

Outline Project Description

The VRE for the Study of Documents and Manuscripts addresses the user needs of documentary, textual and manuscript scholars. Focusing in the first instance on the requirements of ancient documentary specialists working in the fields of epigraphy and papyrology, the pilot will adapt Open Source tools to enable annotation and sophisticated document viewing and make use of existing VRE tools to facilitate communication and collaboration between scholars. The VRE will also provide efficient, integrated access to a disparate range of existing textual databases and related resources.


Although the pilot will focus on ancient documents, it will be constructed so as to be usable by textual specialists working in other languages, periods and cultures. The context will also be extended by treating documents not as disembodied texts but as artefacts which can and should be related to their original physical context. This enlarged perspective opens up the possibility of collaboration between documentary scholars and archaeologists in their respective implementations of VRE technologies. Such collaboration would not only be of benefit to both communities, but would also provide a model for the integration of separate VRE implementations across related disciplines.

The project will also provide an exemplar for the construction of Virtual Research Environments across the broader humanities research community.

Mapping of Project Activities onto VRE Development Model

Proposed VRE development activities:

For each activity complete the funding requested and the number of pilot implementations.

Stage	Activities	Funding Requested	
Stakeholder Participation (30%)	User Needs Analysis (50%)		
	Contextual Analysis (25%)		
	Change Analysis (25%)		
Pilots (30%)	Pilot Preparation (40%)		
	Pilot Implementation (20%)		
	Pilot Evaluation (40%)		
VRE Construction (40%)	System analysis and design (15%)		
	Building (30%)		
	Integration (35%)		
	Testing and Documentation (20%)		
Total funding requested:			

I have looked at the example FOI form at Appendix A and included an FOI form in the attached bid (Tick Box)

YES
√

I have read the Circular and associated Terms and Conditions of Grant at Appendix B (Tick Box)

YES
√

FOI Withheld Information Form

We would like JISC to consider withholding the following sections or paragraphs from disclosure should the contents of this proposal be requested under the Freedom of Information Act.

We acknowledge that the FOI Withheld Information Form is of indicative value only and that JISC may nevertheless be obliged to disclose this information in accordance with the requirements of the Act. We acknowledge that the final decision on disclosure rests with JISC.

Section / Paragraph No.	Relevant exemption from disclosure under FOI	Justification

Please see <http://www.ico.gov.uk> for further information on the Freedom of Information Act and the exemptions to disclosure it contains.

We hereby acknowledge the above form and wish no sections or paragraphs to be withheld.



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A VRE for the Study of Documents and Manuscripts

I. Introduction

- 1 The current application builds on the outcomes of the JISC-funded project Building a Virtual Research Environment for the Humanities (BVREH: June 2005-September 2006, PIs Professor A.K. Bowman, Dr. C.V. Crowther, Dr. M.A. Fraser) The BVREH project addressed the need to determine how Humanities research can benefit from ICT in a collaborative virtual research environment. The objectives pursued in the project were principally the establishment and application of a robust methodology of user requirements capture, and the construction, in response to the user needs analysis, of a range of demonstrators in specific fields of Humanities research which could serve as prototypes for subsequent evaluation and development. There was also a strong element of collaboration with the Integrative Biology VRE project, also led by Oxford (PI Prof. David Gavaghan).
- 2 The proposed project is part of a broader programme of activity within Oxford. We intend over the next 5 years to continue to develop a very broad agenda of VRE development encompassing research in all fields represented in the Humanities Division in Oxford (and therefore all major disciplines in the Humanities). It is envisaged that this broad programme will be led by the Humanities Division but based in the Oxford e-Research Centre (Directors Dr. Anne Trefethen and Prof. Paul Jeffreys). The programme is seeking funding for one or two full-time posts from a range of sources including the University of Oxford, the AHRC e-Science programme (application submitted November 2006), and other sources.
- 3 The present application represents one substantial element in the further development of the original BVREH agenda. The core of the application is a new pilot project which will follow on from the construction (within the EPSRC e-Science Demonstrator Projects in the Arts and Humanities programme) of a demonstrator project for a 'Virtual Workspace for the Study of Ancient Documents' (VWSAD, September-December, 2006: PI Dr. C.V. Crowther). The aim of this demonstrator has been to deliver a proof-of-concept implementation of a system to enable researchers to search across multiple, distributed data sets; select, store, organise and annotate textual and image data in a 'personal workspace'; and to support collaboration by allowing multiple researchers in separate locations to share a common view of the workspace, in conjunction with real time communication via Chat, VoIP and desktop integration with AccessGrid. The principal target user community is made up of documentary, textual and manuscript scholars. The University of Oxford contains the largest such user community in the world, with around 20 specialist scholars actively working in the relevant fields of ancient documentary studies, supported by a rich collection of primary and scholarly resources. The local user group is linked by collaborative research activities with a wider national and international scholarly community. The pilot project proposed in the present application is intended to construct a full, working implementation of the system whose principles have been tested within the EPSRC demonstrator to address the needs of this user community. We anticipate that the project will also provide a valuable exemplar for the construction of VREs across the broader humanities research community.

