

# **e-Science Demonstrator Projects in the Arts and Humanities**

*'A Virtual Workspace for the Study of Ancient Documents'*

*EPSRC Final Report*

**February 2007**

**Principal Investigator:**

Dr Charles Crowther

**Co-Investigator:**

Prof. Alan Bowman

Dr Matthew Mascord

**Research Co-Investigators:**

Ruth Kirkham (Project Manager)

John Pybus (Developer)

## **Background/Context**

The Virtual Workspace for the Study of Ancient Documents (VWSAD) project was formulated in response to a user requirements survey carried out by the JISC-funded Building a Virtual Research Environment (BVREH) project which highlighted the common needs of users across different disciplines, languages, cultures and periods within the Humanities who all work with texts in various forms.<sup>1</sup> The VWSAD demonstrator was a three-month project aimed at constructing a proof-of-concept implementation of a virtual workspace for research involving decipherment and textual analysis of ancient documentary texts written on a variety of materials. The intention of the workspace was to provide direct access to dispersed research resources (images of original documents, lexica, corpora of texts, and so on), and to mediate collaboration between researchers in remote locations, within an integrated environment with the following capabilities:

- to enable researchers to select, store, organise and annotate textual and image data in a ‘personal workspace’
- to search across multiple, distributed data sets
- 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 the AccessGrid.

The demonstrator was constructed specifically to address the needs of research on ancient documents because this is where the expertise of our own research group is focused, but it deploys technologies that are likely to be applicable across other Humanities disciplines in which textual analysis is important.

## **Key Advances and Supporting Methodology**

The intended outcome of the project was to demonstrate a virtual workspace which would allow researchers working in the field of ancient documentary studies to view, annotate and manipulate digitized documents, cross-search relevant datasets and attend a ‘virtual gathering’ in which readings of texts and inscriptions could be made with colleagues regardless of their location. These design goals were refined through an initial user requirements gathering process and further modified in response to user feedback as the components of the workspace were developed and deployed.

Within the three-month timespan of the demonstrator project, implementation of the components of the workspace ranged from elaborated to partial proof of concept. Although not all aspects of the workspace were fully functional by the end of the grant period, the iterative design and development of the workspace, together with comprehensive user testing and feedback, enabled the project to advance its understanding of user needs substantially. The demonstrator has proven that the collaborative study of documents and manuscripts is an area of mutual interest across humanities research.

## **Achievements:**

---

<sup>1</sup> <http://bvreh.humanities.ox.ac.uk>

- The VWSAD demonstrator has enabled the BVREH project team to gain comprehensive user requirements for a fully fledged ‘Virtual Workspace for the Study of Ancient Documents’; the project was informed by a series of AHRC-funded workshops (‘User Requirements Gathering for the Humanities’) conducted before and during the demonstrator grant period.
- The user-focused approach to design and development of the project has kept the workspace in line with researcher needs and fostered a great deal of enthusiasm and support
- The project has provided confirmation that there is both a need for and interest in a VRE implementation amongst documentary specialists
- The VWSAD demonstrator has successfully developed a customised viewing environment to examine and manipulate digitized documents by adapting existing Open-Source software and has spent significant time integrating annotation capability into the system
- The demonstrator has constructed a working system which provides a framework to add comprehensive communication and collaboration facilities
- The Workspace has established that the collaborative study of documents and manuscripts is an area of great mutual interest across humanities research and that such a system could be extended to other disciplines
- Development of the workspace has enabled the project to gain a further two years of funding from the Joint Information Systems Committee (JISC) to extend the capabilities of the demonstrator to become a Virtual Research Environment for the Study of Documents and Manuscripts

## Methodology

The project began by working with documentary specialists to draw up a detailed list of user requirements. This was followed by ongoing testing of implementations of the demonstrator by researchers at the Centre for the Study of Ancient Documents<sup>2</sup>. These sessions generally took the form of a gathering of up to three researchers, each of whom specialised in a different area of documentary scholarship across the range of epigraphy and papyrology. Viewing documents of particular relevance to their own work, researchers tested the usefulness of the workspace, commenting on what they did and did not like and what might be useful and what could be discarded. At the end of each session the project team prioritised the outcomes and endeavoured to add the most useful elements to the workspace for the next round of testing.

In developing the demonstrator the project implemented a version of ‘Giant Scalable Image Viewer’ (GSIV)<sup>3</sup> for viewing digitized documents and inscriptions. Various other viewers were also considered including ‘The Virtual Lightbox for Museums and Archives’ (VLMA)<sup>4</sup>, Zoomify<sup>5</sup> and the prototype viewer which is under construction

---

<sup>2</sup> The Centre for the Study of Ancient Documents is based at the Ioannou Centre for Classical and Byzantine Studies, University of Oxford

<sup>3</sup> <http://www.mojavelinux.com/projects/gsiv/>

<sup>4</sup> <http://lkws1.rdg.ac.uk/vlma/>

by the Virtual Vellum project<sup>6</sup> (another of the eScience Demonstrator Projects in the Arts and Humanities, funded by the EPSRC).

The Open Source GSIV, a javascript solution, was chosen at this stage because it was felt that the Virtual Vellum project was still at too early a stage in its development to allow customisation and integration into the workspace. VLMA was also discounted since the project team felt unwilling to require the installation of java by end-users. Similarly, the licensing terms for Zoomify raised difficulties for further development and customisation. It was felt that GSIV was best placed to provide the functionality needed for the demonstrator, and had the additional advantage of placing minimum installation requirements on end-users.

