS to operate on Eduserv's VI and will also have the potential to become a node on any distributed HE VI.

The DaaS component will be developed from the prototype created during the Sudamih Project to a full production service. Although the usability and robustness of the DaaS are the most critical aspects of the software, we will also extend functionality to meet common requirements of researchers beyond the humanities and cater for different database types besides the traditional

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[1] The scoping digital repository services for research data management project, http://www.ict.ox.ac.uk/odit/projects/digitalrepository/.
[2] The embedding institutional data curation services in research project, http://eidcsr.oucs.ox.ac.uk/.
[3] Supporting Data Management Infrastructure for the Humanities, http://sudamih.oucs.ox.ac.uk/.

relational database. From the user perspective, the DaaS will offer an intuitive means of creating, editing, and querying databases through a simple Web interface. The DaaS will also be extended from the prototype to enable it to run in a hybrid virtualized environment.

To enable the DaaS to be hosted in the cloud, VIDaaS will implement a standards-based federated identity and access management (IAM) solution and provide processes and solutions for billing and accounting. Researcher training will be a significant focus of the project, with user support materials, courses, and documentation developed in close collaboration with the DCC. Oxford will also collaborate with Eduserv to develop the hybrid VI, and with JANET to investigate hosting DaaS on private VIs. A full Return on Investment will be evaluated, and a Business Plan will be developed in collaboration with the Digital Curation Centre to manage cost recovery beyond the life of the project.

3. Overall Approach

VIDaaS (Virtual Infrastructure with Database as a Service) is essentially a project of two halves. The 'DaaS' part will develop software that enables people to build, edit, search, and share databases online; the 'VI' part involves the development of an infrastructure enabling the DaaS to function within a cloud computing environment.

The DaaS aspect of the project is very user-focused. Not only will the software development involve user testing and feedback at every stage, but the Project will also work with researchers to develop appropriate training and documentation to support their use of the system. The VI aspect of the Project is concerned rather with behind-the-scenes functionality: enabling administrators to run the DaaS, control access to it, and monitor usage in order to charge users. It is considered vital that Oxford develops its own relatively small-scale VI that can function as a staging post to the wider cloud, both for testing purposes and to assure researchers with sensitive research data that their data is being kept within the University and not prematurely exposed to potential risks in the public cloud.
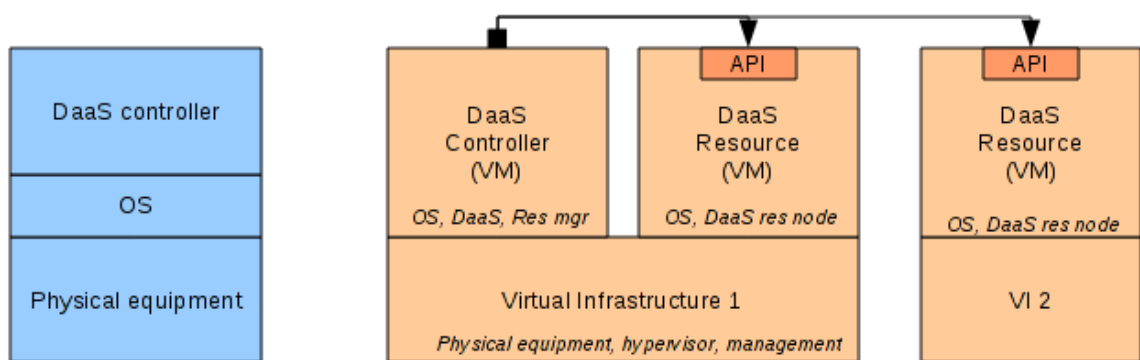

Figure 1. Sudamih DaaS architecture   **Figure 2. Proposed DaaS architecture**

The outline architecture envisaged for the original implementation of the DaaS in the JISC funded Sudamih Project is shown in figure 1. In this model, the DaaS controller coordinates the use of dedicated physical equipment, and performs administrative operations such as database and Web

interface creation, schema upload, and initial data conversion. Users interact with the DaaS controller through a Web interface, and the DaaS controller communicates with underlying database and web providers using existing application management interfaces on the physical servers held at the University of Oxford. Figure 2 illustrates the enhanced architecture that VIDaaS proposes to develop. In this model the system comprises a cluster of virtual machines instantiated from two ready-to-run virtual machine images. The DaaS controller is extended to include resource management capabilities necessary to coordinate the dynamic acquisition, management, and release of computation and storage resources. Individual resource nodes can be run on any number of virtual infrastructures, which may be sourced from different suppliers, offering a standardised API (integration layer) to the DaaS controller. In the case of traditional virtual infrastructure being used (virtual machine running on a hypervisor) the API can be presented directly by the virtual machine(s). Integration with cloud services (e.g. Amazon EC2, Microsoft Azure, or private Eucalyptus-based clouds) is also possible through the use of a lightweight adapter which provides linkage between the requisite cloud computing interface and the resource provider API. This enables immediate support for understood and mature virtual infrastructure, but also provides a high degree of flexibility to adapt smoothly as cloud computing matures.

VIDaaS recognizes the requirement of researchers that their data be held securely over the long-term, for preservation, access, and accurate citation. It is committed, therefore, to ensuring that the services and software produced during the Project can be sustained beyond it. The Project will work with Eduserv to ensure that the infrastructure can be provided in a flexible cloud environment, and with the Digital Curation Centre to ensure that user support can continue to be provided in a cost-effective manner. We will liaise with OSS Watch and the Software Sustainability Institute to learn how the software outputs (which will all be available under an open source licence) can be preserved and how a developer community can be encouraged to continue development beyond the Project.

The VIDaaS Project is funded by HEFCE and JISC under the UMF Shared Services and Cloud Computing Programme. One of the central demands of this Programme is that each project must clearly demonstrate the cost savings that they will bring to UK Higher Education. As such, VIDaaS will be paying close attention to the ongoing costs of service delivery at various levels, and working with researchers to arrive at better estimates of likely uptake and efficiency savings. This will demand a collaborative and coordinated approach between the project team, the user community, the organizations expected to support the project outputs after the end of the project, and the wider stakeholder community.

4. Project Outputs

The principle outputs of the VIDaaS Project are as follows:

- Virtual Infrastructure (VI) based at the University of Oxford upon which Software as a Service (SaaS) can be hosted.