II. Project Description

II.1 Introduction

- 4 The pilot project will be a new one in which we will construct a VRE for the study of documents and manuscripts. This will naturally follow from the outcomes of BVREH, a series of e-Science User Requirements workshops undertaken for the AHRC (PI Prof. A.K. Bowman) and the EPSRC VWSAD demonstrator project. In these we have established a broad-based understanding of user-driven needs, we have shown how tools and resources for studying texts and document might be implemented in a service-based environment and have tested some annotation and markup tools. We will now proceed to construct an integrated environment in which the data (documents), tools and scholarly instrumenta will be available to the scholar as a complete and coherent resource. The research resources on which the VRE pilot project will be based will be ancient documents on various media (stone, wooden tablets, papyri, lead etc.), but we emphasize that it will include two very important features of broader significance. First, that the tools and the structure of the environment will be entirely suitable for the study of a wide variety of types of documents and manuscripts (in two and in three dimensions) and will thus provide an exemplar for humanities researchers working on texts in all disciplines, languages, cultures and periods. The second is that we will extend the context by treating documents not as disembodied texts but as artefacts with an original archaeological or

physical context which can, in a significant number of cases (in antiquity and later periods) be recovered or reconstructed.

- 5 The significance of this approach is that the construction of a VRE appropriate for texts as artefacts opens up the possibility for the archaeologist and the textual scholar to work both separately and together within a unified environment generated by the complementarity of their VRE implementations. This aspect of our proposal has been developed in close collaboration with the Silchester Roman Town VRE (PI Professor M.G.Fulford, Reading University). This VRE has developed a sophisticated system for registering, tracking and analysing data recorded in the field to allow efficient recovery of information on any given artefact or assemblage in its original environment. Future development of the Silchester VRE will focus on on-site information flow, development of a 3-dimensional imaging capability and creation of an environment in which sub-sets of archaeological small finds specialists can work in teams (in this perspective, documentary specialists may be regarded as one such sub-set). This collaboration will be further supported by currently developing links between the University of Reading and the Oxford e-Research Centre (Directors, Dr. Anne Trefethen and Prof. Paul Jeffreys).

II.2. Stakeholder engagement

Target audience

- 6 In this proposal, we concentrate on the user needs of documentary, textual and manuscript scholars, who make up the target user community. Within this broader user group, the pilot project will focus in the first instance on the requirements of ancient documentary specialists working in the fields of epigraphy and papyrology. The local user community within Oxford is of significant size: up to 20 scholars working directly on original papyrus and epigraphical documents within the Classics Faculty; together with a wider circle of historians, numismatists and literary scholars who use inscriptions and papyri as primary sources for their research. The immediate user community is linked to a broader national and international community of documentary scholars through collaborative work on major projects (Inscriptiones Graecae; Oxyrhynchus Papyri; Romano-British Writing Tablets) and participation in electronic initiatives (Advanced Papyrological Information System (APIS); EpiDoc Collaborative; the EAGLE project of the Association Internationale d'Épigraphie Grecque et Latine; International Gazetteer of Papyrus Collections).
- 7 The focus on the material dimension of documentary artefacts entails overlap with the interests of a second user group—archaeologists. IT-based research tools have been deployed in two main contexts in field archaeology: first, to aid in understanding the configuration, topography, and stratigraphy of complex sites; second, to record and catalogue significant numbers of 'small finds' and extensive assemblages of ceramic and zooarchaeological remains in their physical context, from which they are then removed by the nature of the excavation process. In the context of the present proposal 'small finds' naturally include documents (inscriptions, tablets, papyri, graffiti etc): the same object may be viewed in one context as a small find, in another as a documentary text, and the tools used to identify and define these separate aspects can be combined to provide a fuller picture for both the documentary historian and the archaeologist. The proposal aims to explore this area of overlapping perspectives to demonstrate the way in which separate and self-standing VRE implementations may complement and build interfaces to one another.