An implementation of Annotea<sup>7</sup> was used to store and retrieve annotations associated with the images together with added functionality to highlight sections of an image in order to add specific textual annotations. It also became clear at this stage from user testing that the ability to view multiple images and image fragments together was essential, so this functionality was added to the viewing environment.

To enable real-time chat the XMPP (Jabber) protocol was incorporated. Although it was felt that any Jabber client could be installed, it was seen as beneficial to provide a javascript client, which could be embedded in the webpage of the Virtual Workspace viewer using existing Open Source code. The next stage of the project was to build functionality into the framework which would allow multiple copies of the viewer to connect and to be viewed simultaneously. Again XMPP was used and various video conferencing solutions including Access Grid and Skype were reviewed to work in conjunction with this to enable a group of researchers to collaborate on reading a text.

At this stage there was also a good deal of discussion in user testing sessions as to which external datasets should be included in the earliest version of the workspace and how they might be integrated with the viewing environment. A number of datasets were prioritized and although they were not able to be integrated fully into the framework during the project time scale, mock-up demonstrations of interface and functionality allowed the researchers to gain a good sense of how they will work.

## **Project Plan Review**

The administration and organisation of the VWSAD project went largely as planned. As the project progressed, a great deal was learnt from the user requirements process (informed by the User Requirements Workshops funded by the AHRC) and through the development of the viewer, annotation system and overall framework of the workspace. Some elements in the project plan required longer to implement than originally anticipated as the team focused on ensuring that the basic structure and functionality of the workspace were aligned with user needs and that the framework was solid and easily extensible.

Consequently, the project plan altered slightly to enable the team to deliver a demonstrator providing a customised viewing environment for the study and manipulation of ancient documents and a framework through which communication

---

<sup>5</sup> <http://www.zoomify.com/>

<sup>6</sup> <http://www.shef.ac.uk/french/research/froissart/vvellum.htm>

<sup>7</sup> <http://www.w3.org/2001/Annotea/>

and collaboration facilities can be easily added. The project also prioritised datasets and services which could be integrated into the workspace and demonstrated to users how these would be incorporated.

### **Research Impact and Benefits to Society**

The demonstrator project addresses a number of current issues in the application of ICT to ancient documentary studies. The scholar interpreting an ancient documentary text has a broad range of relevant electronic tools available, from online text corpora, lexica and onomastic and prosopographical databases to collections of high-resolution digital images; but the interaction is largely in one direction and the user experience is fragmented by the dispersal of the electronic resources. Decipherment and transcription are activities that naturally benefit from shared visualisation and multiple perspectives, but the potential of ICT to mediate collaborative activities has yet to be fully exploited. The VWSAD demonstrator, by addressing these issues, offers a model for the implementation of a VRE for the study of textual and documentary sources that has the potential to transform current research practice in these fields.

### **Explanation of Expenditure**

The project budget was made up largely of staffing costs for a full-time project manager and 80% FTE developer. Expenditure during the project was in line with the original application in all but two areas. Firstly the project had allocated £2000 to purchase a server on which the Virtual Workspace demonstrator would be deployed. As it turned out, the workspace was implemented on a development machine and deployment will be through the existing BVREH server based at the CSAD<sup>8</sup>, so that the allocation was not required. The budget also set aside money for travel and subsistence during the three month grant. Although the project team attended and presented a poster related to the VWSAD at the DRHA<sup>9</sup> at the beginning of the project, this was funded within the original JISC VRE project and as such the budget allocation in this area was not required.

### **Further Research or Dissemination Activities**

The next phase of work will be to extend the capability of the VWSAD demonstrator to address the wider user needs of documentary, textual and manuscript scholars through a full pilot implementation. The original BVREH project (Building a Virtual Research Environment for the Humanities) has secured further funding from the JISC in the second phase of VRE funding and will construct a 'VRE for the Study of Documents and Manuscripts'. Focusing in the first instance on the requirements of ancient documentary specialists working in the fields of epigraphy and papyrology, the pilot will continue to focus on ancient documents, but will be constructed so as to be usable by textual specialists working in other languages, periods and cultures. The

---

<sup>8</sup> Centre for the Study of Ancient Documents, Classics Faculty, University of Oxford

<sup>9</sup> Digital Resources for the Arts and Humanities at Dartington Hall

context will also be extended by treating documents not as disembodied texts but as artefacts which can also 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.

As set out in the initial grant application, the project team will undertake to showcase the demonstrator at relevant conferences and seminars including the 'Digital Resources for the Humanities' 2007, a Digital Classicist Work in Progress Seminar in London in June 2007, the International Congress of Papyrology (Ann Arbor, August 2007) and a panel session at the 'International Congress of Greek and Latin Epigraphy' (Oxford, September 2007).

The project reports will be published on the BVREH and the CSAD websites and the outcomes will be embedded in the Oxford Humanities VRE and widely disseminated to the wider VRE community, through research centres such as the AHRC Methods Network (KCL) and the Oxford Interdisciplinary e-Research Centre. It is also envisaged that a paper describing the project will be published in a scholarly journal such as *Zeitschrift für Papyrologie und Epigraphik*.