- Database as a Service (DaaS) system enabling researchers and the wider public to create (and import) databases, collaboratively add and edit data, perform queries, and format results so they may be further analysed or displayed in useful formats.
- VI Shared Services that will enable SaaS (such as the DaaS) to run on the VI. This will include tools for:
  - Capacity management
  - Identity and access management
  - Monitoring usage, accounting, and billing

Reports and intellectual outputs will include:

- A Project Website and Blog, hosting news of findings and developments and acting as a publicly-accessible repository of project reports and other outputs
- A literature review summarizing the current state of research into academics' use of research databases
- A brief user requirements report
- A prioritized requirements list that will help the software developers focus on key user requirements
- A Service Level Description (SLD) relating to the DaaS
- A DaaS user manual, integrated with the DaaS software
- Documented DaaS source code available under an open licence and available from a publicly-accessible open source repository
- A DaaS installation and set-up guide
- Training materials relating to the use of the DaaS, aimed at academic researchers
- An updated Return On Investment (ROI)
- A Business Plan for the operation of the DaaS beyond the lifespan of the VIDaaS Project
- A final Project Report summarizing the achievements of the project and lessons learnt, with recommendations for future developments

5. Project Outcomes

The VIDaaS Project has the potential to significantly affect academic research processes. The DaaS facilitates collaboration between researchers working on small-scale data-driven research whilst also enabling that research to be quickly and easily opened up (if so desired) to a wider public. By encouraging the use of a centrally-hosted tool, data can be stored more securely (via integration with institutional back-up services), preserved and curated more reliably, and documented in such a way as to aid rediscovery, all at a significantly lower unit cost than is generally the case at present. Besides the anticipated reduction in costs, adopting the DaaS will enable universities to keep better track of their data assets and potentially simplify technical support. The standardizing nature of the DaaS will encourage researchers to make their data more mutually comprehensible, help to render it interoperable, and facilitate long term re-use, thereby improving the whole research data curation life-cycle and helping to maximize the value of the data.

The VI component is both necessary to enable the benefits of the DaaS and also to achieve the efficiency savings that the better capacity management of cloud computing promises. An extensible

infrastructure that can not only accurately track and cost resource usage but which can also 'burst out' into the wider private or public cloud infrastructure can offer very significant economies of scale over the traditional fixed infrastructure model in which a set of dedicated servers run a particular web service, with all the scalability and separate upgrade issues that model entails.

The anticipated outcomes of the VIDaaS Project are, therefore, that the processes of research are improved, the research data created can be better managed, and the costs involved in this are minimized.

6. Stakeholder Analysis

Stakeholder	Stake	Import-ance	Communications Strategy
Academic researchers at UK HE institutions	As the ultimate users of the DaaS, academic researchers are a key stakeholder. The VI-hosted DaaS will improve research practice and increase the impact and value of research data, by providing mechanisms for data management, collaboration, discovery, and dissemination.	High	Submit posters/presentations to appropriate conferences. Investigate possibilities for disseminating information about the DaaS in media likely to reach researchers – e.g. journals, THES, etc. Towards the end of the project, investigate the feasibility of publicizing the DaaS via a mass mailing to UK university admin/research support/IT departments. Press releases to scholarly organizations.
JISC	VIDaaS will act as an exemplar shared services/cloud project. The good management and curation of research data is a JISC priority, and the DaaS is recognized as a tool that is likely to be of broad application in raising standards of research data management.	High	Steering Group includes Simon Hodson as JISC representative. Progress reports as per project plan. Participate in JISC events as appropriate.
University of Oxford	The University considers the project an important component in its strategy for the cost-effective and sustainable management of research data. The project contributes to the provision of shared infrastructure services to the collegiate University and beyond.	High	Progress reports as per project plan. Recruit test users and participants for user-observation workshop. Include InfoDev (Oxford University Computing Services' Web development team) and ITLP (Oxford University Computing Services' IT Learning Programme) on stakeholder contact list. Explore the possibility of disseminating news about key project developments via Digital.humanities@Oxford. Investigate divisional/departmental channels for reaching researchers, and explore feasibility of organizing one or more seminars where DaaS trialists share their experiences with fellow researchers.

Digital Curation Centre (DCC)	The development of a national digital curation infrastructure is of one of the central challenges of the DCC. Their interest in the VIDaaS project will be particularly significant, as they will be the 'point of provision' for DaaS for the HE community after the project completes, and will work with Oxford to deliver research data and DaaS training.	High	Steering Group includes Kevin Ashley as DCC representative. Provide DCC with regular (monthly?) updates about project progress, for dissemination through DCC website and DPC/DCC What's New monthly newsletter.
Eduserv	Eduserv will host the DaaS on their own virtual infrastructure and take on the responsibility of continue provision of the service after the end of the project	High	Include Andy Powell on the Steering Group. Technical development work to be closely coordinated with Eduserv staff. Include on stakeholder contact list
Humanities Division Research Services	The Humanities Division would like to be able to recommend the DaaS to researchers with database projects as a matter of course - particularly as a means of establishing clear cost information about the project and to demonstrate data management planning.	Medium	Steering Group includes Humanities Division Assistant Registrar (Research). Ensure Assistant Registrar is also kept updated about key developments outside Steering Group meetings – include on stakeholder contact list.
Oxford Roman Economy Project (OXREP)	The OXREP Project has a particular interest in developing a user-friendly system to expose the data in their complex relational database via a publicly-accessible website	Medium	Work closely with OXREP as a test case. Although different researchers will want different things from the DaaS, OXREP is a fairly typical humanities database in terms of requirements, albeit more complicated than many technically. Miko Flohr, the assistant director of the project should be regarded as a 'business ambassador' and be considered a part of the Project Team.
Higher Education Funding Council for England (HEFCE)	At a national governmental level, the VIDaaS project is one element in a programme of university funding ultimately intended to bring cost efficiency savings to the HE sector. HEFCE will see evidence of cost savings and efficiencies as a result of the project.	Medium	Include in stakeholder contact list.
Other projects funded by the Universities Modernization Fund	As the other projects funded by the UMF will all be aiming to create a national infrastructure, it is important that the projects work together to ensure compatibility and avoid unnecessary duplication of activity.	Medium	Include in stakeholder contact list.
Universities and Colleges Information Systems Association (UCISA)	UCISA represents UK HE in the provision and development of academic, management and administrative information systems. They have a particular interest in shared IT services in HE and should find the hybrid VI aspect of the project attractive.	Medium	Steering Group includes UCISA representative. Include in stakeholder contact list.
Research data management community	Other groups working in the field of research data management (e.g. JISC MRD projects, information professionals working at other HEIs, etc) may have an interest in keeping abreast of project developments – particularly those who work with researchers who may wish to use the service.	Medium	Include JISC data management mailing lists (jiscmrd@jiscmail.ac.uk and research-dataman@jiscmail.ac.uk) on stakeholder contact list. As mentioned above, VIDaaS news/events will also be publicized via the DCC website and newsletter.