User needs analysis

- 8 We proceed from our experience in collecting evidence of user needs across a wide range of humanities research during the BVREH project. A core aim of that work was to understand the needs of the humanities community through an extensive user requirements survey. The BVREH project was awarded additional funding within the AHRC e-Science Workshops programme to hold a series of workshops concerned with methods of user requirements capture to form the basis of a 'guide to best practice' for humanities IT projects (PI, Prof. A.K. Bowman). This work was strongly supported by the consultancy of Dr Marina Jirotko (Oxford Centre for Requirements and Foundations and the James Martin Research Fellow at the e-Horizons Institute). Dr Jirotko will continue to play a significant role throughout the proposed project as co-investigator, advising on all aspects of requirements capture.
- 9 Gathering user requirements will be a significant, continuous process throughout the duration of the project and will constantly inform development on an iterative basis. The project will work closely with the community of documentary, textual and manuscript scholars, gathering user requirements by shadowing individuals as they carry out their research and taking time to understand fully the social and cultural requirements that surround the work both of the individual and of the community.

- 10 Deployment of VRE components will be subject to full user testing. The responses will be fed back immediately into the development cycle, which will be both responsive and iterative.

Lessons from BVREH Project

- 11 The VRE for the Study of Documents and Manuscripts extends the activities of the BVREH project by building on experience gained in user requirements elicitation, providing a sound understanding of the needs of the humanities research community and forming the basis for a productive working relationship with the established user group of documentary and textual specialists. The initial VRE project highlighted the common needs of users across different disciplines, languages, cultures and periods within the humanities who all work with texts in various forms. It has demonstrated that the collaborative study of documents and manuscripts is an area of central and shared interest across humanities research which is likely to benefit from the deployment of VRE tools and services. The proposed project will also benefit from the outcomes of the IB VRE project and, in particular, the methodologies that the project developed for a rapid development cycle of requirements analysis, prototyping, feedback and deployment of pilot services.

II.3. Components of the Pilot VRE

- 12 The VRE implementation will be constructed as a suite of interlocking services within an overall portal framework following the service-oriented approach of the e-Framework for Education and Research. By implementing this model within a traditional, but ICT-literate humanities research community, it is hoped that a contribution can be made to the further development and refinement of the e-Framework. The principle elements of the VRE will be:

Authorisation and Access:

- 13 Secure and uniform access to resources in the pilot VRE will be provided by the portal framework. Through the IB VRE and the Sakai VRE Demonstrator projects Oxford has gained expertise in both the Sakai and uPortal frameworks. In addition, Oxford is a founding partner in the Tetra Collaboration which is working towards combining key elements of both the Bodington (Oxford's chosen VLE) and Sakai systems. The project will also benefit from the experience of other domain-centred VRE projects, e.g. the Political Discourse VRE and the VRE for Educational Research (both of which have piloted Sakai instances). Authentication within the environment will be managed through the Stanford WebAuth institutional single sign-on system within Oxford. The project will also take advantage of existing expertise and planned activities relating to the deployment of Shibboleth which offers a potential solution for access to the VRE from outside Oxford, and for access to remote resources from within Oxford.

An environment for presenting, evaluating and transforming image data:

- 14 The AHRC/EPSRC VWSAD demonstrator project is currently in the process of developing web-accessed tools to view and manipulate images. These tools will be integrated within the VRE and extended to support further image-enhancement algorithms and processes (such as shadow stereo and multi-spectral imaging) as required. The project will also investigate the feasibility of integrating the viewer created by the EPSRC Virtual Vellum demonstrator project (PI Prof. Peter Ainsworth, University of Sheffield).

Access to text databases:

- 15 Documentary and textual studies are supported by the existence of a disparate range of textual databases and online lexica and instrumenta: for example, the Duke Databank of Documentary Papyri (DDBDP), the Packard Humanities Institute's Searchable Greek Inscriptions, and the Thesaurus Linguae Graecae, which provide, respectively, searchable full-text databases of published documentary papyri, Greek inscriptions, and Greek literature. Other text databases provide coverage of published Latin inscriptions (EDH, EDCS, EDR, EDB), Roman writing tablets (Vindolanda Tablets Online) and electronic editions of the inscriptions of Aphrodisias (InsAph). Instrumenta include online editions of standard Greek and Latin lexica, and the important onomastic database of the Lexicon of Greek Personal Names. Providing efficient integrated access to these resources will be a crucial part of the VRE. The project will make use of web-service interfaces to access datasets, making use of standards for federated searching such as SRW (Search & Retrieve Web Service)/Z39.50 where possible. The project will encourage resource providers to expose access to their data through web services where they may not already do so, and investigate alternative standards for access to distributed data sets (e.g. metadata harvesting). The interfaces created for the VRE will allow the user to search across a selection of the above datasets in an efficient manner, conveniently combining results from multiple sources.

Annotation:

- 16 The project will adapt and integrate tools created for the VWSAD demonstrator project, allowing a user to maintain a personal collection of annotations made to images and texts delivered through the VRE. These systems then allow annotations, stored as standards based RDF metadata using Annotea (<http://www.annotea.org/>) schemas to be shared among collaborating groups of users. Elaboration of the annotation tools will be subject to user feedback, but an area of development that may be explored will be the possibility to generate well-formed xml editions (in EpiDoc xml, for example, for inscriptions) of transcribed texts, to carry the research cycle forward from initial transcription towards full publication.

Location, mapping, and contextualisation:

- 17 The location of documentary artefacts in their physical and archaeological context is a key element in the project framework. The project will take advantage of existing repertoria of ancient toponyms and the work of the Pleiades Project based on a PrimaGIS implementation within a Content Management System (<http://icon.stoa.org/pleiades-beta>). Interfaces will be built both to generic tools such as Google Earth and to archaeological Integrated Databases, to allow drill down from location to specific physical context.

Communication and collaboration:

- 18 Standard communication components such as chat room facilities along with voice and video conferencing will be made available within the environment. Where available these will utilize Access Grid tools, though it is likely that some users will not initially be able to take advantage of such facilities. The VRE will support synchronous collaboration by allowing multiple researchers in separate locations to share a common view of the workspace, in conjunction with real time communication tools.

II.4. Impact on Research Practice

- 19 We believe that the model outlined above for a VRE for the study of textual and documentary sources has the potential to transform current research practice in these fields. The scholar interpreting an ancient documentary text currently has a broad range of relevant electronic tools available; but the interaction is largely in one direction and the experience is fragmented by the dispersal of the electronic resources. The potential of ICT to mediate collaborative activities has also yet to be fully exploited. Decipherment and transcription are activities that naturally benefit from shared visualisation and multiple perspectives. Developments in e-Science have opened new possibilities to make collaborative work on decipherment and analysis available on demand to researchers.
- 20 The present proposal extends this collaborative activity to the recovery of documentary artefacts through archaeological excavation. Documentary specialists are rarely present during the excavation process. The potential for documentary specialists to work closely with archaeologists through real-time recording and communication of finds and contexts promises significant improvements in the working practices of both. An illustrative scenario shows how we envisage this working. A number of damaged and fragmentary graffiti on ceramic and stone small finds, not immediately legible, have been found in several groups in locations, buildings or strata of uncertain nature. The physical data (including image-capture) are recorded on site. The graffiti are passed to documentary specialists who, with the aid of the toolkit provided by the proposed VRE implementation, produce readings and interpretations of the texts as lists of clothing. These are fed back to the archaeologists who combine the original physical data (stratigraphy etc) and the readings and deduce that the building in which the texts were found was a textile factory, in which stages of the manufacturing process can be distinguished in different rooms.
- 21 This process will also be applied to current archaeological projects available to us in Oxford. The Euesperides (Benghazi) excavations directed by Prof. Andrew Wilson have yielded a series of graffiti incised on pots of the 5th – 3rd c, BC, including religious dedications, ownership and sale/trade marks, and prices, together with a collection of stamped amphora handles in Greek and Punic. These can be linked not only to their context, but also to form and fabric descriptions. From Aphrodisias in Turkey, we can reconstruct the original context of a significant number of important inscriptions and the buildings with which they are associated. Buildings and inscriptions have been meticulously recorded and catalogued and the latter are available in electronic format (InsAph-Epidoc), but they have not been studied together and in context in a way which the proposed VRE will make possible.

III. Project Plan

22 The project will develop through a series of iterations, aiming to make regular deployments every two to three months to the group of users, informed by a continuous programme of user needs analysis. This process has been split into the following workpackages:

Workpackage 1: Project Management

23 **Description:** To ensure overall coordination of the project, this workpackage includes the formulation of a detailed workplan, recruitment (of an additional developer), formation of a user consultative committee, liaising with and reporting to the principal investigators and relevant funding bodies. The Technical Manager will have responsibility for the 0.5 FTE Technical Officer, and will report on behalf of both to the Project Manager. The Project Manager will report, in turn, to the principal investigators and the project as a whole will be guided by them and the pre-existing BVREH Steering Committee. Throughout the project, documentation will be made available on the project website to facilitate communication with project stakeholders and the wider VRE community.

24 **Outputs:** Project workplan; reports to the principal investigators, and funding bodies; project web presence; overall project deliverables.

25 **Outcomes:** Effective coordination and communication throughout the project.

26 **Responsibility:** The Project Manager will take responsibility for this workpackage and will report progress to the principal investigators.

Workpackage 2: User Needs Analysis:

27 **Description:** This workpackage will comprise the conduct of a detailed requirements analysis, working with documentary and technical specialists and archaeologists within the pilot user group. The team will draw upon knowledge gained during the user requirements activities undertaken by the BVREH project. Initially this will involve interviewing users and where possible and appropriate shadowing them in their working environment. Following each new deployment of tools, use of the VRE will be analysed to determine how the users' research is affected by the tools and to guide the next cycle of development. This process will include holding focus groups of representative users, held in conjunction with user training sessions.