Open-source software development community	Ultimately the continued development of the DaaS is likely to depend upon interest from the open-source software development community.	Medium	Develop DaaS as open source software in a public-facing OSS code repository, with appropriate tools, governance, and documentation. Set up a developer's mailing list.
Research funding agencies	Given that the DaaS and associated infrastructure will provide a useful service for researchers in terms of managing their data and opening it up to other researchers in the future, the funding agencies may wish to recommend its use in future funding bids.	Low	Include in stakeholder contact list

7. Risk Analysis

The VIDaaS Project Risk Register, as of 2nd June 2011, is as follows:

Category	Risk	Proba-bility	Impact	Score	Mitigation
Organization	Researchers reluctant to commit time to working with Project	4	4	16	Try to get researchers to use the DaaS system as their primary working database. Communicate regularly and clearly. Ensure issues and request are quickly and accurately recorded on the issues log and clear explanations are given for priorities being as they are. Establish expectations from first contact. Come up with a good spiel explaining the advantages of the DaaS system, to help 'sell' it to testers. Organise a DaaS introductory 'hands-on' workshop to help recruit testers. Use the Research Skills Toolkit introductory sessions to introduce DaaS and recruit testers. Provide early adopters with a cost-free period of use. Ensure we can guarantee that no data will be lost during the testing period. Request recommendations for system testers from the divisional research services.
Organization	Lack of a sustainable business model.	2	4	8	Work within the Programme, taking advantage of expertise and support materials developed by JISC to ensure that all aspects of costs/benefits are considered.
Technical	DaaS does not meet accessibility standards	4	2	8	Work with InfoDev team to ensure that accessibility requirements are understood and factored into development work as far as is possible.
Staffing	Loss of key staff before end of the project.	2	3	6	Ensure regular communication between all project staff, so that processes and progress are clearly understood by the team, and staff may be redeployed to cover different work packages.

Organization	Big Science researchers misconstrue DaaS as being a tool which will or should serve their requirements	3	2	6	Clearly articulate the intended uses and users of the DaaS during presentations and in documentation. Emphasize that the system is not intended for heavy computational work or TB-scale storage.
Organization	Expectations mismatch between project and wider research community.	2	3	6	Ensure cross-disciplinary and cross-institutional academic representation on Steering Group. Ensure requirements gathering is broad and feeds through to technical development. Fully involve researchers in trialling software from an early stage.
Technical	Requirements of researchers outside humanities disciplines are very different, or demanding to meet during timescale.	2	3	6	Ensure speedy transmission of requirements to technical developers so that they may be integrated. Impose boundaries on scope of technical implementation if required to ensure completion of productionization phase within time-span.
Staffing	Failure to allocate appropriate staff for the project.	1	4	4	The project will use existing staff, either with experience of working on the Sudamih Project or on infrastructure development projects. Contractors will be used to backfill allocated staff or to assist with well-defined WPs.
Organization	Estimations of time required to complete technical work packages are inaccurate.	2	2	4	Allocated staff are familiar with the nature and scale of this type of project. Progress on each WP, and resource allocation will be closely monitored.
Organization	Outputs are difficult or demanding to support.	2	2	4	Ensure that DCC and Eduserv are closely engaged with technical development and support WPs.
Technical	Development of large-scale online database provisioning system proves to be too complex.	1	4	4	Ensure members of staff have requisite technical skills. Build upon existing infrastructure and DaaS development work, using same developers.
Organization	Lack of coordination between project stakeholders.	1	3	3	Ensure clear reporting and communication lines; take advantage of existing institutional communication structures.

8. Standards

Compatibility between the outputs of the VIDaaS Project and existing infrastructure used in the UK HE sector is an important goal of the project. It will be ensured, therefore, that the infrastructural elements of development adhere to existing standards, and that the layered approach to the use of open standards described in the JISC Standards catalogue is used. The extended DaaS will be built from, and released as, open source components, in order to enable other institutions to contribute and further develop the software to meet changing requirements in the future.

9. Technical Development

The technical side of VIDaaS consists of three mutually dependent aspects of work: the VI; the DaaS; and the monitoring and management tools that enable the DaaS to function on the VI. Together

these will form a single integrated service. Each aspect will be developed using the methodology deemed most appropriate by the Technical Architect accountable for that particular part. The VI is heavily hardware dependent in its early stages, during which the product and service offerings of competing vendors will be assessed and purchased, followed later by a clearly defined resource managing and monitoring layer (WP3). The development of the shared services layer (WP4) will consist of consecutive evaluation, design, implementation, and testing phases. The extension and productionization of the DaaS (WPs 6 & 7), by contrast, will take a more agile and iterative approach, involving an end user testing group as much as their time allows to re-assess and prioritize development throughout the project and to ensure that the resultant software is something that they would actually want to use in practice. As such, the timetable for this work package may be outlined but is difficult to define with great precision in advance.

Each of the three aspects of technical development work will be managed by a different Technical Architect, with the respective lead and the developers working on that aspect empowered to take technical decisions themselves. The Project Manager will manage by exception and not interfere in technical decisions except to ensure that there are no issues with dependencies in one work package delaying progress in another.

10. Intellectual Property Rights

Any IPR resulting from this project will be owned by HEFCE. HEFCE grants to the University a non-exclusive, royalty free licence to use the Arising IP in accordance with its normal academic teaching and research purposes.

It should be noted that the DaaS is built out of open source software components. Whilst HEFCE will 'own' the IPR arising from the VIDaaS project they may still be restricted in how they distribute the resulting software (should they choose to do so), since it will be a combination of a) pre-existing, third-party open-source software; b) Oxford-owned software developed through the Sudamih project (but released by Oxford under an appropriate OSS license); c) HEFCE-owned code developed through VIDaaS.

The project is maintaining an audit of software licences attached to code used in the DaaS to ensure legal compliance is maintained when licensing software outputs.

Project Resources

11. Project Partners

VIDaaS will work closely with Eduserv to ensure that, in the first instance, the DaaS is portable between infrastructures and can be run from a VI other than Oxford's own. Following that, VIDaaS will work Eduserv to explore the possibility of seamless capacity management between the local VI and the HE VI they are developing. Eduserv will be expected to offer the DaaS to the UK Higher Education community by the end of the project. The VIDaaS contact at Eduserv will be Andy Powell (andy.powell@eduserv.org.uk).

VIDaaS will also be working closely with the Digital Curation Centre (DCC) to ensure that they are able to support DaaS user beyond the project. The DCC will be involved in the researcher training and development of training materials (WP11), and to a lesser extent in the development of the user documentation and the communication and dissemination work. The VIDaaS contact at the DCC will be Joy Davidson (joy.davidson@glasgow.ac.uk).

The experiences and future service estimates of both Eduserv and the DCC will feed in to the cost models and ROI work of the project.

Whilst they are not formally budgeted project partners, VIDaaS will seek guidance on open source software issues and establishing an open source development community from OSS-Watch, based at Oxford University Computing Services (OUCS), and liaise with the OUCS Infodev team for advice on software accessibility and usability.