28 **Outputs:** detailed user needs analysis; documentation to inform the development cycle and report on the effect of introducing VRE tools to this community.

29 **Outcomes:** Knowledge and understanding of ongoing needs/issues

30 **Responsibility:** Project Manager and Technical Manager, reporting to Dr Jirotko as Co-Investigator.

Workpackage 3. System analysis and design

31 **Description:** Initial system design will be based on the outcomes of the BVREH project and the tools created as part of the VWSAD demonstrator project. The project will consult with the Oxford e-Research Centre to ensure that suitable standards are being used for the integration to match infrastructure being constructed within Oxford and the wider UK community. More detailed design work will take place as part of each iteration of the development cycle, ensuring that the interface and interaction with resources through the VRE fit the needs of the user group.

32 **Outputs:** detailed systems analysis; design documents to inform the Development workpackage

33 **Outcomes:** Detailed plan of system architecture.

34 **Responsibility:** Technical Manager and Technical Developer, reporting to the Project Manager and PIs.

Workpackage 4. Development: Building and integration

35 **Description:** The purpose of this workpackage is to create such new components as will be needed for the project and to construct a framework within which they will function as a unity. As development follows an iterative model, the exact work for each cycle will depend on the user feedback phase that precedes it, but will entail adapting the tools used by the e-Science demonstrator to fit within a VRE framework; work to integrate the Database/Web Resource access for the resources identified above, and integration of more generic VRE components for real time communication and document storage. All components developed will be made available as Open Source Software, developed in accordance with the best practices identified in the JISC OSS Guidelines http://www.jisc.ac.uk/about_opensourcepolicy.html. Regular releases of each component will be made available for deployment into the VRE Pilot.

36 **Outputs:** Code for tool versions, available as OSS.

37 **Outcomes:** New versions of the code delivered at least 4 times per year for testing.

38 **Responsibility:** Technical Manager and Technical Developer, reporting to the Project Manager and PIs.

Workpackage 5. Documentation

39 **Description:** This workpackage will create documentation both for end users of the system, including manuals and other training material, and of code and components developed for the project. As code is developed for the VRE, documentation will be created to enable the reuse of components by other development projects.

40 **Outputs:** Training materials for end users and technical documentation of components developed.

41 **Outcomes:** The availability of comprehensive project documentation.

42 **Responsibility:** Project Manager, Technical Manager and Technical Developer, reporting to the PIs.

Workpackage 6. Deployment

43 **Description:** Deployment will be to a server/s located within the Humanities Division at the University of Oxford, which will be maintained by the project staff. The systems will make use of the University's Hierarchical File Server to ensure that all data is securely backed-up. When new releases of the system code are available they will be installed on the production servers and data migrated.

44 **Outputs:** Ongoing deployment of VRE pilot service.

45 **Outcomes:** VRE pilot secure and available to end users. Data migrated successfully between versions.

46 **Responsibility:** Technical Manager and Technical Developer, reporting to the Project Manager and PIs.

Workpackage 7. User Training

47 **Description:** To enable users of the pilot to make informed use of the VRE tools to best enhance their research, the project will distribute the documentation produced as part of WP5 and will hold training sessions to demonstrate the functionality of the tools. The project will produce walk-through demonstrations of typical use case scenarios, (identified in WP2) to suggest to end users ways in which these tools could integrate into their work practices.

48 **Outputs:** Workshops and group or one-to-one training sessions.

49 **Outcomes:** Well informed users able to make full use of deployed tools.

50 **Responsibility:** Project Manager and Technical Manager, reporting to the PIs.

Workpackage 8. Evaluation

51 **Description:** This workpackage concerns the evaluation of the VRE in meeting predefined and uncovered needs of the user community and analysis of the impact on the user group. It is expected that the evaluation of the project as a whole will be undertaken in conjunction with the JISC VRE 2 Programme. The workpackage will include consultation with representative members of the community beyond the pilot user group, whether locally, nationally or internationally, with particular focus on the usability of the pilot system and its ability to support the needs of the user community. The project will carry out analysis of usage and uptake of each pilot iteration and the effect on documentary specialists' research methods. The resulting report will make recommendations as to the extensibility and benefit of the VRE to other fields of humanities scholarship.

52 **Outputs:** Report evaluating usability and extensibility of VRE tools; analysis of usage and uptake of pilot iterations.

53 **Outcomes:** Knowledge and experience of introducing a VRE to a humanities specialism, for re-use.

54 **Responsibility:** Principal Investigators and Co-investigator, reporting to the User Consultative Group and JISC.

Workpackage 9. Dissemination

55 **Description:** The continuous dissemination of the project's progress and results will be conducted through the project web site, a project mailing list, and two workshops to discuss the results with interested parties (researchers, relevant ICT specialists, and external experts). The project will also be presented at the meetings of the International Associations of Papyrologists and Epigraphists to be held, respectively, in Ann Arbor in August 2007 and in Oxford in September 2007. Members of the project team will also publish project reports in relevant journals and participate in relevant conferences.

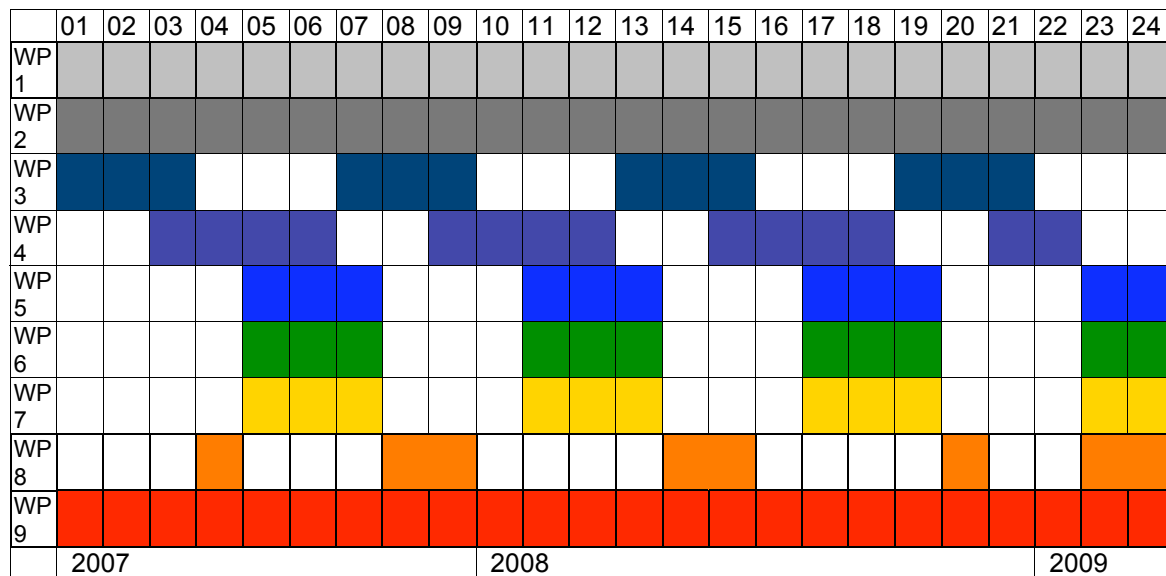
56 **Outputs:** Maintenance of project web site; project mailing list; online publication of reports; conference papers and general publications; workshop to discuss the project and its results. Final project report.

57 **Outcomes:** Awareness of project progress within the wider community to enable the reuse of pilot functionality.

58 **Responsibility:** Project Manager, Technical Manager and Principal Investigators.

III.1. Timetable

59 Below is a summary chart of the proposed timetable of work packages over the 24 months duration of the project, with months across the top and workpackages down the side. The shaded areas indicate the periods in which each workpackage is to be carried out:



III.2. Risk Analysis

60 A range of possible risks to the timely completion of the project and its outputs has been identified. The potential risks are listed below and ranked for severity and probability on a scale from 1 (lowest probability/risk) to 5 (highest probability/risk).

Risk	Probability (1-5)	Severity (1-5)	Score (P x S)	Action to Prevent/Manage Risk
Lack of engagement with and of the user community	1	3	3	Preceding and continuing user needs analysis indicates a positive reception for the proposed pilot.
Failure to recruit staff	1	3	3	Risk affects the recruitment of an additional technical officer. However, appropriate expertise also exists in OUCS and the Oxford e-Research Centre. The project will carefully manage the recruitment process.
Key staff resign during project	1	4	4	Depending on the stage of the project, second staff from other projects within OeRC. In worst case scenario, new recruitment.
Failure to identify appropriate technologies for deployment within the pilot project	1	3	3	A rigorous user needs analysis and systems analysis and design cycle will mitigate this possibility.
Inadequate implementation of technologies identified for deployment.	1	4	4	Appropriate procedures for quality assurance and delivery will be established at the earliest stage of project planning.

IV. Sustainability

- 61 The project fits within the overall Divisional strategy for establishing support for ICT and develops an initiative sponsored by the Division to investigate potentials for the construction of a VRE within the Humanities. The project will be sustained by the commitment of the University to supporting research in digital environments through: a) the Oxford e-Research Centre; and the James Martin School e-Horizons Institute; b) the presence of an overall aim to take a leading role in the development of VRE(s) (through the Research Technologies Service) within the OUCS five-year strategic plan (2004-2009)¹; c) the commitment to distributed ICT support and distributed computing in general as part of a new ICT Strategic Plan for the University (<http://www.ict.ox.ac.uk/strategy/>). Given that the project reflects strategic commitments by the Humanities Division and by the University to the development and deployment of VRE technologies, a successful outcome will be sustained and supported within the developing Managed Learning Environment architecture of the Division and the University. The University has already committed bridging funding to enable retention of key personnel between the conclusion of funding for the Phase 1 JISC VRE project BVREH and the expected start of VRE 2 projects in spring 2007. The Humanities Division has made a further commitment to maintain VRE activities as a key element in the development of its own research and ICT strategies.