12. Project Management

The VIDaaS Project is led by the Director of IT at the University of Oxford and the Head of the Infrastructure Systems and Services Group at Oxford University Computing Services. It is supported by a Steering Group comprising internal and external representatives from the key stakeholder communities. A smaller Project Working Group has been established in order to help facilitate an agile approach to the development of the project outputs. The group comprises members of the Project Team and a representative of the user community.

The Steering Group will meet face-to-face twice during the course of the Project in order to set strategic direction and assist the prioritization and focus of activities. Additionally, conference calls may be used to reach a quick decision on any particularly pressing matters or when it is inconvenient for all members to meet in person.

VIDaaS Steering Group	
Prof. David Shepherd	Chair
Prof. Paul W. Jeffreys	Principal Investigator
Dr. Michael Fraser	Co-investigator
Prof. Andrew Wilson	Oxford Institute of Archaeology
Dr. Andrew Fairweather-Tall	Assistant Registrar (Research), Humanities Division
Kevin Ashley	Director, Digital Curation Centre
Dr. Simon Hodson	JISC Programme Manager
Andy Powell	Research Programme Director, Eduserv
Peter Tinson	UCISA
Dr. James A. J. Wilson (in attendance)	Project Manager

The Project Working Group will meet monthly to discuss progress and ensure agreement regarding the more day-to-day matters of the Project, for which Steering Group involvement would not be necessary.

VIDaaS Project Working Group		
Prof. Paul W. Jeffreys	Principal Investigator; Director of IT	paul.jeffreys@odit.ox.ac.uk Tel: 01865 273229
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The Project Manager is responsible for the day-to-day coordination of the Project, including managing the working environment, monitoring progress, and communicating with the user group and other stakeholders. He is also responsible for developing the business case, and is assigned 100% to the Project. The Technical Architects, each of whom is assigned to the Project on a 0.33 FTE basis, are responsible for the delivery of the technical solution. Along with the software developers and specialists assigned to each aspect of development, the Technical Architects are empowered to

make technical decisions without requiring prior approval from the Project Manager, in order to minimize delays and encourage a more agile approach to development. The Analysts (one of whom works as a consultant and is not represented on the PWG) are responsible for requirements gathering, implementing training, and aspects of communication and dissemination. The Technical Author is responsible for working with the development team to produce end-user documentation and help files. Overall direction is provided by the Principal Investigator and co-director, with senior representation on the PWG also provided by the Director of the University of Oxford Computing Services. Miko Flohr, as the user representative on the Project Working Group, is responsible for ensuring that the user perspective is borne in mind at all times during planning and discussion.

The Project is also creating a User Testing Group who will test and provide feedback on the DaaS as it is extended and further developed. This will consist of ten to twelve members representing different academic subjects, each of whom will ultimately intend to use the DaaS in different research projects.

13. Programme Support

The VIDaaS Project would benefit from programme support in the following areas:

- Alerting and introducing the Project to other relevant activities.
- Informing the Project of recent developments relating to the costs and benefits analysis work being undertaken by JISC
- Promotion and dissemination activities

14. Budget

See *Appendix A*.

Detailed Project Planning

15. Workpackages

See *Appendix B*.

16. Evaluation Plan

Timing	Factor to Evaluate	Questions to Address	Method(s)	Measure of Success
Throughout	Aims and objectives	Are project priorities and scheduling configured to address the ultimate aims and objectives?	Steering Group; User requirements report	Agreement on priority work to be undertaken within time remaining

Throughout	Project progress and adherence to timetables	Is the project going to be able to deliver the outputs it has promised at an acceptable quality level in the remaining time available and within budget	Project Working Group; Steering Group; OUCS monthly reports	Milestones being met and work packages proceeding as scheduled
May	Communications plan	Does the communications plan propose effective and realistic means for disseminating information about the project and its outputs to key stakeholders?	Approval by DCC & Project Working Group	High levels of awareness of project amongst identified stakeholders
June / July 2011	DaaS system created during Sudamih Project	How should the pilot DaaS be developed further to better meet user needs?	User testing; requirements meeting with user representatives	Acceptance of existing functionality with useful suggestions for improvements during VIDaaS
July 2011	Basic Virtual Infrastructure (VI)	Is the Oxford local VI performing as expected?	User acceptance testing	VI is assessed to be performing as anticipated.
August 2011 – March 2012	DaaS functionality	Can the DaaS do what researchers would like it to do? Does it do it well enough that people will choose to use it?	User testing; user observation workshop	Researchers wish to use the DaaS for their own research
September 2011	VI-compatible DaaS	Does the DaaS actually run on the local VI?	User acceptance testing	DaaS can be installed to run on VI without difficulty and all features are functional
September 2011	Updated ROI	Does the improved ROI make a strong case for future ROI, supported by evidence?	Steering Group; JISC/HEFCE approval	Signed off by Steering Group; accepted by JISC/HEFCE
September 2011 – January 2012	DaaS-related courses	Do the course materials meet the expectations and perceived needs of researchers working with data?	Feedback form from course attendants	High satisfactions levels amongst attendees; uptake of DaaS as a result of courses; DCC able to take up and maintain training
October 2011	VI resource management and monitoring	Are the essential VI tools functioning as expected?	User acceptance testing	VI tools assessed to be performing as anticipated.
October 2011	Identity & access management tools	Are the IAM tools functioning as expected?	User acceptance testing	IAM tools assessed to be performing as anticipated
October 2011	Accounting & billing tools	Are the accounting & billing tools functioning as expected?	User acceptance testing	Accounting & billing tools assessed to be performing as anticipated

November 2011	Back-up and disaster recovery	Are user data secure enough that a service level description can be agreed that users will have enough trust in to use the system?	System testing; Service Level Description (SLD)	Tests meet level required by SLD
November 2011	DaaS works on external cloud infrastructures	Does the DaaS actually run on Eduserv's VI?	User acceptance testing	DaaS can be installed to run on VI without difficulty and all features are functional
January 2012	DaaS support and documentation	Is the documentation clear and comprehensible to users? Does it cover what they need?	Feedback from testing group	Meets user expectations; DCC happy to adopt responsibility
February 2012	Final Business Case and ROI	Does the Business Case provide a full description of how the services and software produced by VIDaaS are to be continued and the costs and benefits anticipated from so doing?	Steering Group; JISC / HEFCE / Eduserv / JANET DCC approval	The DaaS service and supporting materials continue to be provided by partners beyond the lifetime of the VIDaaS Project itself
March 2011	JISC Final Report	Does the report offer a full, detailed, and clear account of the project, its outputs and its finding? Does it offer useful conclusions and recommendations that can inform future JISC decision-making?	JISC approval	Approval and acceptance by JISC

17. Quality Plan

Timing	Quality criteria	QA method(s)	Evidence of compliance	Quality responsibilities
Output	Project website, blog and bookmarks			
May 2011 (& ongoing)	Adherence to standards and specifications, well written content	Follows W3C standards and is reviewed by Project Working Group	Validation checks are passed.	Project Manager, Project Working Group
Output	Database as a Service (DaaS) system			
June 2011 – March 2012	DaaS provides a stable and secure services that meets users' functionality requirements	Use of user testing group throughout software development. Issues prioritized and tracked via a public-facing issue & bug tracker	User adoption of DaaS; high-priority issues dealt with by end of project	Technical Architect; Project Manager
Output	Virtual Infrastructure (VI) based at the University of Oxford upon which Software as a Service (SaaS) can be hosted			

July 2011 – October 2011	Robust system capable of hosting SaaS such as the DaaS	User acceptance testing	VI passes testing procedure	Technical Architect
Output	User Requirements Report & Prioritized Requirements List			
August 2011	Report and list accurately reflect user requirements	Interviews across all academic divisions, followed up by broader survey	Agreement of priorities by Steering Group; consultation with existing testing group	Project Manager
Output	Training Materials			
September 2011 – January 2012	Training materials are clear and comprehensible, and users feel that they have improved their ability to use the DaaS in their research	Training feedback surveys	Positive response to training surveys	Project Manager
Output	VI Shared Services that will enable SaaS (such as the DaaS) to run on the VI			
October 2011	DaaS & VI tools can accurately measure usage and allow access to data only to those with access rights	User acceptance testing	System correctly tracks usage and allows access correctly	Technical Architect
Output	DaaS User Manual			
January 2012	Documentation for users is clear, comprehensive, and addresses needs	Involve user testing group at all stages of development	Approval of user testing group	Technical Author
Output	Project workshop			
January 2012	Workshop is well attended by stakeholders, who learn more about the DaaS and intend to try using it for their own research	Workshop attendance and feedback forms	Positive feedback from attendees	Project Manager
Output	Final Business Case			
February 2012	Business case is clear about anticipated costs and benefits and clearly explains next steps and future responsibilities	Involve external expertise in costs and benefits; use existing tools where available	Approval by Steering Group and DCC	Project Manager
Output	Publications & Presentations			
Throughout	Articles published in peer-reviewed journals and papers/posters accepted at relevant conferences and workshops	Review by Project Working Group. Acceptance by peer-review panels	Acceptance of papers and presentations	Project Manager and Project Working Group

18. Dissemination Plan

The dissemination and communication plan consists of the following broad areas and associated activities:

Project Website

- Update as appropriate with information about outputs, details of project events, etc. (throughout project)

Project Blog

- Post blogging schedule (at least two posts per month) on SharePoint site, and invite project team members to sign up for slots (by June 2011)
    - Send out monthly reminders asking project team members to fill remaining slots (particularly if they will be attending a conference or workshop, or expect to reach a significant milestone in the near future) (throughout project)
    - Project team members contribute blog posts as agreed (throughout project)

Publicizing DaaS/VIDaaS within Oxford

- Recruit group of test users for DaaS (core group in place by July 2011, additional recruitment at start of 2011/2012 academic year)
- Keep ITLP and InfoDev team informed of progress; ask them to direct people the DaaS where appropriate (throughout project)
- Publicize DaaS-related training materials via ITLP and other appropriate routes (throughout project)
- Stage a hands-on introductory DaaS workshop to introduce researchers to the system and identify early adopters (September/October 2011)
- Use ITLP's Research Skills Toolkit introductory sessions to explain DaaS and acquire potential recruits
- Organize a DaaS user-observation workshop to gain feedback (November/December 2011)
- Investigate divisional/departmental channels for reaching researchers (by December 2011)
- Explore feasibility of organizing one or more seminars where DaaS trialists share their experiences with fellow researchers (January/February 2012)

Publicizing DaaS/VIDaaS beyond Oxford

- Participate in JISC events as appropriate (throughout project)
- Provide regular updates to the DCC to ensure they remain informed about project progress (throughout project)
- Disseminate VIDaaS news and events via DCC website (http://www.dcc.ac.uk/news) (throughout project)
    - Disseminate news on VIDaaS and VIDaaS training events via the DPC/DCC What's New monthly newsletter (http://www.dpconline.org/newsroom/whats-new) (throughout project)
    - Provide access to VIDaaS and related guidance and support materials via DCC website (http://www.dcc.ac.uk/resources/tools-and-applications) (as available – complete by March 2012)
    - Liaise with DCC to plan for handover of DaaS service and training (February/March 2012)

- Establish contact with other UMF-funded projects and liaise with them as appropriate (throughout project)
- Identify key stakeholder groups/organizations and compile contact list (by May 2011)
- Use list to circulate news of significant project developments (throughout project)
    - Circulate quarterly key points bulletin (brief overview of project progress and details of where to find further information) to stakeholder groups not receiving other formal updates (e.g. other UMF projects, UCISA, funding agencies) (June 2011, September 2011, December 2011, March 2012)
- Organize and stage workshop for project stakeholders (January 2012)

Publications and Presentations

- Compile list of relevant conferences and other events (by June 2011; update throughout project)
- Submit presentations/posters as appropriate (throughout project)
- Make literature review results available via Zotero/Mendeley (by September 2011)
- Submit article about findings of requirements gathering to Information Research (by October 2011)
- Investigate possibilities for disseminating information about the DaaS in media likely to reach researchers (by December 2011). Possible channels include:
    - Submission of one or more articles about the DaaS to HEA Subject Centre journals or other suitable publications (early 2012)
    - Press releases to scholarly organizations (early 2012)

19. Exit and Sustainability Plans

Project Outputs	Action for Take-up & Embedding	Action for Exit
DaaS software	The source code for the DaaS software will be available from a public-facing open source code repository (Google Code) from near the beginning of the project to provide the opportunity to grow a developer community around it. We will be taking advice from OSS Watch as to how best to accomplish this.	Document code appropriately to enable future development. Seek advice from the Software Sustainability Institute before end of project.
DaaS service	Test and embed DaaS service on Eduserv's VI to ensure compatibility with external cloud services. Build user community within Oxford via workshop and dissemination activities.	Ensure users of service can continue to be supported by the DCC.