V. Budget

Directly Incurred Staff	March 07	April 07– March 08	April 08– March 09	TOTAL £
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED] -
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Total Directly Incurred Staff (A)	£0	£95,142	£101,884	£197,026
Non-Staff	March 07	April 07 – March 08	April 08 – March 09	TOTAL £
Travel and expenses	[REDACTED]			
Hardware/software	[REDACTED]			
Other	[REDACTED]			
Total Directly Incurred Non-Staff (B)	[REDACTED]			
Directly Incurred Total (A+B=C)	[REDACTED]			
Directly Allocated	March 07	April 07 – March 08	April 08 – March 09	TOTAL £
Staff	[REDACTED]			
Estates	[REDACTED]			
Directly Allocated Total (D)	[REDACTED]			
Indirect Costs (E)	[REDACTED]			
Total Project Cost (C+D+E)	[REDACTED]			
Amount Requested from JISC	[REDACTED]			
Institutional Contributions	[REDACTED]			
Percentage Contributions over the life of the project		JISC	Partners	Total
		[REDACTED]	[REDACTED]	[REDACTED]

¹ 'Vision for 2008: a five-year strategic plan (2003-2008) for the Oxford University Computing Services'. <http://www.oucs.ox.ac.uk/internal/5yr/>.

V.1 Justification of Costs

- 62 The project involves intensive user needs analysis and an iterative series of development cycles. Funding is requested for three posts to meet these requirements: a 100% FTE Project Manager, Ms Ruth Kirkham, the current BVREH Project Manager, who will be principally responsible for user needs analysis, documentation and project management. Development activity is covered by two posts: the role of Technical Manager will be taken by Mr John Pybus, currently Technical Officer for the BVREH project. Mr Pybus works as 20% FTE IT Research Officer in Phonetics and is accordingly budgeted at 80% FTE. An additional 50% FTE technical developer will be recruited to work specifically on system design and building and integration of tools.
- 63 Directly allocated staff costs [REDACTED] two of the PIs are active members of the target user community (Bowman: papyrology; Crowther: epigraphy) and a corresponding input of time is required and budgeted for them (2 hours p.w. each). The third PI (Fraser) is responsible for co-ordinating the development of the project within the Oxford and wider VRE community (1 hour p.w.). The Co-Investigator, Dr. Jirotko has a vital consultancy role in supervising user needs analysis (1 hour p.w.).
- 64 The budget provides for travel costs for project staff for attendance at relevant conferences and visits to associated projects and partners [REDACTED]
- 65 A workstation for the Technical Developer and a server for deployment will be purchased [REDACTED] The Project and Technical Manager will continue to use their BVREH workstations.
- 66 Funding for two workshops, to communicate and exchange ideas with the user and VRE communities, covering expenses for invited participants, administration and catering costs, and for conference fees is subsumed under other expenses [REDACTED]

VI. Institutional and Community Benefits

- 67 We expect the pilot VRE deployment to influence research practices in textual and documentary studies in the following areas:
- The ability to bring together research data of different types and from widely dispersed locations will enable more detailed and intensive research by a wider range of scholars.
 - The integration of advanced searching tools will make it possible to accumulate evidence from different fields more readily, enhancing synergy between object and context.
 - The VRE will encourage increased and more effective collaboration—scholars sharing notes, working drafts, putting working papers on line. This will lead, in turn, to more critical use of published editions of texts and archaeological reports.
 - The integration into the user environment of more effective communication tools, based on Access grid technologies, will make it possible to do this in real time.
 - The VRE will enable us more easily to reassemble texts and artefacts which were removed from their original context and dispersed in museum collections, and to reconstitute archives and assemblages and feed them back into their original context.

Since the host institution maintains the largest active research community of documentary scholars, its leadership status in this area will be enhanced, although the benefits are intended to flow through to the whole user community. The specific implementation of VRE technologies in ancient documentary studies will provide a base for their deployment for textual scholarship throughout the Humanities division.