Oxford Virtual Infrastructure, IAM, and monitoring tools	Thoroughly test the performance and reliability of the VI hosting the DaaS.	Investigate means by which the VI can be expanded into other VIs, including commercial cloud services (with the assistance of JANET).
DaaS documentation	Test thoroughly with DaaS user group to ensure it is fit for purpose. Integrate user help within the DaaS software itself.	Ensure DCC has rights and ability to update and support documentation for future users.
DaaS training materials	Test thoroughly and update after trialling. Provide step-by-step instructions on how to achieve particular research aims using the DaaS.	Ensure DCC has rights and ability to update and support training for future users.
All reports including requirements analysis, ROI and business plans, progress, evaluation, and final reports	Deliver to appropriate individuals and deposit copies with the Oxford Research Archive (ORA).	Ongoing preservation and maintenance for ORA.
Business plan	The Business Model is to be developed specifically to define levels of ongoing support required to extract maximum value from the DaaS system. It will assume both continued hosting of the DaaS and user support from the DCC.	Ensure with all interested parties that the Business Plan describes actions that can in reality be undertaken and maintained at a described cost.
Project website and blog	Ensure relevant material and news is added to website and blog as the project progresses. Enable interested parties to embed the blog in their own websites via RSS feeds. Encourage links with and from other relevant websites.	Ensure website is up-to-date with all relevant public reports and presentations. The website will be preserved by the University of Oxford beyond the lifetime of the Project for a minimum of 3 years.
Curated research data generated by researchers	The project must assure researchers that data placed in the DaaS will continue to remain available and secure as well as being retrievable at any time.	Ensure that data within the system is preserved and remains accessible.

Appendices

Appendix A. Project Budget

(Omitted from this version of file)

Appendix B. Workpackages

WORKPACKAGES	Apr 2011	May 2011	June 2011	July 2011	Aug 2011	Sept 2011	Oct 2011	Nov 2011	Dec 2011	Jan 2012	Feb 2012	Mar 2012
1: Project Initiation	▓	▓	▓									
2: Project Management	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓
3: Development of Production VI		←—— a ——→	← b ——————→									
4: Shared Services		←———————— a ————————→ b										
5: Requirements and Analysis		▓	▓	▓	▓							
6: DaaS Productionization		▓	▓	▓	▓	▓	▓	▓	▓			
7: DaaS Expansion of Functionality		▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓
8: DaaS Service Design and Initiation			▓	▓	▓	▓	▓	▓	▓	▓	▓	
9: Delivery of DaaS to External Vis			▓	▓	▓	▓	▓	▓	▓	▓	▓	
10: Documentation and Support					▓	▓	▓	▓	▓	▓	▓	▓
11: Data Management Training					▓	▓	▓	▓	▓	▓	▓	▓
12: Cost models and Cost/Benefits Analysis					▓	▓	▓	▓	▓	▓	▓	▓
13: Communication and Dissemination	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓
14: User Acceptance Testing			▓	▓	▓	▓	▓	▓	▓	▓	▓	

Project start date: *1 April 2011*

Project completion date: *31 March 2012*

Duration: 12 months

Project Acronym: VIDaaS
Version: 1.0
Contact: James A J Wilson
Date: 22/07/2011

Work Package and Activity	Earliest Start Date	Latest Completion Date	Outputs	Milestone	Responsibility
WORKPACKAGE 1: Project Initiation <u>Objective</u>: **To plan project and establish working environment and dissemination tools**					
1. Establish project working environment, including management tools	01/04/2011	29/04/2011	Sharepoint environment; email lists		JAJW
2. Build and publish project website & blog	01/04/2011	29/04/2011	Project website; project blog	X	JAJW
3. Undertake comprehensive stakeholder and risk analysis	25/04/2011	13/05/2011	Risk register; stakeholder analysis; (feeds into Project Plan)		JAJW
4. Produce detailed project plan	02/05/2011	03/06/2011	Complete draft Project Plan	X	JAJW
5. Complete secondment arrangements for staff not already assigned at beginning of project	18/04/2011	10/06/2011	All project staff in place		MF / PJ
WORKPACKAGE 2: Project Management <u>Objective</u>: **Ensure timely and efficient delivery of project deliverables, update plans and write regular progress reports; manage finances and resource allocation**					
6. Coordinate work, liaise with stakeholders, monitor progress		Throughout			JAJW
7. Write monthly OUCS Project Progress Reports		Monthly	OUCS Project Reports		JAJW
8. Hold monthly meetings of the Project Working Group		Monthly	Actions and Decisions Arising Reports		DW
9. Write termly Oxford PICT Reports		Quarterly	PICT Reports		JAJW
10. Write two JISC Progress Reports		July & December	Two formal JISC Reports		JAJW
11. Stage two meetings of Project Steering Group		July & December	Minutes of Steering Group Meetings		DW

Work Package and Activity	Earliest Start Date	Latest Completion Date	Outputs	Milestone	Responsibility
12. Produce JISC Final Report in draft	06/02/2012	02/03/2012	Draft Final JISC Report		JAJW
13. Produce JISC Final Report	12/03/2012	30/03/2012	Final JISC Report	X	JAJW
WORKPACKAGE 3: Development of Production VI **WP 3a – Basic Virtual Infrastructure** <u>Objective</u>: **Develop small local VI IaaS upon which DaaS (and other software as a service) can be hosted. Develop core VI built upon VMware vSphere.**					
14. Produce VI design documentation	15/05/2011	20/06/2011	VI design documentation		PJn
15. Produce User Acceptance Tests (UAT) for basic VI	25/05/2011	27/06/2011	UAT plans		PJn
16. Procure hardware and licences	13/06/2011	25/07/2011			PJn
17. Implement basic VMware vSphere VI per VI design documents, using UAT to inform implementation	04/07/2011	01/08/2011	Basic VI	X	PJn
WP 3b – Extension to Hybrid VI <u>Objective</u>: **Develop hybrid VI, linking local VI to other suitably configured VIs, including Eduserv. Build resource management & monitoring layer, and self-service components. Work with JANET to extend VI to a commercial VI such as Logicalis**					
18. Produce design docs for self service components and system integration with authentication mechanisms	11/07/2011	22/07/2011	Hybrid VI design documentation		PJn/JH
19. Produce UAT docs for self service, managing & monitoring components	25/07/2011	05/08/2011	UAT plans		PJn/JH
20. Implement resource monitoring & management solution, using UAT to inform implementation	08/08/2011	09/09/2011	Resource monitoring & management tools	X	PJn/JH

Work Package and Activity	Earliest Start Date	Latest Completion Date	Outputs	Milestone	Responsibility
21. Implement self-service components, using UAT to inform implementation	12/09/2011	14/10/2011	Self-service tools	**X**	PJn/JH
22. Investigate automatic transfer of workloads between VIs & report	17/10/2011	25/11/2011	Short report on VI workload transfers		PJn/JH
23. Explore with JANET extending VI to include private cloud suppliers & report	28/11/2011	16/12/2011 (ext. Dep.)	Short report on extending VI into private clouds		PJn/JH
WORKPACKAGE 4: Shared Services *WP 4a – Accounting and Billing* Objective: **Implement technology to enable, control, and track usage and associated procedures to support billing and accounting.**					
24. Produce evaluation plan for existing accounting & billing technologies	01/05/2011	15/07/2011	Evaluation plans		JH
25. Evaluate existing technologies against evaluation plans	17/06/2011	18/07/2011			JH
26. Produce design documents for billing & accounting system	27/06/2011	08/08/2011	Billing and accounting design document		JH
27. Produce UAT plans for billing & accounting	25/07/2011	19/08/2011	UAT plans		JH
28. Implement billing and accounting system	19/08/2011	30/09/2011	Billing and accounting software tools	**X**	JH
29. Test against UAT plans	30/09/2011	14/10/2011			JH
30. Investigate extending accounting & billing to private cloud	16/09/2011	20/01/2012	Short report on extending billing and accounting tools to private cloud		JH

Work Package and Activity	Earliest Start Date	Latest Completion Date	Outputs	Milestone	Responsibility
WORKPACKAGE 4: Shared Services **_WP 4b –Identity and Access Management_** Objective: Implement technology to integrate with appropriate IAM solutions					
31. Produce evaluation plan for existing IAM	01/05/2011	29/07/2011	Evaluation plans		JI
32. Evaluate existing technologies against evaluation plans	29/07/2011	19/08/2011			JI
33. Produce design docs for IAM	15/08/2011	26/08/2011	IAM design document		JI
34. Produce UAT plans for IAM	22/08/2011	02/09/2011	UAT plans		JI
35. Implement IAM system	02/09/2011	30/09/2011	IAM tools	**X**	JI
36. Test against UAT plans	30/09/2011	14/10/2011			JI
37. Investigate extending IAM to private cloud	14/10/2011	30/2/2012	Short report on extending IAM tools to private cloud		JI
WORKPACKAGE 5: Requirements and Analysis Objective: Improve understanding of user requirements both within and without the Humanities Division					
38. Assemble bibliography for literature review of researchers' database behaviour & use	18/04/2011	03/06/2011	Literature Review Summary		MP
39. Identify interviewees	18/04/2011	03/06/2011	Interviewer Matrix		MP
40. Interview at least eight researchers from non-humanities areas (at least two from each of the other academic divisions at Oxford)		01/07/2011	Interview notes		MP

Work Package and Activity	Earliest Start Date	Latest Completion Date	Outputs	Milestone	Responsibility
41. Design & distribute DaaS requirements & uptake survey		08/07/2011	DaaS Requirements Survey		MP
42. Gather survey responses		22/07/2011			MP
43. Identify & invite new DaaS trialists		29/07/2011	Updated trialists list		MP
44. Analyse survey results	25/07/2011	29/07/2011	Survey Results Spreadsheet		MP
45. Complete literature review		29/07/2011	Literature review		MP
46. Identify and prioritize key user requirements	25/07/2011	05/08/2011	Prioritized Requirements List		JAJW/MP
47. Produce short VIDaaS user requirements report	25/07/2011	12/08/2011	User Requirements Report	X	JAJW/MP
WORKPACKAGE 6: DaaS Productionization **Objective**: **Extend DaaS prototype to run in a virtualized environment, meeting scalability and reliability requirements and supporting repeatable deployment to execution environments.**					
48. Extend DaaS hosting environment for VI compatibility	09/05/2011	24/06/2011			JI/CF
49. Develop strategies to protect user data		15/07/2011	Short strategy report		JI/CF
50. Develop support for backup of user data		09/09/2011			JI/CF
51. Develop modules for fault tolerance and disaster recovery		07/10/2011	DaaS software with fault tolerance and disaster recovery support		JI/CF
52. Develop DaaS installation mechanism & packaging		21/10/2011	DaaS installation files		JI/CF
53. Develop load-balancing mechanism across virtual hosts and databases		25/11/2011			JI/CF

Work Package and Activity	Earliest Start Date	Latest Completion Date	Outputs	Milestone	Responsibility
54. Assess disaster recovery & back-up costs & benefits		02/12/2011	Short report on risks of data loss and cost of disaster recovery		JI/CF
WORKPACKAGE 7: DaaS Expansion of Functionality <u>Objective</u>: **Expand functionality of prototype DaaS to meet requirements of broader research community.**					
55. Baseline user acceptance testing of prototype DaaS functionality	01/05/2011	1/07/2011	Log of bugs, issues, and feature requests in a public-facing code repository		JI/AA
56. Develop advances SQL query-builder according to user requirements	16/05/2011	1/07/2011	DaaS SQL-builder component	**X**	JI/AA
57. Develop online DaaS provisioning mechanism		29/07/2011	DaaS provisioning mechanism		JI/AA
58. Develop non-Web interface based on Restful Web services		23/09/2011			JI/AA
59. Extend DaaS to support XML databases (if supported by user requirements)		21/10/2011	Advanced DaaS software feature		JI/AA
60. Adapt DaaS to interface with document-orientated databases (if supported by user requirements)		25/11/2011	Advanced DaaS software feature		JI/AA
61. Integrate DaaS to with local & national registries (if available)		16/12/2011			JI/AA
62. Implement additional functionality identified in WP5	05/08/2011	16/12/2011	Advanced DaaS software features		JI/AA
63. Develop DaaS-specific management and monitoring tools for support staff		27/01/2012	Management and monitoring tools		JI/AA
64. Further iterations of user testing and functionality improvement		16/03/2012			JI/AA

Work Package and Activity	Earliest Start Date	Latest Completion Date	Outputs	Milestone	Responsibility
WORKPACKAGE 8: Service Design and Initiation **Objective**: Initiate a supported DaaS shared service on production VI					
65. Produce initial technical architecture		08/07/2011	DaaS technical architecture		JI
66. Design metrics and targets		15/07/2011	Metrics and targets document		JI
67. Agree service level description (SLD)		29/07/2011	Draft SLD		JI
68. System test DaaS on VI		18/09/2011			JI
69. Agree service governance model		23/09/2011	Service governance model		JI
70. Design required operational processes & service management tools		07/10/2011	Operational processes and services tools design document		JI
71. Design management processes, including change control		07/10/2011	Management processes design document		JI
72. Launch DaaS service in staging environment		21/10/2011	DaaS service available on Oxford VI	X	JI
73. Design & test disaster recovery plan	10/10/2011	04/11/2011	Disaster recovery plan		JI
74. Launch shared DaaS service to early adopters		11/11/2011	Test DaaS service available to researchers at University of Oxford	X	JI
75. Launch shared DaaS service as 'production service'		16/12/2011	Full DaaS service available to researchers at University of Oxford	X	JI