VII. IPR Statement

- 68 Any IPR resulting from this project will remain the property of the organisation(s) generating it. Under the University of Oxford's policy on intellectual property (which covers all University employees and students), the University claims ownership of a range of intellectual property rights with commercial potential. The University does not assert any claim to the ownership of copyright in artistic works, books, articles or lectures, apart from those specifically commissioned by the University. Results arising from projects funded by the JISC at Oxford would therefore usually be owned in the first instance by the University as the employing institution. The University seeks to maximise the commercial potential of its intellectual property through its wholly-owned technology transfer company, ISIS Innovation Ltd. In accordance with the desires of the JISC Virtual Research Environments Programme it is proposed to release any software applications developed by this project under an Open Source Software license to maximise the benefit for the wider community.

VIII. Key Personnel

Principal investigators:

- 69 **Professor Alan Bowman.** Camden Professor of Ancient History and Director of the Centre for the Study of Ancient Documents, University of Oxford, which has pioneered the development of ICT tools for the study and web delivery of ancient texts on papyrus, wood and stone. Projects with substantial ICT elements, completed or in progress, include: The Vindolanda Tablets On-Line (AHRB and Mellon Foundation), Script, Image and the Culture of Writing in the Ancient World (Mellon Foundation), Image Processing of Ancient Documents (with Prof. Sir Michael Brady, EPSRC), Building a Virtual Research Environment for the Humanities (with Dr. C.V.Crowther, Dr. M.A.Fraser, JISC). Former member of AHDS steering Committee, member of the British Academy's IT Committee.
- 70 **Dr. Charles Crowther.** Assistant Director of the Centre for the Study of Ancient Documents and expert in Greek epigraphy (texts inscribed on stone). Has worked extensively on the development of ICT tools for the study and web delivery of ancient texts and has collaborated with engineering scientists in pioneering new methods for the computer-based enhancement of damaged documents. Projects with substantial ICT elements, completed or in progress, include: The Vindolanda Tablets On-Line (AHRB and Mellon Foundation), Script, Image and the Culture of Writing in the Ancient World (Mellon Foundation), Image Processing of Ancient Documents (with Prof. Sir Michael Brady, EPSRC). Chairman, Classics Faculty IT Committee.
- 71 **Dr Michael Fraser.** Michael is head of the Research Technologies Service at Oxford University Computing Services and Director of Intute Arts and Humanities (previously the Humbul Humanities Hub). He is, or has been, a principal investigator for a number of projects relating to access management, virtual research environments, and institutional repositories. He serves as Technical Secretary for Oxford University's ICT Strategy Programme and is also an Associate Director of the Oxford e-Research Centre. He is a member of various advisory committees and until October 2006 was Visiting Examiner for UCL's Electronic Communication and Publishing MA programme. He has an academic background in the humanities with a PhD in theology from Durham University.

Co- Investigator:

- 72 **Dr Marina Jirotka** is Director of the Oxford Centre for Requirements and Foundations, Lecturer in Requirements Engineering at Oxford University Computing Laboratory and Fellow of St Cross, Associate Director of the Oxford e-Research Centre (OeRC), and James Martin Research Fellow at the e-Horizons Institute. She has been the requirements analyst on flagship e-Science projects such as eDiaMoND and is advisor on requirements methods and techniques for e-Science projects such as Integrative Biology and Building a Virtual Research Environment for the Humanities. She is a member of the UK e-Science Usability Task Force, Co-Director of the Oxford e-Social Science node that is investigating the Ethical, Legal and Institutional Dynamics of Grid Enabled e-Sciences and is Principal Investigator of the EPSRC project Embedding e-Science Applications: Designing and Managing for Usability.
- 73 **Project Manager: Ms Ruth Kirkham** joined the University of Oxford in July 2005 as the Project Manager of the Building a VRE for the Humanities project. Ruth is responsible for the day to day running of the project, including the conduct of the detailed user requirements survey. Ruth joined the University having worked at Ingenta Plc as a Project and Technical Manager where she oversaw the construction and day to day management of a wide range of bespoke websites. She has a degree in Fine Art and a Post Graduate Diploma in Publishing.
- 74 **Technical Manager: Mr John Pybus** is the Technical officer on the BVREH project. He comes from a background of creating e-Science services within the Biological Sciences where he has worked on GRID projects, and latterly on the integration of Semantic Web tools. He also has a role in Oxford University's Phonetics Laboratory, supporting the use of cluster computing in Phonetics and Linguistics research.
- 75 **Technical Developer:** to be appointed.

Annexe 1

This Annexe collects letters of support for the proposed project:

1. Institutional letter of support from the Research Services Manager, University of Oxford
2. Institutional letter of support from Professor Sally Shuttleworth, Head of the Humanities Division, University of Oxford.
3. Institutional letter of support from Professor Paul Jeffrey, Director of OeRC, University of Oxford.
4. Letter of support from Professor Kathryn Sutherland, English Faculty, University of Oxford.
5. Letter of support from Professor Roger Bagnall, Columbia University, representing APIS