Work Package and Activity	Earliest Start Date	Latest Completion Date	Outputs	Milestone	Responsibility
WORKPACKAGE 9: Delivery of DaaS to External VIs **Objective**: **Deliver the DaaS as a supported production services to be hosted and run on virtual infrastructure.**					
76. Deliver pilot DaaS on VMware on Eduserv infrastructure	21/10/2011	28/10/2011	Pilot DaaS hosted on external VI	**X**	JH
77. Test DaaS functionality and fix as required		25/11/2011			
78. Deliver production DaaS on VMware on Eduserv	19/12/2011	13/01/2012	Full production DaaS available	**X**	JH
79. Explore through JANET brokerage service possibility of deploying DaaS on public VI & report		27/01/2012	Short feasibility report on hosting DaaS on public VI		JH
80. Evaluate possibility of bursting out from Oxford VI to external VI automatically & report		24/02/2012	Short feasibility report on seamlessly 'bursting out' from Oxford VI		JH
WORKPACKAGE 10: Documentation and Support **Objective**: **Document the DaaS and its management tools. Requires end-user, administrative, and technical documentation**					
81. Produce contextual user help within DaaS software	01/08/2011	11/11/2011	User help instructions within DaaS software		EB
82. Produce DaaS user manual 1st draft	01/08/2011	16/12/2011	Full online DaaS user manual	**X**	EB
83. Document code to enable future software development		Throughout	Documented code that can be understood by external developers		AA/CF
84. Produce DaaS installation guide		20/01/2012	DaaS installation guide		EB
85. Test clarity and comprehensiveness of user support materials with testing group	19/12/2011	27/01/2012			EB

Work Package and Activity	Earliest Start Date	Latest Completion Date	Outputs	Milestone	Responsibility
86. Produce final DaaS user manual	30/01/2011	16/03/2012	Final DaaS user manual	X	EB
WORKPACKAGE 11: Data Management Training **Objective**: **Produce and trial training material for researchers using the DaaS**					
87. Assess training requirements for researchers and schedule course trials	08/08/2011	26/08/2011	Training plan & implementation schedule		MP
88. Produce and trial introductory course: Introduction to the DaaS (& use as feedback opportunity)	08/08/2011	09/09/2011	Trialled introductory course on using the DaaS	X	MP
89. Develop and trial course #2 (e.g. Building a database with the DaaS)	29/08/2011	30/09/2011	Trialled second course	X	MP
90. Develop and trial course #3 (e.g. Using the DaaS for collaborative project)	29/08/2011	28/10/2011	Trialled third course	X	MP
91. Develop and trial course #4 (e.g. Geospatial data and the DaaS)	29/08/2011	25/11/2011	Trialled fourth course	X	MP
92. Develop and trial course #5 (e.g. Using the DaaS for Humanities databases)	29/08/2011	13/01/2012	Trialled fifth course	X	MP
93. Update introductory course to take account of subsequent developments	16/01/2012	24/02/2012	Updated introductory course		MP
94. Update other courses to take account of trial feedback & DCC input	27/02/2012	16/03/2012	Updated courses		MP
95. Ensure reusability and awareness of courses	19/03/2012	30/03/2012			MP

Work Package and Activity	Earliest Start Date	Latest Completion Date	Outputs	Milestone	Responsibility
WORKPACKAGE 12: Cost Models and Cost/Benefits analysis <u>Objective</u>: **Calculate ROI; develop business plan and service and pricing models to recoup operational costs**					
96. Update & extend ROI analysis submitted with bid	01/08/2011	26/08/2011	Updated ROI	X	JAJW
97. Commission external consultant to advise with costs and benefits		09/09/2011			JAJW
98. Assess BIILS, FDS 'Costing IT Services Toolkit', and RDMI tools for building cost/benefits models		11/11/2011			JAJW
99. Produce initial service continuation business plan		16/12/2011	Initial business plan		JAJW
100. Collate & synthesize services and costs info from other WPs		13/01/2012			JAJW
101. Produce final ROI evaluation		03/02/2012	Final ROI evaluation		JAJW
102. With DCC, develop continuing DaaS support model ensuring savings are maximized		24/02/2012	DaaS support model		JAJW
103. Produce final business case		17/02/2012	Final Business case	X	JAJW
104. Deliver plan to offer 'warranty' for DaaS after the completion of the project		02/03/2012	Warranty plan		JAJW

Work Package and Activity	Earliest Start Date	Latest Completion Date	Outputs	Milestone	Responsibility
WORKPACKAGE 13: Communication and Dissemination **Objective: Pursue effective communications opportunities to ensure awareness and take-up of services**					
105. Produce communications plan	18/04/2011	13/05/2011	Initial communications plan		MP
106. Update project website with outputs	18/04/2011	Throughout			All
107. Publish introductory project blog post, then regular blog posts about project or related issues (at least once per month)	18/04/2011	Throughout			All
108. Initiate VIDaaS newsfeed		24/06/2011			JAJW/MP
109. Compile events calendar		24/06/2011	Events calendar/list		MP
110. Attend and address appropriate workshops and conferences	18/04/2011	Throughout			JAWJ/others
111. Write journal article(s)		22/12/2011	Journal article(s) submitted to publishers	X	JAJW/MP/AA
112. Write press release for popular/academic press (Times Higher, etc.)		13/01/2012	Press release		JAJW
113. Stage Stakeholder workshop		27/01/2012	Workshop report	X	JAJW/MP
WORKPACKAGE 14: User Acceptance Testing **Objective: Manage UAT, defining processes and working with early adopters**					
114. Draft cost model to apply to data belonging to user testing group / early adopters	06/06/2011	01/07/2011			JAJW/JI

Work Package and Activity	Earliest Start Date	Latest Completion Date	Outputs	Milestone	Responsibility
115. Define evaluation and testing plans	06/06/2011	22/07/2011	Evaluation and testing plan		JAJW/JI
116. Stage DaaS introductory DaaS workshop to test system and identify early adopters	12/09/2011	21/10/2011			JAJW/MP
117. Use ITLPs Research Skills Toolkit session to introduce DaaS and recruit early adopters	03/10/2011	21/10/2011			JAJW/MP
118. Organize a DaaS user-observation workshop to gain feedback	14/11/2011	02/12/2011	User-observation workshop report	X	JAJW/MP
119. Manage ongoing user acceptance testing	25/07/2011	24/02/2012			JAJW

Members of Project Team:

Name	Role
PJ (Paul Jeffreys)	Principal Investigator
MF (Mike Fraser)	Co-investigator
DW (Diane West)	PA to the Principal Investigator
JAJW (James A J Wilson)	Project Manager
JI (John Ireland)	Technical Architect
PJn (Peter Jones)	Technical Architect
JH (Jon Hutchings)	Technical Architect; VI Specialist
AP (Adrian Parks)	VI Specialist
??	Shared Services Developer
AA (Asif Akram)	DaaS Developer
CF (Christian Fernau)	DaaS Developer
MP (Meriel Patrick)	Analyst
LMU (Luis Martinez-Uribe)	Analyst
EB (Elena Blanco)	Technical Author